



Water Distribution System Repairs
NAS/JRB New Orleans, Belle Chasse, Louisiana

Final RFP

Work Order Number 1322159

Date: January 2015

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Preface

This Request for Proposal (RFP) consists of six parts.

Part 1 contains typical contractual forms, procedures, bidding instructions, bond information, clauses and wage decisions.

Part 2 contains general contract administrative and execution requirements including, but not limited to safety, design criteria & process, quality control, security, schedule, invoicing, temporary facilities, and design and construction oversight processes.

Part 2, Attachment A, contains project-specific general requirements that may either modify and/or supplement the corresponding standard paragraphs in the Part 2 "General Requirements" section.

Part 3 lists the project requirements, specific scope items, and expected quality level above and beyond those outlined in Part 4.

Part 4 contains Performance Specifications and minimum quality requirements.

Part 5, prescriptive specifications, is typically not used in this Small Project format.

Part 6 contains background project information, references, and other project-specific requirements.

Small Project Part 2 General Requirements

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1. **DEFINITIONS:** As used throughout the contract, the following terms shall have the meaning set forth below:

Contracting Officer (KO): The individual designated to administer the contract. Throughout this contract this individual will be responsible and possess the authority to act on behalf of the Government with respect to the specific contract.

Contracting Officer Representative (COR): The individual designated by the Contracting Officer as the authorized representative of the Contracting Officer. The COR is responsible for monitoring performance and technical management of the effort required and should be contacted regarding questions or problems of a technical nature.

Contractor: The term Contractor refers to both the prime Contractor and subcontractors, including the Designer of Record.

Designer of Record (DOR): Licensed architect/engineer working as subcontractor to or partner with prime Contractor who provides design for this contract.

Quality Control (QC): Contractor's system to control the quality of design, material, equipment and construction.

Quality Assurance (QA) Program: Government's program to evaluate the effectiveness of the Contractor's quality control. The Government's QA Program is not a substitute for the Contractor's QC Program.

Federal Holidays: New Year's Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day; Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, and Christmas Day.

Contract: Contract or task order.

2. **ORDER OF PRECEDENCE:** NFAS Clause 5252.236-9312. In the event of conflict or inconsistency between any of the below described portions of the confirmed contract, precedence shall be given in the following order:

- a. Any portions of the proposal or final design that exceed the requirements of the solicitation.
 - 1) Any portion of the proposal that exceeds the final design.
 - 2) Any portion of the final design that exceeds the proposal.
 - 3) Where portions within either the proposal or the final design conflict, the portion that most exceeds the requirements of the solicitation has precedence.
- b. The requirements of the solicitation, in descending order of precedence:
 - 1) Standard Form 1442, Price Schedule, and Davis Bacon wage rates.
 - 2) Part 1 – Contract Clauses.
 - 3) Part 2 – General Requirements.
 - 4) Part 3 – Statement of Work/Project Program Requirements.

- 5) Part 6 – Attachments (excluding Concept Drawings).
- 6) Part 5 – Prescriptive Specifications, exclusive of performance specifications.
- 7) Part 4 – Minimum Materials, Engineering and Construction Requirements, exclusive of prescriptive specifications.
- 8) Part 6 – Attachments (including Concept Drawings).

3. **POST AWARD KICKOFF MEETING (PAK):** Prior to commencement of design, and within 21 calendar days of award, meet with representatives of the Contracting Officer, installation and client to present the concept design for discussion and acceptance. The project team will develop a mutual understanding relative to the approved proposal, safety program, environmental permits and requirements, quality control procedures, and design and construction schedule. During the meeting, Contractor shall propose and gain acceptance for any critical path work activities requiring advance submittal and approval. If the contract includes work on any fire protection system, including fire alarm and mass notification systems, the Contractor and the appropriate DOR shall meet with the NAVFAC Fire Protection Engineer (FPE) to establish clear expectations of fire protection requirements of the project.

The Contractor's key personnel shall attend at the expense of the Contractor. Key personnel are defined as the Project Manager, Superintendent, CQC representative(s), DOR, major subcontractors and specialized supplementary personnel.

The PAK includes partnering, held during normal work hours with the non-labor –related costs shared by both parties. Partnering is a structured process, as well as philosophy of doing business with Contractors and clients that recognizes common goals through communication and teamwork. It helps create an environment where trust and teamwork prevent disputes, foster good working relationships to everyone's benefit, and facilitate the completion of a successful contract. If included in Attachment A, a Performance Assessment Plan that provides monthly performance feedback to the Contractor, will be discussed during the partnering session.

Key personnel will meet to identify strategies to ensure the project is carried to expeditious closure and turnover to the Client. Start the turnover process at the PAK Meeting utilizing the NAVFAC Red Zone (NRZ) Checklist and convene the Facility Turnover Meetings once the project has reached approximately 75% completion or 3 to 6 months prior to Beneficial Occupancy Date (BOD), whichever comes first. The Contracting Officer's Representative will lead the meetings and guide the discussions based on an agenda provided by the Government. The Facility Turnover effort shall fill in the NRZ Checklist including Contractor, Client, and NAVFAC Checklist Items and assign a person to be responsible for each item and a due date. The Contracting Officer's Representative will facilitate the assignment of responsibilities and fill out the NRZ Checklist. The Contracting Officer's Representative shall develop a Plan of Action and Milestones (POAM) for the completion of all Contractor, Client, and NAVFAC Checklist items.

4. **DESIGN:** Design is the work necessary to ensure functionality, quality, and safety for critical facets of the project. Special coordination requirements, such as for phone, LAN and cable, are included in Attachment A.

- a. Provide work in compliance with the following design standards and codes, as a minimum. Government standards listed in this RFP take precedence over industry standards.

This RFP references published standards, the titles of which can be found in the Unified Master Reference List (UMRL) on the Whole Building Design Guide at the Unified Facilities Guide Specification (UFGS) Website. The publications referenced form a part of this specification to the extent referenced.

The advisory provisions of all codes, requirements, and standards shall be mandatory; substitute words such as “shall”, “must”, or “required” for words such as “should”, “may”, or “recommended,” wherever they appear. The results of these wording substitutions incorporate these code and standard statements as requirements. Reference to the “authority having jurisdiction” shall be interpreted to mean Contracting Officer or Contracting Officer Representative. Comply with the required and advisory portions of the current edition of the standard at the time of contract solicitation.

The following list of codes and standards is not comprehensive and is augmented by other codes and standards referenced and cross-referenced in the RFP. Refer to Parts 3 and 4 for specific requirements within other UFC's.

- a) UFC 1-200-01, *General Building Requirements*
 - b) UFC 1-300-08, *Criteria for Transfer and Acceptance of Military Real Property*
 - c) UFC 1-300-09N, *Design Procedures*
 - d) UFC 3-560-01, *Electrical Safety, O&M*
 - e) UFC 3-600-01, *Fire Protection Engineering for Facilities*
 - f) UFC 3-600-10N, *Fire Protection Engineering*
 - g) UFC 3-800-10N, *Environmental Engineering for Facility Construction*
 - h) UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
 - i) UFC 4-020-01, *Security Engineering: Facilities Planning Manual*
- b. Part 3 contains the project description, functional and performance requirements, scope items, and expected quality levels that exceed Part 4. Part 4 identifies design criteria, verification requirements, and performance and quality requirements of products. See “Order of Precedence” paragraph in Part 2 for relationships between all parts of this RFP.
 - c. Provide professional registration and design signing and stamping requirements per requirements of UFC 1-300-09N, *Design Procedures*.
 - d. See Attachment A for project-specific submittal requirements.

5. **FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS:** Work shall comply with applicable criteria identified herein and Attachment A. Any project including work on means of egress, fire rated elements, Fire Suppression, Mass Notification, or Fire Alarm Systems shall require the services of a Registered Fire Protection Engineer per Attachment A.

- a. Final Life Safety/Fire Protection Certification Documentation: Unless otherwise specified in Attachment A, provide certification that all life safety and fire protection features and systems have been installed in accordance with applicable criteria, the contract documents, approved submittals, and manufacturer's requirements. This certification shall summarize all life safety and fire protection features.

6. **QUALITY CONTROL:** Maintain quality control for and inspect all work under the contract. The DOR, as a member of the Contractor QC organization, shall remain directly involved during the construction process. For certain projects, the Quality Control Manager, Superintendent, and Site Safety and Health Officer may be combined – see paragraphs 6 and 34 in Attachment A. Further QC requirements are identified in Attachment A.

- a. Submit a QC Plan for Government review and acceptance. The QC plan shall include the following:
 - 1) **NAMES, QUALIFICATIONS and RESPONSIBILITIES:** For each person in the QC organization (design and construction).
 - 2) **OUTSIDE ORGANIZATIONS:** Outside organizations, including architectural and consulting engineering firms and a description of the services these firms will provide.
 - 3) **INITIAL SUBMITTAL REGISTER (DESIGN & CONSTRUCTION):** Include submittal reviewer, estimated date of delivery, and identify which design submittals require Government approval prior to construction, and which construction submittals require DOR or Government approval prior to construction.
 - 4) **TESTING LABORATORIES:** Accredited laboratories as applicable.
 - 5) **TESTING PLAN AND LOG:** Tests required, referenced by specification paragraph number requiring the test, frequency, and person responsible for each test.
 - 6) **LIST OF DEFINABLE FEATURES:** A Definable Feature of Work (DFOW) is a task, which is separate and distinct from other tasks, and has the same control requirements and work crews.
 - 7) **COMMUNICATION PLAN:** Provide a plan for key decisions and possible problems the Contractor and Government may encounter during the design phase of the project. Communication Plan shall indicate the frequency of design meetings and what information is covered in those meetings, key design decision points tied to the Network Analysis Schedule and how the DOR plans to include the Government in those decisions, peer review procedures, interdisciplinary coordination, design review procedures, and comment resolution.
- b. QC Manager Responsibilities:
 - 1) Participate in the Post Award Kick-off, Partnering, Design Development and Coordination Meetings and Production Meetings.
 - 2) Ensure that no construction begins before the DOR has signed and stamped the design for that segment of work, and design and construction submittals are approved as required in Attachment A and the QC Plan.
 - 3) Immediately stop any work that does not comply with contract plans and specifications, and direct the removal and replacement of any defective work.
 - 4) Prepare QC Reports.
 - 5) Hold biweekly QC meetings with DOR, Superintendent and Government technical team; participation shall be suitable for the phase of work.
 - 6) Ensure that safety inspections are performed. Attend weekly Toolbox meetings.
 - 7) Maintain submittal log.

- 8) Maintain updated as-built drawings on site.
 - 9) Maintain testing plan and log. Ensure that all testing is performed per contract.
 - 10) Maintain deficiency log on site, noting dates deficiency identified, and date corrected.
 - 11) Certify and sign statement on each invoice that all work to be paid under the invoice has been completed in accordance with contract requirements.
 - 12) Perform Punch-out and Pre-final inspections, and participate in Final Inspections. Establish list of deficiencies; correct prior to the Final inspection.
 - 13) Ensure that all required keys, operation and maintenance manuals, warranty certificates, and the As-built drawings are submitted to the Contracting Officer.
- c. Use the Three Phases of Control process for construction QC.
- 1) Preparatory Phase: Review all applicable documents for compliance with all applicable laws, codes, regulations, and the requirements of the contract, including contract drawings and specifications. Determine requirements for testing and certification. Review submittal approvals for materials, equipment, shop drawings, and applicable methods of construction and installation. Include all Preparatory Phase items in the QC Report.
 - 2) Initial Phase: Observe and inspect the initial portion of the work performed under a DFOW to establish the quality of the workmanship, resolve conflicts in construction, ensure that testing is done and certified as required, and to check all work procedures to ascertain the work is in conformance with required safety requirements. Record and report nonconforming work and work not of acceptable quality and requiring correction or rework. Include all Initial Phase items, along with initial phase checklist and, in the QC Report.
 - 3) Follow-Up Phase: Occurs at the completion of each DFOW. Ensure the work is in compliance with contract requirements, quality of workmanship for all work is maintained, and all work performed meets safety requirements. Include all Follow-Up Phase items, including date, in the QC Report.
- d. The QC Manager must possess a current certificate showing successful completion of the NAVFAC Contractor Quality Management (CQM) Training.

7. **SUBMITTAL PROCESS:** Provide to the Government submittals as listed. See Paragraph 4, DESIGN, and Attachment A for specific design and construction submittal format and approval and surveillance requirements. Design drawings may be prepared more like shop drawings to minimize construction submittals after final designs are approved. Therefore, the Contractor is encouraged to prepare and submit with the design drawings, appropriate connection, fabrication, layout, and product specific drawings.

- a. QC Plan, prior to Design/Construction (may be phased).
- b. Design and construction submittals, prior to construction, approved IAW QC Plan, The DOR or QC Specialist is the approving authority for submittals unless otherwise indicated in Attachment A.
- c. DOR-approved design and construction submittals identified in Attachment A for Government surveillance (typically Fire Protection system and Life Safety submittals). Stamp the submittals "FOR SURVEILLANCE ONLY." Submit Surveillance submittals to the Government prior to starting work for that item. Submittals required for surveillance will be returned only if corrective actions are required.

- d. Material Safety Data Sheets (MSDS) as applicable.
 - e. Schedule: Provide detailed design schedule and preliminary construction schedule, due prior to PAK.
 - f. Environmental Protection Plan, prior to start of the work.
 - g. Contractor Safety Self-Evaluation Checklist.
 - h. Accident Reports – submit if incidence occurs.
 - i. Safety Submittals: Per Paragraph 34 and Attachment A, prior to construction.
 - j. Schedule of Prices, initial due 21 calendar days after award and a detailed due prior to construction.
 - k. Budget Management Summary: Per Attachment A.
 - l. Record Drawings, due at Beneficial Occupancy
 - m. Operation and Maintenance Information: Per Paragraph 23, Part 2 Attachment A, and Part 4. Due prior to testing as applicable, no later than 30 calendar days before Beneficial Occupancy.
 - n. Licenses and Permits: Per Attachment A and Part 4.
 - o. DD Form 1354: For all new construction, demolition, and any construction on an existing facility that adds new parts, items, or systems that are not maintenance or repair; e.g. replacement of windows, replacement of roofs, replacement of an exterior utility, adding an AC system, adding exterior lighting, the DOR shall prepare DD Form 1354 TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY, in accordance with UFC 1-300-08, available at http://65.204.17.188/report/doc_ufc.html. Submit form for Government approval a minimum of 30 calendar days prior to final acceptance of work.
8. **SUPERVISION:** The Contractor shall have a supervisor fluent in English on the job site during working hours. Additional requirements per Attachment A.
9. **SCHEDULE:** Provide Design and Construction Schedule adequate for Contractor to efficiently manage project and for Government to efficiently manage QA and scheduling interfaces. Include construction phasing and any work restrictions (such as occupied spaces, special hours, potential work disruptions). Schedule shall contain DFOWs and dates for completion of each task including material procurement, and construction activities. Update the schedule at least monthly; use 3-week look-ahead for each QC meeting.
10. **BUDGET MANAGEMENT:** The Contractor shall be responsible for budget management throughout the entire project. It is the intent of the Government to partner with the Contractor to maximize project value while strictly controlling contract modifications and maintaining overall fiscal control. When required in Attachment A, develop a Budget Management System for each phase of the design.
11. **PRECONSTRUCTION CONFERENCE:** Prior to construction or demolition start, meet with representatives of the Contracting Officer to discuss and develop mutual understanding relative to administration of the safety programs, environmental issues, safety of building occupants and surrounding area, hazardous materials, waste disposal, construction QC procedures, construction

schedule, labor provisions and other construction phase contract procedures. The Preconstruction Conference shall reinforce partnering philosophy initially established during the PAK.

12. **ACCESSIBILITY:** Provide barrier-free design in accordance with the requirements of the DEPSECDEF Memorandum "Access for People with Disabilities" dated Oct 31, 2008. The memorandum updates the DoD standards for making facilities accessible to people with disabilities. The US Access Board issued an update of the accessibility guidelines which the DEPSECDEF Memorandum implements with military unique requirements specified in the memorandum attachment. The new DoD, "ABA (Architectural Barriers Act) Accessibility Standard" (DoD ABAAS) and the DEPSECDEF Memorandum are located at <http://www.access-board.gov/ada%2Daba/aba-standards-dod.cfm> .

13. **CONTRACTOR'S PRODUCTION REPORTS:** Submit Contractor Production Reports on forms furnished for this purpose. Complete the reports weekly unless otherwise requested by the Contracting Officer. Reports shall include:

- a. Worker hours by classification, move-on and move-off of construction equipment furnished by the prime, subcontractor or the Government, and materials and equipment delivered to the site.
- b. Safety meetings, checks and inspections.
- c. Disposition of Construction Waste Material: Per Environmental Protection Plan.
- d. Design and Construction Services: Including, but not necessarily limited to:
 - 1) Check all Contract Documents for correctness and correlation. If the Contractor notes any discrepancy or ambiguity, immediately notify the COR.
 - 2) Examine the work site as to conditions affecting the work. Field verify the site and scope of work, including but not limited to the measurement and location of all significant items required to perform the work. Failure by the Contractor to familiarize oneself with available information regarding these conditions shall not relieve the Contractor from the responsibility of successfully completing the work.

14. **SCHEDULE OF PRICES:** Submit on forms furnished by the Government. The initial schedule of prices may be preliminary for construction activities until the design is developed. Include a detailed breakdown of the contract price, with quantities for each kind of work. Include General Conditions, profit, and overhead in the unit prices. Break down into design and each construction category if stated in Attachment A. The Contractor may invoice for bonds once the Government has approved the bonds, however, no other requests for payment will be processed without an approved Schedule of Prices.

15. **CONTRACTOR INVOICES:** Contractor requests for payment shall conform and will be processed in accordance with the requirements of FAR 52.232-5 and FAR 52.232-27.

- a. Content of Invoice: Requests for payment in accordance with the terms of the contract shall consist of the following: (If NFAS Clause 5252.232-9301 is present in the contract, documents shall be provided as attachments in Wide Area Workflow (WAWF). The maximum size limit per attachment is less than 2 megabytes, but you may have an unlimited number of attachments. If a document cannot be attached to WAWF due to system or size restrictions it shall be provided as instructed by the contracting officer). If

NFAS Clause 5252.232.9301 is not present in the contract, follow the invoicing instructions provided in the contract.

- 1) Contractor's Invoice on NAVFAC Form 7300/30, which shall show, in summary form, the basis for arriving at the amount of the invoice.
- 2) Contractor's Monthly Estimate for Voucher (LANTNAVFACECOM Form 4-4330/110 (New 7/84)), with subcontractor and supplier payment certification.
- 3) Affidavit to accompany invoice (LANTDIV NORVA Form 4-4235/4 (Rev. 5/81)).
- 4) Updated copy of submittal register.
- 5) Updated copy of progress schedule. Furnish as specified in "FAR 52.236-15, Schedules for Construction Contracts."
- 6) Network mathematical analysis.
- 7) Contractor Safety Self Evaluation Checklist (original)
- 8) Final release (for final payment only)

b. Payment:

- 1) Payment will be made on Contractor's submission of itemized requests and will be subject to reduction for overpayments or increased for underpayments from previous payments. The Government may withhold payment or reduce payments for the following:
 - a) Defects in material or workmanship.
 - b) Claims the Government may have against the Contractor under or in connection with this contract.
 - c) Contractor's failure to submit an updated schedule.
 - d) Payroll violations.
 - e) Unless otherwise adjusted, repayment to the Government upon demand for overpayments made to the Contractor.
- 2) Payments may be made for materials, stored off construction sites, under the following conditions:
 - a) Conditions described in Attachment A.
 - b) Materials adequately insured and protected from theft and exposure.
 - c) Materials not susceptible to deterioration or physical damage in storage or in transit to the job site are acceptable for progress payments. Items such as steel, machinery, pipe and fittings and electrical cable are acceptable, but items such as gypsum board; glass, insulation and wall covering are not.
 - d) Materials in transit to the job or storage site are not acceptable for payment.
 - e) Conditions specified in FAR 52.232-5(b) Payments Under Fixed Price Construction Contracts.

16. **PROTECTION OF GOVERNMENT PROPERTY:** Take special care to protect Government property. Return areas damaged as a result of construction under this contract to their original

condition. In addition to FAR 52.236-9, *Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements*, perform the following:

- a. Remove or alter existing work or facilities in such a manner as to prevent injury or damage to any portion of the existing work or facilities that remain.
- b. Repair or replace portions of existing work 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.
- c. Preserve the natural resources in accordance with the approved environmental protection plan.

17. **EXISTING UNDERGROUND UTILITIES:** Verify on-site utilities and have them marked out by a utility locator service prior to the start of construction. Where existing piping, utilities, oil and gas lines, and underground obstructions of any type that are to remain are indicated in locations to be traversed by new piping, ducts, and other work provided herein, and such are not indicated or specified to be removed, the elevations of the existing utilities and obstructions shall be determined before the new work is laid closer than the nearest manhole or other structure at which an adjustment in grade could be made. Obtain required dig permits and notify the Contracting Officer 21 calendar days prior to any excavation. Refer to Attachment A for specific station requirements.

18. **LICENSES/PERMITS:** Obtain all appointments, licenses, and permits required to perform work under this contract at no additional expense to the Government. See "Permits Record of Decision" (PROD) form for list of permits. Comply with all applicable federal, state, and local laws, and base regulations and procedures. Provide evidence of such permits and licenses to the Contracting Officer before work commences and at other times as requested by the Contracting Officer (see FAR 52.236-7, *Permits and Responsibilities*). Coordinate permit applications with Navy or local environmental office.

The contractor shall submit a complete PROD form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link <http://www.wbdg.org/ndbm/Download/Download.html?Tab=Download>. Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the Government's Civil Reviewer and Environmental Reviewer.

Contractor is exclusively responsible for his full compliance with patent laws and shall affirm that the company is licensed to use equipment and processes the company shall employ in this project.

19. **CONTRACTOR WORK SITE:** Limit use of the premises for work and for storage of material and equipment associated with the contract. Unless otherwise specified or separately agreed to, Government owned material handling equipment, transportation equipment or general tools will not be available for Contractor's use. Clean work area daily and after completion of the work, removing all loose debris and disposing of all non-permanent materials IAW the contractor's Waste Management Plan.

- a. **Temporary Facilities:** The Contractor may provide his own office facilities; coordinate and obtain advance approval from the Contracting Officer. Provide and maintain suitable sanitary facilities within the construction limits of the contract. Dispose of sanitary waste in accordance with the applicable laws, and local regulation.

- b. **Contractor-Furnished Equipment:** Equipment is subject to the inspection and approval of the Contracting Officer, prior to and during the life of the contract. All equipment and vehicles shall display readily visible Contractor identification markings. Relocate stored Contractor equipment which may interfere with operations of the Government or with others on-site.
- c. **Contractor-furnished Material:** Protect and secure products stored at this site.
 - 1) All replacement units, parts, components, and materials to be used in the maintenance, repair and alteration of facilities and equipment shall be new and compatible with the existing equipment on which it is to be used, and shall comply with applicable Government, commercial, or industrial standards such as Underwriter's Laboratories, Inc., and National Electrical Manufacturers Association.
 - 2) In addition, submit a current certificate recognized by the State or local authority that states the Contractor has completed at least 10 hours of training in backflow preventer installations.

20. **TEMPORARY UTILITIES:**

- a. The Government will provide water and power in reasonable quantities at the prevailing rates.
- b. All labor, material, and equipment necessary to affect temporary utility tie-ins, including transformers if necessary, shall be at the expense of the Contractor and under the surveillance of the Contracting Officer.
- c. The Contractor shall be responsible for any damages to Government, private or public facilities and property that may result from the installation and removal of these temporary utility tie-ins. Corrections and repairs shall be made at the Contractor's expense.
- d. The actual location and installation of the temporary tie-in, together with any interruptions of utilities systems, shall be identified and approved by the Contracting Officer prior to execution. Notify the COR and Station Utilities 15 calendar days prior to any tie-ins.
- e. Permanent utility systems, when indicated, will be available for tie-in.
- f. Telephone and Data Service: Make arrangements with local telephone company, NMCI and other pertinent base communication departments.
- g. Maintain utility services to existing facilities surrounding the site at all times during construction.
- h. Contractor shall install and certify back flow preventers on all connections to the potable water supply system.

21. **ENVIRONMENTAL CONTROLS AND PROTECTION**

Unforeseen Hazardous Conditions: Do not disturb hazardous materials and report condition immediately to the Contracting Officer potentially hazardous conditions that are uncovered or the Contractor becomes aware of that have not been identified in the RFP. This includes hazardous components and materials and contamination (see UFC 3-800-10 for more information). This includes conditions that are not only hazardous to humans but wildlife, marine life and the environment. Stop work in the area of the questionable material or condition until identification and direction is provided.

22. **WASTE MANAGEMENT:** Develop a Waste Management Plan that identifies all recyclable material and disposal methods for all material. Contractor shall reduce, recycle or salvage as much waste material as possible with a goal of diverting at least 50% of construction waste from landfill. Address waste reduction, recycling and salvage as part of the waste management plan. Report volume or weight of disposed and recycled materials. The Contractor is responsible for removing and disposing of all waste materials generated. Consider all material recyclable or reusable, unless clearly demonstrated the material requiring disposal is waste material.
23. **RECORD DRAWINGS AND OPERATION & MAINTENANCE (O&M) DATA:** Furnish hard copy and electronic format for all as-built and O&M information. Record drawings shall incorporate all changes to the approved final design. Provide O&M data for as-built products, materials, and equipment, including data sheets, test reports, warranties, certificates, list of spare parts suppliers for all pieces of equipment, and approved construction submittals. Refer to Attachment A.
24. **WARRANTY:** Warrant all materials and work for not less than one year after final acceptance of the work, except as otherwise indicated in this RFP. If required to provide remedial repair of previously installed work due to latent defect or unacceptable work performance, warrant the repaired work for one year after the completion and acceptance of the repair. For warranted items, furnish the manufacturers' original written warranty accompanied by a copy of the supplier's receipt showing place of purchase, telephone number of supplier, address, delivery order number if applicable, and ticket number.
25. **PERFORMANCE EVALUATIONS:** The evaluation will take into account all aspects of the Contractor's performance, including evaluations from Performance Assessment Plans when included in Attachment A. Performance evaluations may be completed any time during the contract. The Government will provide a copy of the performance evaluation and an opportunity to discuss the evaluation. The performance evaluations will have an impact on the award of future contracts.
26. **WORK HOURS, ACCESS AND PASSES:** All Contractor employees, including subcontractors, and subcontractors' employees, suppliers, and suppliers' employees shall be required to comply with the Installation Security Requirements regarding personnel, vehicle, and equipment security passes and access the jobsite. Nothing in the contract shall be construed in any way to limit the authority of the Commanding Officer to prescribe new, or to enforce existing security regulations governing the admission or exclusion of persons and the conduct of persons while aboard the station, including but not limited to, the rights of search of all persons or vehicles aboard the station.
- Coordinate with the Contracting Officer for specific security and access requirements.
- a. **Access to Buildings/ Occupied Buildings:** The Contractor may work in or around existing occupied buildings. The Contractor is responsible, via the Contracting Officer, to obtain access to building and facilities and arrange for them to be opened and closed. Do not enter the building(s) without prior approval of the Contracting Officer. Keep the existing buildings and their contents secure at all times. Provide temporary closures as required to maintain security. Contract personnel will not be permitted in security-regulated buildings or areas unless cleared by the Security Officer.

- 1) Passes: Contractor employees and representatives performing work under this contract are required to be either United States citizens or documented legal residents (status verified by prime contractor). All Contractor employees shall obtain the required employee passes. NAS JRB encourages contractors and subcontractors to apply for a RAPIDGate company/personal badge that affords personal base access (and/or multiple base accesses) that can be issued to each Contractor employee who meets background check criteria. There are costs for Contractors to participate in the RAPIDGate program which include a fee for the Contractors firm and a fee per Contractor. Costs to participants are recaptured through increased productivity of their employees due to the reduction in waiting times at Pass and Identification Office. A RAPIDGate kiosk is located inside the Pass and Identification Office. While Contractors are not required to participate in this program, those Contractors who choose not to participate will be required to obtain daily passes at Pass and Identification Office. Failure to obtain base access passes shall not be a cause for contract performance time extension. Delivery of materials will be allowed with the driver presenting a valid delivery order/ticket and presenting a valid Transportation Workers Identification Card (TWIC) Card.
- 2) Personnel requiring daily passes will be processed through security by having the Contractor submit to the appointed Facilities Engineering and Acquisition Division (FEAD) representative on company letterhead, a list indicating that all individuals are bona fide employees. Passes valid up to 30 days may be considered. Allow 72 hours for FEAD to submit to security (Contractor's direct submission to Security will not be processed) The list shall contain the following information:
 - a) Name of Employee
 - b) Company Name
 - c) Drivers License Number and State of Issue
- b. Contractor Vehicles: All vehicles shall display a valid state license plate and safety inspection sticker, if applicable, and shall be maintained in good repair. The company name shall be displayed in a clearly visible manner and size on each Contractor vehicle used in the course of work. Registration, proof of insurance and driver's licenses are required to obtain a station vehicle pass.
- c. Work Hours: Unless otherwise indicated, work will be located on a Government compound, military installation, or station. Contractor work hours shall be between 0630 and 1700 Monday through Friday, or as indicated in Attachment A. Obtain advance approval from the Contracting Officer for Contractor personnel to remain on site beyond normal working hours. Notify the Contracting Officer at least 48 hours in advance to obtain approval for access to the jobsite or work outside of normal working hours or on Saturday, Sunday, and Federal Holidays.
- d. Contractor Personnel: Provide the Contracting Officer the name(s) of the supervisory person(s) authorized to act for the Contractor. Provide, and update as required, a list of the key personnel for the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. Prominently post contact names and phone numbers on the job site in case of emergency.
- e. Contractor employees shall conduct themselves in a proper, efficient, courteous and businesslike manner. Remove from the site any individual whose continued employment

is deemed by the Contracting Officer to be contrary to the public interest or inconsistent with the best interests of National Security.

27. **SECURITY REQUIREMENTS:** All security requirements apply to all subcontractors and suppliers associated with this contract. Special or extraordinary security requirements are identified in Attachment A. In addition to special or extraordinary security requirements, comply with the following:

- a. Do not publicly disclose any information concerning any aspect of the materials or services relating to this contract, without prior written approval of the Contracting Officer.
- b. Do not disclose or cause to be disseminated any information concerning the operations of the activity's security or interrupt the continuity of its operations.
- c. Do not disclose any information to any person not entitled to receive it. Failure to safeguard any classified information that may come to the Contractor or any person under his control, may subject the Contractor, his agents or employees to criminal liability under 18 U.S.C., Sections 793 and 798.
- d. Direct to the Contracting Officer and or Installation Security Officer for resolution all inquiries, comments or complaints arising from any matter observed, experienced, or learned as a result of or in connection with the performance of this contract, the resolution of which may require the dissemination of official information.
- e. Coordinate photography requirements with the Contracting Office. Some areas restrict or prohibit photographing Government property.

Deviations from or violations of any of the provisions of this paragraph, will, in addition to all other criminal and civil remedies provided by law, subject the Contractor to immediate termination for default and withdrawal of the Government's acceptance and approval of employment of the individuals involved.

28. **REQUIRED INSURANCE:** Within 15 calendar days after award, furnish the Contracting Officer a Certificate of Insurance as evidence of the following insurance coverage amounts not less than the amount specified below in accordance with FAR Clause 52.228-5, *Insurance Work On A Government Installation*:

- a. Comprehensive General Liability: \$500,000 per occurrence.
- b. Automobile Liability: \$200,000 per person, \$500,000 per occurrence for bodily injury; \$20,000 per occurrence for property damage.
- c. Worker's Compensation: As required by Federal and State Worker's compensation and occupational disease and other laws.
- d. Employer's Liability Coverage: \$100,000, except in states where worker's compensation may not be written by private carriers.
- e. Others as required by state law.
- f. Above insurance coverages are to extend to Contractor personnel operating Government owned equipment and vehicles.
- g. The Certificate of Insurance shall provide for 30 calendar days written notice to the Contracting Officer by the insurance company prior to cancellation or material change in policy coverage. Other requirements and information are contained in Attachment A.

For projects which require removal of asbestos containing materials the Asbestos Contractor or Subcontractor, as the case may be shall provide occurrence-based liability insurance with asbestos coverages in an amount not less than \$1,000,000 and shall name the Government and PQP as additional insureds.

29. **PROPRIETARY RIGHTS:** All field notes, design drawings, specifications, and other documents collected and produced as part of this contract shall be considered property of the Government. These data shall not be used, in whole or part, published or unpublished, as a part of any technical or non-technical presentation without written pre-approval of the Contracting Officer.
30. **GOVERNMENT FURNISHED MATERIAL AND EQUIPMENT:** If applicable, the Government will furnish the materials and equipment for installation by the Contractor pursuant to contract clause FAR 52.245-2, *Government Property (Fixed Price Contracts)*. Notify the Contracting Officer in writing at least 15 calendar days before the materials and equipment are required. Pick up materials and equipment no later than 30 calendar days after such date. When materials and equipment are not picked up by the 30th day, the Contractor will be charged for storage at the prevailing rate. The Contracting Officer will specify the location of materials and equipment and the delivery location.
31. **ORAL MODIFICATION:** No oral statement by any person other than the Contracting Officer, as provided in the contract clause entitled, "CHANGES AND CHANGED CONDITIONS," will in any manner or degree modify or otherwise affect the terms of this contract.
32. **NO WAIVER BY THE GOVERNMENT:** The failure of the Government in any one or more instances to insist upon strict performance to any of the terms of this contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon such terms or options on any future occasion.
33. **EQUITABLE ADJUSTMENTS – WAIVER AND RELEASE OF CLAIMS:**
- a. Whenever the Contractor submits a claim for equitable adjustment under a clause which provides for equitable adjustment of the contract, such claim shall include all types of adjustments in the total amounts to which the clause entitles the Contractor, including, but not limited to, adjustment arising out of delays or disruptions.
 - b. Except as the parties may otherwise expressly agree, the Contractor shall be deemed to have waived: (1) any adjustments to which he otherwise might be entitled under the clause where such claim fails to request such adjustments; and (2) any increase in the amount of equitable adjustments additional to those requested in its claim.
 - c. The Contractor agrees that, if required by the Contracting Officer, it shall execute a release, in form and substance satisfactory to the Contracting Officer, as part of the supplemental agreement setting forth the aforesaid equitable adjustment. The Contractor further agrees that such release shall discharge the Government, including its officers, agents, and employees, from any further claims, including, but not limited to, further claims arising out of delays or disruptions caused by the aforesaid change.
34. **SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS:**
- a. References: The publications listed below form a part of this specification to the extent referenced. Use current version of referenced requirements at the time of contract solicitation. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z359.1, *Safety Requirements for Personal Fall Arrest System, Subsystems and Components*
ANSI A10.32, *Fall Protection systems for Construction and Demolition Operations*
ANSI A10.6, *Demolition Operations*
ANSI Z9.2, *Fundamentals Governing the Design and Operation of Local Exhaust Systems*
ANSI Z88.2, *Respiratory Protection*
ANSI Z358.1, *Emergency Eyewash and Shower Equipment*

ASME INTERNATIONAL (ASME)

ASME B30.22, *Articulating Boom Cranes*
ASME B30.3, *Construction Tower Cranes*
ASME B30.5, *Mobile and Locomotive Cranes*
ASME B30.8, *Floating Cranes and Floating Derricks*

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

ASTM Standards on Lead-Based Paint Abatement in Buildings
ASTM E 1368, *Visual Inspection of Asbestos Abatement Projects*

DEPARTMENT OF DEFENSE (DoD)

MIL-STD-1472F, *Military Standard, Human Engineering Design Criteria for Military Systems, Equipment and Facilities*
DoD-HDBK 743A, *Anthropometry of US Military Personnel*

DEFENSE LOGISTICS AGENCY (DLA)

DLA 4145.25, *Storage and Handling of Compressed Gases and Liquids in Cylinders*

EPA Standards and Documents – General

15 U.S.C. 2601 – *Toxic Substances Control Act*
EPA Title X – *The Residential Lead Based Paint Hazard Reduction Act*
EPA & HUD – *Lead Safe Work Practices*
HUD Guidelines, *Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing*

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241, *Safeguarding Construction, Alteration, and Demolition Operations*
NFPA 51B, *Fire Prevention During Welding, Cutting, and Other Hot Work*
NFPA 70, *National Electrical Code*
NFPA 70E, *Electrical Safety in the Workplace*

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 Safety -- *Safety and Health Requirements*

UNITED FACILITIES CRITERIA (UFC)

UFC 3-560-01, *Electrical Safety, O&M*

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

29 CFR 1910 *Occupational Safety and Health Standards*

29 CFR 1910.146 *Permit-required Confined Spaces*
29 CFR 1915 *Occupational Safety and Health Standards for Shipyard Employment*
29 CFR 1926 *Safety and Health Regulations for Construction*

- b. Submittals: A "G" following a submittal indicates that Government approval action is required.
- 1) Contractor Accident Prevention Plan (APP), comply with EM 385-1-1, Appendix A; G
 - 2) Contractor Safety Self-Evaluation Checklist; G
 - 3) Monthly Work-Hour Reports
 - 4) Crane Critical Lift Plan; G
 - 5) Accident Reports – submit if incidence occurs.
 - 6) Activity Hazard Analyses, as applicable.
- c. Weight Handling Equipment (WHE) Accident: A WHE accident occurs when any one or more of the six 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, roll over).
- d. Contractor Safety Self-Evaluation Checklist: Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor. Complete the checklist monthly and submit with each request for payment. A score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90, will result in a retention of up to 10 percent of the voucher.
- e. Regulatory Requirements: In addition to the detailed requirements included in this contract, work performed shall comply with USACE EM 385-1-1, and the laws, ordinances, criteria, rules and regulations included in Attachment A. 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 shall apply. UFC 3-560-01 takes precedence over all other guidance for electrical safety.
- f. Site Safety and Health Officer (SSHO) Qualifications & Duties: SSHO shall perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The assignment of the SSHO does not relieve the Contractor from the regulatory requirements governing safety responsibility. The SSHO on this project can be the site superintendent unless otherwise indicated in Attachment A.

In addition to duties required in EM 385-1-1 the SSHO shall perform the following:

- 1) 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 daily production report.

- 2) Attend pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic progress meetings.

Failure to actively apply an acceptable safety program will result in dismissal and a project work stoppage that will remain in effect pending approval of a suitable replacement.

g. Accident Notification and Reports

- 1) For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, fill out the Contractor Incident Report (CIR) electronically and submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS) within 5 calendar days. The Contracting Officer will provide copies of any required or special forms.
- 2) For any weight handling equipment accident (including rigging gear accidents), the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Crane operations shall not proceed 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.
- 3) Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident. 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 (e.g., type of construction equipment used, PPE used). Preserve the conditions and evidence on accident site until the Government investigation team arrives and Government investigation is conducted.
- 4) Monthly Work-Hour Reports: Monthly work-hour reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

- h. Hot Work: Prior to performing "Hot Work" (e.g., welding, cutting) or operating other flame-producing/ spark-producing devices, request a written permit from the Fire Division. **CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED.** It is mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site as required after completion of the task or as specified on the hot work permit.

- i. Hazardous Material Use: Each hazardous material must receive approval 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.

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 USACE 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, or lead-based paint are prohibited. The Contracting Officer, upon written request may consider exceptions to the use of any of the above excluded materials.

The Request for Proposal should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, 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*.

- j. Pre-outage Coordination Meeting: Apply for utility outages at least 15 days in advance. As a minimum, include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Once approved, and prior to beginning work on the utility system requiring shut down, attend a pre-outage coordination meeting with the Contracting Officer to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.
- k. Fall Hazard Protection and Prevention Program: Establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. Include company policy; identify 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.
 - 1) Fall Protection for Roofing Work: Implement all 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) A safety monitoring system is not adequate fall protection for low sloped roofs and is not authorized.
 - b) Work on steep-sloped roofs, including residential or housing type construction, requires a personal fall arrest system, guardrails with toe-boards, or safety nets.

- 2) Fall Prevention and Design: During design, consider and eliminate fall hazards encountered at the facility during maintenance evolutions whenever possible. If it is not feasible to eliminate or prevent the need to work at heights with its subsequent exposure to fall hazards, include control measures in the design to protect personnel conducting maintenance work after completion of the project. In addition to the detailed requirements included in the provisions of this contract, incorporate the requirements of 29 CFR 1910 Standards in the design (29 CFR 1915 applies for work in Shipyards).
- I. Weight Handling Equipment:
- 1) Crane Critical Lift Plan: Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. Submit the plan 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. as well as the following:
 - a) For lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.550(g).
 - b) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.
 - 2) Provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 section 16 and Appendix H. The Certificate of Compliance shall state that the crane operator(s) is qualified and trained in the operation of the crane to be used. Also certify that all of its crane operators working on the DOD activity have been trained in the proper use of all safety devices (e.g., anti-two block devices). Post these certifications on the crane.
 - 3) Notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.
 - 4) Comply with the crane 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.
 - 5) Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes and floating derricks.

- 6) Under no circumstance make a lift at or above 90% of the crane's rated capacity in any configuration.
 - 7) When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.
 - 8) Use cribbing when performing lifts on outriggers.
 - 9) Position the crane hook/block directly over the load. Side loading of the crane is prohibited.
 - 10) Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall be available for review by Contracting Officer personnel.
 - 11) Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.
 - 12) Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).
 - 13) Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations, set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. Include this maximum wind speed determination in the activity hazard analysis plan for that operation.
- m. Utility Locations and Verification Prior to Excavation: Obtain appropriate digging permit from Base personnel through Contracting Officer prior to digging. All underground utilities in the work area must be positively identified by a private utility locating service in addition to any station locating service and coordinated with the station utility department. Maintain all markings during utility investigation throughout the contract. Locate utilities in accordance with Paragraph 17 and Attachment A.
- Physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Use hand digging within 0.61 m (2 feet) of a known utility. If construction is parallel to an existing utility, expose the utility by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.
- n. Utilities Within Concrete Slabs: Utilities located within concrete slabs are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall 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.

- o. Conduct of Electrical Work: Follow electrical safety criteria specified in UFC 3-560-01, USACE EM 385-1-1, and NFPA 70E during the conduct of all work.
- p. Work in Confined Spaces: In addition to the requirements of Section 06.I of USACE EM 385-1-1, OSHA 29 CFR 1910.146 and OSHA 29 CFR 1926.21(b)(6), comply with the following paragraphs. Any potential for a hazard in the confined space requires a permit system to be used.
 - 1) Confined Space Signage: Provide permanent signs integral to or securely attached to access covers for permit-required confined spaces provided by this contract. Signs wording: "DANGER--PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER -" in bold letters a minimum of 25 mm (one inch) in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" shall be red and readable from 1.52 m (5 feet).
 - 2) 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 all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures.) Review all hazards pertaining to the space with each employee during AHA process.
 - 3) Forced air ventilation is required for all confined space entry operations. Maintain minimum air exchange requirements to ensure exposure to any hazardous atmosphere is kept below its' action level.
 - 4) Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.
- q. Ergonomics Considerations During Design: Design facilities, processes, job tasks, tools and materials to reduce or eliminate work-related musculoskeletal (WMSD) injuries and risk factors in the workplace. Design maintenance access to reduce WMSD risk factors to the lowest level possible. In addition to requirements included in this contract, design shall incorporate the requirements of MIL-STD-1472F.

-- End of Section --

Small Project Part 2, Attachment A Project-Specific General Requirements

05/11

The following requirements are project specific and may either supplement and/or modify those requirements contained in the body of Part 2, General Requirements, for Small Projects. Paragraph numbers in Part 2 correspond to paragraph numbers used in Part 2, Attachment A.

Paragraph 3 POST AWARD KICKOFF MEETING (PAK)

The post award kickoff meeting will be held at Public Works, Building 552, Naval Air Station (NAS) Joint Reserve Base (JRB) New Orleans, LA. The meeting is expected to last approximately 2 hours and will be followed by a site visit.

Conformed RFP:

Prior to the PAK meeting, and within two weeks after contract award, provide electronic consolidated RFP document incorporating all amendments and revisions that are contained in the contract award. Identify the changes to the RFP with the "Red-lining" or "Track Changes" feature of MS Word or Adobe to clearly highlight the pre-award modifications to the contract. Submit consolidated RFP to the contracting officer and the NAVFAC SE project manager.

Paragraph 4 DESIGN

Submit design drawings or sketches, calculations and manufacturer's data to demonstrate compliance with contract requirements. The Contractor is encouraged to prepare design drawings more like shop drawings to minimize construction submittals.

Provide hard copies (quantities per chart below and one electronic copy of design submittal package to the following reviewers a minimum of 2 weeks prior to the all review meetings. Submittals shall be provided for the 35%, 65%, 100% and Final design as a minimum. All design review comments from previous submittals shall be addressed with the next submittal.

Deliverable	FEAD/ ROICC	IPT
Half-size Drawings	4	4
Full-size Drawings	1	1
Specifications and Manufacturer's Cut Sheets	4	4
Design/Construction Schedule	3	1
Calculations	4	4
PROD Form (Permits)	2	1

1. The final design submittal must be accepted by the Government, professionally signed and sealed by the DOR and forwarded to the Contracting Officer prior to the start of construction.

Separated final design packages will only be considered for Government review and approval during the Post Award Kick-off Meeting

2. Construction submittals are to be Contractor-approved, except those listed below:
 - a. DOR Approval required for:
 - 1) Fire Protection related submittals
 - 2) Earthwork and Geotechnical submittals
 - 3) All components of the roof and exterior wall.
 - 4) All components of the interior doors, hardware, cabinets, fireproofing/firestopping, railings, paint, finish materials/colors.
 - 5) HVAC Testing, Adjusting, and balancing.
 - 6) Telecommunications
 - b. Government Approval required for:
 - 1) All electrical equipment and associated components.
3. Submit the following construction submittals, approved by the DOR, to the Government for surveillance:
 - a. Submit fire protection related submittals pertaining to spray-applied fire proofing and fire stopping, exterior fire alarm reporting systems, interior fire alarm & detection systems, and fire suppression systems including fire pumps and standpipe systems.
 - b. Submit geotechnical related submittals pertaining to the soils investigations (reports and soils analysis), foundations (shallow and deep), pavements structure design, test pile and production pile testing and installation.
 - c. Submit roofing submittals pertaining to materials and systems used to make up the roof system.
 - d. Submit HVAC Testing, Adjusting, and Balancing required submittals.
 - e. Submit telecommunications shop drawings for coordination with the NMCI Contractor.
 - f. Submit Performance Verification and Acceptance Testing required by IBC or this RFP.
 - g. Submit all Interim Special Inspection Reports on a bi-weekly basis until work requiring special inspections is complete. Submit all Structural Observation Reports and the Final Report of IBC Special Inspections.
 - h. For any pre-engineered buildings, submit shop drawings showing engineering data and complete building drawings, signed and sealed by a registered professional engineer.

Paragraph 5 FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS

The Contractor shall retain the services of a Registered Fire Protection Engineer (FPE). This FPE shall be an integral part of the Prime Contractor's Design and Quality Control Organization, and shall have no business relationships (owner, partner, operating officer, distributor, salesman, or technical representative) with any fire protection equipment device manufacturers, suppliers or installers for any such equipment provided as part of this project. Unless otherwise specified, all work performed

on means of egress, fire rated elements, Fire Suppression, Mass Notification, and Fire Alarm Systems shall be designed, reviewed, inspected and approved by the FPE.

1. Qualifications/Experience:

- a. Qualifications of the Designer: The FPE DOR shall have obtained professional registration by successfully completing the Fire Protection Engineering discipline examination.
 - b. Qualifications of the Installer: Prior to installation, submit data showing the Contractor has successfully installed systems of the same type and design as specified herein, or that Contractor has a contractual agreement with a subcontractor having such experience. Include names and locations of at least two installations where the Contractor, or subcontractor, has installed such systems. Indicate type and design of each system and certify that each has performed satisfactorily as intended for not less than 18 months.
 - c. Qualifications of the System Technician: Installation drawings, shop drawing and as-built drawings shall be prepared, by or under the supervision of, an individual who is experienced with the types of works specified herein, and is currently certified by the National Institute for Certification in Engineering Technologies (NICET) as an engineering technician with minimum Level-III certification in the fire protection certification program applicable to the work being performed. Submit data for approval showing the name and certification of all involved individuals with such qualifications at or prior to submittal of drawings.
2. Area of Responsibility: The FPE is responsible for assuring the proper design, construction and installation of life safety, fire protection, and mass notification features across all disciplines and trades. Services include preparing the Design Analysis, preparing or reviewing and approving the design documents (drawings), preparing or reviewing all fire protection related specification sections (including fireproofing, firestopping, fire suppression systems, and mass notification and fire alarm systems), certifying in writing that the completed design incorporates all required features, and certifying in writing that the facility was constructed in accordance with the approved design documents and applicable criteria. The FPE shall be responsible for assuring that the construction and installation are in accordance with the approved design documents by reviewing and approving all fire protection construction submittals, providing construction surveillance and preliminary and final inspections and testing services. Examples include, but are not limited to, water distribution systems including fire pumps and fire hydrants, fire resistive assemblies such as spray-applied fire proofing of structural components and fire rated walls/partitions, mass notification, fire alarm and detection systems, fire suppression and standpipe systems, means of egress components, and emergency and exit lighting fixtures. A copy of each approved submittal, with a copy of the Contractor's FPE review comments, shall be forwarded to the Government FPE prior to starting work for that item.
3. Construction Surveillance: The FPE shall visit the construction site as necessary to ensure life safety and fire protection systems are being constructed, applied, and installed in accordance with the approved design documents, approved construction submittals, and manufacturer's requirements. Frequency and duration of the field visits are dependent upon particular system components, system complexity, and phase of construction. At a minimum, field visits shall occur just prior to installation of suspended ceiling system to inspect the integrity of passive fire protection features and fire suppression system piping, preliminary inspections of mass notification, fire alarm/detection and suppression systems, and final acceptance testing of mass notification, fire alarm/detection and suppression systems.

- a. Preliminary and Final Inspections and Acceptance Testing: FPE shall personally witness all preliminary inspections and testing of mass notification, fire alarm/detection and suppression systems. Once preliminary inspections and testing have been successfully completed, the FPE shall submit a signed certificate to the QC Manager that systems are fully compliant and ready for final inspection and acceptance testing. The QC Manager shall provide 14 days advance notice to the Contracting Officer to schedule the final inspection and acceptance testing with the activity Fire Inspection Office and the NAVFAC Fire Protection Engineer.

Final Life Safety/Fire Protection Certification Documentation: The FPE shall provide certification that all life safety and fire protection features and systems have been installed in accordance with applicable criteria, the contract documents, approved submittals, and manufacturer's requirements. This certification shall summarize all life safety and fire protection features, and shall bear the professional seal of the fire protection engineer.

Paragraph 6 QUALITY CONTROL

The Project Superintendent and the Site Safety and Health Officer may not serve as the Quality Control Manager on this project.

A Design Quality Control Manager shall be required and shall not be subordinate to the Project Superintendent or Project Manager.

Paragraph 7 SUBMITTAL PROCESSING

	SUBMITTAL/BENCHMARK	DURATION	BENCHMARK	RECEIVED	STATUS
1	Quality Control Plan				
2	Material Safety Data Sheets				
3	Design/Construction Schedule				
4	Waste Management Plan				
5	Safety and Health Plan				
6	Schedule of Prices				
7	Budget Management Summary				
8	Record Drawings				
9	Operation and Maintenance Information				
10	Licenses and Permits				
11	Badge Requests				
12	Statement of Acknowledgement SF 1413				
13	Demolition and Work Plan				
14	Design Development Docs				
15	Final Design Docs				
16	Submittal Register				
17	Performance/Payment Bonds				
18	Environmental Protection Plan				
19	Certificates of Insurance				
20	DD Form 1354				

Paragraph 10 BUDGET MANAGEMENT

This project requires a Budget Management System be developed and maintained. The Budget Management System shall represent major portions of the work such as electrical, HVAC, site work, and exterior skin. The purpose of budget management is to balance scope and value during critical project design decisions. Update the budget management status at regular intervals during design, at a minimum with design submittals, for review by and discussion with the COR. The final budget management summary shall correspond with the final Schedule of Prices.

Paragraph 19 CONTRACTOR WORK SITE

Contractor shall coordinate staging, lay down, and temporary site facilities with Contracting Officer and property owner before commencement of work. Contractor shall ensure all personnel employed become familiar with and obey all regulations including safety, fire, traffic and security regulations of the property owner.

Paragraph 21 ENVIRONMENTAL CONTROLS AND PROTECTION

The DOR is required to edit and submit UFGS 01 57 19.00 25, *Temporary Environmental Controls*, and UFGS 01 57 19.01 25, *Supplementary Temporary Environmental Controls*. The DOR must ensure state and local regulations are met within the edited UFGS section.

Where asbestos containing materials are identified by the Contractor performed testing, the DOR is required to edit and submit UFGS 02 82 16.00 20, *Engineering Control of Asbestos Containing Materials*. The DOR must ensure the requirements of ASHARA, state and local regulations are met within the edited UFGS section.

Submit evidence of DOR qualifications as an EPA and state accredited Asbestos Project Designer.

Where lead containing materials are identified by the Contractor performed testing, the DOR is required to edit and submit UFGS 02 82 33.13 20, *Removal/Control and Disposal of Paint with Lead*.

Submit evidence of DOR qualifications as an EPA and state accredited Lead Project Designer.

Paragraph 23 RECORD DRAWINGS AND OPERATION & MAINTENANCE (O&M) DATA

Provide the Contracting Officer with two copies of half size as-built drawings, one copy of full-size as-built drawings, and two CDs containing drawings (in both pdf and Autocad formats), and all construction submittals.

Paragraph 27 SECURITY REQUIREMENTS

Contractor employees and representatives performing work under this contact shall be required to comply with all security requirements regarding personnel, vehicle and equipment security passes and access to the jobsite as outlined by the Contracting Officer and property owner.

Paragraph 34 SAFETY AND OCCUPATIONAL HEALTH

The DOR is required to edit and submit UFGS 01 35 29 25, *Safety and Occupational Health Requirements*.

Sub-Paragraph f., Safety and Health Officer (SSHO)

The Site Safety and Health Officer may not serve also as the Superintendent.

Sub-Paragraph h., Hot Work

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

--End of Section--

Small Project Part 3 Statement of Work / Project Program

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1. PROJECT DESCRIPTION

1.1 GENERAL DESCRIPTION OF WORK EFFORT

The work required by the Contractor includes all analysis, field investigation, solution development, computer modeling, permitting, design, construction and testing of water system repairs so that the domestic potable water system will meet all water quality requirements of local, state, and Federal authorities while completely splitting the potable domestic water system from the non-potable flightline fire protection system so that the fire main system provides sufficient water to the hangars without affecting domestic water quality. The domestic water system will continue to provide fire protection water through fire hydrants and building sprinkler systems excluding the flightline hangars. The Government requires certain minimum prescriptive fixes outlined in paragraph 1.2 and certain minimum performance criteria outlined in paragraph 1.3. Final testing and commissioning of the water system will require the Contractor to prove that the performance criteria have been met in this Design-Build construction project.

Part 6 Attachments includes background information and data, a water distribution study with partial potential solutions, details of prescriptive requirements, reference documents, and site data. This information is included to help the Contractor develop an effective solution and meet the minimum prescriptive requirements.

The Contractor is responsible for providing a solution that meets all of the performance criteria.

1.2 MINIMUM CONSTRUCTION REQUIREMENTS

Design water distribution repairs and new construction as needed to meet Louisiana Administrative Code, Title 51, Public Health Sanitary Code, Part XII, Water Supplies to include but not limited to:

- Permit application in accordance with subsection 105
- Preparation of a written sampling plan for coliform routine compliance monitoring per subsection 903 including map of points of collection and sampling taps along the water mains to meet testing criteria in subsection 905.

Minimum Requirements: The following list provides mandatory items to be included in the design solution to meet the required water quality standards:

- Isolate the potable domestic water system from the million gallon ground storage tank and the non-potable flightline fire protection system.
- Split existing water service, within the existing fenced water tower compound, to provide independent service lines to the existing million gallon ground storage tank and the water tower.
- Service line to the water tower shall be valved to allow isolation of water tower and direct feed from Parish to potable water distribution piping to allow water tower to be brought off-line for future cleaning and/or repairs.
- Install a new potable water distribution pumping system with two new pumps
- Install chlorine dosing station downstream of the potable water tower. Contractor to validate best location for dosing station.
- Install testing points for sampling of potable water at targeted locations within the distribution system to meet LAC Title 51 testing requirements.
- Replace the existing fire pumps with four new electric-drive vertical turbine pumps and four new fire pump controllers.
- Enclose the existing pump house as detailed in ESR B20.
- Repair the leaks in existing million gallon ground water tank and put back in service for non-potable flightline fire protection.
- Install a backup power system with natural gas generator and automatic transfer switches to serve all lighting, domestic water pumps, and fire pumps installed under this contract.
- Separate the existing 20" main water line (from the elevated tank to the flightline) into two new pipes; one for potable domestic and one for non-potable flightline fire protection. Contractor shall validate pipe sizes required for entire distribution system, potable and non-potable.

- Provide repairs to cathodic protection on existing water tower per inspection report provided in Part 6, Attachments.
- Install hydrants at the east and west end of the new flightline fire main to allow for flushing, maintenance and flow testing. Make the east and west ends of the main configured ready for future expansion.

Additional solution options: The following list provides acceptable alternatives for inclusion in the design solution to meet the required water quality standards. This list is not all-inclusive and the contractor may propose additional solutions to meet the required water quality standards.

- Installation of new water recirculation lines
- Installation of additional chlorine dosing stations at targeted areas within the potable water distribution system
- Installation of automatic flushing units for system flushing

Exclusions: the contractor may not provide additional capacity to the system, through additional water tank storage or additional connections to Belle Chasse Water District (BCWD) water supply, as part of the design solution.

1.3 MINIMUM PERFORMANCE REQUIREMENTS

The project goal is to provide potable water that meets all water quality criteria at every facility with water service while minimizing the need for additional chlorination and eliminating the need for routine system flushing. The contractor is responsible for providing a design solution that meets the following performance criteria:

- Residual (total) chlorine levels of 0.5mg/l shall be maintained at all facilities served by the potable water distribution system as required by the State of Louisiana Department of Health and Hospitals, Office of Public Health Emergency Rule amending Chapter 3 (Water Quality Standards), Chapter 9 (Louisiana Total Coliform Rule), Chapter 11 (Surface Water Treatment Rule) and Chapter 15 (Approved Chemical Laboratories/Drinking Water) of Part XII (Water Supplies) of Title 51 (Public Health-Sanitary Code) of the Louisiana Administrative Code, dated November 6, 2013.
- Potable water quality shall meet Stage 2 of the Disinfectants and Disinfection Byproduct Rule (D/DBPR) for total trihalomethanes (TTHMs) less than 80 parts per billion and for haloacetic acids (HAAs) below 60 parts per billion
- Demonstration through modeling and calculations that system will meet water quality standards in accordance with National Primary Drinking Water Regulations and the Louisiana Total Coliform Rule
- Assume influent from BCWD supply shall be 0.5 mg/L chlorine residual as measured at existing service meter. While historical data shows BCWD provides water with disinfectant levels between 1.9 and 3.3 mg/L total chlorine residual; the bcwd will only guarantee 0.5 mg/L. BCWD will be implementing water treatment plant modifications beginning in 2015, including adding UV light for primary disinfection.
- The domestic water system shall meet all requirements for a Community Water Supply in accordance with LAC, Title 51, Part XII.
- The domestic water system shall meet all criteria while eliminating the need for regular flushing; if regular flushing is determined to be essential to meet criteria, design shall quantify estimated flushing required.
- The domestic water system shall meet all the criteria with minimal need for regular dosing of chlorine; and the design shall quantify estimated chlorination required.
- Water availability at the east and west end of the fire protection main shall provide a minimum of 4,000 gpm and 100 psi with no more than three pumps running.
- The domestic water system, after modifications to meet the above criteria, shall continue to provide sufficient water quantity and pressure to serve both fire hydrants and building sprinkler water demands throughout the base, excluding those facilities served by the dedicated flightline main.

1.4 DIVISION OF WORK

Key components of this project have been divided into two contract line items (CLINS) according to work classification. The two CLINS include both minimum prescriptive requirements and performance criteria. The first CLIN is all work classified as repair to the existing systems and the second CLIN is all work classified as new construction. Refer also to the ESRs for detailed demolition and construction requirements.

This subdivision of work effort, by CLIN, includes:

CLIN 0001 Potable Water Distribution Repairs:

- Demolition needed for contractor's design solution, to include as a minimum:
 - four (4) existing fire pumps and associated equipment.
 - diesel tanks, metal stairs, and metal platforms at existing fire pump facility.
 - existing electrical service to fire pumps.
 - sluice gates within 1,000,000 gallon water tank and adjacent dosing tank.
 - existing chlorine dosing system located in concrete block storage building on top of the UST.
 - two (2) existing pumps serving water to the water tower and associated equipment.
 - selected existing water distribution piping.
 - existing 10" service lines into existing 1,000,000 gallon water tank, existing ground on this side of tank is very saturated and is assumed to be due to pipe leaks from settlement.
 - Demolition (by abandonment) of existing 20 inch diameter fire line. Note: majority of 20" line is expected to be asbestos transite pipe, which will require handling and disposal in accordance with Louisiana Administrative Code Title 33 Chapters 27 and 51.
 - Demolition of Building 25 which houses electrical components and controls.
- Potable water distribution repairs for contractor's design solution, to include:
 - Install new water service and pumps to supply BCWD water to existing water tower.
 - Install new water meter and chlorine injection at discharge from existing water tower.
 - Repair elevated water tower cathodic protection per inspection report included in Part 6, Attachments.
 - Install potable water distribution lines, meters, chlorine dosing stations, etc as provided in the contractor's design solution to meet required water quality standards for the base potable water distribution system.
- Non-potable flightline fire suppression system repairs for contractor's design solution, to include:
 - Install a new dedicated 20 inch diameter (or as required by design) flightline non-potable fire suppression water line.
 - Install new 10" service line to million gallon water tank.
 - Install new fire distribution piping as described in ESR D4020.
 - Isolate existing million gallon ground storage tank from potable water distribution system.
 - Install new fire pumps and supporting equipment to provide needed pressure for the fire loop.
 - Repair to existing one million gallon concrete water tank as noted in ESR sections of this RFP.
 - Install new backflow preventer on the BCWD water service to the million gallon water tank.
 - Install water storage tank mixing system for million gallon water tank.
 - Install chlorine injection system for million gallon water tank.
 - Install fire pump test header, pump recirculation piping back to the tank, and hydrant test connections at the east and west ends of the new flightline main.

CLIN 0002 New Construction

- Install backup power generator(s) to support fire pumps, water pumps and site lighting.

- Install new backflow preventer on the main water line entering the installation from the BCWD.
- Enclose fire pump clearspan to protect electrical pumps from elements.
- New piping and valves to allow isolation of existing water tower.

Refer to Section 6 ESRs for more detail of the work required under this project.

2. PROJECT BACKGROUND

2.1 CURRENT CONDITIONS

The water distribution system on NAS JRB New Orleans supplies the domestic and fire protection needs of approximately 120 facilities spread across the 550 acre military installation. The water distribution system consists of approximately 113,245 linear feet of pipe ranging in size from 1 ½ inches to 20 inches in diameter. The distribution system includes PVC, cast iron, transite (asbestos-cement), and ductile iron pipe materials. Much of the water distribution system is over 50 years old. A Water Distribution Map is provided in Part 6, Attachments. The base receives potable water from Plaquemines Parish through a single 10 inch diameter water main and meter on the southwest intersection of the base entry road, Russell Avenue and Belle Chasse Highway (LA State Highway 23).

The existing water distribution system experiences water quality problems including discoloration, odor, accelerated disinfectant byproduct (DBP) concentrations, and low residual chlorine levels, particularly during the hot summer months. These water quality issues are currently addressed by flushing the system and injecting sodium hypochlorite into the system. The goal of these upgrades is to eliminate the need for regular flushing and minimize the amount of chlorine injection that must be done on a regular basis.

The fire suppression requirements of the aircraft hangars located on the flightline require a water distribution system that can supply a large amount of water at a high pressure along a large-diameter fire main that runs adjacent to the flightline. The pipe sizing and water storage requirements for this fire main system greatly exceed the typical domestic water demand and this creates an excess of stored water in the potable water piping creating degradation of water quality. Separating the flightline fire main from the potable water distribution system will eliminate many of these problems.

2.2 SITE SPECIFIC CONDITIONS

The water distribution piping system extends throughout the base and can be seen in the water distribution system existing conditions map and the site photos provided in Part 6, Attachments. The site photos give a good indication of the surface conditions along the water distribution system routing as shown on the site photo index drawing included with the photos.

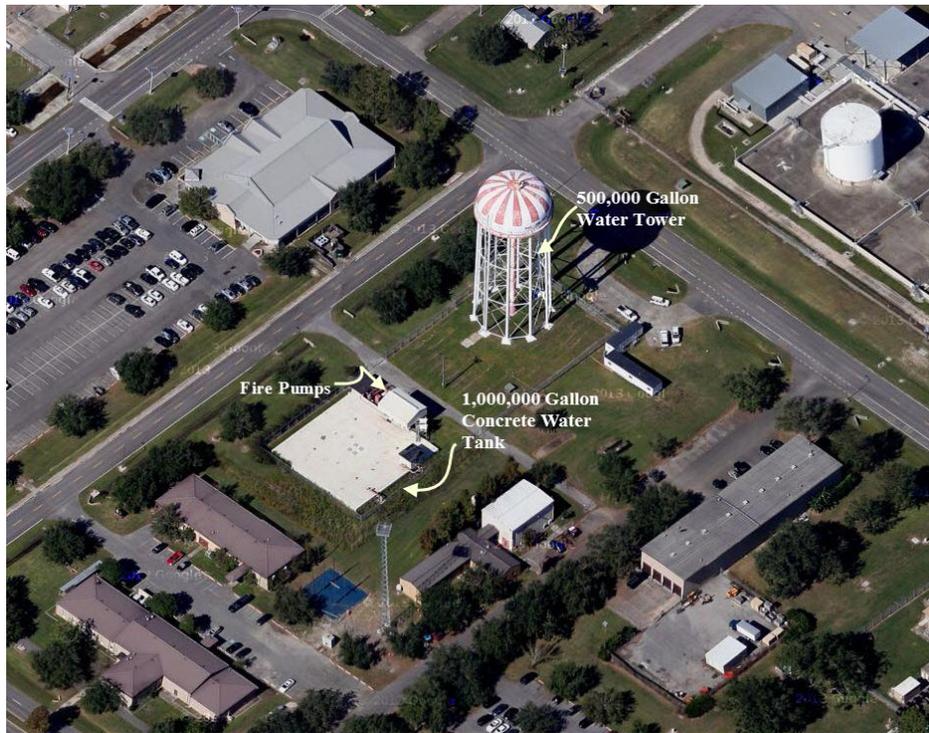


Figure 1: Water Tank and Pumping Station Location Aerial Photograph



Figure 2: View of fire pump facility with diesel tanks on metal platforms.

The base receives potable water from Belle Chasse Water District through a single 10 inch diameter water main and meter on the southwest intersection of the base entry road, Russell Avenue and Belle Chasse Highway (LA State Highway 23). BCWD water main splits at the existing one-million gallon underground storage tank (UST, Facility 228) to supply water to the tank through two 10 inch diameter pipes. Water from the UST is pumped to a half-million gallon aboveground storage tank (AST, Facility 26) which feeds the base water distribution system by gravity. The base water distribution pipe network consists of ductile iron pipe (DIP), cast iron pipe (CIP), transite, and polyvinyl chloride (PVC) pipe with mains ranging in size from six to 20 inches in diameter. Domestic water lines, from the trunk main to each facility, range in size from 1 ½ inches to six inches in diameter. Fire protection water lines, from the trunk main to each facility, range in size from six inches to 15 inches in diameter.

The existing one-million gallon UST is approximately 100 feet wide, 100 feet long and 13 feet deep. Approximately 6 feet of the UST is above the existing adjacent grade. The existing UST is internally divided into four quadrants separated by sluice gates with each quadrant approximately equal in volume. The water in the UST is pumped to the AST when the AST reaches a target refill level as set by Base Public Works.

Historical monthly water consumption is provided in the table below. Increasing consumption is assumed to be due to increased flushing of the system. There has been no population increase nor mission change to account for the increased consumption.

Historical Monthly Water Consumption for NAS JRB New Orleans

Fiscal Year	Annual Average (gpd)	Monthly Maximum (gpd)	Peak Factor
2009	142,000	169,000	1.19
2010	196,000	290,000	1.48
2011	190,000	271,000	1.43
2012	216,000	261,000	1.21
2013	231,000	319,000	1.38
Average	195,000	262,000	1.34

Part 6 Attachments includes existing site photographs, tank drawings, and base maps. The contractor shall perform a site visit and verify all conditions prior to providing price proposal.

The existing potable water distribution system was evaluated in an engineering study completed by Pond and Company on June 14, 2013. The study includes a large amount of detailed information about the water distribution system and also includes one approach to solving the problems. The study is provided in Part 6 Attachments. *Note that the water quality criteria for Louisiana changed after this study was initiated, and the study solution is not considered sufficient for the current criteria.*

Although this Request for Proposal was developed based on the results of the engineering study; this is a design-build proposal, and the contractor is fully responsible for performing all site investigation and engineering analysis required to provide a design solution and the contract documents necessary for construction.

3. ADDITIONAL DESIGN CONSIDERATIONS

3.1 APPLICABLE CODES AND STANDARDS

In addition to the codes and standards listed in Part 4, the design and construction shall be in accordance with the latest revision/edition of the following referenced codes and standards. The term "Latest Revision/Edition" is defined as the version as of the RFP release date.

- *NAVFAC SE Interim Design Guidance: Integrating Energy and Water Efficiencies into Contracts.*
- *Louisiana Administrative Code (LAC) Title 33, Environmental Quality, Chapters 27 and 51, Asbestos-Containing Materials in Schools and State Buildings Regulation and Comprehensive Toxic Air Pollutant Emission Control Program.*
- *State of Louisiana, Department of Health and Hospitals, Office of Public Health – Emergency Rule Making, Letter dated November 6th 2013, action to increase the minimum disinfectant residual levels and measurements required to be taken and maintained by public water systems.*
- *OPNAV M-5090.1, Environmental Readiness Program Manual*

3.2 SUSTAINABLE DESIGN

In accordance with Executive Order 13423, NAVFAC Engineering & Construction Bulletin (ECB) 2008-01 and other pertinent directives, integrate sustainable principles into the design, development and construction of the project. Reduce the total cost of ownership of the facility using a life-cycle approach. Consider chlorination requirements, flushing requirements, and energy consumption requirements in life-cycle analysis.

Provide integrated sustainable design strategies and features to minimize the energy consumption of the system; conserve resources, and minimize adverse effects to the environment.

Provide narrative describing minimum sustainable characteristics of materials and systems used in project.

3.3 SITE DRAINAGE AND STORM WATER RUNOFF (LOW IMPACT DEVELOPMENT)

This project is not generating new impervious surfaces; therefore Low Impact Development calculations are not required. The contractor will be required to develop storm water pollution prevention plan for excavation work associated with this project.

If the project design disturbs one or more acre of land, contractor shall submit notice of intent Louisiana Department of Environmental Quality storm water construction general permit application with associated fees to the Contracting Officer for submission to Base Environmental.

3.4 ENERGY CONSERVATION

No new facilities are being constructed. Designer of record shall select equipment to maximize energy conservation.

3.5 ANTITERRORISM CRITERIA

This project does not trigger AT/FP requirements per UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

3.6 SPECIAL DESIGN AND CONSTRUCTION CHALLENGES

- Project must be designed and constructed such that potable and fire suppression water services to all base facilities are maintained with only short outages for connections. Contractor shall prepare a detailed construction phasing plan for approval by the Government. All outages shall be minimized. Major outages shall be scheduled to minimize impact to base operations.
- Existing water storage tank fenced compound contains major electrical feeder lines.
- Expect large quantities of abandoned/unknown utilities along major utility corridors.

- Expect utility locate challenges. High ground water precludes effective use of Ground Penetrating Radar for locating utilities. Many utilities do not have effective tracer wire. Contractor shall validate utility locations through pot-holing in congested utility corridors during the design phase.
- High groundwater table will require dewatering for trenching operations.
- Coordination with two in-progress utility infrastructure upgrade projects: Gas Lines Replacement Project and Electrical Feeders Replacement Project.
- Geotechnical Data: Several geotechnical reports are provided from throughout the base to provide a basis of design for proposal. ***The contractor shall make their own interpretation of the subsoil investigations and shall base their bid on their own opinion of the conditions likely to be encountered.*** The Contractor shall be responsible for providing the services of a geotechnical engineer to conduct any subsurface exploration, investigation, testing, and analysis that the Designer of Record deems necessary for the design and construction of the proposed utility system and site improvements. The geotechnical engineer shall be registered as a Professional Engineer in Louisiana (Geotechnical Engineer where required by law) and experienced with soil conditions in the greater New Orleans area with specific experience in providing pipe bedding recommendations. The geotechnical engineer shall prepare a report addressing all elements of the work requiring his services. The report shall be submitted to the Contracting Officer accompanied by a letter from the Designer of Record certifying that the Geotechnical Engineer has reviewed the construction documents and that the design reflects the recommendations of the geotechnical report.
- Designer of Record (DOR) shall be a Professional Engineer with a minimum of 10 years of experience in potable water distribution design and a minimum of 2 relevant projects, as defined in the Source Selection Plan for this project.
- The DOR shall be experienced in the use of water systems models and shall support design solution with modeling data.

3.7 SYSTEM COMMISSIONING

Compliance with the performance criteria outlined in paragraph 1.3 above shall be tested as follows:

- Residual chlorine tests shall be conducted daily for all new mains as they are brought on line and will continue for 60 days after construction is complete.
- Coliform compliance monitoring will be provided in accordance with the written sampling plan as mains are constructed and will continue for 60 days after construction is complete.
- Weekly sampling for Stage 2 of the Disinfectants and Disinfection Byproduct Rule (D/DBPR) for total trihalomethanes (TTHMs) and for haloacetic acids (HAAs) shall be accomplished for 60 days after construction is complete.
- The fire pumps shall be commissioned with flow tests at the pump header
- The fire main pressure shall be checked at the two remote ends of the flightline main

Testing and commissioning plans shall be submitted for Government review and approval during the design stage. Contractor shall make system adjustments if testing does not meet water quality standards.

The sixty days of testing shall occur during the warm months, June 1 – Sept 30. Water distribution system construction shall be complete and ready for testing no later than August 1, 2016. Testing shall not begin before June 1, 2016.

If the contractor cannot demonstrate compliance with water quality criteria or fire flow requirements during the commissioning testing, the contractor shall make system adjustments and continue testing until criteria are met without additional cost to the Government.

4. BUILDING REQUIREMENTS

Not used.

5. ROOM REQUIREMENTS

Not used.

6. ENGINEERING SYSTEMS REQUIREMENTS (ESR)

A10	Foundations
B10	Superstructure
B20	Exterior Closure
C20	Stairs
D40	Fire Protection Systems
D50	Electrical Power and Lighting
F20	Selective Building Demo
G10	Site Preparations
G20	Site Improvements
G30	Site Mechanical Utilities
G40	Site Electrical Utilities

A10 FOUNDATION

Reinforced concrete pad foundations will be required to support installation of new potable water pumps and a new natural-gas-fueled generator.

B10 SUPERSTRUCTURE

Superstructure work will include enclosure of the existing fire pump shelter. The existing fire pump shelter is a pre-engineered metal building with metal roof and side panels. The side panels extend down from the eaves to approximately 8 feet above the top slab of the existing fire pump wet well. All sides of the structure are open below the side panels. This project shall enclose the existing structure with metal panels to match existing. Some existing metal wall and roof panels may need to be removed to facilitate the demolition of the existing fire pumps and prime movers and then reinstalled. At the Contractor's option, all metal wall and roof panels may be removed and replaced with new panels if it will be more efficient and cost effective. See other sections of this RFP for additional requirements for the enclosure.

The structural system for the fire pump shelter may need to be reinforced to provide additional structural capacity due to the change from an open structure to an enclosed structure. The structure shall be analyzed and designed in accordance with IBC 2012 using the following parameters:

Risk category: IV

Live loads: 100 psf or as required by the equipment installed, whichever is greater.

Wind loads: Design wind speed: 158 mph; Exposure Category C

Snow loads: Ground snow load: 0 psf

Earthquake loads: Mapped seismic acceleration parameters: $S_s:9$; $S_1:5$

Additional structural work shall include:

- Removal of seven sluice gates from the interior walls of the underground storage tank and repair of all damage to the walls caused by gate removal. Sizes of the openings shall remain at least equal to the existing gates.
- Review the tank inspection report included in Part 6 of this RFP and include in the project repairs recommended by the inspection report and as described in other sections of this RFP.

B20 EXTERIOR ENCLOSURE

B2010 EXTERIOR WALLS

The primary exterior material of the building shall metal sheet prefabricated panel with exposed fasteners to match existing portions of the building structures.

Existing back-up wall system shall be used for the attachment of new panels. Provide additional metal framing and supports as required for new panels wall systems.

Additional metal framing members, bracing, fastenings, and other accessories necessary for complete installation shall be designed to meet wind load and withstand all imposed load requirements as specified in B10 Superstructure and in accordance with IBC 2012.

Exterior Louvers & Screens

Provide exterior louvers and screens, where required, that match the existing finishes and are detailed to integrate with the architecture of the building, as appropriate to the design of the building.

Exterior Soffits

Not used.

Exterior Coatings

Provide field applied exterior coatings for all items that are not prefinished, and to prefinished items when required to provide a color other than a standard prefinished color. All paint shall be in accordance with the Master Painter Institute (MPI) standards for the exterior architectural surface being finished.

Joint Sealants

Provide exterior application of joint sealants to seal joints and prepare for finish material installation.

B2020 EXTERIOR WINDOWS

Not used.

B2030 EXTERIOR DOORS

Provide a single set of double doors with solid door assemblies. Exterior doors and frames shall be non-corroding prefinished galvanized steel or prefinished aluminum.

Doors shall be Heavy Duty Doors - Level 2, physical performance Level B, Model 2 for type of door.

Door hardware finish shall be chrome-plated brass or bronze, or stainless steel. Existing locks were manufactured by Best and have interchangeable cores.

Solid Doors

Provide solid steel door assemblies prefinished, heavy-duty, non-corroding, doors with frames and hardware. Openings in exterior flush doors shall be flashed with aluminum flashings at the bottom of the openings. Also provide louvers and accessories and wall opening elements such as lintels sills and flashings.

Exterior Door Hardware

Provide the services of a certified door hardware consultant to prepare the door hardware schedule.

Provide hardware keying compatible with the existing base-wide keying system. Replacement interchangeable cores shall be compatible with the Best Lock system.

B30 ROOFING

B3010 ROOF COVERINGS

High slope roofing (3 in 12 pitch or greater) Architectural Standing Seam Metal Roofing and shall maintain watertight system. Any portions of roof that is compromised and/or damaged shall be replaced where it is necessary to match an existing roof.

Provide all new roof hatches/access panels as required with the necessary flashing, sheet metal flashing materials, and accessories and incidental work necessary for a complete, new, watertight installation. All penetrations shall be flashed in accordance with NRCA.

B3030 WIND UPLIFT AND FIRE RESISTANCE REQUIREMENTS

Sheet metal perimeter and flashing components shall be designed, attached, and installed to provide for wind resistance equivalent to or greater than that required for the roof membrane system, and in accordance with FM, NRCA, or other applicable industry standard recommendations.

B3050 ROOF SPECIFICATION AND DETAILING

All work, materials, installation and details shall be in accordance with Standard Design-Build Template PTS B30 and comply with all applicable Unified Facilities Guide Specification (UFGS) materials and installation requirements. UFGS's are referenced in PTS B30 and are available at www.ccb.org. Provide for complete rough carpentry, roof insulation, roof covering, sheet metal flashing, and other components necessary to complete the installation.

All details shall be in accordance with recommendations and guidelines of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual and Construction Details and as required by the RFP.

The roof system shall comply with the applicable requirements of the International Building Code. Refer to UFC 3-110-03, *Roofing*, and UFC 3-100-10, *Architecture* for additional technical requirements for the roof system to be installed.

B3060 ROOF DESIGNER REQUIREMENTS

Provide materials specification, installation requirements, and system detailing to include all flashings, penetrations, closures, corners, intersections, terminations, transitions, interfaces, joint, and lap conditions to provide for a watertight installation.

C20 STAIRS

Stairs, including stair construction and stair finishes, shall be provided as required by the building code to provide egress from the building from above or below grade level floors. Stairs shall be in accordance with UFC 1-200-01, *General Building Requirements*.

C2010 STAIR CONSTRUCTION

C201001 EXTERIOR STAIRS

Exterior stairs shall be constructed of galvanized steel or prefabricated steel stair system with detachable railing and a landing the length of door opening.

C201090 HANDRAILS, GUARDRAILS, AND ACCESSORIES

Handrails and guardrails shall be painted galvanized steel. Handrails and guardrails shall present a smooth, unbroken surface throughout the length of the stair.

Handrails and guardrails shall be finished to withstand extreme wear conditions.

Metal ladders and railings complying with OSHA requirements shall be provided for access and protection to any mechanical mezzanines, lofts or other similar spaces.

D30 HVAC

HVAC SYSTEM REQUIREMENTS

Provide ventilation for the pump shelter as indicated:

Provide a ventilation system for the pump shelter that will consist of an exhaust fan and intake louvers located to provide cross ventilation of the space. Calculate the required exhaust airflow quantity for a maximum rise in temperature between intake and exhaust of 20 degrees Fahrenheit at peak summer temperature conditions. The heat load used in the calculation shall be the sum of building heat gain and equipment operating loads of pumps, generators and other heat producing equipment housed within the space to be ventilated.

Intake louvers shall be located on the building side opposite generator exhaust pipes. Intake louvers shall be located in the lower portion of the walls so as to cross ventilate the occupied zone and heat producing equipment. Intake louvers shall be certified storm proof. Provide intake louvers with galvanized bird screen.

The exhaust fan shall discharge the exhaust air through the wall. The fan shall be either in-line style or housed propeller type. Provide the fan installation complete wire mesh intake, ductwork as required, automatic discharge damper, and wall louver. Motor shall be rated high efficiency. Preferred fan/motor drive is direct.

Provide supplemental steel with galvanized finish as required to adequately support the fan. Suspended fans shall be provided with threaded rods and vibration isolation. Wall mounted fan installations shall not transmit vibration to the building structure.

D3010 ENERGY SUPPLY

Not Used.

D3020 HEAT GENERATING SYSTEMS

Not used.

D3030 COOLING GENERATING SYSTEMS

Not used.

D3040 DISTRIBUTION SYSTEMS

Air Distribution, Ventilation

Provide galvanized steel ductwork as required.

D3050 TERMINAL & PACKAGE UNITS

Not used.

D3060 CONTROLS AND INSTRUMENTATION

HVAC Controls

Provide electric controls for the HVAC systems and equipment. Provide a hand-off-auto switch for fan operation. In the "Auto" setting the fan operation shall be controlled by an industrial heavy duty thermostat. Thermostat set point shall be 85 degrees Fahrenheit, adjustable.

D3070 SYSTEMS TESTING AND BALANCING

Provide complete Testing and Balancing (TAB) of all air HVAC equipment.

D40 FIRE PROTECTION SYSTEMS

This project will design and install a new hangar fire main system, which is independent of the installation domestic water distribution system. The two systems are currently one system.

The project will include demolition of the 4 (four) existing vertical turbine pumps and controllers, partial demolition and partial abandonment of the existing underground piping, installation of a new underground hangar fire main, installation of 4 (four) new vertical turbine fire pumps, a new jockey pump, new controllers with auto-transfer switches connected to the new generator, enclosure of the existing pump house, and a new sprinkler and fire alarm system for the pump house.

D4010 FIRE ALARM AND DETECTION SYSTEMS

Provide a fire alarm system in the new fire protection pump house. The system shall include an addressable Monaco FACP/radio transmitter, notification devices, manual pull stations, smoke detectors, and supervision of the sprinkler system and fire pumps.

Provide Class A Notification Appliance Circuits, Class A Signaling Line Circuits. Any Class B Initiation Device Circuits shall be less than 10 feet in length.

Fire alarm signals shall be sent to the fire alarm receiving station via the Monaco radio transmitter.

All fire alarms, supervisory alarms and trouble conditions indicated at the fire alarm control panel shall be transmitted to the fire alarm receiving station. Transmitter zones shall be as follows:

- a. Sprinkler Water Flow
- b. Smoke Detector
- c. Manual Pull Station
- d. Supervisory (i.e., valve tamper switch, fire pump loss of power, fire pump phase reversal)
- e. Fire Pump Running

D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT

Demolition

Demo the existing 2,500 gpm vertical turbine fire pumps, and all associated equipment. This includes two electric motors, one diesel engine, a combined diesel/electric drive, two diesel storage tanks with associated foundations, 4 pump controllers, 2 sets of batteries, fuel lines, and all above ground water piping up to the start of the underground. See Part 6 Attachments for the existing piping layout.

Fire Pumps

Provide 4 (four) new 2,000 gpm vertical turbine electric fire pumps rated at 120 psi to supply the new hangar fire main.

Provide a new 50 gpm vertical turbine jockey pump.

All pumps shall be provided with their own reduced voltage controller set at the lowest tap with auto-transfer switch. See Part D50 for details on the electrical connections. There shall be a 10 second delay between when one pump starts and the starting of the next pump. Stage the pumps approximately as follows:

- Jockey Pump:** 120psi
- Pump 1:** 110psi
- Pump 2:** 100psi
- Pump 3:** 100psi

Stage the pumps so the first pump to start is from the North side of the tank, and the second pump to start is from the South side of the tank.

Distribution System

Provide new schedule 120 CPVC underground piping for the new fire main in all locations shown in Part 6 Attachments. Hangars 3, 4, 5, 263, 302, and 439, as well as Engine Test Cell 442 shall be connected to the system. All piping from the pump house to hangars 3, 4, 5, 263, and 439 shall be 20" minimum. The line running to hangar 302 shall be 14" minimum, and the line running to the Engine Test Cell 442 shall be 12" minimum.

The existing building lead-ins can be reused, but no other existing distribution system piping can be reused for the new fire main.

Terminate the mains in a manner which allows for future extension.

Install two (2) fire hydrants at each end of the main to allow for testing and flushing. They shall be appropriately identified to distinguish them from hydrants off the potable system.

Provide a RPZ backflow preventer on the incoming service from the Parish to the 1,000,000 gallon water storage tank.

Use rising stem gate valves. No butterfly valves are permitted.

Provide a pump test manifold, with a valved recirculation line back through the top of the underground fire protection water storage tank.

See Part 6 Attachments for existing pump house drawings, existing water distribution system drawings, new conceptual fire main drawings, and a schematic drawing for new pump house.

Fire Protection Water Demands

Water demands for buildings on the fire main are as follows:

BLDG	Roof Demand (gpm)	AFFF Monitor Demand (gpm)	Total Demand (gpm)	Pressure Req. at BOR (psi)
3	1530	2448	3978	77
4	3686	N/A	3686	66
5	1530	1930	3460	81
263	1820	1000	2820	64
302	3000	N/A	3000	80
439	unknown	unknown	4134	88
442	2526	N/A	2526	33

The water demands for the above buildings only include sprinklers and supplemental suppression systems, and not outside hose stream demands. The hose stream demands will be taken off of the domestic system. No hydrants are required or desired on the new fire main, except at the ends for testing and flushing.

Hangar 263 currently has the domestic service split from the fire service within the fire riser room. The domestic service shall be disconnected from the new fire main, and connected to the new domestic service with new incoming underground tie-in.

D4040 SPRINKLERS

Provide wet pipe automatic sprinkler protection for complete coverage throughout the entire new pump shelter.

For the pump shelter the design density shall be 0.20 gpm/ft² over the entire facility, with a hose stream allowance of 500 gpm.

Provide corrosion resistant sprinkler heads with black steel piping. Paint all sprinkler piping and above ground fire main piping with red enamel paint. All exterior piping shall be coated with red paint suitable for exterior use.

D4090 OTHER FIRE PROTECTION SYSTEMS

Provide portable fire extinguishers and cabinets as required by NFPA 10 and NFPA 101.

D50 ELECTRICAL

Provide an interior electrical system, for the pump shelter, consisting of Distribution and Lighting Panelboards, Conduits, Feeder and Branch Circuits, Motor Control Equipment, Lighting and Branch Wiring, Communications, Security and Alarm Conduit Systems, Emergency Lighting and Power, Grounding, Lightning Protection, Cathodic Protection, and Equipment connections including cords and cord caps, etc., accessories and devices as necessary and required for a complete and usable system. This section covers installations out to the building 5 foot (1.5 meter) line and the incoming services to the facility.

The interior distribution system shall consist of insulated copper conductors in conduit.

The electrical scope of this project includes new primary and secondary power distribution, lighting, fire alarm, and communications to support the installation of four (4) new fire pumps (three primary and one standby), Jockey pump and two (2) new domestic water pumps in new fire pump station facility. The power distribution to serve the fire pumps shall comply with requirements of UFC 3-600-01, NFPA 20, and NEC Article 695. Power distribution shall include the extension of primary power from existing pad-mounted SF6 switch, which would provide primary overcurrent protection, to a new pad-mounted transformer with 480Y/277 volt secondary. The pad-mounted transformer shall serve a Life Safety Distribution Panel (LDP) and the normal facility Panel HA via an ATS. The LDP shall serve each fire pump controller (to be equipped with integral automatic transfer switch and reduced voltage starter) and the life safety panelboards, LHA and LLA via an ATS. The facility Panel HA shall serve the domestic water and jockey pumps in addition to other miscellaneous facility loads (lighting, receptacles, HVAC, etc) through a step down 208Y/120V transformer and panelboard. Panels HA and LHA shall be connected to generator through their own automatic transfer switches while each fire pump controller shall be provided with an integral ATS. See E001 in Part 6 Attachments for clarification.

A natural gas engine generator package unit with enclosure shall be provided as an emergency power source for fire pumps, jockey pumps, domestic water pumps and associated loads. The generator package shall be provided with load bank. It is assumed that only three of the four fire pumps along with both domestic water pumps will run simultaneously. Service equipment shall be sized accordingly. It is also assumed the fire pump room will be approximately 578 square feet. Other electrical scope shall include interior and exterior lighting, fire alarm connected to the central system, and communications systems to support the fire pump station facility.

A fiber optic connection from each building served by the fire pump shelter shall be provided for fire protection controls as defined in section G40.

GENERAL SYSTEM REQUIREMENTS

Provide an Electrical System complete in place, tested and approved, as specified throughout this RFP, as needed for a complete, usable and proper installation. All equipment shall be installed per the criteria of PTS Section D50 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall". The design shall be in accordance with all applicable codes and standards in force at the time of the contract date. Successful bidder shall also design the project per the applicable NAVFAC Design Standards.

A detailed analysis of the electrical design shall be conducted. The electrical studies shall include, but are not limited to, Voltage Drop/Load Flow, Short Circuit Analysis, Arc Flash Hazard, NEC Service Calculation, Building Demand Calculations per UFC 3 501-01, Feeder, Switchgear and Panelboard Calculations and Protective Device Coordination. Protective Device Coordination shall be reviewed and coordinated back to the incoming protection at the primary feeder from the power company. These calculations shall be prepared on SKM Power Tools for Windows Software. Hand calculations or other software shall not be used. Arc Flash shall utilize the methods of IEEE 1584 and the PPE required shall conform to UFC 3-560-01, Electrical Safety, O and M. Lighting Calculations shall be performed on software that utilizes IES photometry and shall be a point by point calculation with sufficient points to give meaningful data. Lightning Risk Assessment shall also be performed and may be a hand calculation showing all assumptions. Submit partial calculations with each submittal so that the progress may be reviewed. All submittals shall be of adequate size and shall be readable.

COORDINATION OF TRADES REQUIREMENT

Provide an Electrical System that is fully coordinated with all other trades especially fire protection. Locate receptacles, power drops, data drops, telephone drops and lighting fixtures and controls based on locations of equipment. Lack of coordination shall not be grounds for change orders or time extensions.

NAVFAC DESIGN GUIDES

The following is only a **partial** list of the available design guides. Bidders and the successful Contractor shall obtain **all** applicable publications and shall be expected to follow the requirements contained therein.

UNIFIED FACILITIES CRITERIA

UFC 1-300-09N Design Procedures

UFC 3-501-01 Electrical Engineering

UFC 3-520-01 Interior Electrical Systems

UFC 3-530-01 Design: Interior and Exterior Lighting and Controls

UFC 3-550-01 Exterior Electrical Power Distribution

UFC 3-560-01 Electrical Safety, O&M

UFC 3-580-01 Telecommunications Building Cabling Systems Planning and Design

UFC 3-580-10 Navy and Marine Corps Intranet (NMCI) Standard Construction Practices

UFC 4-021-002NF Security Engineering Electronic Security Systems

UFCs are available from the Whole Building Design Guide at:

http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

NAVFAC-SE Requirements are available at:

https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_southeast_pp/about_us/tech_specs/navfac%20se%20interim%20design%20guidance%202-1-12.pdf .

NAVFAC CAD Standards are available at:

https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_southeast_pp/cad_st .

QUESTIONS PERTAINING TO THIS DOCUMENT

Any conflicts in the various publications mentioned above that are not clarified by this RFP should be addressed in a RFI directed to the Contracting Officer.

Questions requesting clarification of the intent of the information contained in this RFP should also be addressed in a RFI directed to the Contracting Officer.

D5010 ELECTRICAL SERVICE & DISTRIBUTION

D501001 MAIN TRANSFORMERS

Main transformer(s) are defined in Section G40, *Site Electrical Utilities*.

D501002 SERVICE ENTRANCE EQUIPMENT

Two separate services from a single pad mounted transformer shall be provided to fire pump shelter. One service shall be provided for all life safety equipment and the other service shall be provided for normal facility loads.

D501004 PANELBOARDS

Provide new distribution and branch circuit panelboards to serve loads as required. All panels shall have a copper bus. All breakers in the panelboards shall be bolt on. Series rated breakers are not allowed.

D501005 ENCLOSED CIRCUIT BREAKERS

NAVFAC-SE does not permit the use of fusible disconnect switches. Use non-fused switches or enclosed circuit breakers in lieu of fused disconnect switches.

D501006 MOTOR CONTROLS

Provide individual motor starters with disconnect switches or combination motor starters, reduced voltage controllers or manual motor starters for motor controls as required by mechanical equipment.

Provide all circuits and connections for motor. Variable speed drives shall be provided by the fire protection trade and installed by the electrical trade unless integral to equipment.

D501090 OTHER SERVICE AND DISTRIBUTION

Provide Type 1 Transient Voltage Surge Suppressors (TVSS) at the service entrance. Provide a 10 mode unit for wye connected systems with a minimum surge rating of 80kA per mode. Unit shall be a modular parallel suppressor system designed for service entrance applications. Modules shall be internally fused.

Provide a 4 pole automatic transfer switch connected to the life safety branch panel board LHA circuits. The life safety branch shall serve all egress lighting throughout building and fire protection and alarm systems. See sheet E001.

D5020 LIGHTING & BRANCH WIRING

Provide electrical connections for all systems requiring electrical service including dedicated receptacles for equipment as required. Provide and install cords, cord caps and the required receptacles as required by the selected equipment.

Provide lighting and general purpose receptacles throughout all spaces as required.

D502001 BRANCH WIRING

All branch and feeder wiring shall be insulated copper conductors in metal conduit. Metallic sheathed cable shall NOT be used.

D502002 LIGHTING EQUIPMENT

Provide a complete lighting system, for the pump shelter, appropriate for the use of the spaces within this facility consisting of exit and emergency lighting and general lighting utilizing fluorescent lamps. Fixtures shall be attractive and shall reinforce the themes in the spaces where installed. Merely selecting fixtures based upon price will not be acceptable. Provide required controls including switches and automatic controls including occupancy sensors, and automatic lighting shutoff systems. Add additional building mounted exterior lighting to improve appearance of building and to enhance security. Verify all egress door have lighting on the exterior. See Section G40 for site lighting requirements.

Fluorescent lamps shall be the higher efficiency, higher lumen output type and all sizes shall be of the same family and manufacturer. Lamps shall be rated 30000 hours at 12 hrs/start and shall utilize programmed start ballasts. All fluorescent lamps shall be 3500 Kelvin. Designer shall use best overall match of lamps and ballasts for maximum efficacy and minimum ballast factor acceptable shall be 88%. Only one lamp and ballast combination shall be utilized for each type of lamp, i.e. F54T5HO, F32T8, F25T8, etc., on this project. Incandescent lamps shall not be used on this project. Lamps damaged during construction shall be replaced with the exact same lamp as furnished in the fixture.

Lighting methods and foot-candle levels shall be in accordance with the information contained in this document, applicable UFC publications and the Illuminating Engineering Society of North America (IESNA) recommendations if no UFC documents are applicable. Unless otherwise stated, recommended illumination levels shall be assumed to be maintained, average foot-candles at the work surface. Calculated illumination shall be in the range of -5% to +10% of the requirement. Energy consumption, by the Energy Policy Act of 2005 (EPA Act), must comply with the power budget listed in ASHRAE 90.1-2007 or IBEC, less 30%. Interior lighting calculations shall be determined at a plane 30 inches above the floor for all spaces except restrooms and corridors. Exterior lighting calculations shall

be at ground level. Calculations shall be point by point performed using software that uses manufacturers IES photometric files. Select a calculation grid that will produce meaningful results. Include a listing by room of the files used with number of fixtures, initial lamp lumens, maintenance factors, ballast factors, required illumination, calculated illumination and a summary of the lighting power budget requirement and the actual power used. Unreadable calculations will not be reviewed and will require resubmitting.

D5030 COMMUNICATIONS AND SECURITY

D503001 TELECOMMUNICATIONS SYSTEMS

Provide a complete new building entrance facility, backbone distribution system, and horizontal distribution system including, but not necessarily limited to, all wiring pathway systems, grounding, backboards, connector blocks, protectors for all copper service entrance pairs, patch panels, fiber optic distribution panels, terminators for all fiber optic cables, outlet boxes, telephone jacks, data jacks, cover plates .

Provide Category 6 Unshielded Twisted Pair (UTP) copper cable for horizontal voice and data cables.

Each telephone system and computer system must have its own space on the backboard within the electrical or communications room. The designer shall clearly show each space on the plans for verification by the affected groups. Depending on the project the data drops and voice drops may be allowed in a common box at the user location, however, they must be separated at the backboard or rack locations

All telecommunications systems shall be designed by a currently registered RCDD designer.

Coordinate with local activity authorities and building users for specific requirements as may be directed by the Contracting Officer. Connection points must be coordinated with base.

D509001 GENERAL CONSTRUCTION ITEMS (ELECTRICAL)

Provide General Construction Items (Electrical) including, but not necessarily limited to, all connections, fittings, boxes and associated equipment needed by this and other sections of this RFP as required for a complete and usable system.

Conduits, cable trays and busways that penetrate fire-rated walls, fire-rated partitions, or fire-rated floors shall be firestopped in accordance with Section C10, Interior Construction.

D509002 EMERGENCY LIGHTING AND POWER

All lighting shall be on the emergency generator, such that the facility shall maintain complete functionality upon the loss of Normal Power.

D509003 GROUNDING SYSTEMS

Provide an electrical system ground bus near the main service gear. The bus shall be 18" x 4" x ¼' copper and predrilled for one and two bolt connectors. The grounding system as described in Section G40 shall be connected to this bus as well as all electrodes per NEC Article 250. From this bus provide a ground conductor to the service gear sized per NEC Table 250.66 and a # 2 copper bare conductor in 1" PVC Schedule 40 conduit to all the communication backboards and other grounding systems required in this facility. Provide a phenolic tag on all connections at the ground bus.

D509004 LIGHTNING PROTECTION

Interface new lightning protection system with existing lightning protection system that may be currently installed at this site location. Provide UL Master Label Certification.

D509005 MECHANICAL AND OTHER EQUIPMENT

Provide power wiring and connections as required for all mechanical and other equipment.

D509006 ENERGY MANAGEMENT CONTROL SYSTEM

Provide data and power connection for the energy management control panel. Sensors and wiring shall be by supplier of the system including conduit and the supports thereof per the requirements of this document.

F20 SELECTIVE BUILDING DEMOLITION

F2020 HAZARDOUS COMPONENT ABATEMENT

The contractor shall inspect the structures and equipment to be demolished under this project and identify and test any suspected asbestos containing materials. The contractor shall test all painted surfaces to be demolished to determine if lead based paint is present.

All 20" pipe shall be assumed to be transite, asbestos-containing material.

Contractor shall meet all requirements of Louisiana Administrative Code Title 33, Chapters 27 and 51 for inspection, testing, and abating asbestos and lead containing materials. Louisiana State certified contractors required for all asbestos and lead containing materials inspection, testing and abatement work.

G10 SITE PREPARATION

Physically verify the location of all existing utilities.

Jurisdictional tidal and non-tidal wetlands have not been identified on the project site.

Provide grading to match existing drainage conditions. Provide materials required in excess of those resulting from excavations from off Government property. All unsuitable material and surplus excavation shall become the property of the Contractor and shall be disposed of off Government property.

Contractor shall obtain the services of a geotechnical engineer familiar with local soils to determine pipe bedding requirements and trenching/soil management practices that will enable the trenched soil to be used to the fullest extent possible as backfill material.

GIS LOCATING

The contractor shall provide GIS data for all pipe installed under this project, pipe abandoned under this project, and new equipment locations per the GIS details provided in Part 6, Attachments. For natural ground, position accuracy for located points shall meet or exceed NSSDA Class 1 standards

to an accuracy of 0.5 feet at the 95% confidence level. Vertical location of pipeline installed under this project shall also be indicated and within an accuracy of 1 foot.

Existing utility GIS files will be made available to the contractor upon request to the contracting officer.

G1010 SITE CLEARING

Minimize removal and disposal of all existing pavement, sidewalks, grassed areas and trees required for project construction. Burning is not allowed.

All grubbing and clearing residue, demolished material, rubbish and debris generated by this project shall be hauled off-site and off station by the Contractor and disposed of in compliance with all local, state and federal regulations.

G1020 SITE DEMOLITION

At the existing fire pump house, demolish all fire pumps, diesel tanks, metal supports, metal stairs, electrical equipment, and all associated piping, connections, foundations, and appurtenances supporting the pumps being demolished.

Demolish 10" water service lines for the existing 1,000,000 water tank back to the new point of connection for the new water service to the new water storage tank.

Demolish building 25, the electrical controls building adjacent to the million gallon water tank. Utilize site for new natural gas generator(s).

Accomplish all other site demolition as indicated in other ESRs of this RFP.

Existing water lines and appurtenances being demolished shall be removed completely or abandoned in place. All abandoned-in-place water lines shall be filled with flowable fill. All valves on lines to be abandoned in place shall have the valve fully opened and the valve box or post indicator removed in its entirety. All abandoned pipe and valves shall be included in GIS data and red-lined on the as-built submittal.

All existing transite pipe shall be handled in accordance with Louisiana Administrative Code requirements.

Relocations of other utilities, sidewalks, etc., shall be the responsibility of the contractor and shall be clearly indicated on the design submittal packages. All existing protective bollards that are removed must be replaced in kind. Any curb line, pavement or concrete that is damaged during water line installation shall be restored at no additional cost to the Government.

The Government reserves the right to all salvageable material removed during construction. If the Government chooses to accept the salvageable material, the contractor shall transport it to an on-base location as designated by the contracting officer.

G1030 SITE EARTHWORK

Native material backfill may be used if it is free from waste, rubbish, debris, excessive organic matter, large rocks, waste concrete or other deleterious materials. Other select backfill and crushed stone for pipe bedding shall be used as specified by the designer of record based on geotechnical conditions encountered.

Excavations shall be of sufficient dimensions to allow construction of the work. Excavation shall extend a sufficient distance to allow for installation of piping and mechanical compaction of backfill materials and inspection. The contractor shall dewater the site as needed to maintain dry and stable excavations. Excavations shall not be plowed, scraped or machine dug closer than 3 inches to the finished subgrade elevation. Perform final excavation by hand methods as approved by designer of record. Provide foundation which is clean and firm and free of loose material.

Provide grading to maintain existing drainage patterns. Provide all materials required in excess of those resulting from excavations from off Government property.

Bedding of pipe and trench backfill shall be specified by an engineer experienced in local soil conditions.

G20 SITE IMPROVEMENTS

G2010 ROADWAYS AND OTHER PAVEMENT

No open cuts of any roadways, parking lots, sidewalks, or paved areas shall be allowed unless prior approval is received from the Contracting Officer. New water lines shall be directionally drilled or "jack and bored" under the roadways and pavement areas, and existing lines abandoned in place at these locations.

Any pavements approved for demolition shall be reconstructed to match surrounding pavement.

Provide reinforced concrete equipment pads for all equipment being installed under this contract.

G2020 LANDSCAPING

Seeding and Sodding

All disturbed areas shall be seeded or sodded. Disturbed slopes such as sides of swales, shall be sodded.

G30 SITE CIVIL/MECHANICAL UTILITIES

G3010 WATER SUPPLY (DOMESTIC AND FLIGHTLINE FIRE PROTECTION)

The new water system is a replacement of the existing water distribution system. This replacement shall include the water lines, valves, and meters to provide a complete water distribution system. The existing water system is owned, operated and maintained by the federal government. The water system design and construction shall be in accordance with UFC 3-201-01, Civil Engineering, the state waterworks regulations, and the Plaquemines Parish requirements.

The contractor shall design all necessary connections to the water system including the necessary meter assemblies, backflow-preventing devices, valves, and other ancillary devices. Wherever possible, valve boxes and all other utility access structures shall be sited out of paved areas.

Water main piping, fittings, valves, accessories and all other materials shall meet the American Water Works Association (AWWA) standards for a minimum system working pressure of 150 psi.

A minimum of two feet (2') separation shall be provided between water lines and existing utilities. Provide warning tape at 12 inches below grade directly above buried water lines. Provide a continuously connected 14 AWG or larger solid copper or copper clad steel tracer wire on all PVC water lines and secure to the water line every eight (8) feet with tape. Tracer wire shall have

jacket/coating made for direct burial and be APWA uniform color code (blue). Tracer wire shall be brought to the surface at every valve box, vault, line marker, dead end hydrant and at least every 1,000 feet.

G301001 WATER STORAGE TANK

FIRE SUPPRESSION WATER STORAGE TANK:

Existing 1,000,000 gallon concrete water storage tank shall be reconfigured for flight-line fire protection water supply use only. Completely disconnect this tank from potable water system. Remove existing 10" service lines and install new 10" service lines from the point of new connection for new water storage tank. Provide backflow preventer on new service line.

All concrete walls and floor shall be inspected for cracks and defects. All cracks and defects shall be repaired. Refer to water tank inspection report provided in Part 6, Attachments.

Install a circulation pump and a chlorine injection system to keep water minimally circulated and treated to prevent algae growth.

Permanently remove all components of the sluice gates within the water tank and repair concrete around the openings.

POTABLE WATER STORAGE TOWER:

Repair existing cathodic protection system. Provide new service connection with in-line dual pumps to serve water tower. Provide by-pass service line to allow water tower to be brought off-line for future maintenance without disrupting water supply to base potable water system. Provide meter, sample point and chlorine injection system downstream of water tower.

FIRE PUMP SUMP TANK:

Permanently remove all components of the sluice gate between the two chambers of the fire pump sump tank. All concrete walls and floor shall be inspected for cracks and defects. All cracks and defects shall be repaired.

G301002 WATER DISTRIBUTION PIPING

Water main pipes shallower than 10 feet and 12" diameter and less shall be PVC. Water mains deeper than 10 feet or larger than 12 inches in diameter shall be ductile iron.

Ductile iron pressure pipe shall conform to AWWA C151, pressure class 250. Fittings shall conform to AWWA C110 or AWWA C153. Interior Lining shall conform to AWWA C104. Exterior protection shall conform to AWWA C105, polyethylene encasement. Installation of ductile iron pressure pipe shall conform to AWWA C600

PVC pressure pipe and fittings shall conform to AWWA C900, pressure class 150. Installation of PVC pressure pipe shall conform to AWWA C605. Joint seals shall meet the requirement for ASTM F477, "Standard for Elastomeric Seals (Gaskets) for Joining Plastic Pipe." Potable water pipe shall meet the requirements of ANSI/NSF 61, "Drinking Water System Components – Health Effects." Provide a continuous length of tracer wire for the full length of PVC pipe runs.

G301003 DOMESTIC WATER DISTRIBUTION VALVES

Valves shall be of the same diameter and have the same joint ends as the mains to which they are installed. Each type of valve shall be of one manufacturer. Valves shall be located in all small branches off larger mains and where eight inch (8") or larger main lines intersect, a valve shall be located in each branch. At street intersections, valves shall be located near pipe intersections for ease in finding in the event of a water line break. Water mains shall be valved so that not more than one-fifth (1/5) of a mile will be affected by a water break. Make and assemble joints to valves as specified for making and assembling the same type of joints between pipe and fittings.

Gate Valves: Valves shall be installed at all new points of connection. Valves shall be located to ensure that no more than two fire hydrants will be out of service in the event of a single break in the water main. Valves shall be located outside of paved areas and heavy traffic areas whenever possible. Valves 20" and smaller in diameter shall conform to AWWA C509 or AWWA C515, non-rising stem and of one manufacturer. Any valves greater than 20 inches in diameter shall conform to AWWA C500. Valves for Indicator Post shall conform to AWWA C500 with the indicator post flange in accordance with the applicable requirements of UL 262. Valve interior coatings shall conform to AWWA C550.

Valve Boxes: Provide cast iron, adjustable valve box for each gate valve on buried piping. Valve boxes shall be sized in accordance with the valve it houses with a minimum diameter of 5-1/4 inches. Provide a round head, painted blue, with the word "WATER" cast in the center. Valve boxes in non-paved areas shall be provided with a concrete collar.

Check Valves: Check valves shall be swing-check type conforming to AWWA C508 with a protective epoxy interior coating conforming to AWWA C550. Provide vault box for all underground check valves.

Air Release, Air/Vacuum, and Combination Air Valves: Provide in accordance with AWWA C512 and AWWA M51.

G301004 BACKFLOW PREVENTION

Provide backflow prevention and cross connection control in accordance with AWWA M-14 and governing Louisiana plumbing codes and waterworks regulations. Contractor may reuse existing backflow preventers if they are in good working condition. Install a new backflow preventer at the main water meter where the water main enters the base.

G301005 THRUST RESTRAINT

Provide thrust restraint for all piping, fittings, valves, and other appurtenances of the water distribution system. Concrete thrust blocks shall conform to AWWA C600. Restrained joints shall be designed and installed according to the manufacturer's recommendations.

G301006 FIRE HYDRANTS

All fire hydrants currently serviced by 20" water line shall be connected to the new domestic water line being installed to replace the 20" water line. Contractor shall assume 10% of hydrants will be found non-functional and shall be replaced.

All new fire hydrants shall be of one manufacturer. Provide protection for fire hydrants located in areas subject to vehicle damage. Fire hydrants shall have National Standard threads on hose and pumper connections. Provide a 6 inch inlet, two each 2.5 inch hose connections and one pumper connection sized to accommodate fire department equipment requirements. Stencil the hydrant number and main

size on the hydrant barrel using black stencil paint. Provide an isolation valve at each hydrant. The minimum number and spacing of hydrants on new lines shall be as specified in Appendix C of the International Fire Code.

Dry barrel fire hydrants shall comply with AWWA C502 with frangible sections. Wet barrel fire hydrants shall comply with AWWA C503 or UL 246, "Wet Barrel" design, with breakable features.

Coordinate hydrant installation with the base fire department to determine best orientation for the pumper connection.

G301007 AUTOMATED FLUSHING UNITS

Automated flushing units may be provided as part of the design. Units shall be free standing design and sited in locations where the discharge will not cause a nuisance. Units shall be designed for water pressures up to 150 psi. Units shall be programmable. Units shall be equipped with discharge limiters to minimize possibility of erosion damage.

G301008 CHLORINE INJECTION UNITS

Remote chlorine injection units may be provided as part of the design and may be located on a distribution line or in a facility. Contractor shall submit cut sheets of recommended chlorine injection units as part of the proposal.

G301009 DISINFECTION

All existing water lines shall remain active until all transfer connections have been made from the existing to the new water lines. The new water lines shall be disinfected and placed in service prior to the start of transfer of connections. Disinfect new water piping and existing water piping affected by the Contractor's operations in accordance with the state waterworks' regulations and AWWA C651.

G301010 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

Compliance with the requirements will be determined by a review of the design and construction submittals and by field inspection. Verification of satisfactory utility system performance shall be via Performance Verification Testing as detailed below, in Chapter 3 of this RFP, and in the paragraph "Field Quality Control" in the designer of record's applicable UFGS specification.

1. Water Distribution System Verification Testing
 - a. Provide testing on water mains in accordance with the state waterworks regulations and the following:
 - i. Ductile Iron: AWWA C600
 - ii. PVC: AWWA C605
 - b. Do not begin testing of pipeline until concrete thrust blocks have been allowed 5 days minimum cure time.
2. Deflection Testing: Deflection of the pipe in the installed pipeline under external loads shall not exceed 4.5 percent of the average inside diameter of the pipe in accordance with ASTM D 2412.
3. Leakage Testing: Leakage tests must be performed on sections of new water line. These must be performed after backfill of the lines and after thrust blocks have had time to cure.

G3060 FUEL DISTRIBUTION

Provide natural gas connection to service natural gas generators. Existing 3" natural gas line runs parallel to Olson Avenue, on the southeast side of the road. Provide AMI compliant gas meter at

service connection.

G40 SITE ELECTRICAL UTILITIES

The site electrical utility system consists of all power, lighting and telecommunications and fiber optic cabling from the existing distribution system point of connection including all connections, testing, terminations, accessories and devices as necessary and required for a complete and usable system. The points of connection (POC) are located off-site and may require manholes, duct bank, directional boring, etc. to bring the require service to the site. Contractor shall be responsible to determine the conflicts with existing facilities on the site, determine if the utilities are active or abandoned and engineer, relocate or remove as applicable.

The electrical scope of this project includes new primary and secondary power distribution, lighting, fire alarm, and communications to support the installation of four (4) new fire pumps (three primary and one standby), Jockey pump and two(2) new domestic water pumps in new fire pump station facility. The power distribution to serve the fire pumps shall comply with requirements of UFC 3-600-01, NFPA 20, and NEC 695. Power distribution shall include the extension of primary power to a new pad-mounted SF6 switch which would provide primary overcurrent protection for a new pad-mounted transformer with 480Y/277 volt secondary. The pad-mounted transformer shall serve a Life Safety Distribution Panel (LDP) and the normal facility Panel HA. The LDP shall serve each 200HP fire pump controller (equipped with integral automatic transfer switch and reduced voltage starter) and the life safety panelboards. The facility Panel HA shall serve the domestic water and jockey pumps in addition to other miscellaneous facility loads (lighting, receptacles, HVAC, etc) through a step down 208Y/120V transformer and panelboard. Panel HA shall be connected to generator through its own automatic transfer switch.

As part of second cost line item, provide two natural gas engine generators with enclosures as an alternate power source. It is assumed that only three of the four fire pumps along with both domestic water pumps will run simultaneously. Service equipment shall be sized accordingly. It is also assumed the fire pump shelter will be approximately 578 square feet.

Electrical scope shall also include interior and exterior lighting, fire alarm connected to the central system, and communications systems to support the fire pump shelter.

GENERAL SYSTEM REQUIREMENTS

Provide an Electrical System complete in place, tested and approved, as specified throughout this RFP, as needed for a complete, usable and proper installation. All equipment shall be installed per the criteria of PTS Section G40 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

NAVFAC DESIGN GUIDES

The following is only a **partial** list of the available design guides. Bidders and the successful Contractor shall obtain **all** applicable publications and shall be expected to follow the requirements contained therein

UNIFIED FACILITIES CRITERIA

UFC 1-300-09N Design Procedures

UFC 3-501-01 Electrical Engineering

UFC 3-520-01 Interior Electrical Systems

UFC 3-530-01 Design: Interior and Exterior Lighting and Controls

UFC 3-550-01 Exterior Electrical Power Distribution

UFC 3-560-01 Electrical Safety, O&M

UFC 3-580-01 Telecommunications Building Cabling Systems Planning and Design

UFC 3-580-10 Navy and Marine Corps Intranet (NMCI) Standard Construction Practices

UFC 4-021-002NF Security Engineering Electronic Security Systems

UFCs are available from the Whole Building Design Guide at:

http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

NAVFAC-SE Requirements are available at:

https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_southeast_pp/about_us/tech_specs/navfac%20se%20interim%20design%20guidance%202-1-12.pdf .

NAVFAC CAD Standards are available at:

https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_southeast_pp/cad_st .

QUESTIONS PERTAINING TO THIS DOCUMENT

Any conflicts in the various publications mentioned above that are not clarified by this RFP should be addressed in a RFI directed to the Contracting Officer.

Questions requesting clarification of the intent of the information contained in this RFP should also be submitted.

G4010 ELECTRICAL DISTRIBUTION

All primary distribution systems must be designed as four-wire, multi-grounded systems wye connected at the source transformer. A system grounded neutral conductor must be provided throughout the system. Equipment intended to interrupt current at fault levels must have interrupting ratings sufficient for the nominal circuit voltage and the current that is available at the line terminals of the equipment.

Use stainless steel enclosures and hardware for exterior electrical equipment. Connect to the existing 13.8kV, three phase, 60 Hertz electrical power system. Provide new pad mounted transformers, connecting to existing GS-29 switch. Complete site survey to verify existing conditions. Reroute of primary cabling may be necessary. Underground cable shall be EPR, 100% insulation with copper conductor.

The available fault current at the point of connection shall be assumed to be an infinite bus.

Provide SF6 or oil insulated, vacuum break, dead-front switches.

Equipment foundation pads must be 200 mm (8 in) thick; pre-cast concrete pads can be used. Ensure a minimum of 3 m (10 ft.) clear workspace in front of pad-mounted equipment for hot stick work. Provide bollards in areas where equipment is subject to vehicular damage.

G401002 TRANSFORMERS

Provide a three-phase pad mounted transformer to feed the fire pump shelter.

Provide the following features:

1. Dead-Front Design with ANSI specific front plate spacing
2. Loop feed switches
3. 6 bushings with inserts
4. Three MOV elbow surge arresters
5. Biodegradable less-flammable liquid-insulated
6. Stainless steel enclosure and base
7. Load break separable connectors as required.

G401006 UNDERGROUND ELECTRIC CONDUCTORS

G401006 UNDERGROUND ELECTRIC CONDUCTORS

Provide a medium voltage underground electrical power distribution systems to meet the connection requirements as indicated in paragraph G4010 "Electrical Distribution". Provide in the Coordination Study the required fuse size to insure the coordination is correct.

Provide underground secondary conductors as necessary from the fire pump building main distribution panel to the other buildings where applicable. Direct buried conduits are acceptable. Include two (2) spare 6" conduits in each run. Bury conduits a minimum of 30 inches deep and provide magnetic marking tape 12 inches above the conduit runs. **Provide accurate record drawings of the runs.**

G401007 DUCTBANKS, MANHOLES, HANDHOLES AND RACEWAYS

Provide a direct buried underground conduit for the service entrance. Accurately provide dimensions on all underground facilities in the record drawings.

G401008 GROUNDING SYSTEMS

Provide a complete grounding system for the electrical power distribution system. Electrical ground shall be #2/0 AWG tinned bare copper ground ring, 3/4" x 10' ground rods connected also to the ground ring. Provide a ground ring around each structure. Install ring ground 5 feet to 8 feet from the

buildings. Provide a ground rod in the ground ring system at least every 100 feet and a minimum of one at each corner of the building. The lightning protection down conductors shall be terminated on a ground rod per NFPA 780. Bond each lightning protection ground rod to the ground ring. All connections to the ground ring and all ground rods shall be exothermic. All the provisions of NEC 250.50 shall be followed. Bring in one 4/0 conductor in 1" PVC Schedule 40 conduit from the ground ring to a ground bus in the main electrical room.

G401009 METERING

Provide a separate Kilowatt Demand Meter for each Pad Mounted Transformer. Meter shall be in accordance with the Navy's Advanced Metering Initiative.

G401011 EQUIPMENT REQUIREMENTS FOR COASTAL AND HIGH HUMIDITY AREAS

Provide 304 or 304L stainless steel equipment designed for coastal and high humidity areas. Exterior equipment is defined as junction boxes, transformer enclosures, disconnects and other equipment. Do not use painted steel for any other equipment.

G4020 SITE LIGHTING

Provide LED site lighting for exterior and security. Design site lighting to .5 average maintained foot-candles with a 15:1 max to min uniformity. Fixtures shall have standard IES patterns and shall have photometric files available prepared by a certified lighting laboratory. Provide a corrosion resistant pole of either decorative concrete or painted aluminum. Do not use painted steel poles. Fixtures and poles as a unit shall withstand 150 mph wind gusts.

Provide wall mounted security lighting as necessary in the other areas of the project.

G4030 SITE COMMUNICATION & SECURITY

Provide a site communication system including all conduit and wiring, underground structures, termination equipment, poles and structures, and grounding systems as required for a complete and usable system. Fiber optic cabling for fire protection control systems shall be provided from each hangar served by the fire pump facility. Each raceway system shall have a spare conduit to the closest manhole.

Provide a 2 strand single mode OSP optical cable through communications direct buried ductbank consisting of 2-4" PVC conduits with innerduct and associated handholes. Provide a fiber patch within hangers, coordinate with fire protection on exact demark location of fiber strands. See Section D50.

G403009 GROUNDING SYSTEMS

Provide a complete grounding system for all communications and security systems. Provide ground bars, conductor, etc., as necessary. Bond all communication ground bars directly to the service entrance bond point in each facility.

-- End of Section --

Small Project Part 4

Minimum Materials, Engineering and Construction Requirements

05/11

1. GENERAL REQUIREMENTS: The requirements indicated here are minimum performance requirements. More specific project functional and performance requirements, scope items and expected quality levels over and above the standards in Part 4 are identified in Part 3 of the Request for Proposal or Basic Ordering Agreement. The Contractor is encouraged to exceed the minimum requirements. The Contractor's performance evaluation will be based in part on enhancements to materials, engineering, design and construction provided for the contract that exceed minimum requirements.

Part 4 is a general section. Not all items in Part 4 will be required for this project. See Part 3 for project-specific requirements. See "Order of Precedence" paragraph in Part 2 for relationships between all parts of the RFP.

In general, unless otherwise indicated, Contractor shall provide all labor, equipment and materials necessary to complete the work required for the contract. All work shall be in conformance with all applicable referenced criteria, construction standards, laws and regulations, including applicable building and fire, life safety codes.

Recycled Materials Considerations:

An Affirmative Procurement Program has been established within the Federal government to promote the purchase of products containing recovered materials. This program promotes the purchase of products containing materials recovered from the solid waste stream. The intent is to conserve resources and reduce solid waste by developing markets for recycled products and encouraging manufacturers to produce quality recycled content products. The contractors shall use products that meet or exceed the EPA guideline standards for recovered content as required by the Federal Acquisition Regulations (FAR). Availability lists of manufacturers and EPA research on product usage are on the Construction Criteria Base (CCB) at <http://www.ccb.org> under Documents Library, NAVFAC Criteria. A partial list of products containing recycled materials for possible use is as follows:

- Rock Wool Insulation
- Fiberglass Insulation
- Cellulose Insulation
- Structural Fiberboard and Laminated Paperboard
- Cement and Concrete - Coal Fly Ash
- Carpet including backings and cushions
- Floor Tiles
- Reprocessed and Consolidated Latex Paint.

1.1 MATERIALS AND METHODS OF CONSTRUCTION. Only new materials and equipment shall be installed in the work. All materials, equipment and appliances shall be of the current manufacturers' products. No obsolete or discontinued materials, equipment and appliances shall be used, except that construction materials containing recycled content as described in Paragraph 1 of this Part that completely comply with all materials specifications found elsewhere in this Part may be used.

1.2 APPLICABLE CODES AND STANDARDS:

The design and construction shall be in accordance with established construction practices, and the latest revision/edition of the following referenced codes and standards. The term "Latest Revision/Edition" is defined as the version as of the project award date. References are available at www.wbdg.org/ndbm/. The advisory provisions of all codes and standards shall be mandatory, as though the word "shall" had been substituted for "should" wherever it appears. Reference to the "authority having jurisdiction" shall be construed to mean "Contracting Officer". Comply with the required and advisory portions of the current edition of the standard at the time of contract award. UFC 1-200-01, *General Building Requirements* is the building code guide and contains references to other UFCs and Codes that are to be used for all sections in this contract. UFC 1-300-09N, *Design Procedures*, provides design guidance and contains references to other UFCs and Codes that are to be used for all sections in this contract.

1. Unified Facilities Criteria (UFC) 1-200-01, *General Building Requirements*
2. UFC 1-200-02, High Performance and Sustainable Building Requirements
3. UFC 1-300-09N, *Design Procedures*
4. American Gas Association (AGA).
5. Associated Air Balance Council (AABC)
6. National Environmental Balancing Bureau (NEEB)
7. International Mechanical Code (IMC).
8. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standards
9. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) guidelines.
10. International Plumbing Code (IPC).
11. Illuminating Engineering Society North America (IESNA) Handbook
12. National Electrical Manufacturers Association (NEMA).
13. Electronic Industries Alliance (EIA)
14. Telecommunications Industry Association (TIA)
15. American Woodwork Institute
16. Architectural Woodwork Institute
17. APA – The Engineered Wood Association.
18. Steel Door Institute (SDI).
19. American Aluminum Manufacturers Association (AAMA)
20. National Wood Window and Door Association (NWWDA).
21. NRCA, *Roofing and Waterproofing Manual* found at <http://www.nrca.net/rp/technical/manual/manual.aspx>
22. American Hardware Association (AHA).
23. Building Hardware Manufacturers Association (BHMA).
24. Federal, State, County, and local environmental regulations.
25. ASHRAE Std. 90.1, *Energy Standards for Buildings Except Low Rise Residential Buildings*
26. American Society of Testing and Materials (ASTM)
27. American Water Works Association (AWWA)
28. National Fire Protection Association (NFPA) Codes and Standards
29. IEEE C2, *National Electrical Safety Code*

1.3 LOCATION-SPECIFIC CODES AND STANDARDS: See Part 3

1.4 DISCREPANCIES: When discrepancies in the referenced standards and the contract requirements occur, the more stringent requirements shall govern. The word "should" in all NFPA publications shall be interpreted as a requirement. The Authority Having Jurisdiction in the interpretation of the codes and standards, and approving the exceptions allowed in the referenced standards, shall be the Contracting Officer, and the parties designated by the Contracting Officer.

2. PERFORMANCE TECHNICAL SPECIFICATIONS

Note: The paragraph numbers used correspond with the numbers used in UNIFORMAT II/Work Breakdown Structures (WBS) as listed in the Whole Building Design Guide, Navy Design Build Master, accessible at this website: www.wbdg.org/ndbm.

SECTION A. SUBSTRUCTURE

A10 FOUNDATION

Pile foundations are required for the water tank and pump house and the generator pad. Concrete slabs shall not be less than 4 inches in thickness and footings shall not be less than 18 inches below the lowest adjacent grade. Foundations shall be designed and constructed of reinforced concrete. All design and construction shall comply with IBC and with applicable requirements in Section B Shell. For the purposes of interpreting IBC Chapter 18, the "Owner" and "Building Official" shall mean the "Government", and the "Applicant" shall mean the "Contractor/Designer of Record".

- 1. Contractor-Foundation Design: The Designer of Record shall evaluate the RFP data, and obtain and evaluate all additional data as required to support the design and construction.**
- 2. Geotechnical Site Data required in Design Drawings: The Contractor's final design drawings shall include:**
 - a. Notes identifying the soil allowable bearing capacity used in design.
 - b. Subsurface soil information, be it Government provided or Contractor obtained, that represents subsurface conditions existing on the project site (such as boring logs, test pits, laboratory test results and groundwater observations). The locations of all borings shall be indicated on the drawings.
- 3. Performance Verification and Acceptance Testing: Verification of satisfactory construction and system performance shall be via Performance Verification Testing, as detailed in this part of the RFP.**
 - a. Earthwork: Perform quality assurance for earthwork in accordance with IBC Chapter 17. See Section G1030.

SECTION B. SHELL

Building shell may be of any materials and design allowed by applicable codes and standards, subject to specific requirements that may be applicable to a particular Activity, such as the Base Exterior Architecture Plan (BEAP) and UFC 4-010-01.

B10 SUPERSTRUCTURES

Superstructure work includes structural frames, bearing walls, floors, roofs, roof canopies, and balcony construction. Unless otherwise specified in Part 3, superstructures may be designed and constructed using any materials or combination of different materials allowed by applicable codes and standards. All design and construction shall comply with IBC. Special inspection, testing, approvals, certifications, observations and quality assurance plans as prescribed in Chapter 17 of the IBC are required.

- 4. Concrete:** All concrete shall be constructed in accordance with ACI 301. Concrete shall have a 28-day minimum compressive strength of 3,000 psi. Slump shall be between 2 and 4 inches in

accordance with ASTM C143. Provide joints as required to minimize cracking. All concrete shall be reinforced. Provide joints as required by applicable ACI standards. Unless otherwise specified in Part 3 or as indicated by the contracting officer, provide steel trowel finish for all exposed floor surfaces.

5. Masonry:

- a. All concrete masonry shall be constructed in accordance with ACI 530.1. Concrete masonry shall have a minimum 28-day compressive strength of 1500 psi. Concrete masonry units shall conform to ASTM C90, grade A1. Broken blocks are not allowed. Use only standard size and shape blocks. Block may be cut when necessary. Mortar shall be Type S.
- b. When used, brick shall conform to ASTM C216. In exposed construction, broken brick shall not be allowed. Standard size brick may be cut to fit job condition. Use Type S mortar.
- c. Provide metal anchors for masonry and brick, including veneer construction as required by IBC.

6. Structural Steel: Structural steel exposed to weathering shall be adequately protected to prevent corrosion.

7. Steel deck: Steel form deck shall have a G90 galvanized finish, and must have a minimum 26-gage thickness. All other steel deck shall have a G90 galvanized finish, and must have a minimum 20-gage thickness.

8. Cold-formed metal framing: Cold-formed steel studs, joists and track shall be galvanized with a minimum thickness of 20-gage.

9. Wood framing: Wood framing members are not permitted.

B20 EXTERIOR ENCLOSURE

B2010 EXTERIOR WALLS

1. Exterior Wall Performance:

- a. **Vapor Transmission Analysis:** Perform a job specific vapor transmission analysis in accordance with ASHRAE 90.1 or WUFI. The conclusion of the analysis shall indicate the appropriate locations of needed vapor retarders, air barriers, and anticipated dew-point locations in the exterior enclosure during different critical times of the year.
- b. **Maximum Air Infiltration:** The maximum allowable air leakage for any material used as part of the air barrier system for the opaque enclosure shall be 0.02 L/s/M² @ 75 Pa (liters/second per square meter at 75 Pa pressure) [0.004 cfm / sf at 1.57 psf], as tested according to ASTM E 2178 test protocol.
- c. **Wind Loads:** Provide wind load calculations for exterior cladding in accordance with ASCE-7 with comparative analysis of the cladding system to be provided.
- d. **Water Penetration:** No water penetration shall occur at a pressure of 39 Kg/m² (8 psf) of fixed area when tested in accordance with ASTM E 331.

- e. **Insulating Value:** The complete wall system shall have a minimum insulating value as required by the building code and as required to meet ASHRAE Standard 90.1 as modified by the Energy Policy Act of 2005.

2. Metal Wall Panel Exterior Closure

Panels shall have factory applied, baked coating to the exterior and interior of metal wall panels and metal accessories. Exterior finish topcoat shall be of 70 percent polyvinylidene fluoride (PVDF) resin with not less than 0.8 mil dry film thickness (DFT). Exterior primer shall be standard with panel manufacturer with not less than 0.8 mil dry film thickness (DFT).

Wall system and attachments shall resist wind loads as determined by ASCE 7, with a factor of safety appropriate for the material holding the anchor. Maximum deflection due to wind on aluminum wall panels shall be 1/60. Maximum deflection due to wind on steel wall panels and girts behind aluminum or steel wall panels shall be limited to 1/120 of their respective spans, except that when interior finishes are used the maximum allowable deflection shall be limited to 1/180 of their respective spans.

Conformations - Non-insulated steel or aluminum wall panels shall have configurations for overlapping adjacent sheets or interlocking ribs for securing adjacent sheets and shall be fastened to framework using concealed fasteners, or choose the option for exposed fasteners when exposed fasteners are acceptable at the installation. Length of sheets shall be sufficient to cover the entire height of any unbroken wall surface.

a. Steel Wall Panels:

- i. Material and Coating: Form sheets from steel conforming to ASTM A 653/A 653M, Structural Grade 40, galvanized coating conforming to ASTM A 924/A 924M, Class G-90; aluminum-coated steel conforming to SAE AMS 5036; or steel-coated with aluminum-zinc alloy conforming to ASTM A 792/A 792M, except that coating chemical composition shall be approximately 55 percent aluminum, 1.6 percent silicon, and 43.4 percent zinc with minimum coating weight of 0.5 ounce per square foot.
- ii. Gage: Minimum 22 U.S. Standard Gage for wall panels, but in no case lighter than required to meet maximum deflection requirements specified.

b. Aluminum Wall Panels:

- i. Material and Coating - Form sheets of Alloy 3004 or Alclad 3004 conforming to ASTM B 209 having proper temper to suit respective forming operations.
- ii. Thickness - Minimum 0.81 mm (0.032 inch) nominal, but in no case thinner than that required to meet maximum deflection requirements specified.

- c. **Insulated Aluminum or Steel Wall Panels:** Insulated wall panels shall be steel or aluminum factory-fabricated units with insulating core between metal face sheets securely fastened together and uniformly separated with rigid spacers. Panels shall have a factory color finish. Wall panels shall have edge configurations with interlocking ribs for securing adjacent panels. System shall utilize factory fabricated corners and trim pieces at intersections with other materials. Insulated wall panels shall be fastened to framework using concealed fasteners.

- i. Insulated Steel Panels - Zinc-coated steel conforming to ASTM A 653/A 653M; or Aluminum-zinc alloy coated steel conforming to ASTM A 792/A 792M, AZ 55 coating. Uncoated wall panels shall be 0.61 mm (0.024 inch) thick minimum.
- ii. Insulated Aluminum Panels - Alloy conforming to ASTM B209, temper as required for the forming operation, minimum 0.81 mm (0.032 inch) thick.

3. Load-Bearing Metal Framing System

- a. If permitted, provide load-bearing metal framing including top and bottom tracks, bracing, fastenings, and other accessories necessary for complete installation. Framing members shall have the structural properties indicated. Where physical structural properties are not indicated, they shall be as necessary to withstand all imposed loads. Design framing in accordance with AISI SG-673. Installation shall be in accordance with DOR-approved shop drawings and manufacturer's installation instructions.

4. Exterior Studs:

<u>Max. Deflection Criteria</u>	<u>Exterior Finish</u>
L/360 Panels	Cement Plaster, Wood Veneer, Synthetic Plaster, Metal
L/600	Brick Veneer, Stone Panels

Wall deflections shall be computed on the basis that studs withstand all lateral forces independent of any composite action from sheathing materials. Studs abutting windows or louvers shall also be designed not to exceed 1/4-inch maximum deflection and as required in UFC 4-010-01.

Studs - ASTM A 1003/ASTM A 1003M, Structural Grade 50, Type H minimum; provide Z180 (G60) galvanized coating in accordance with ASTM A 653/ASTM A 653M. Do not expose studs to direct moisture contact

Bracing - Provide horizontal bracing in accordance with design calculations and AISI SG-673, consisting of, as a minimum, runner channel cut to fit between and welded to the studs.

Sheathing - Provide sheathing to withstand structural loads imposed on the wall structure. Cover sheathing with either a 15 pound asphalt-impregnated building paper, or air barrier as required by the wall moisture analysis. Sheathing shall be one of the following:

Plywood: C-D Grade, Exposure 1;
Structural-Use and OSB Panels;
Gypsum: ASTM C 79/C 79M and ASTM C 1177/C 1177M, 13 mm (1/2 inch) thick fire retardant (Type X) 15 mm (5/8 inch) thick; 1.2 meters (4 feet) wide with square edge for supports 400 mm (16 inches) o.c. with or without corner bracing of framing. Gypsum sheathing shall be faced with materials capable of resisting six months of weathering exposure without degradation of the covering or the gypsum. Seal all joints as recommended by the manufacturer.

5. Exterior Louvers and Screens: If required, provide louvers for Screened Equipment Enclosure or as louvers for exterior doors.

- a. Storm shutters shall comply with ASTM E 1996-03.

- 6. Exterior Painting and Special Finishes;** All painting and coating materials shall be low VOC. Painting practices shall comply with applicable federal, state and local laws enacted to insure compliance with Federal Clean Air Standards. Apply coating materials in accordance with SSPC PA 1. SSPC PA 1 methods are applicable to all substrates.

All paint shall be in accordance with the Master Painters Institute (MPI) standards for the exterior architectural surface being finished. The current MPI, "Approved Product List" which lists paint by brand, label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. Provide paint systems tested to "Detailed Performance Level" standard as defined by MPI.

- 7. Exterior Joint Sealant:** Sealant joint design, priming, tooling, masking, cleaning and application shall be in accordance with the general requirements of Sealants: A Professionals' Guide from the Sealant, Waterproofing & Restoration Institute (SWRI). All sealant shall conform to ASTM C 920.

B2030 EXTERIOR DOORS

Exterior doors shall be heavy duty insulated steel doors and frames for service access. Door frames shall have welded corners. Use heavy-duty overhead holder and closer to protect doors from wind damage. Steel shall have G60 galvanized coating in accordance with ASTM A 924/A 924M and ASTM A 653/A 653M when the job site is located within 300 feet from a body of salt water. Provide commercial quality, coating Class A zinc coating in accordance with ASTM A591 for other steel or steel skin hollow metal doors at other locations. Provide kickplates on the inside face of all exterior doors. Weather-protect all exterior doors and related construction with low infiltration weatherstripping and sealants. Provide threshold with offset to stop water penetration while maintaining accessibility compliance. Conform to the design criteria of ASCE 7. See the hardware schedule for door hardware requirements.

- 1. Steel Doors:** Exterior doors shall comply with ANSI A250.8-1998 (SDI-100). Hardware preparation shall be in accordance with ANSI A250.6. Doors shall be hung in accordance with ANSI A115.16.

Doors Required:

- 1) Heavy Duty Doors – MSG # 18 (IP 0,042", 1 mm), physical performance Level B, Model 1 or 2.

Insulated steel doors and frames are required for entrances to dwelling units, and may also be specified as a Contractor's option to Level 1 standard hollow metal doors. Do not use wood doors for exterior doors, unless they are fully protected from the elements, an exterior grade species, and specially finished. If wood doors are used, provide in accordance with Standard Design-Build Performance Technical Specification Paragraph B203001 2.

- 2. Standard Steel Frames;** ANSI A 250.8. Form frames with welded corners for installation in exterior walls. Form stops and beads of 20 gage steel. Frames shall be set in accordance with ASTM A250.11. Anchor all frames with a minimum of three jamb anchors and base steel anchors per frame, zinc-coated or painted with rust-inhibitive paint, not lighter than 18 gage. Mortar infill frames in masonry walls, and infill with gypsum board compound at each jamb anchor in metal frame walls. Only use surface exposed bolted anchors in concrete walls.
- 3. Door and Frame Finishes:** a) Exterior Doors, Factory-Primed and Field Painted Finish - Doors and frames shall be factory primed with a rust inhibitive coating as specified in ANSI A250.8. Factory prime doors on six sides of the door; b) Exterior Doors Galvanized Finish -- Shall be Commercial Quality, Coating Class A, zinc coating in accordance with ASTM A 591 when facility

is located further than 91 meters (300 feet) from the ocean. When facility is located within 91 meters (300 feet) of the ocean, provide G60 galvanized coating in accordance with ASTM A 924/A 924M and ASTM A 653/A 653M.

4. **Hardware:** Provide the services of a Certified Door Hardware Consultant to prepare the door hardware schedule.

Provide all new hardware with satin chrome finish throughout. Hardware shall be commercial grade, suitable for the operational requirements and in compliance with life safety code and handicapped accessibility requirements, similar in quality to the hardware shown in C1020 Interior Doors and Hardware below.

Coordination: Provide a master keying system compatible with the existing base system. Provide an emergency access key box for exterior door fireman key access. Coordinate with the local authority and the Contracting Officer to determine the local requirements for hardware, keying and master keying.

B3010 ROOF COVERINGS

Roof coverings and procedures shall comply with the requirements of UFC 3-110-03, *Roofing*, and NRCA, *Roofing and Waterproofing Manual* found at <http://www.nrca.net/rp/technical/manual/manual.aspx> as the primary NAVFAC roofing criteria. Roof selection shall comply with UFC 3-330-02A, *Design: Commentary on Roof Systems*. Determine wind uplift using wind speed in accordance with ASCE-7.

5. ROOF COMPONENTS:

- a. **Flashing and Sheet Metal:** Provide flashing and sheet metal work including scuppers, splash pans, and sheet metal roofing. Flashing and sheet metal shall be provided in accordance with roof manufacturer's printed installation instructions and in compliance with NRCA and SMACNA recommendations. Fabricate Flashing and sheet metal components from Copper, Lead-Coated Copper sheet, Steel Sheet, Zinc-Coated (Galvanized) - ASTM A 653/ A 653M, Stainless Steel - ASTM A 167, Type 302 or 304, 2D finish, or Pre-Finished Aluminum.
- b. **Roof Openings and Supports:** Provide flashings for roof openings and supports as recommended by the NRCA. Assure all penetration flashings extend minimum 200 mm (8 inches) above the finished roof surface.
- c. **Roof Hatches:** Provide roof hatch where required by OSHA, and as access to roof when roof mounted equipment is used or other routine roof maintenance is required.
- d. **Guards:** Provide rails or guards as required by the OSHA, the International Building Code or other applicable safety standards.

6. OTHER ROOFING

- a. **Lightning Protection:** Lightning protection component penetrations and attachments shall be sealed and flashed and anchored in a permanent manner and in a manner to avoid the degradation of the watertight integrity of the roof system.

SECTION C. INTERIORS

C20 STAIR CONSTRUCTION

Provide interior and exterior stair construction. Stair design, materials and construction shall comply with IBC, and applicable codes and standards, including NFPA 101. Provide refuge area at top of stair in accordance with applicable Americans with Disability Act Design Guide requirements.

D30 HEATING, VENTILATION AND AIR CONDITIONING (HVAC) SYSTEMS:

The HVAC systems shall comply with the latest edition of the International Mechanical Code, International Plumbing Code, ASHRAE Standards, National Electrical Code, National Fire Protection Association Publications, International Building Code, and California Title 24 or ASHRAE 90.1 energy efficiency standards (the more stringent of the two) unless otherwise specified in Part 3. All equipment, appliances, ductwork and accessories shall comply with applicable codes and standards. For projects located in California, also comply with California Energy Commission (CEC) efficiency rating requirements as stated in Ca. AB 970 Title 24. The Contractor shall certify that the installation is in conformance with the applicable codes and standards at the completion of the contract, prior to final invoice being processed and final acceptance.

1. **Equipment Clearance:** Provide working space around all equipment. Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the manufacturer's recommendations. Where the word "should" is used in manufacturer's instructions, substitute the word "shall".
2. **Material and Equipment Qualifications:** All materials and equipment shall have been in satisfactory commercial or industrial use for 2 years prior to the bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures during the 2-year period.
3. **Motors:** Single-phase fractional-horsepower alternating-current motors shall be high efficiency types corresponding to the applications listed in NEMA MG 11. Select polyphase motors based on high efficiency characteristics relative to the applications as listed in NEMA MG 10. Additionally, all polyphase squirrel-cage medium induction motors with continuous ratings shall meet or exceed energy efficient ratings per Table 12-10 of NEMA MG 1. Provide controllers for 3-phase motors rated 0.75 kW (1 hp) and above with phase voltage monitors designed to protect motors from phase loss and over/under-voltage. Provide means to prevent automatic restart by a time adjustable restart relay. For packaged equipment, the manufacturer shall provide controllers including the required monitors and timed restart. Provide reduced voltage starters for all motors 25 hp and larger.
4. **Equipment Support:** Provide housekeeping pads and vibration isolators under all floor-mounted equipment.
5. **Coatings:** When required in Part 3, provide chiller and air handler coils with copper tube/copper fin coil construction or immersion applied, baked phenolic or other approved coating. Field applied coatings are not acceptable. Mechanical equipment casings shall have painted finishes that pass a salt-spray test conducted per ASTM B117 for duration of at least 500 hours.

6. **Equipment Insulation:** Provide insulation on all chilled water equipment. Insulate hot and chilled water pumps and equipment as suitable for the temperature and service in rigid block, semi-rigid board, or flexible unicellular insulation to fit as closely as possible to equipment. Provide vapor retarder for chilled water applications.
7. **Acoustical considerations:** Noise levels in all areas served (supply, return, and exhaust) by a mechanical system shall comply with ASHRAE Design Guidelines for HVAC related background sound in rooms as indicated in the lasted ASHRAE Fundamentals Handbook. The RC-rating method shall be utilized.

D3030 COOLING GENERATING SYSTEMS

1. **Direct expansion systems:** Provide units factory assembled, designed, tested, with ducted air distribution and rated in accordance with ARI 210/240 or ARI 340/360. Refrigerant piping size shall be per the manufacturer's recommendations. Insulate refrigerant piping suction lines and condensate drain.
2. **Refrigerants:** The use of Ozone Depleting Substances (ODS) as well as the qualifications and credentials of personnel servicing equipment that contains ODS is restricted. Refrigerants shall have an Ozone Depletion Factor (ODF) of 0.055 or less. The ODF shall be in accordance with the "Montreal Protocol on Substances That Deplete the Ozone Layer", September 1987, sponsored by the United Nations Environment Program.

D3040 DISTRIBUTION SYSTEMS

1. **Ductwork:** All ductwork shall be provided in accordance with the latest SMACNA guidelines. Flexible duct lengths shall not exceed 6 feet. Provide galvanized sheet metal ducts except for special exhaust systems and the following:
 - a. Internal insulation-lined ductwork is prohibited in all areas. For ductwork located exterior to the building, provide externally insulated systems with sheet metal cladding. Provide external thermal insulation for all ductwork. Insulate ductwork in concealed spaces with blanket flexible mineral fiber. Insulate ductwork in Mechanical Rooms and exposed locations with rigid mineral fiber insulation. Provide insulation with factory applied all-purpose jacket with integral vapor retarder. In exposed locations, provide a jacket with white surface suitable for painting. Flame spread/smoke developed rating for all insulation shall not exceed 25/50. Minimum insulation thickness shall be the minimum thickness required by ASHRAE 90.1. Insulate the backs of all supply air diffusers with blanket flexible mineral fiber insulation.
 - b. The ductwork shall be sealed with an approved duct sealer and in accordance with SMACNA standards. If leakage testing is indicated in part 3, the duct leakage shall not exceed 2%.
 - c. Provide manual volume dampers in each branch take-off from the main duct to control air quantity. Dampers shall conform to SMACNA DCS. Dampers shall be installed in accessible locations.
2. **Fire Dampers:** Fire dampers shall be rated per UL 555. Fire dampers shall be dynamic type rated for closure against a moving airstream. Provide fire dampers that do not intrude into the air stream when in the open position.
3. **Piping:**

- a. Provide insulated, steel piping for sizes 4 inches and larger and insulated copper piping for sizes less than 4 inches for water supply and return piping to serve the HVAC equipment throughout the facility.
- b. Provide system flushing and start-up for water systems.

4. Exhaust Fans And Ducts:

- a. **General:** Exhaust fans shall be sized to move the volume of air required to comply with International Mechanical Code for the areas requiring exhaust.

D3050 TERMINAL AND PACKAGE UNITS

1. **Unit heaters:** ANSI Z83.8 and AGA label. Equip each heater with individually adjustable package discharge louver. Provide with thermostat.

D3060 CONTROLS AND INSTRUMENTATION

1. **General:** Provide stand-alone or distributed direct digital controls, as required in Part 3.
2. **Distributed Direct Digital Controls (DDC):** DDC hardware shall be UL-916 rated. Use controllers in a distributed control manner. Controllers shall be stand alone with an internal clock and modem. The total number of I/O hardware points shall not exceed 48 in any controller. Provide sufficient memory for each controller to support required control, communication, trends, alarms, and messages. Provide communications ports for controller to controller, on-site interface, remote workstation interface, and telecommunications interface. When providing a partial DDC system or connecting to an existing DDC system, provide a laptop computer with all necessary software for user interface.

D40 FIRE PROTECTION

Provide new Automatic Fire Sprinkler system, Smoke detection systems, Fire Alarm and Mass Notification systems as required. The work for fire sprinklers, fire alarm, smoke detection, and heat detection shall be provided by contractors licensed to perform such work.

Project Requirements: Prior to the start of design, the Designer of Record shall meet with the Government's Fire Protection Engineer to determine the extent and types of fire protection required.

D4010 FIRE ALARM AND DETECTION

Fire alarm system shall include manual stations, system smoke detectors, duct smoke detectors, audio/visual alarms, connection to basewide fire alarm monitoring, electrical supervision of fire pump controllers, and electrical supervision of all sprinkler system alarm and supervisory devices as required.

D4020 FIRE SUPPRESSION WATER SUPPLY AND EQUIPMENT

The water supply information is provided for bidding purposes. The design point of connection to existing water supply shall require the approval of the Contracting Officer. The FPE DOR shall conduct additional flow tests after contract award prior to any design submissions. Tests shall be coordinated through the Contracting Officer.

D4040 SPRINKLERS

Areas subject to freezing shall be provided with a dry pipe system.

D50 ELECTRICAL

D5010 ELECTRICAL SERVICE & DISTRIBUTION

Provide interior electrical wiring, fixtures, switches, outlets, and apparatus in accordance with applicable codes and standards. The electrical system shall conform to NFPA 70. Power and lighting circuits shall be separate.

- 1. Wiring:** All wiring shall be in electrical metal conduits and shall be concealed except in the industrial spaces and at locations indicated in Part 3. No conductors shall be smaller than No. 12 AWG, copper wires. Wiring below slab or underground shall be in Schedule 40 PVC with ground wire. Exposed conduits on the exterior of the building are prohibited. Provide a ground conductor for each circuit; conduits shall not be used for grounding. Use of cable assemblies Types AC, MC, or MI and flat conductors are prohibited. Circuit breakers shall be bolt-on type. Series rated circuit breakers and fusible panelboards shall not be used.
- 2. Outlet Circuits:** Lighting and convenience outlets shall be on separate circuits. Install GFI protected receptacles at all wet or damp areas. Location of outlets shall be as required by applicable codes and standards. Provide extra outlets for maintenance and service staffs in spaces such as corridors, hallways and other public spaces as identified below. All exterior outlets shall be on separate circuits, shall be GFI protected, and equipped with a cover to prevent accidental water infiltration into the devices.

In addition to the location requirements specified by NFPA 70, locate general purpose and dedicated outlets in accordance with the following:

- a. Mechanical equipment: Provide receptacle within 7.6 m (25 ft) of mechanical equipment on the interior and exterior of buildings.
- b. Office, staff support spaces, and other workstation locations: One receptacle for each workstation with a minimum of one for every 3050 mm (10 ft) of wall space. When less than 3500 mm (10 ft) of wall at the floor line, provide a minimum of two receptacles spaced appropriately to anticipate furniture relocations. Limit loads to a maximum of four workstations per 20 amp circuit. See Appendix C, Table C1 for workstation load data.
- c. Conference rooms and training rooms: One for every 3.6 m (12 ft) of wall space at the floor line. Ensure one receptacle is located next to each voice/data outlet. Provide one receptacle above the ceiling to support video projection device. Extend circuit to wall location for connection to motorized screen. When it is expected that a conference room table will be specifically dedicated to floor space in a conference room, locate a floor-mounted receptacle under the table. This receptacle may be part of combination power/communications outlet.
- d. Provide power outlets throughout the building to serve all proposed equipment, including government furnished equipment, and allow for future reconfiguration of equipment layout. Provide power connections to all ancillary office equipment such as printers, faxes, plotters, and shredders. Provide dedicated circuits where warranted.
- e. In each telecommunications room provide a dedicated 20 amp circuit with a receptacle adjacent to each rack or backboard for each of the following:

- 1) CCTV for training systems
 - 2) CCSTV for security systems
 - 3) CATV
 - 4) Voice systems
 - 5) Data systems.
- f. Provide dedicated receptacles as required throughout the facility for television monitors. These outlets will typically be located at the ceiling level for wall mounted television monitors.
- g. Corridors: One every 15 m (50 ft) with a minimum of one per corridor.
- h. Janitor's closet and toilet rooms: One GFI receptacle per closet. Provide GFI receptacles at counter height for each counter in toilets such that there is a minimum of one outlet for each two sinks.
- i. Space with counter tops: One for every 1.200 m (4 ft) of countertop, with a minimum of one outlet. Provide GFI protection of outlets when located within 1.8 m (6 ft) of plumbing fixtures.
- j. Building exterior: One for each wall, GFI protected and weatherproof, while in use.
- k. Kitchen non-residential: One for each 3.05 m (10 ft) of wall space at the floor line. Provide GFI protection when located within 1.8 m (6 ft) of plumbing fixture.
- l. Child occupied spaces (including toilets): One for every 3.6 m (12 ft) of wall space. Use child safety type such as those that require rotating an integral surface cover plate to access current. Removable caps and plugs are not acceptable.
- m. All other rooms: One for every 7.6 m (25 ft) of wall space at the floor line. When 7.6 m (25 ft) or less of wall at the floor line exists in a room, provide a minimum of two receptacles spaced appropriately to anticipate furniture relocations.
- n. Special purpose receptacles: Designer of Record must coordinate with the user to provide any special purpose outlets required. Provide outlets to allow connection of equipment in special use rooms.
- 3. Service Entrance Equipment:** When a switchboard or switchgear is required, the Designer of Record shall utilize UFGS Section 26 23 00, *Switchboards and Switchgear*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

D5020 LIGHTING & BRANCH WIRING

1. **Lighting Fixtures:** All lighting fixtures shall be energy conservation compact fluorescent except where indicated by Part 3.
 - a. **Fluorescent Fixtures for Administrative and Commercial Spaces:** For offices, commercial and administrative spaces and facilities provide high efficiency ballast, and instant or rapid start recessed fluorescent fixtures.

- b. **Three-Way and Four-Way Switches:** Provide three-way or four-way switching of light fixtures as necessary to facilitate movement between adjacent spaces to allow efficient energy management.
2. **Exterior Lighting Fixtures for Large Open Areas:** Exterior lighting fixtures for large open areas such as parking lots, streets and playgrounds shall be energy efficient High-Intensity Discharge (HID) or LED and shall comply with local regulations regarding low lighting levels to avoid light pollution.
 - a. **Photocell Overriding Switch:** Provide photocell-overriding switch for all outdoor light fixtures.

D5030 COMMUNICATIONS & SECURITY

1. **Telecommunications Systems:** Provide a horizontal distribution system including, but not necessarily limited to, all wiring, pathway systems, connector blocks, protectors for all copper service entrance pairs, terminators for all fiber optic cables, outlet boxes, telephone jacks, and data jacks cover plates in accordance with EIA/TIA standards. Provide Category 6 UTP telephone premise wiring where telephones are required.
2. **Public Address Systems:** Provide a Public Address system with speakers in all locations identified in Part 3.
3. **Intercommunications Systems:** Provide an Intercommunication System to allow two-way communications between all locations identified in Part 3.
4. **Television Systems:** Provide television systems to the extent specified in Part 3. Coordinate with the local Cable Company, Local users and Local Authority at the Activity for other specific requirements. The interior cable outlets and wiring shall be complete and ready for use. Wiring shall not be run exposed on any surface of the building.
5. **Security Systems:** Provide an Intrusion Detection System (IDS) to sense all perimeter doors and windows and the interior volume in at least two locations. System shall have 90-minute battery back-up and annunciate both locally and at the Base Security Office via a telephone dialer. System shall have entry/exit timer. Provide wall mounted keypad control at two locations.

D5090 OTHER ELECTRICAL SERVICES

1. **Transient Voltage Surge Suppression (TVSS):** Provide TVSS in accordance with UFC 3-500-10N.
2. **Emergency Generators:** When an emergency generator is required, the Designer of Record shall utilize UFGS Section 26 32 13.00 20 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.
3. **Automatic Transfer and Bypass/Isolation Switches:** When an Automatic Transfer Switch is required, the Designer of Record shall utilize UFGS Section 26 36 23.00 20 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.
4. **Uninterruptible Power Supply (UPS) System:** When a UPS system is required, the Designer of Record shall utilize UFGS Section 26 32 33.00 20 and shall submit the edited specification section as a part of the design submittal for the project.

- 5. 400 Hertz Systems:** The Designer of Record shall utilize UFGS Section 26 32 26 or 26 35 43 for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

SECTION F. SPECIAL CONSTRUCTION AND DEMOLITION

F20 SELECTIVE BUILDING DEMOLITION

In general terms, demolition work shall include the removal and effective management and disposition of existing construction and or structures. Contractor shall take care to prevent damage to existing utilities and construction that are not scheduled for demolition. If damage occurs, the Contractor shall make repairs to the satisfaction of the Contracting Officer and at no cost to the Government. Comply with local Activity and Installation local requirements regarding demolition and removal. Unless otherwise specified in Part 3, all demolished materials and equipment must be removed from government property in accordance with applicable laws and regulations, including local Activity or Installation regulations. Selling of demolished or salvaged materials and equipment on government properties is prohibited.

Demolition Plan and Environmental Protection Plan: No demolition work shall take place until a Demolition Plan, Environmental Protection Plan, Safety Plan (including Activity Hazard Analysis), Asbestos Abatement Plan, and a Lead Abatement Plan have been submitted to, and approved by, the Contracting Officer. The Plans shall take into consideration, and indicate method of removal, disposition, and abatement of environmentally hazardous materials. Demolition, disposition, and abatement of hazardous materials must comply with all applicable Local, State, and Federal regulations and laws. If destructive investigation is to occur, the Contracting Officer shall approve a Destructive Investigation Plan.

When hazardous materials such as asbestos, lead paint, PCB and other hazardous materials are involved in the performance of the work, the contractor shall abate, remove and manage the hazardous materials in construction and finish materials such as insulation, flooring, wall materials, ceiling materials, roofing materials, heating, plumbing, ventilation, air conditioning equipment and installations in accordance with National as well as local Environmental Protection Laws and Regulations.

F2020 HAZARDOUS COMPONENT ABATEMENT

- 1. Asbestos in DoD Schools:** For projects that require removal or disturbance of asbestos containing materials within DoD schools, perform work in accordance with the edited UFGS 02 82 14.00 10, *Asbestos Hazard Control Activities*.
- 2. Asbestos Materials:** Asbestos shall be removed, transported and managed in accordance with the following regulations: Louisiana Administrative Code, Title 33, Chapters 27 and 51, 29 CFR 1926.1101, and 40 CFR 61-Subpart M. Contractors shall be Louisiana certified contractors.

Category I & II Nonfriable: Demolition of Category I & II nonfriable asbestos containing materials (approved to be left in place during building demolition) shall be performed in accordance with 40 CFR 61 – Subpart M.

- 3. Lead Based Paint in Child Occupied Facilities:** For projects that require removal or disturbance of painted surfaces within a child occupied facility, perform work in accordance with the edited UFGS 02 83 19.00 10, *Lead Based Paint Hazard Abatement, Target Housing and Child Occupied Facilities*.and Louisiana Administrative Code Title 33, Chapter 28.

4. **Paint Containing Lead, Cadmium and Chromium:** Work which requires the disturbance of paint that have been determined to contain all or any of the following: lead, cadmium and chromium must be performed in accordance with: 29 CFR 1926.62, 29 CFR 1926.1126 and 29 CFR 1926.1127 and Louisiana Administrative Code Title 33, Chapter 28 including requirement for Louisiana Administrative Code Title 33, Chapter 28.
5. **Mercury & LLR Components:** Work which requires removal of mercury and LLR components shall be performed in accordance with: 29 CFR 1910.1000, 10 CFR 20, and 40 CFR 273.
6. **PCBs:** Work which requires removal of PCB containing components or materials shall be performed in accordance with 29 CFR 1910.1000, 40 CFR 761, and 40 CFR 273.
7. **Hazardous Materials Reporting:**
 - a. **Daily Report:** Notify the Contracting Officer of work involving hazardous materials abatement and removal, including the quantities involved, on daily reports.
 - b. **Hazardous Material Inventory Report:** The Contractor shall provide a list of all hazardous materials used on the site.

SECTION G. BUILDING SITEWORK

G10 SITE PREPARATIONS

1. **General Requirements:** Building site work includes site preparation, site improvements, site civil/mechanical utilities, site electrical utilities, exterior furnishings, landscaping, and irrigation. Provide site work in accordance with UFC 3-200-10N, *Civil Engineering*, which accommodates regional requirements (see paragraph 1-6).
2. **Project Limitations:** Prior to the start of design, the contractor shall determine the exact limit-of-work line for the project periphery, considering items such as, but not limited to, utility work, landscape re-vegetation of disturbed areas, and lay down areas. The Civil Engineer and Landscape Architect of Record shall determine limit-of-work lines. Minimize the impact of construction activity on operations and neighboring facilities.
3. **Geotechnical Data:** A geotechnical engineer shall conduct the subsurface exploration, investigation/evaluation, testing, and analysis that the Designer of Record deems necessary for the design and construction of the proposed facilities, including building pad, structure, pavement sections, repairs, overlays, stormwater management facilities, utility structure foundations, septic systems, and other features requiring soil support.

G1010 SITE CLEARING

1. **Existing Utilities:** When the Contractor is to work at a site that has existing utilities, the contractor is responsible for coordination with Contracting Officer and utility companies for staking out, capping, connection and relocation of any existing utility systems or traffic interruption. Notify utility locator service for area where Project is located before site clearing.
2. **Interruption:** All interruption to the existing utilities and traffic shall be coordinated with and approved by the Contracting Officer not less than 14 calendar days in advance of such interruption.

G1020 SITE DEMOLITION & RELOCATIONS

Abandon utility systems in-place conforming to applicable codes and regulations, removing their presence from the ground surface and clearly indicating that they have been abandoned. Remove utilities underneath or within 3.0 m (10 feet) of any new facilities. Fill abandoned gravity systems with flowable fill. Fill abandoned utility system piping under pavements subject to potential vehicle loading with flowable fill.

Remove existing utility structures to 900 mm (3 feet) below existing or new adjacent grade, whichever is greater. Break up bases to permit drainage. Fill with clean sand.

Comply with the requirements of the utility provider concerning utility relocation.

G1030 SITE EARTHWORK

The DOR shall utilize UFGS Section 31 23 00.00 20 for the project specification and shall submit the edited section as a part of the design submittal. Perform quality assurance for earthwork in accordance with UFGS Section 31 23 00.00 20. If sheeting/shoring or dewatering is required, the Contractor shall provide a registered Professional Engineer to provide excavation, sheeting, shoring, and dewatering plans and inspection of excavations and soil/groundwater conditions throughout construction. The Engineer shall be responsible for performing pre-construction and periodic site visits throughout construction to assess site conditions. The Engineer, with the concurrence of the contractor and the Contracting Officer, shall update the excavation, sheeting, shoring, and dewatering plans as construction progresses to reflect actual site conditions and shall submit the updated plan and a written report (with professional seal) at least monthly informing the Contractor and the Contracting Officer of the status of the plan and an accounting of Contractor adherence to the plan; specifically addressing any present or potential problems. The Engineer shall be available to meet with the Contracting Officer at any time throughout the contract duration.

G20 SITE IMPROVEMENTS

Provide site improvements as required to make a useable facility that meets functional and operational requirements, incorporates all applicable anti-terrorism, force protection and physical security requirements and blends into the existing environment.

Provide site improvements in conformance with applicable requirements of the Uniform Federal Accessibility Standards.

- 1. Pavements:** For work in and adjacent to existing pavements, the Contractor is required to match the existing adjacent finish elevation, materials, paving section and texture, unless otherwise indicated in Part 3 or directed by the Contracting Officer.

Provide pavement design and pavement section materials in accordance with UFC 3-200-10N, *Civil Engineering*.

- 2. Traffic Control:** If the site work involves interference with normal vehicular and or pedestrian traffic, the Contractor shall coordinate with the authority having jurisdiction, propose and obtain approval for traffic control measures that may be required in performance of the work required by the contract.
- 3. Performance Verification And Acceptance Testing:**

- a. **Subgrade Preparation:** If required by the Designer of Record, perform proof rolling. Proof rolling shall be performed in the presence of the Contracting Officer. Rutting or pumping of material shall be undercut as directed by the Contracting Officer and replaced with satisfactory soil materials as defined by the Geotechnical Engineer.
- b. **Base Course Performance Verification:** At a minimum, Contractor must perform visual performance verification. Surface shall be smooth with no ruts, sloped or crowned to not pond water.
- c. **Bituminous Concrete Pavement Performance Verification:** At a minimum, Contractor must perform visual performance verification. Finished surface shall be uniform in texture and appearance, free of defects such as cracks and creases, and be sloped or crowned so as to not pond water.
- d. **Portland Cement Concrete Pavement Performance Verification:** At a minimum, Contractor must perform visual performance verification. Finished surface shall be uniform in texture and appearance, free of defects such as cracks and spalls, and be sloped or crowned so as to not pond water.
- e. **Concrete Joint Performance Verification:** Joint sealer that fails to cure properly, or fails to bond to joint walls, or reverts to uncured state or fails in cohesion, or shows excessive air voids, blisters, or has surface defects, swells, or other deficiencies, or is not recessed within indicated tolerances shall be rejected. Remove rejected sealer, re-clean and reseal joints.

G2040 EXTERIOR FURNISHINGS

All site furnishings shall be permanently attached to concrete pads. Site furnishings shall conform to the Base Exterior Architecture Plan (BEAP) or Installation Appearance Plan (IAP) for each Activity. If no product guidance is given, coordinate material, finish and color with architecture (fiberglass and aluminum are not acceptable) and provide to the greatest extent possible, materials with industrial recycled content, preferably from regionally local manufacturers. At a minimum, provide a trash and ash receptacle at each entry and gathering/smoking area.

G2050 LANDSCAPING

1. **Landscaping Design:** The design of landscaped areas shall be in accordance with Presidential Executive Order 13148 of April 2000 with a goal to reduce fertilizers, pesticides, and water use. All non-paved site areas inside the project limits disturbed by construction operations, after meeting plant quantity requirements, shall be covered with plant material or mulch. All projects with planting (except for seeding, sprigging and or sodding) and or irrigation areas shall utilize the design services of a Landscape Architect licensed or certified in the State of the project.
2. **Existing Plant Material to Remain:** Fence at plant or tree drip lines, and maintain all plant material to remain to keep plants healthy and thriving during construction operations. Should any plants die or are damaged during this period or during the Landscape Establishment Period, the Contractor, at the direction of the Contracting Officer, shall remove the existing tree and stump and replace with trees of the same genus and species equal to the total caliper of the existing tree. Minimum caliper of replacement trees shall be 100 mm (4 inch). Replace shrubs with 18.9 liter (5 gallon) size container, ground cover with flat containers planted at 200 mm (8 inches) on center, and turf with sod, all of the same genus and species.
3. **Seeding, Sprigging, and Sodding:** Select a permanent seed mix. Apply seed at a time best suited for germination of the selected species. Seeded areas shall achieve a 95-percent

coverage of the selected species and be weed free at the end of the Establishment Period. Sodded areas shall achieve 100% coverage and be weed free.

4. **Utilities:** Trees shall not be placed within 10 feet of any above or below-grade utility line or structure.
5. **Green Waste Recycling:** Contact the Public Works Department for potential green waste collection, management, and recycling by the Government.
6. **Plant Quality:** All plants shall be in a healthy, disease and pest-free condition. All seed mixes, sod and sprigs shall be State Certified. Contractor shall provide native species appropriate for the locality.
7. **Plant Quantities:** Within project limits, provide for building periphery, parking lot and perimeter site planting, not covered by buildings or paving, with a minimum of one tree and a minimum of 8 shrubs per 83.6 square meter (900 square feet) of landscape area. Provide a minimum tree size of 200 mm (24 inch) box/50mm (2 inch) caliper, or if within an anti-terrorism zone provide a minimum size of 910 mm (36 inch) box/76 mm (3 inch) caliper. For shrubs provide a minimum size of 19-liter (5 gallon), for ground cover provide a minimum size of 3.85-liter (1 gallon) containers. For trees and shrubs within concrete or other non-permeable paved area, allow a minimum non-paved area of 1.2 m by 2.4 m (4 feet by 8 feet per tree).
8. **Edging & Mulching Materials:** Provide 3/16-inch thick by 4-inch deep galvanized metal or 6-inch by 6-inch Concrete edging dividing all turf and shrub areas and dividing all planted and non-planted inorganic mulch areas. Plastic edging is not allowed. Mulch all plant areas with a minimum 3-inch layer of mulch to match local area material.
9. **Weed Control Fabric:** Provide an ultra-violet-resistant weed barrier fabric of polypropylene or polyester fabric specifically designed for weed control purposes beneath all mulched non-planted areas with a minimum weight of 0.11 kg per square meter (5 ounces per square yard) with a minimum thickness of 0.50mm (20 mils) with a 20-year minimum guarantee.
10. **Irrigation:** If specified in Part 3, all planting areas shall be automatically irrigated with a permanent, below-grade system.
 - a. **Irrigation Design and Testing:** Provide 100 percent sprinkler head coverage. Provide pop-up heads in turf and when adjacent to turf, walks, roads, parking lots, and in sparsely planted landscape areas where pedestrians may circulate. Provide pop-up heads project-wide on high-traffic sites such as, but not limited to, dining, housing, entertainment, daycare, education and recreation facilities. Verify adequate water pressure for irrigation purposes and provide booster pumps and or pressure regulation as required. Provide minimum 12-inch cover over PVC irrigation pipe. 13 mm (1/2 inch) pipe is not allowed. The Landscape Contractor shall test the entire system in the presence of the Contracting Officer (and for projects greater than 5,000 square feet, the Landscape Architect of Record shall attend,) to ensure proper performance. All irrigation components shall be commercial or institutional quality. Provide rain shut-off device and watertight splices. Sprinkler heads, bodies and nozzles shall be of the same manufacturer.
 - b. **Irrigation Operation and Control:** Assure systems will automatically operate on an "irrigation window" between 2130-0530. Provide compatible and fully functional control if a central control system exists on base. Otherwise, provide evaporo-transpiration measuring control with flow meter and master valve with controller capable of indicating visible or auditory notification, such as a blinking light or beeping sound, of system shut-off.

- c. **Irrigation Controller Charts:** Provide one chart for each new controller or existing re-sequenced controller. The chart shall be an actual plan reduced to fit inside maximum dimensions of the controller housing. Use black line print for chart and a different color to indicate each station area of coverage. After chart is completed and approved for final acceptance, seal chart between two 0.5 mm (20 mil) pieces of clear plastic. The chart shall be affixed to the inside of the controller cabinet door using approved mastic or fastening system.
 - d. **Irrigation Zoning:** Provide separate control valves for differing solar exposures, for areas with differing irrigation head types or differing precipitation rates, and top and bottom of slopes. Provide a separate irrigation backflow prevention device and water meter. Turf and shrubs/groundcover are not allowed on the same valve. Provide separate concrete valve box with cast iron lid and valve ID for each valve and wire splice. Provide quick coupling valves at 30m (100 feet) on center. Provide in-head check valves for sloped areas with 150 mm (0.5 feet) or more in elevation change.
 - e. **Temporary Irrigation:** Provide ultra-violet resistant pipe and fittings for above-grade, temporary irrigation. Only non-pressure pipe is allowed above grade. Irrigation systems intended to remain in place longer than one year shall be installed below grade.
 - f. **Non-Potable Irrigation:** Provide lavender-colored pipe, sprinkler head and quick coupler caps, valve tags, signage, and associated filtration equipment.
- 11. Landscape and Irrigation Establishment Period and Guarantee:** Provide the following landscape and irrigation establishment period for landscaped areas within the limits of work and areas disturbed by construction:

365 days: Trees, Shrubs, Ground Cover, Vines, and Ornamental Grasses.
120 days: Turf Areas (Active growing season).

The Landscape Architect-of-Record shall, along with the Contracting Officer, attend, approve and document the start of the Establishment Period and document quarterly and final inspections. During this period, the Contractor shall perform tasks which shall include, but not be limited to, watering, weeding, eradicating pests, adjust irrigation and replenish mulch to assure all plant material is in a healthy and thriving condition or the Contractor shall replace plant material at his own expense. All trees, shrubs, and ground covers that die or have 20 percent or more of their crowns that die during planting operations or the guarantee period shall be replaced with healthy plants of the same species or variety. Broadcast seeded or hydro-seeded areas that do not achieve the 95-percent coverage of the selected species by the end of the Establishment Period shall be reseeded by the same method and be maintained an additional 120 days to assure coverage. Sodded turf areas should be 100% at the end of the guarantee period. Turf shall be maintained in a manner that promotes proper health, growth, rich natural green color, and a neat, uniform, manicured appearance. Mow weekly during the growing season and remove excess clippings.

G30 SITE CIVIL/MECHANICAL UTILITIES

Develop the site to provide water, fire protection, sanitary sewer, storm drainage, heating, cooling and fuel distribution services that meet the requirements of each utility provider and each applicable regulatory agency that governs and issues permits for the construction and operation of these systems.

Coordinate with the local utility providers and pay any fees or charges required to connect to their utility.

Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the criteria indicated in this RFP and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

G3010 WATER SUPPLY

1. **Water System Design and Construction:** Provide the new water system and connections to the existing water system in accordance with UFC 3-200-10N, *Civil Engineering (paragraph 2-3)*; the utility provider's requirements; or the state waterworks' regulations; whichever is more stringent.
2. **Notifications:** Notify the utility provider of the additional demand generated by the proposed facility. Provide a copy of all correspondence with the utility provider to the Government's Civil/Mechanical Reviewer.
3. **Performance Verification And Acceptance Testing:** Provide testing on water mains and service lines in accordance with the state waterworks' regulations and the following:
 - a. Ductile iron and other materials: AWWA C600.
 - b. PVC: AWWA C605.

whichever is more stringent. Do not begin testing on any section of a pipeline where concrete thrust blocks have been provided until at least 5 days after placing of the concrete.

G3060 FUEL DISTRIBUTION

Gas Distribution System: Refer to Section D20 for requirements.

G40 SITE ELECTRICAL UTILITIES

G4010 ELECTRICAL DISTRIBUTION

1. **Electrical Utilities Design and Construction:** Site electrical utilities include all exterior electrical work, including the connection to the primary distribution system. This also includes telephone and cable television supplies.

Provide electrical overhead and underground, distribution systems in accordance with IEEE C2 (National Electrical Safety Code), NFPA 70, local utilities company requirements, and local Activity guidelines.
2. **Coordination With Local Utilities Company and Local Activity:** Service meters for electrical services shall be provided and installed in conformance with the local utilities company requirements and local activity guidelines.
3. **Substations:** When secondary unit substations are required, the Designer of Record shall utilize UFGS Section 26 11 13, *Secondary Unit Substation*, and UFGS Section 26 23 00, *Switchboards and Switchgear*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.
4. **Transformers:** When transformers are required, the Designer of Record shall utilize UFGS Section 26 12 19.10, *Three-Phase Pad Mounted Transformers*, UFGS Section 26 12 19.20, *Single-Phase Pad Mounted Transformers*, or UFGS Section 33 71 01.00 20, *Overhead Transmission and Distribution*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

5. **Switches, Controls and Devices:** When switches or control devices are required, the Designer of Record shall utilize UFGS Section 26 13 00.00 20, *SF6 Insulated Pad Mounted Switchgear*, or UFGS Section 33 71 01.00 20, *Overhead Transmission and Distribution*, for the project specification, and shall submit the edited specification section as a part of the design submittal for the project.

G4030 SITE COMMUNICATION & SECURITY

1. **Telephone Distribution System:** Provide all telephone distribution systems in accordance with EIA/TIA Standards, NFPA 70, and the cognizant telephone company requirements.
2. **Cable Television System:** Provide all cable television systems in accordance with NFPA 70, and the cognizant cable television company requirements and BICSI recommendations.

-- End of Section --

**PART 6
ATTACHMENTS**

05/11

FOR GENERAL INFORMATION ONLY

PART 6 CONTAINS INFORMATION THAT WILL HELP THE CONTRACTOR DEVELOP A SUITABLE DESIGN AND CONSTRUCT WITHOUT HINDRANCE.

PLANS, DRAWINGS, SKETCHES, VIEWS, PHOTOGRAPHS, DETAILS, AND DEPICTIONS ARE PROVIDED FOR GENERAL INFORMATION IN AN ATTEMPT TO COMMUNICATE CONDITIONS, GENERAL INTENT, AND NEW WORK REQUIREMENTS. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFICATION OF EXISTING CONDITIONS AND IMPACT ON REQUIRED WORK PRIOR TO SUBMITTING COST PROPOSAL.

INDEX OF ATTACHMENTS

ATTACHMENT A	Proposed Water Recirculation and Main Layout Concept Drawing
ATTACHMENT B	Fire Distribution Drawing and Fire Pump Layout Concept Drawing
ATTACHMENT C	Electrical Site Plan and Electrical Schedule Bldg 228, Fire Pump Room
ATTACHMENT D	As-Built Drawings for 1,000,000 Gallon Water Tank
ATTACHMENT E	Existing Water Distribution Survey
ATTACHMENT F	GIS Geospatial Data Delivery and Maintenance Standards
ATTACHMENT G	Tanks Inspection Report, 27 August 2013
ATTACHMENT H	Selected Site Photographs

SUPPLEMENTAL FILES

THE FOLLOWING FILES ARE PROVIDED AS SUPPLEMENTAL INFORMATION TO THE RFP, VOLUMES 1 AND 2. THESE FILES ARE ISSUED AS SEPARATE DOCUMENTS.

THE DOCUMENTS PROVIDED BELOW AS SUPPLEMENTAL FILES ARE FOR INFORMATION PURPOSES ONLY. IF ANY INFORMATION IN THE BELOW SUPPLEMENTAL FILES CONTRADICTS INFORMATION IN THE RFP, THE RFP'S REQUIREMENTS TAKE PRECEDENCE.

THE MODEL FILES PROVIDED ARE ASSUMED TO BE CORRECT WITH RESPECT TO EXISTING CONDITIONS. THE MODEL SOLUTION PROVIDED DOES NOT MEET RFP REQUIREMENTS FOR INFLUENT CHLORINE RESIDUAL NOR FOR RQUIRED CHLORINE RESIDUAL AT ALL TAPS.

THE BELOW SUPPLEMENTAL FILE IS BEING PROVIDED VIA UPLOAD TO NECO/FEDBIZOPS:

SF1_Geotechnical Reports Combined.pdf

THE BELOW SUPPLEMENTAL FILES ARE EXTRACTED FROM THE WATER DISTRIBUTION STUDY AND ARE BEING PROVIDED VIA UPLOAD TO NECO/FEDBIZOPS:

SF2_Water Study Narrative.pdf

SF3_Fire Protections Calculations.pdf

SF4_Domestic Demand Calculations.pdf

THE BELOW SUPPLEMENTAL FILES ARE PROGRAM DATA FILES AND ARE BEING DISTRIBUTED VIA THE FTP SITE AMRDEC. PLEASE SEND A REQUEST FOR FILE DOWNLOAD ACCESS INFORMATION TO MELISSA.F.MCCARTNEY@NAVY.MIL TO RECEIVE THE FOLLOWING FILES:

SF5_Water Model Data.INP

SF6_Domestic Fire Model Data.P2K

SF7_Dedicated Fire Model Data.P2K

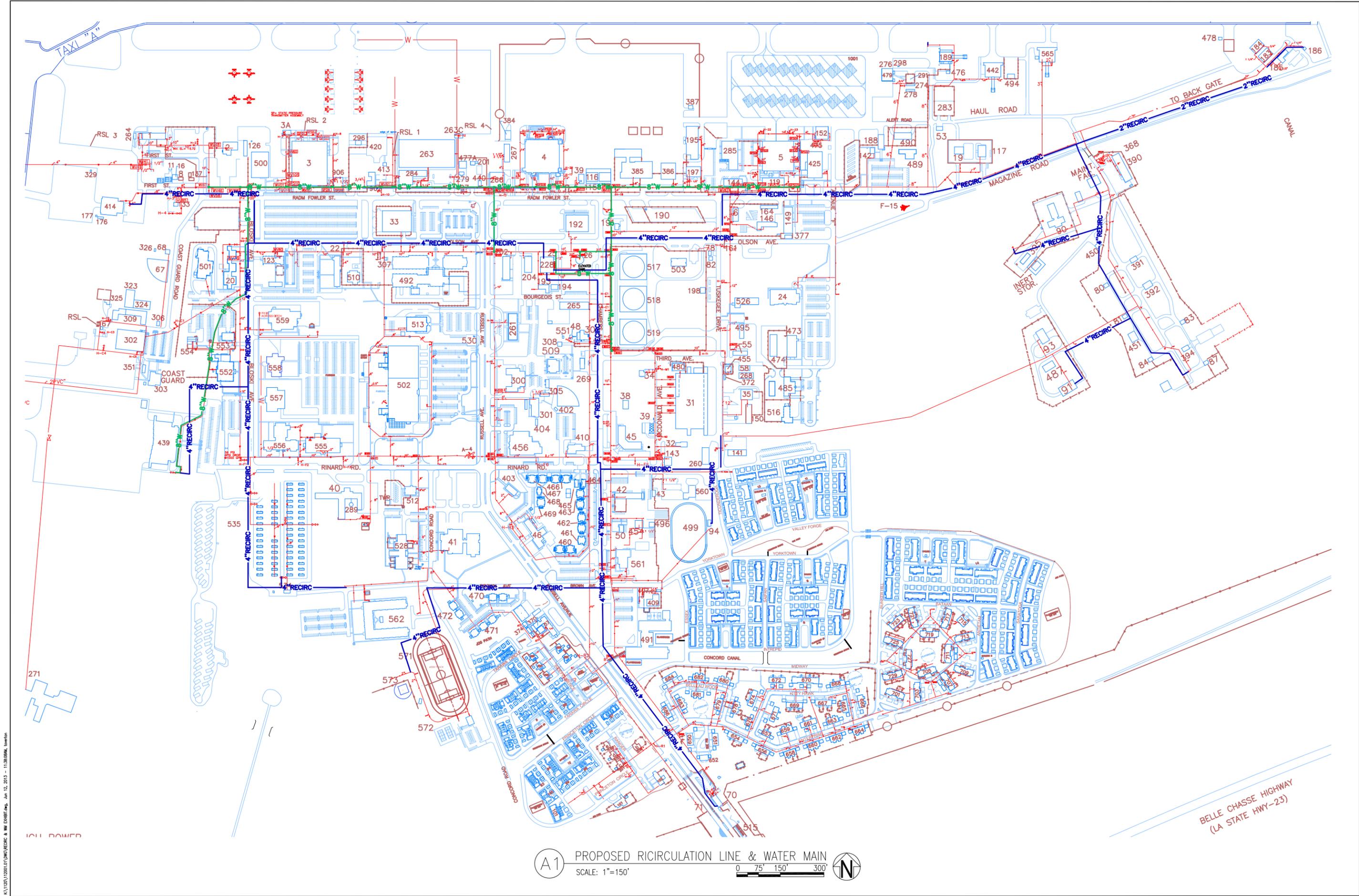
SF8_Water Study CAD File.dwg

SF9_NAS JRB NOLA Base Map.dwg

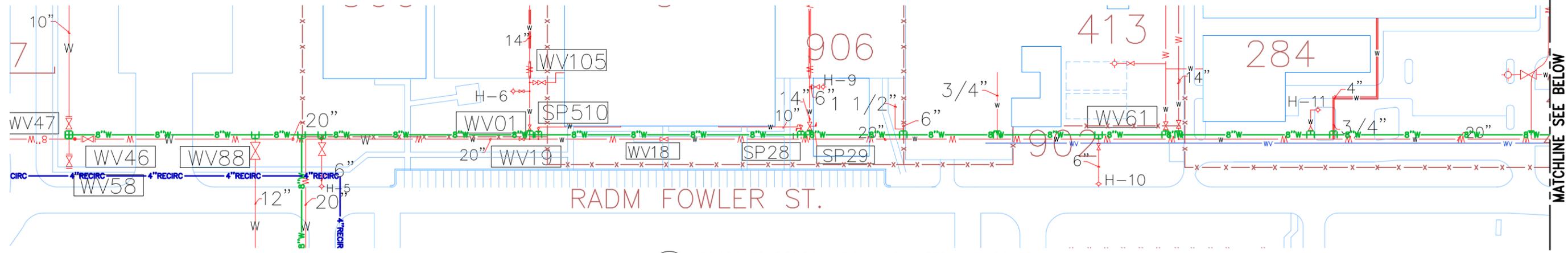
APPENDIX A

Concept site plans provided in Appendix's A, B and C are provided for illustrative purposes only to show partial potential solutions. The contractor is fully responsible for developing a concept design solution which meets the requirements of the RFP. Refer also to Appendix B for fire distribution line drawings and Appendix C for electrical site plans. Appendix H provides extensive site photographs.

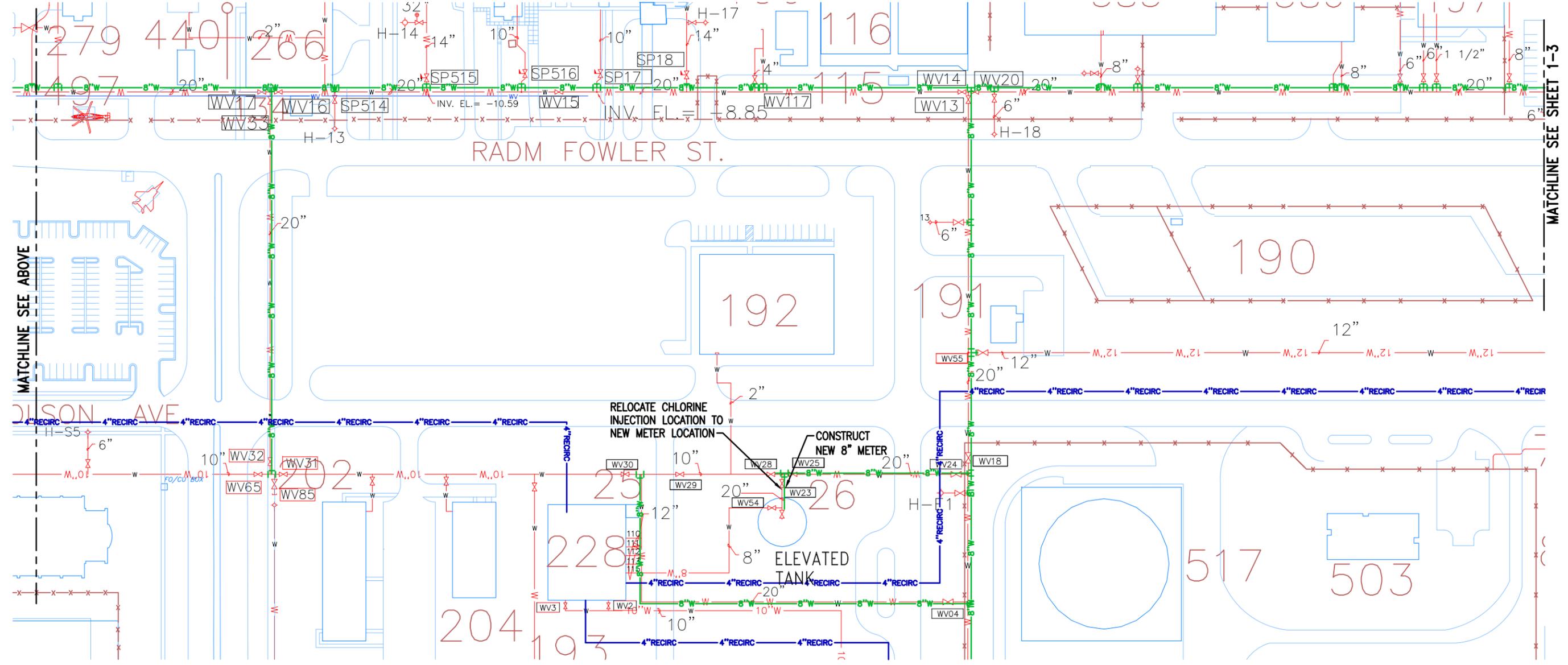
Sheet C100	Original Site Plan Concept – Note that new water tank is NOT authorized for this project and should not be included in the contractor's design solution
Figures 1-1 through 1-13	Water Recirculation and Main Layout Concept Drawings from Water Distribution Study



A1 PROPOSED RICIRCULATION LINE & WATER MAIN
 SCALE: 1"=150'
 0 75' 150' 300'



(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'



(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'

MATCHLINE SEE BELOW

MATCHLINE SEE SHEET 1-3

MATCHLINE SEE ABOVE

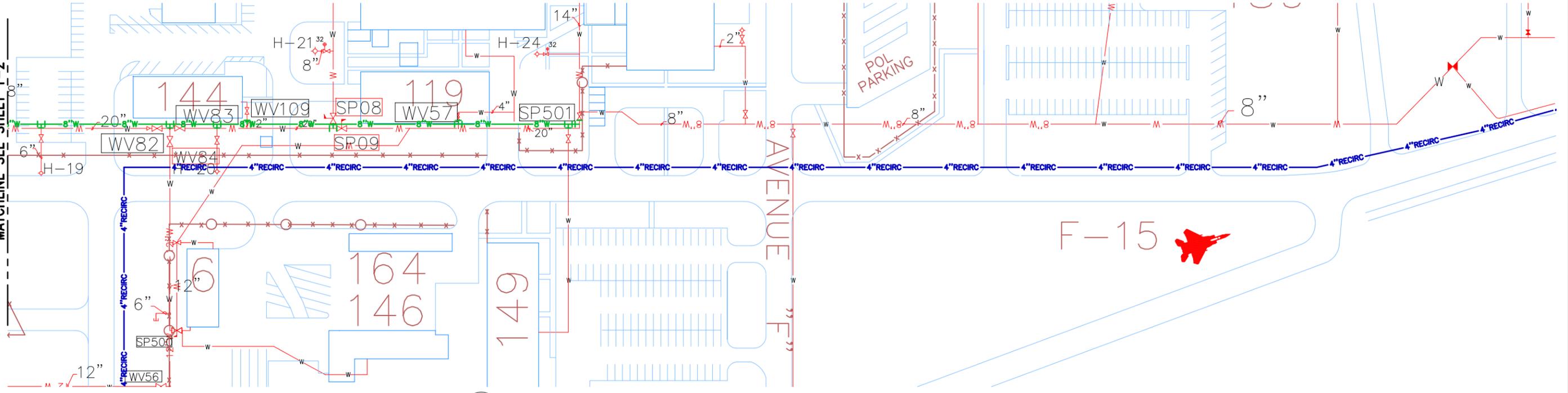
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FIGURE TITLE:
OPTION 3C RECIRCULATION LINE
AND WATER MAIN

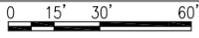
FIGURE NO.:
1-2

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MATCHLINE SEE SHEET 1-2



(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
 SCALE: 1"=30'



F-15 

FIGURE NO.:

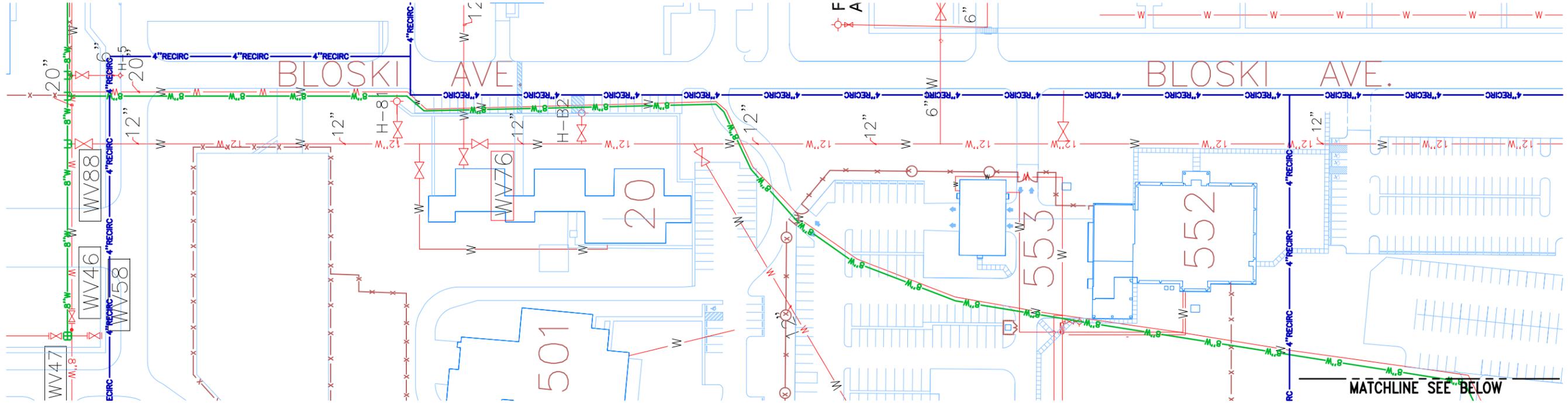
1-3

FIGURE TITLE:
 OPTION 3C RECIRCULATION LINE
 AND WATER MAIN

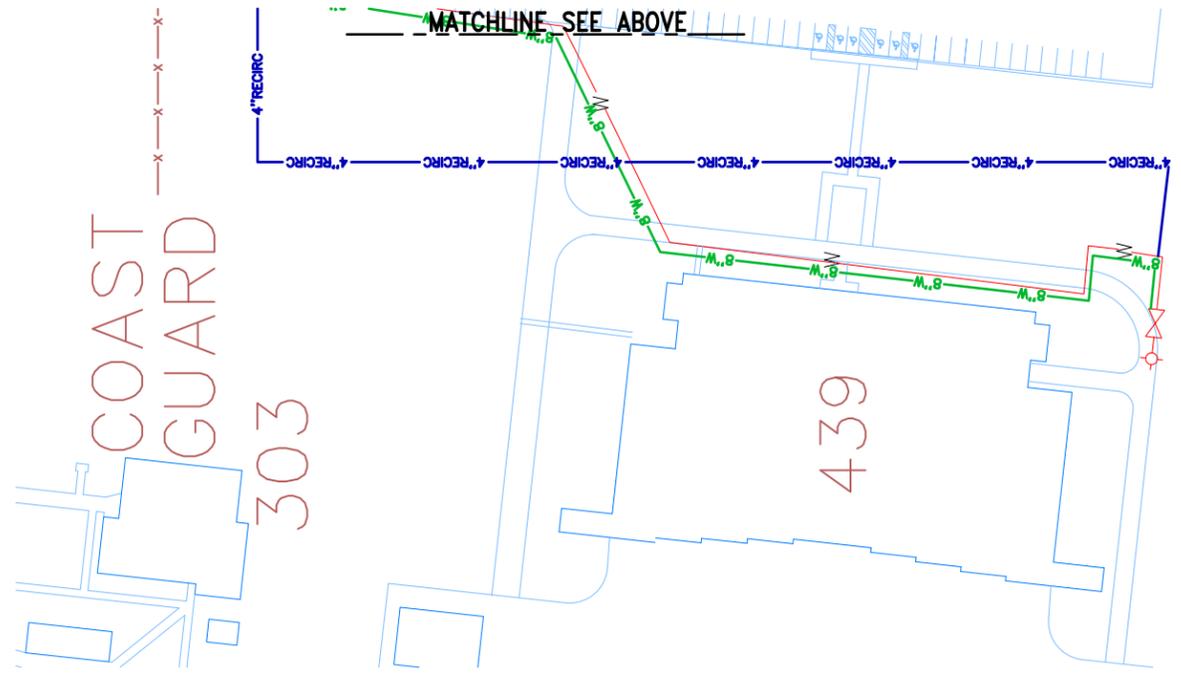
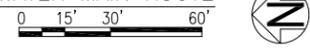
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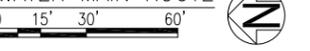
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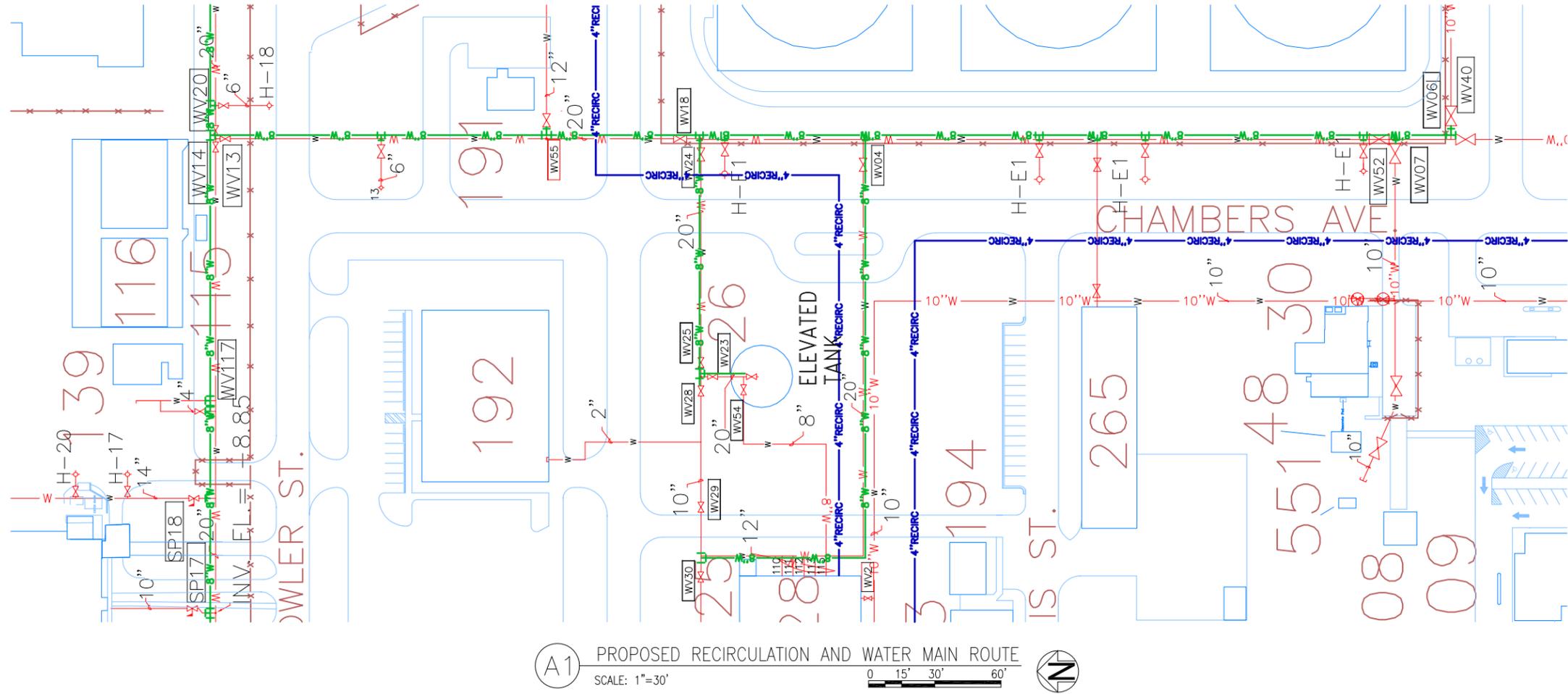


(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
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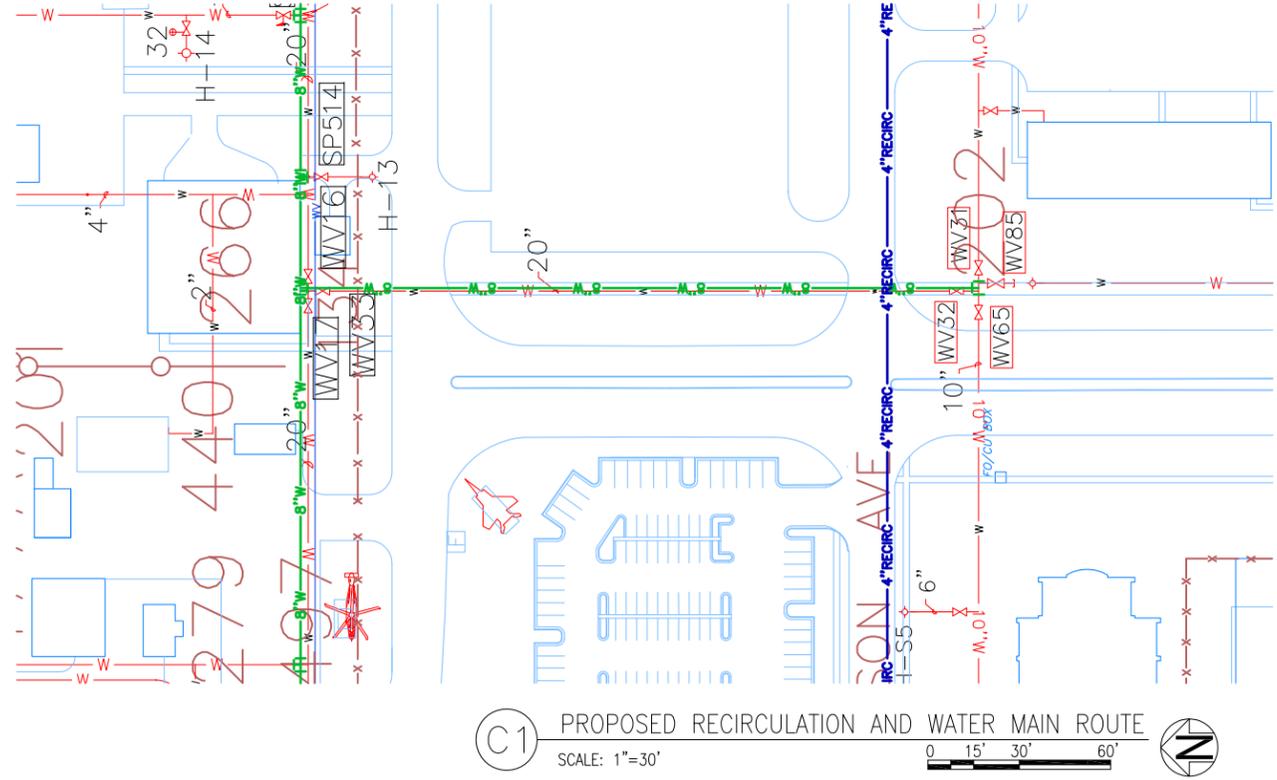


(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
 SCALE: 1"=30'

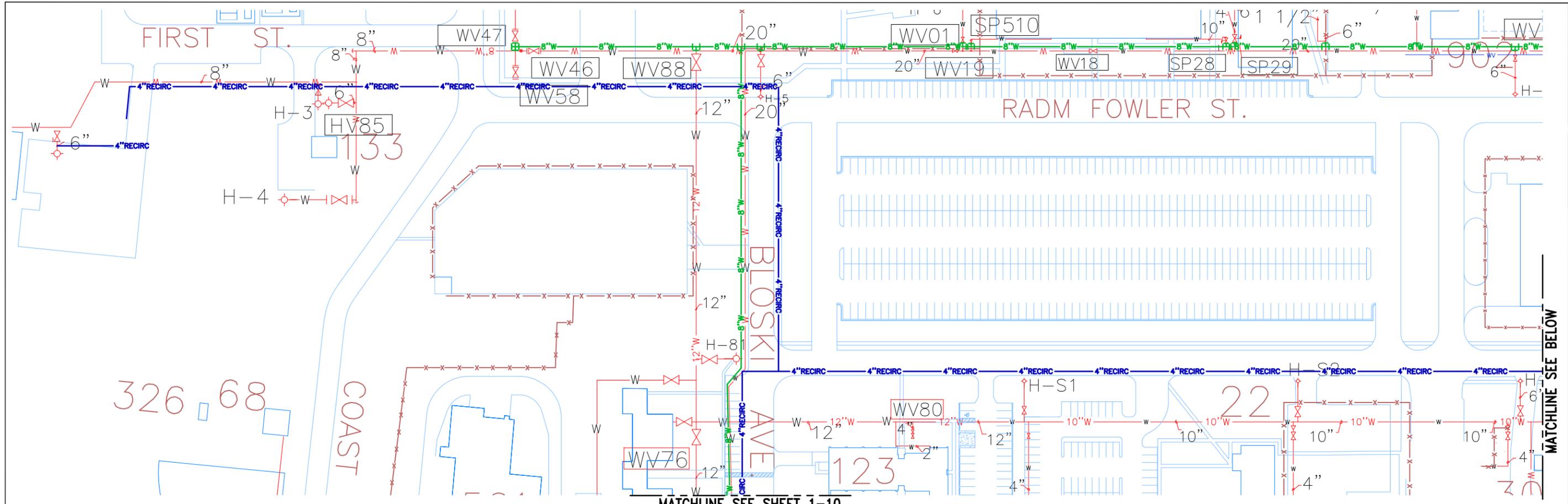




A1 PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'



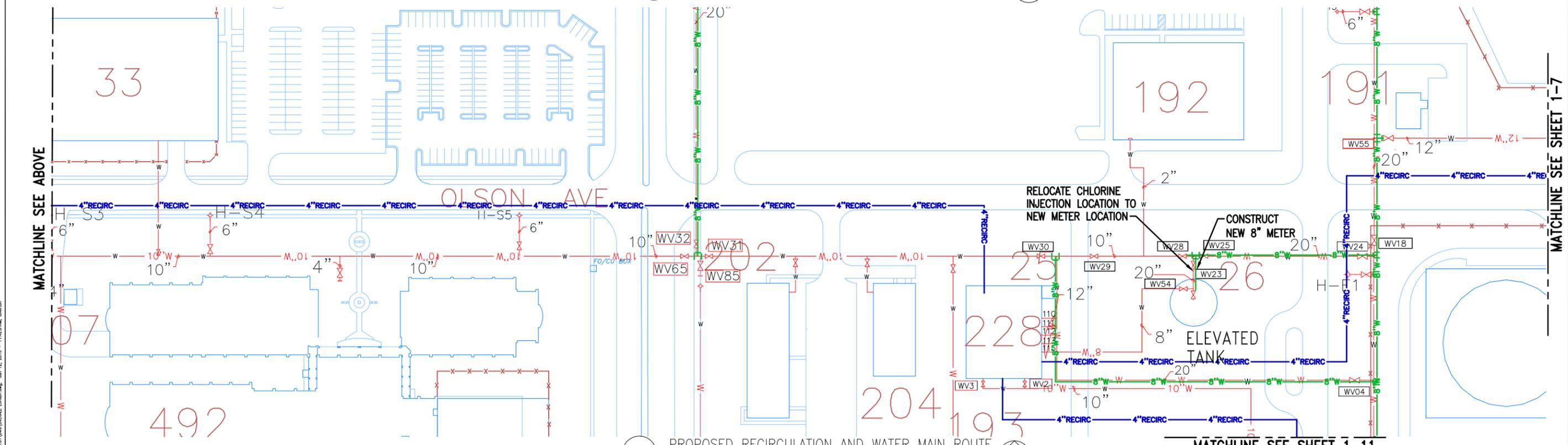
C1 PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'



MATCHLINE SEE SHEET 1-10

MATCHLINE SEE BELOW

(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'



(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'

MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 1-7

MATCHLINE SEE SHEET 1-11

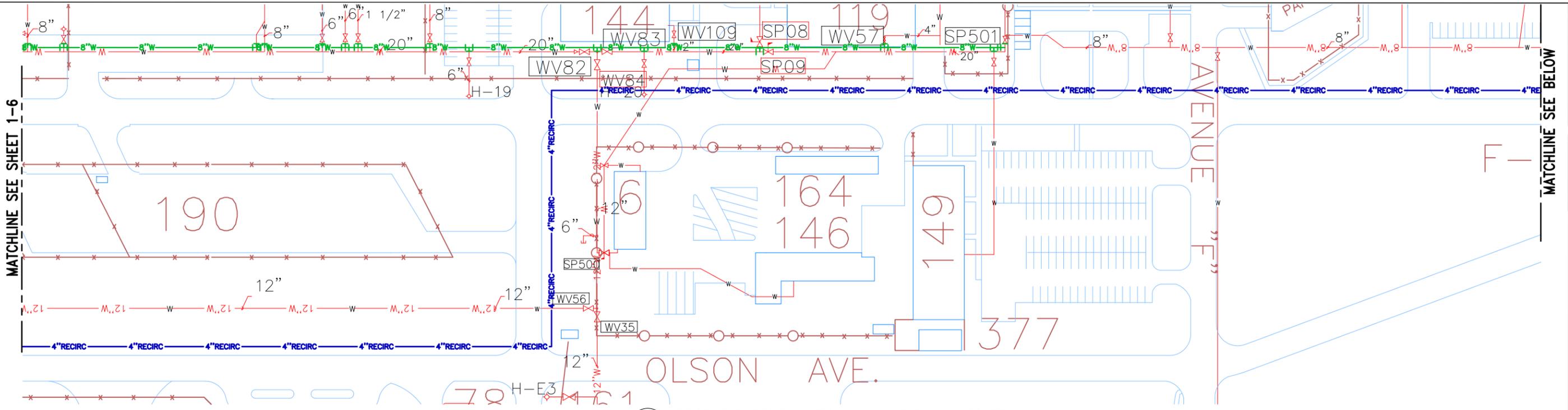
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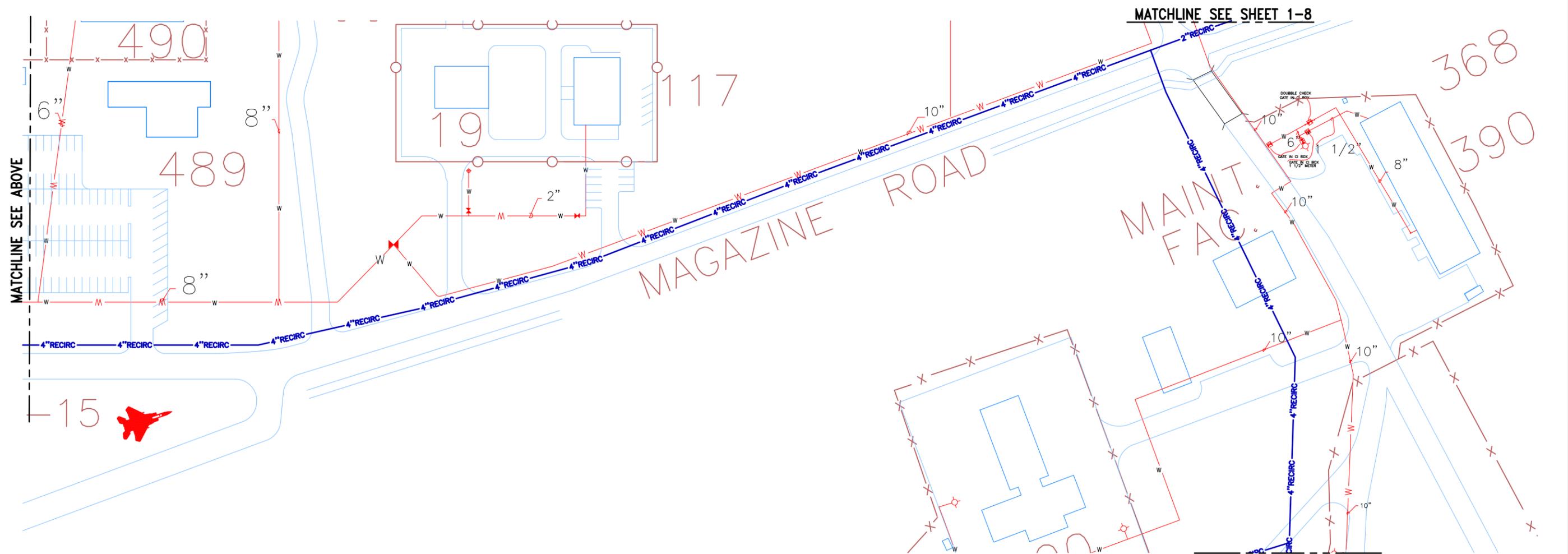
FIGURE TITLE:
 OPTION 3C RECIRCULATION LINE
 AND WATER MAIN

FIGURE NO.:
 1-6

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(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
 SCALE: 1"=30'



(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
 SCALE: 1"=30'

MATCHLINE SEE SHEET 1-6

MATCHLINE SEE BELOW

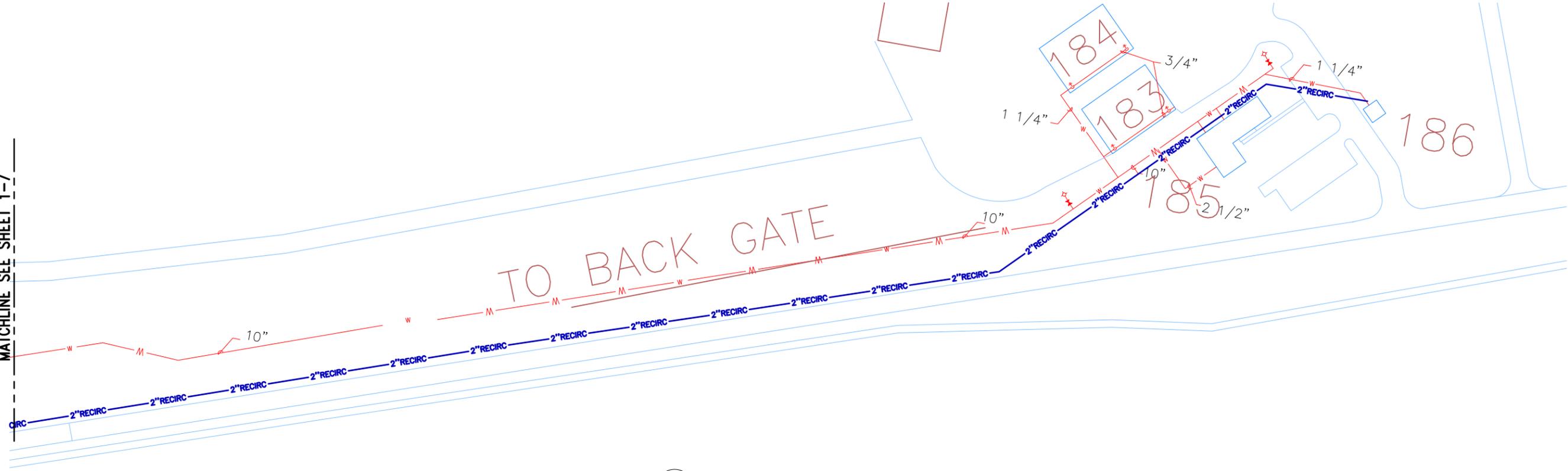
MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 1-8

MATCHLINE SEE SHEET 1-9

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MATCHLINE SEE SHEET 1-7



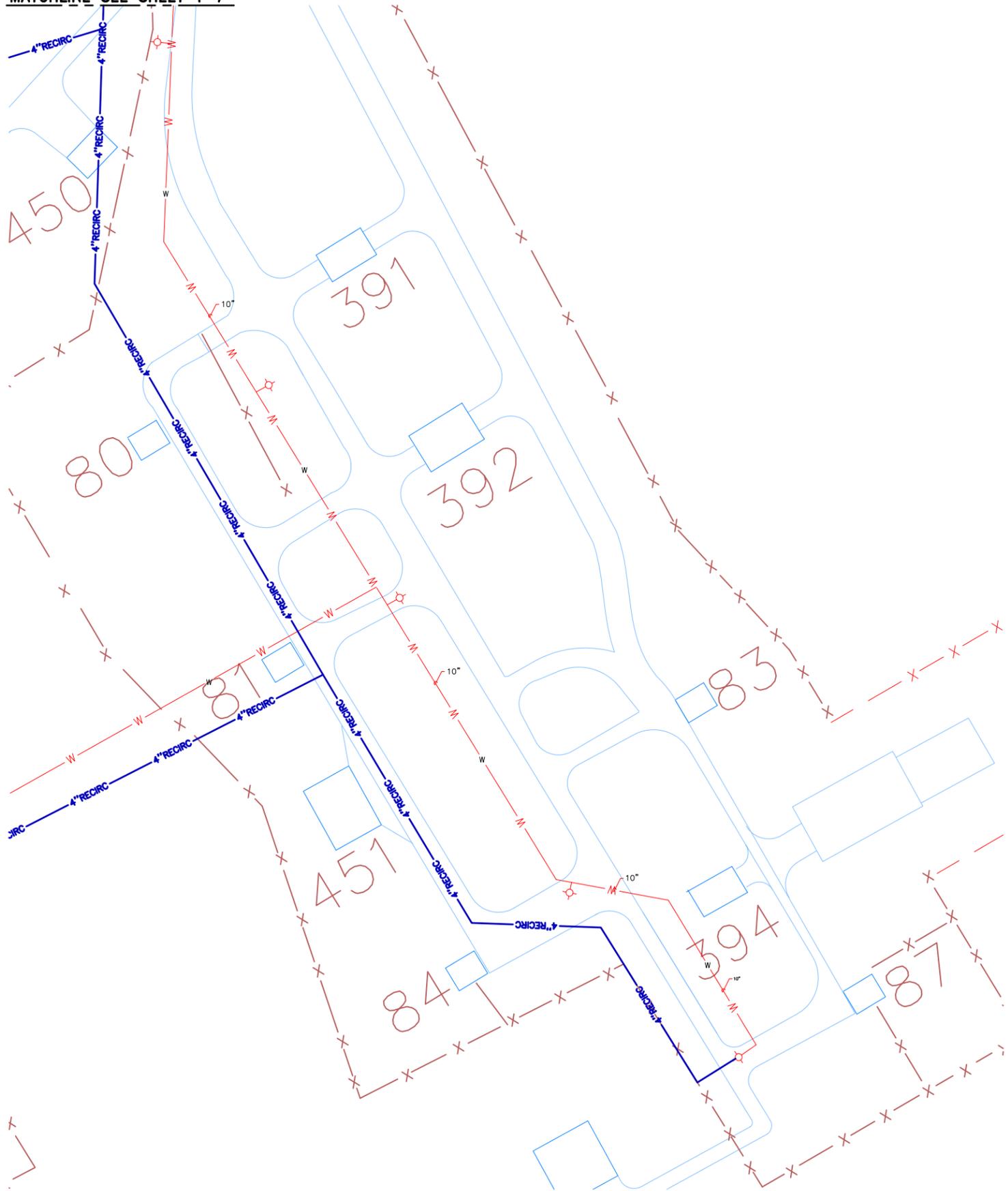
(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
 SCALE: 1"=30'



368

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MATCHLINE SEE SHEET 1-7



(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
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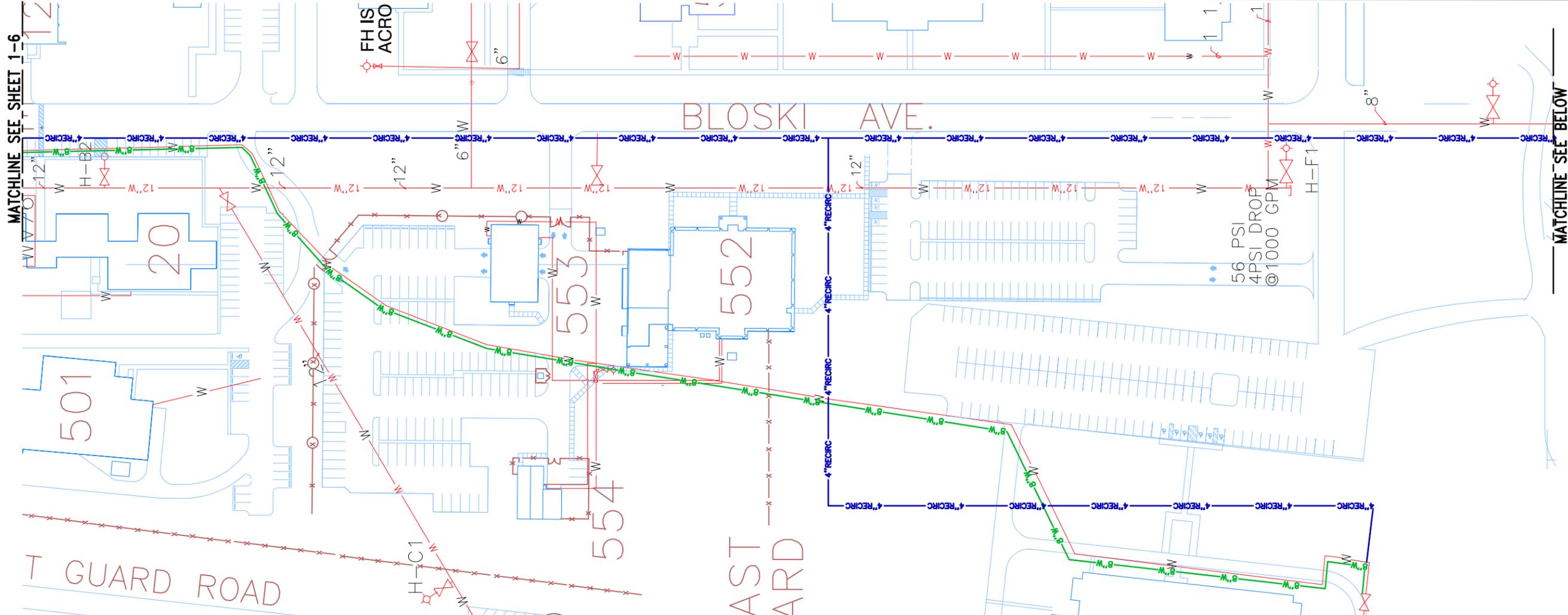
FIGURE NO.:
1-9

FIGURE TITLE:
OPTION 3C RECIRCULATION LINE
AND WATER MAIN

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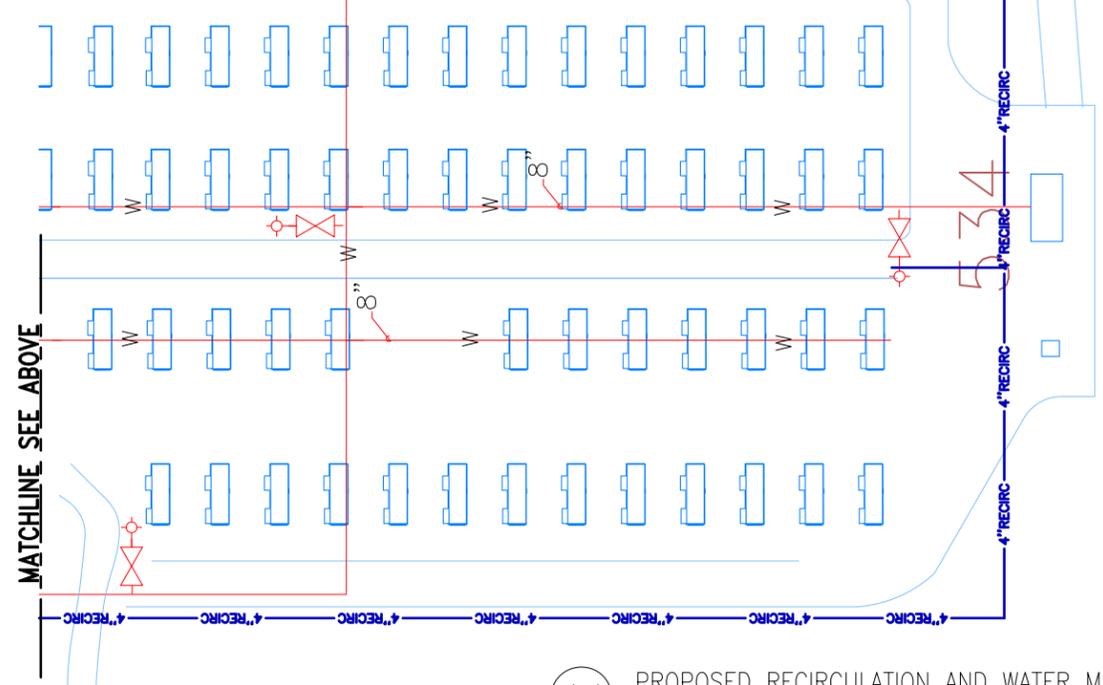
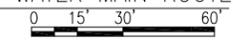
POND
 Architects ■ Engineers ■ Planners



MATCHLINE SEE SHEET 1-6

MATCHLINE SEE BELOW

(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'



MATCHLINE SEE ABOVE

(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'

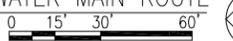


FIGURE NO.:

1-10

FIGURE TITLE:

OPTION 3C RECIRCULATION LINE
AND WATER MAIN

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NEW ORLEANS

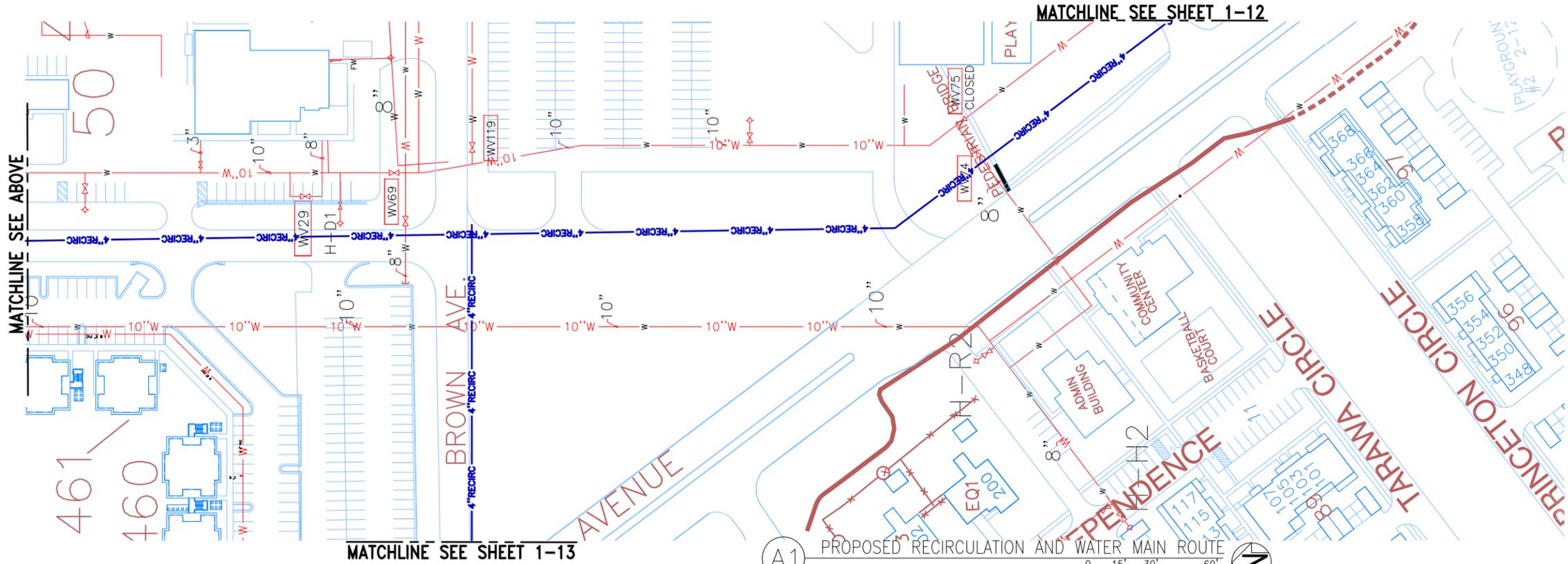
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Innovative Infrastructure Solutions

4419 W. MAINE STREET, SUITE 200
IRVING, TEXAS 75039-2000
PH: 972.251.1000 FAX: 972.251.1001
WWW.BASKERVILLE-DONOVAN.COM

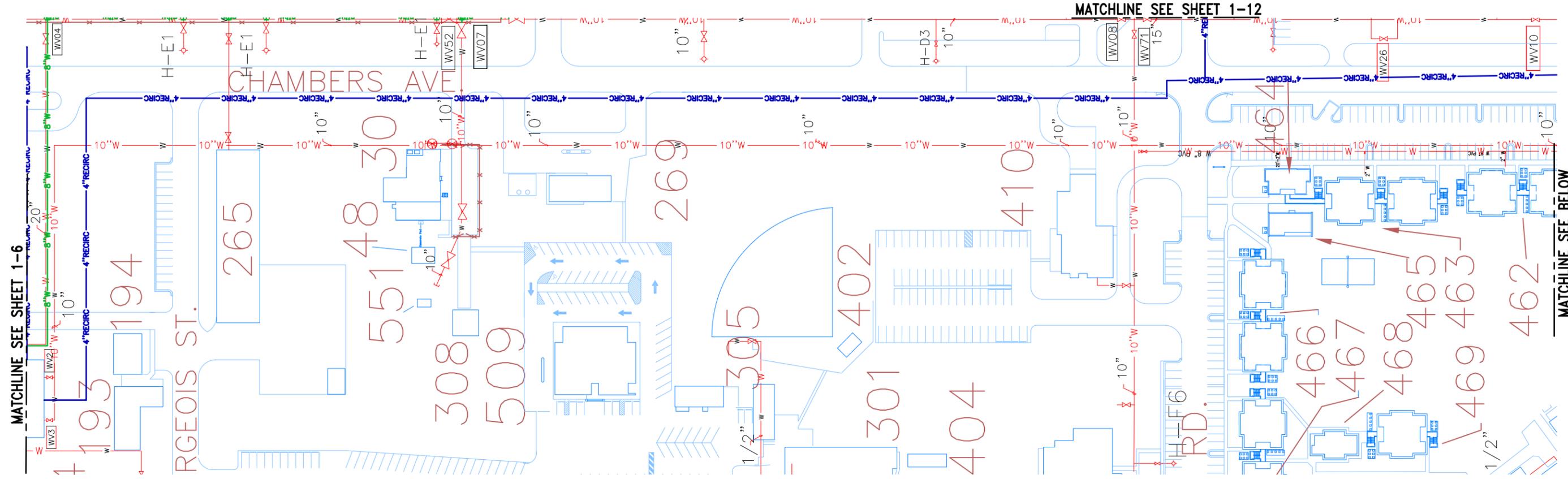
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(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'



(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
SCALE: 1"=30'

FIGURE NO.: 1-11

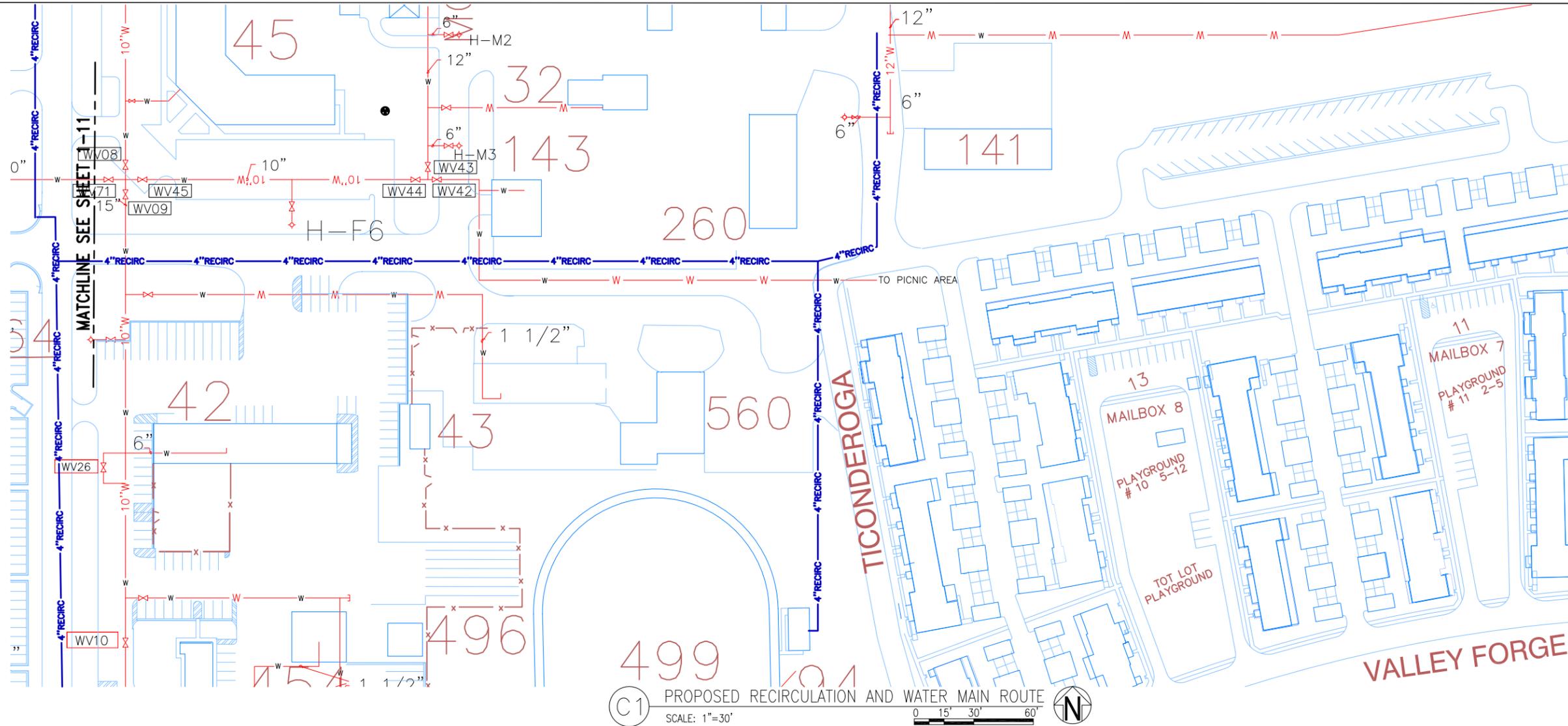
FIGURE TITLE: OPTION 3C RECIRCULATION LINE AND WATER MAIN

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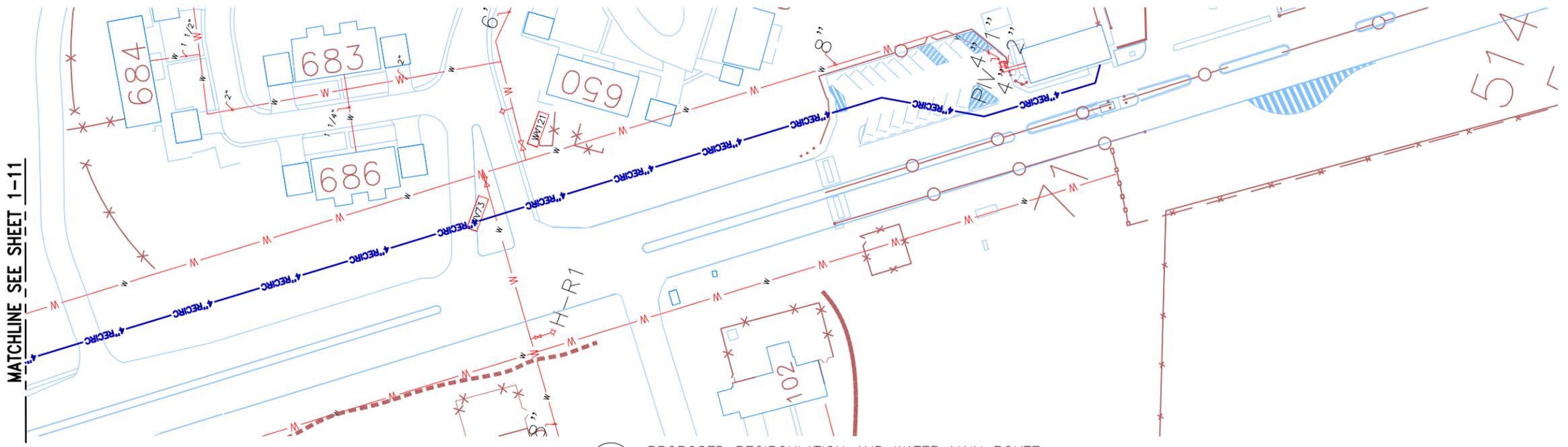
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(C1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
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(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
 SCALE: 1"=30'

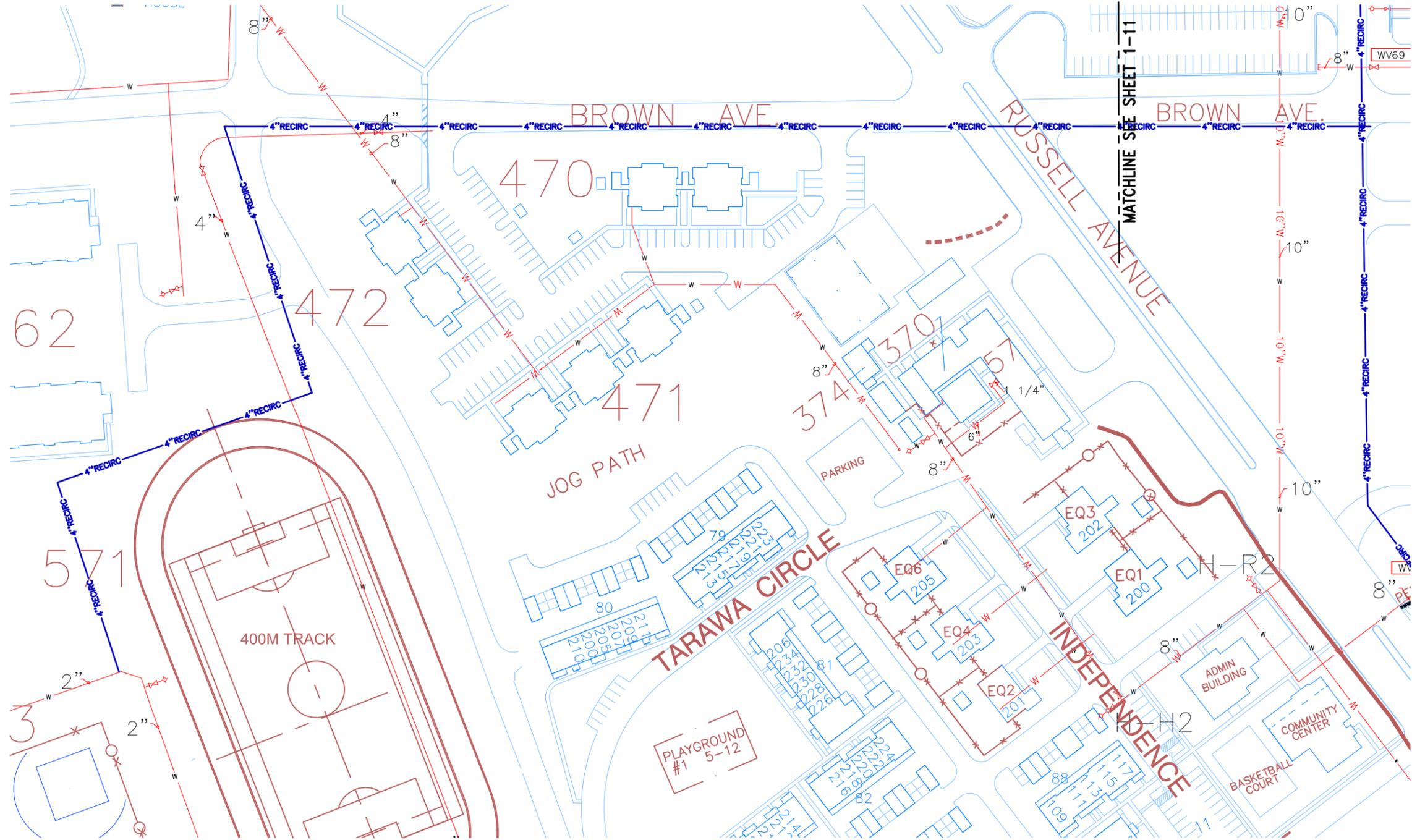
FIGURE NO.:
1-12

FIGURE TITLE:
OPTION 3C RECIRCULATION LINE
AND WATER MAIN

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(A1) PROPOSED RECIRCULATION AND WATER MAIN ROUTE
 SCALE: 1"=30'
 0 15' 30' 60' N

FIGURE NO.:
1-13

FIGURE TITLE:
OPTION 3C RECIRCULATION LINE
AND WATER MAIN

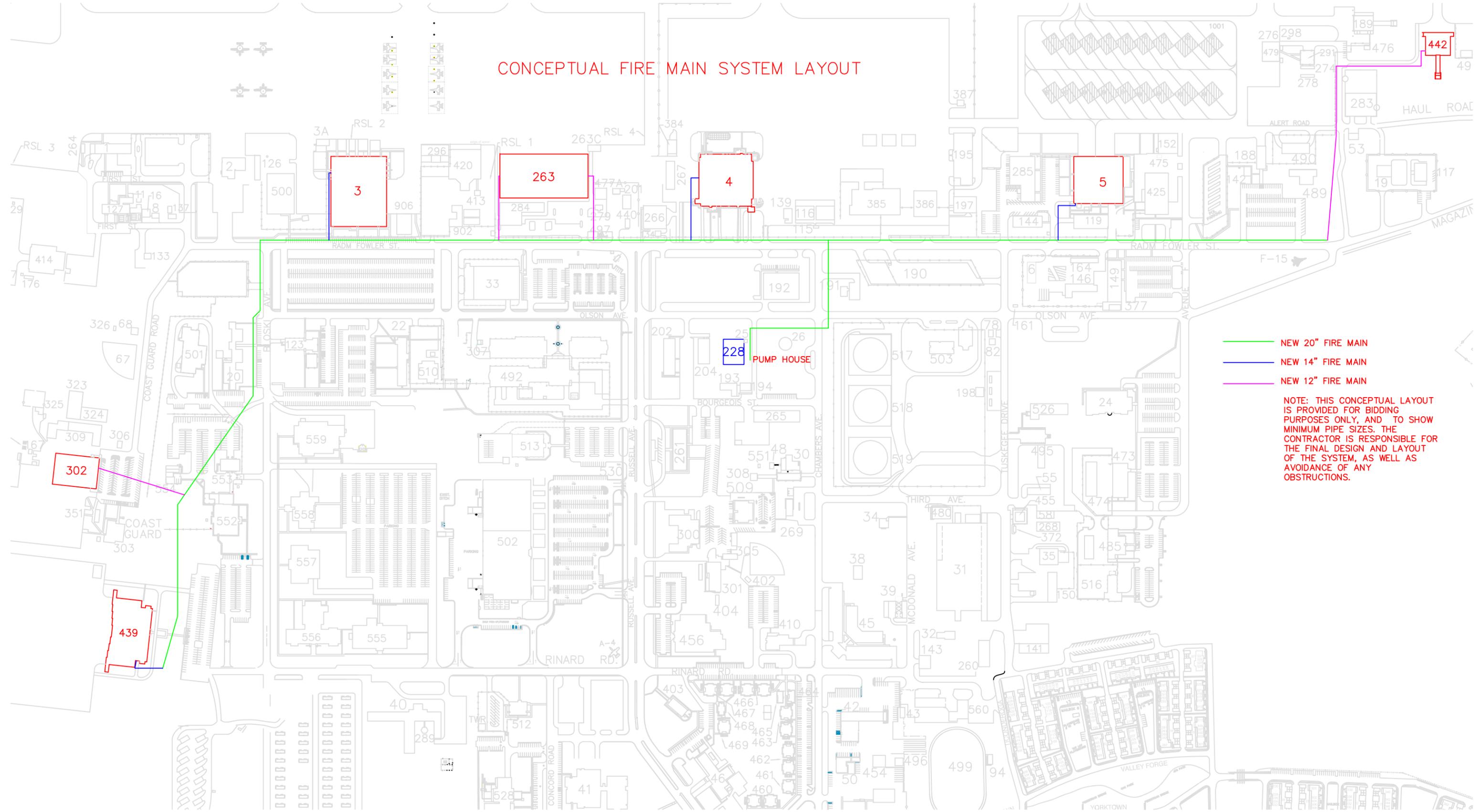
PREPARED FOR:
NAS JRB
NEW ORLEANS

APPENDIX B

Fire Distribution Drawing

Fire Pump Layout Drawing

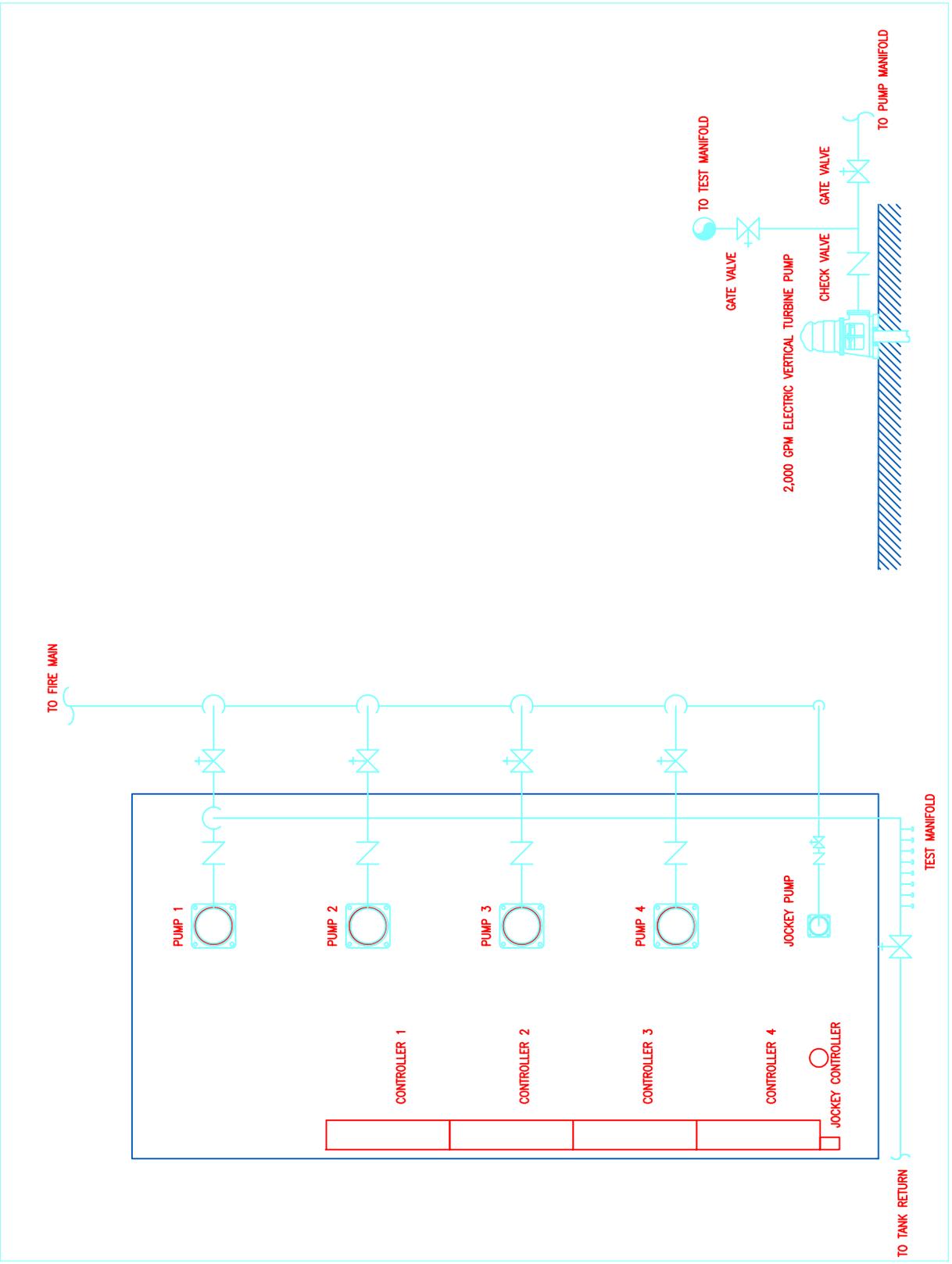
CONCEPTUAL FIRE MAIN SYSTEM LAYOUT



- NEW 20" FIRE MAIN
- NEW 14" FIRE MAIN
- NEW 12" FIRE MAIN

NOTE: THIS CONCEPTUAL LAYOUT IS PROVIDED FOR BIDDING PURPOSES ONLY, AND TO SHOW MINIMUM PIPE SIZES. THE CONTRACTOR IS RESPONSIBLE FOR THE FINAL DESIGN AND LAYOUT OF THE SYSTEM, AS WELL AS AVOIDANCE OF ANY OBSTRUCTIONS.

FIRE PUMP HOUSE SCHEMATIC LAYOUT



APPENDIX C

Electrical Site Plan

Electrical Schedule Bldg 228, Fire Pump Room

480 / 277 VOLT			PANELBOARD LDP			1200 A BUS W/ MAIN LUGS ONLY		
3 PHASE 4 WIRE			LOCATION BLDG 228, FIRE PUMP ROOM			AIC SYM, TOP FEED, SURFACE MOUNT		
CIRCUIT			DESCRIPTION	VOLT AMPS			FEEDER SIZE	
NO.	FRAME	TRIP / P		PH A	PH B	PH C		
1	400	350 / 3	FIRE PUMP #1	66480				
					66480			
						66480		
2	400	350 / 3	FIRE PUMP #2	66480				
					66480			
						66480		
3	400	350 / 3	FIRE PUMP #3	66480				
					66480			
						66480		
4	400	350 / 3	FIRE PUMP #4	66480				
					66480			
						66480		
5	100	60 / 3	PANELBOARD PANEL LHA	1000				
			EGRESS LIGHTING		1000			
						1000		
6								
7								
8								
9								
10								
11								
12								
13								
14								
TOTAL CONNECTED THIS PANEL				266920	266920	266920	TOTALS	
TOTAL FEEDTHRU LOAD							600 KVA	
TOTAL CONNECTED LOAD				266920	266920	266920	722 AMPS	
TOTAL CODE LOAD				200118	200118	200118		
REMARKS:								
PROVIDE SERVICE ENTRANCE RATING								
-								
-								
-								
-								

208 / 120 VOLT 3 PHASE 4 WIRE		PANELBOARD LA										100 A BUS W/ 100A MAIN CIR BKR		
LOAD SERVED		LOCATION BLDG 228, FIRE PUMP ROOM					A/C SYM, TOP FEED, SURFACE MOUNT					LOAD SERVED		
		VOLT AMPS			BREAKER TRIP / P	CKT NO	CKT NO	TRIP / P	VOLT AMPS			TOTAL CONN. THIS SIDE	TOTAL CODE LOAD	
		A	B	C					A	B	C			
RECEPTACLES	720				20 / 1	1	2							
MISC LOAD	200				20 / 1	3	4							
MISC LOAD				500	20 / 1	5	6							
MISC LOAD	500				20 / 1	7	8							
						9	10							
						11	12							
						13	14							
						15	16							
						17	18							
						19	20							
						21	22							
						23	24							
						25	26							
						27	28							
						29	30							
						31	32							
						33	34							
						35	36							
						37	38							
						39	40							
						41	42							
TOTAL CONN. THIS SIDE	1220	200	500		TOTALS						1220	200	500	
TOTAL FEEDTHRU LOAD					2 KVA									
TOTAL CONN. BOTH SIDES	1220	200	500		5 AMPS									

REMARKS:

-
-
-
-

480/277 VOLT 3 PHASE 4 WIRE		PANEL BOARD HB										100 A BUS W/ 100A MAIN CIR BKR		
LOAD SERVED	LOCATION WATER PUMP HOUSE			LOCATION WATER PUMP HOUSE			AIC SYM. BOTTOM FEED. SURFACE MOUNT			VOLT-AMPS			LOAD SERVED	
	A	B	C	TRIP / P	BREAKER	CTK	TRIP / P	NO	NO	A	B	C		
DOMESTIC WATER PUMP #1	14404	14404	14404	90 / 3	1	2	3	4	5	6				
DOMESTIC WATER PUMP #2 REDUNDANT	14404	14404	14404	90 / 3	7	8	9	10	11	12				
PANEL LB VIA XFMR TB	1500	1500	1500	60 / 3	13	14	15	16	17	18				
					19	20	21	22	23	24				
					25	26	27	28	29	30				
					31	32	33	34	35	36				
					37	38	39	40	41	42				
TOTAL CONN. THIS SIDE	30308	30308	30308	TOTALS	48	KVA					15904	15904	15904	
TOTAL FEEDTHRU LOAD					57	AMPS								
TOTAL CONN. BOTH SIDES	30308	30308	30308										TOTAL CONN. THIS SIDE TOTAL CODE LOAD	

REMARKS:
PROVIDE SERVICE ENTRANCE RATING

208 / 120 VOLT 3 PHASE 4 WIRE		PANELBOARD LB										100 A BUS W/ 100A MAIN CIR BKR				
LOAD SERVED		LOCATION BLDG 228, FIRE PUMP ROOM					A/C SYM, TOP FEED, SURFACE MOUNT					LOAD SERVED				
RECEPTACLES	MISC LOAD	MISC LOAD	MISC LOAD	VOLT AMPS			BREAKER TRIP / P	CKT NO	CKT NO	TRIP / P	VOLT AMPS					
				A	B	C					A	B	C			
				720			20/1	1	2							
				200			20/1	3	4							
				500			20/1	5	6							
							20/1	7	8							
								9	10							
								11	12							
								13	14							
								15	16							
								17	18							
								19	20							
								21	22							
								23	24							
								25	26							
								27	28							
								29	30							
								31	32							
								33	34							
								35	36							
								37	38							
								39	40							
								41	42							
TOTAL CONN. THIS SIDE		TOTAL FEEDTHRU LOAD		TOTAL CONN. BOTH SIDES		TOTALS		TOTALS		TOTAL CONN. THIS SIDE		TOTAL CODE LOAD				
1220		500		1220		2 KVA		5 AMPS		1220		500				
200		200		200		5 AMPS		5 AMPS		200		500				

REMARKS:
-
-
-
-
-

208 / 120 VOLT 3 PHASE 4 WIRE		PANELBOARD LLA										100 A BUS W/ 100A MAIN CIR BKR		
LOAD SERVED		LOCATION BLDG 228, FIRE PUMP ROOM					FIRE PUMP ROOM					AIC SYM, TOP FEED, SURFACE MOUNT		
		VOLT AMPS			BREAKER			TRIP / P			VOLT AMPS			LOAD SERVED
		A	B	C	NO	CT	NO	NO	NO	A	B	C		
FIRE ALARM		1200			1		2							
					3		4							
					5		6							
					7		8							
					9		10							
					11		12							
					13		14							
					15		16							
					17		18							
					19		20							
					21		22							
					23		24							
					25		26							
					27		28							
					29		30							
					31		32							
					33		34							
					35		36							
					37		38							
					39		40							
					41		42							
TOTALS					TOTALS						TOTAL CONN. THIS SIDE			
TOTAL CONN. THIS SIDE		1200			1 KVA			1200			TOTAL CONN. THIS SIDE			
TOTAL FEEDTHRU LOAD					3 AMPS						TOTAL CODE LOAD			
TOTAL CONN. BOTH SIDES		1200												

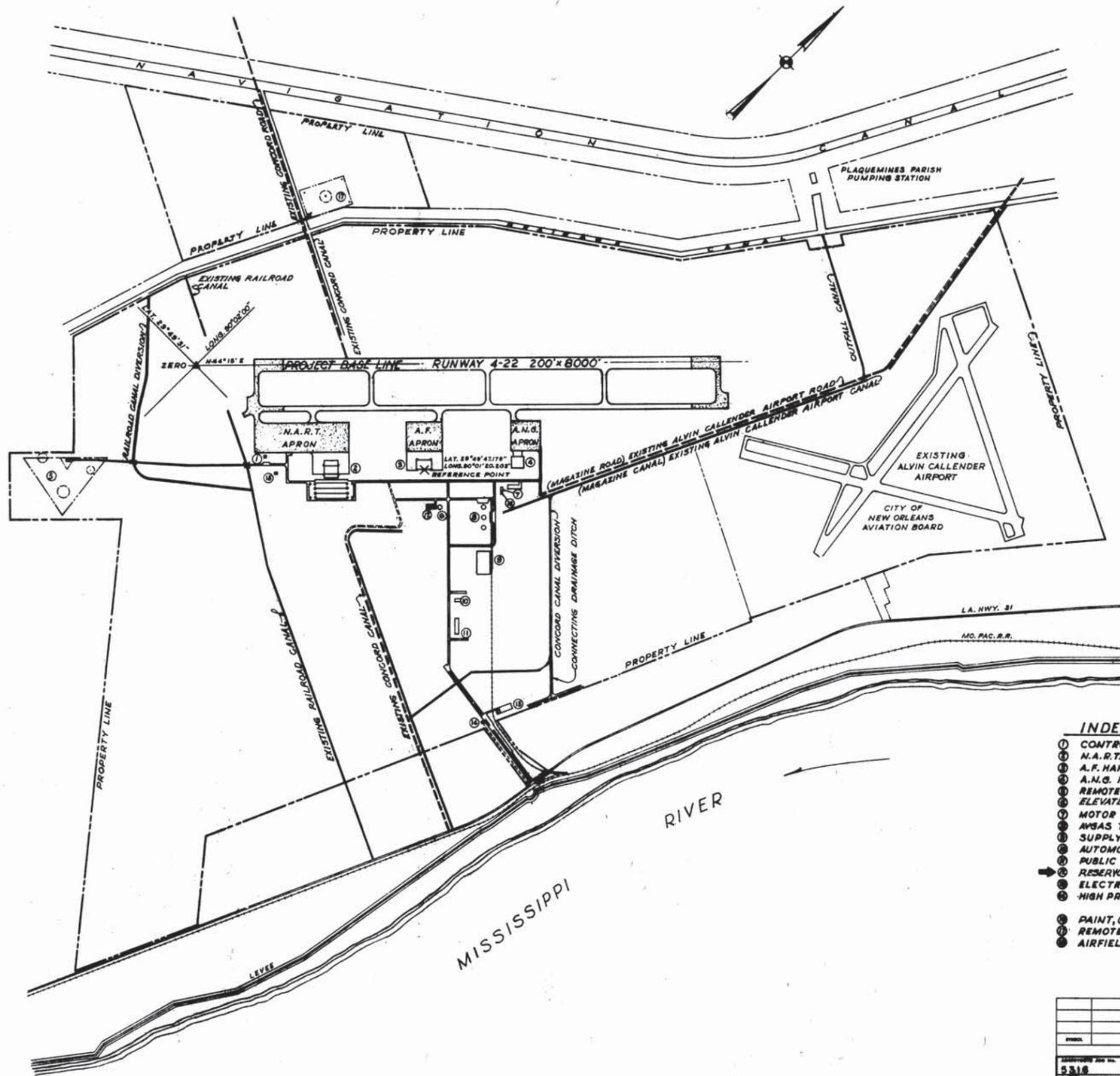
REMARKS:

-
-
-
-

APPENDIX D

As-Built Drawings

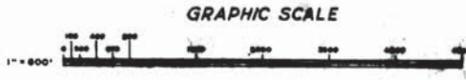
1,000,000 Gallon Water Tank



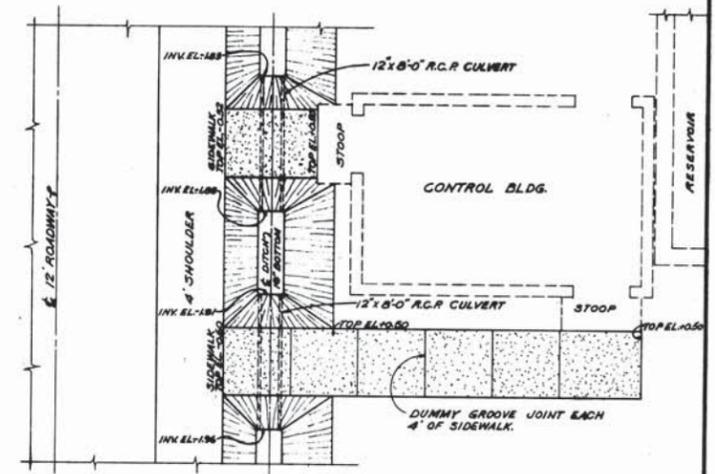
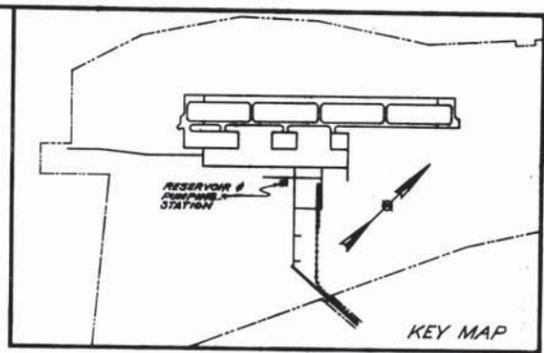
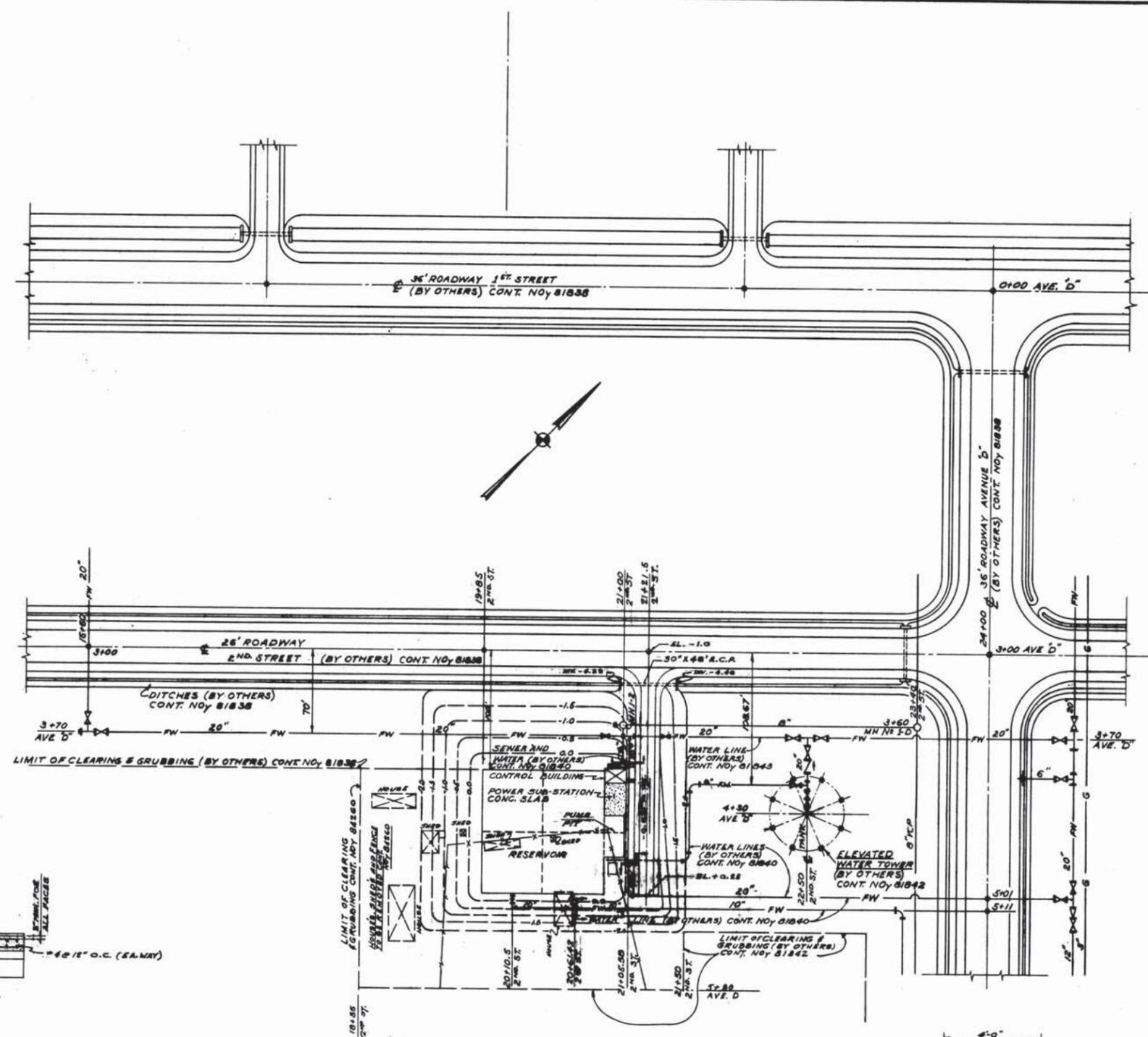
- INDEX**
- ① CONTROL TOWER
 - ② N.A.R.T. HANGAR
 - ③ A.F. HANGAR
 - ④ A.N.G. HANGAR
 - ⑤ REMOTE TRANSMITTER SITE
 - ⑥ ELEVATED WATER TANK
 - ⑦ MOTOR POOL SERVICE SHOP AND SERVICE SUPPLY WAREHOUSE
 - ⑧ AWSAS TANK FARM
 - ⑨ SUPPLY WAREHOUSE
 - ⑩ AUTOMOTIVE GARAGE
 - ⑪ PUBLIC WORKS SHOPS
 - ⑫ RESERVOIR & PUMPING STATION - CONTRACT NO. 84260
 - ⑬ ELECTRICAL POWER - MAIN SWITCHING STATION
 - ⑭ HIGH PRESSURE GAS REGULATING STATION
 - ⑮ PAINT, OIL, AND DOPE STORAGE BLDG.
 - ⑯ REMOTE VHF-UNF RECEIVER SITE
 - ⑰ AIRFIELD LIGHTING TRANSFORMER VAULT

25

NO.	DESCRIPTION	DATE	APPROVAL
REVISIONS			
DESIGNED BY	REVISIONS		
DRAWN BY	REVISIONS		
CHECKED BY	REVISIONS		
APPROVED BY	REVISIONS		
PROJECT NO. 84260 DRAWING NO. 633754		SHEET NO. 25 TOTAL SHEETS 11	

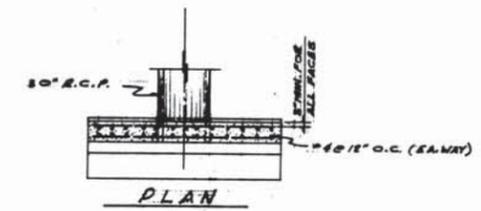


BLDG # 25

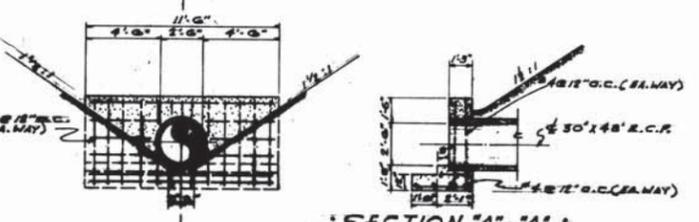


- PLAN -
 (2) - SIDEWALKS 4" THICK x 4'-0" WIDE
 CONTROL BLDG. TO 12' ROADWAY
 SCALE: 1/4" = 1'-0"

- LEGEND**
- FRESH WATER SYMBOLS**
- FW — FRESH WATER LINE
 - tee symbol — TEE
 - plug symbol — PLUG
 - reducer symbol — REDUCER
 - check valve symbol — CHECK VALVE
 - gate valve symbol — GATE VALVE W/ BOX & COVER
 - fire hydrant symbol — FIRE HYDRANT
- GAS SYMBOLS**
- G — GAS LINE
- SEWER SYMBOLS**
- S — SEWER LINE
 - M — MAN HOLE
 - 10 — FINISH GRADE
 - box symbol — EXISTING STRUCTURES TO BE REMOVED

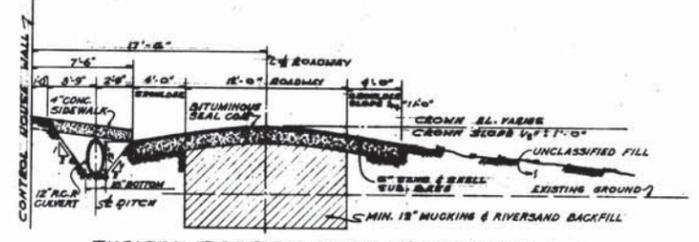


PLAN



ELEVATION

DETAILS - GRAVITY CONG. STRAIGHT HEADWALL



TYPICAL SECTION THRU 12' DRIVEWAY
 SCALE: 1/4" = 1'-0"



TYPICAL SIDEWALK SECTION
 SCALE: 1/4" = 1'-0"



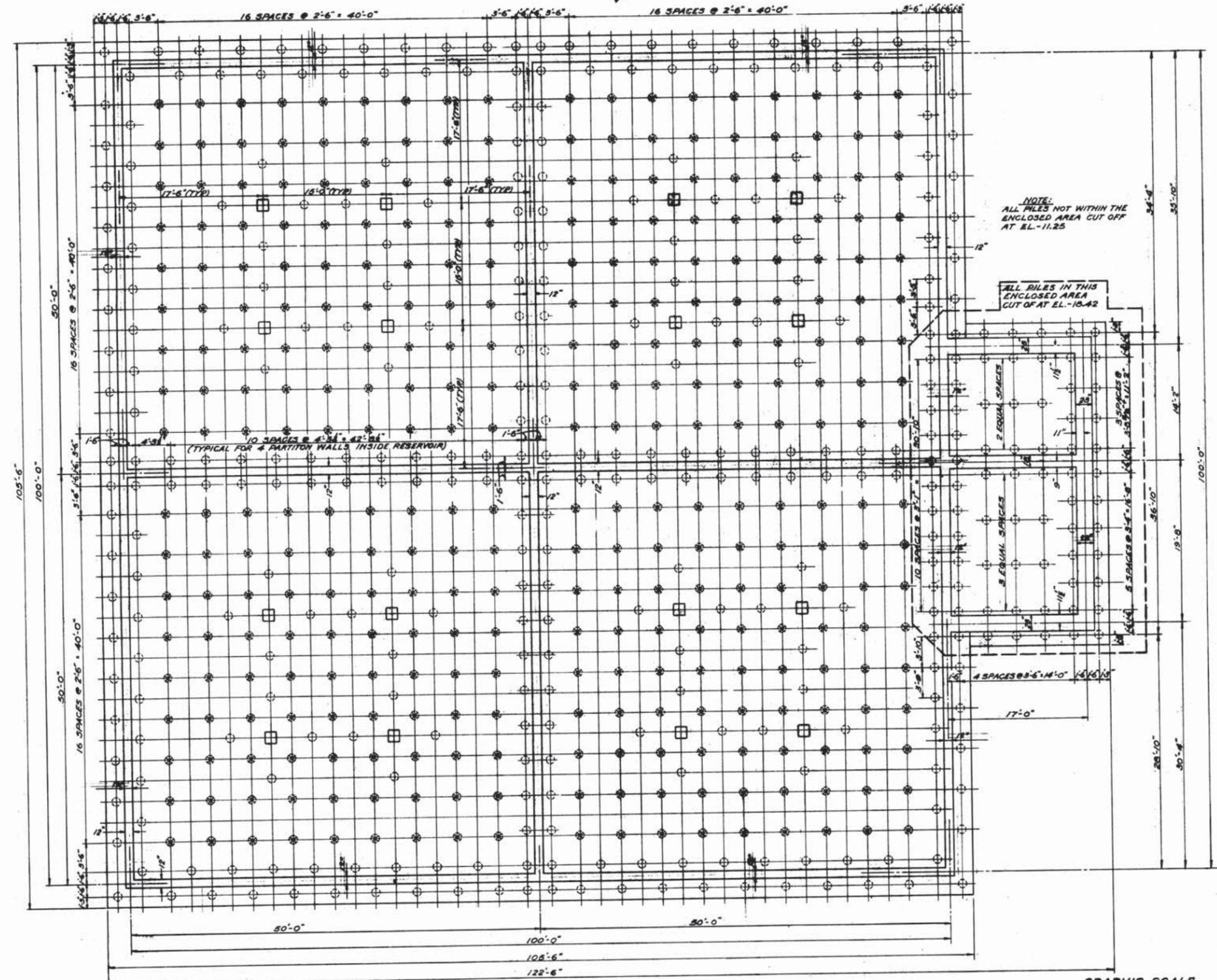
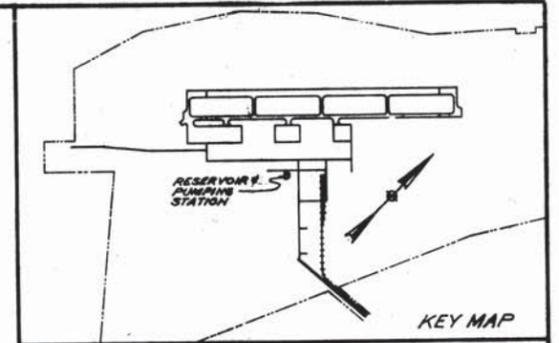
NO.	DESCRIPTION	DATE	APPROVAL
REVISIONS			
1	AS SHOWN	5/11/45	W.F. Batten

AUTHORITY AND NO. 5318 S.A. & S. ENGINEER NO. 11281 DRAWN BY W.F. Batten CHECKED BY W.F. Batten DATE 5/11/45	DEPARTMENT OF THE NAVY DISTRICT PUBLIC WORKS OFFICE BEDELL & NELSON - ENGINEERS 842 LEMON ST. NEW ORLEANS 14, LA.	BUREAU OF YARDS & DOCK 578 1/2 WEST ORLEANS ST. NEW ORLEANS 14, LA.
JOINT AIR RESERVE TRAINING CENTER ALVIN CALLENDER FIELD NEW ORLEANS 14, LA.		
RESERVOIR & PUMPING STATION SITE PLAN		
SCALE: 1" = 40'-0"		
SHEET NO. 42888 PROJECT NO. 633755		

25

25
 SITE

211



NOTE:
ALL PILES NOT WITHIN THE
ENCLOSED AREA CUT OFF
AT EL.-11.25

ALL PILES IN THIS
ENCLOSED AREA
CUT OFF AT EL.-10.42

LEGEND
 ○ INDICATES PLAIN BEARING PILE
 ⊗ INDICATES BEARING PILE WITH STRAP FOR UPLIFT

NOTES
 LOADS AND STRESSES USED FOR DESIGN.
 LIVE LOADS : RESERVOIR ROOF 100 R.S.F.
 STRESSES : CONCRETE $F_c = 3000$ R.S.I., $F_s = 10500$ R.S.I.
 REINF. STEEL 20,000 R.S.I.
 PILES : DESIGN LOAD, 11 TONS PER PILE
 MAX. DESIGN UPLIFT, 7 TONS PER PILE
 1. REINFORCING STEEL DETAILS SHALL CONFORM TO MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (A.C.I. 315-B) BARS SHALL BE LAPPED 24 DIAS. OF SMALLER BAR AT SPLICES.
 2. ALL PILING SHALL BE UNTREATED TIMBER PILES, CLASS "A"

PILE PLAN
 SCALE: 1" = 1'-0"
 TOTAL 693 PILES - ALL PILES SHOWN
 374 UPLIFT PILES - 319 PLAIN PILES

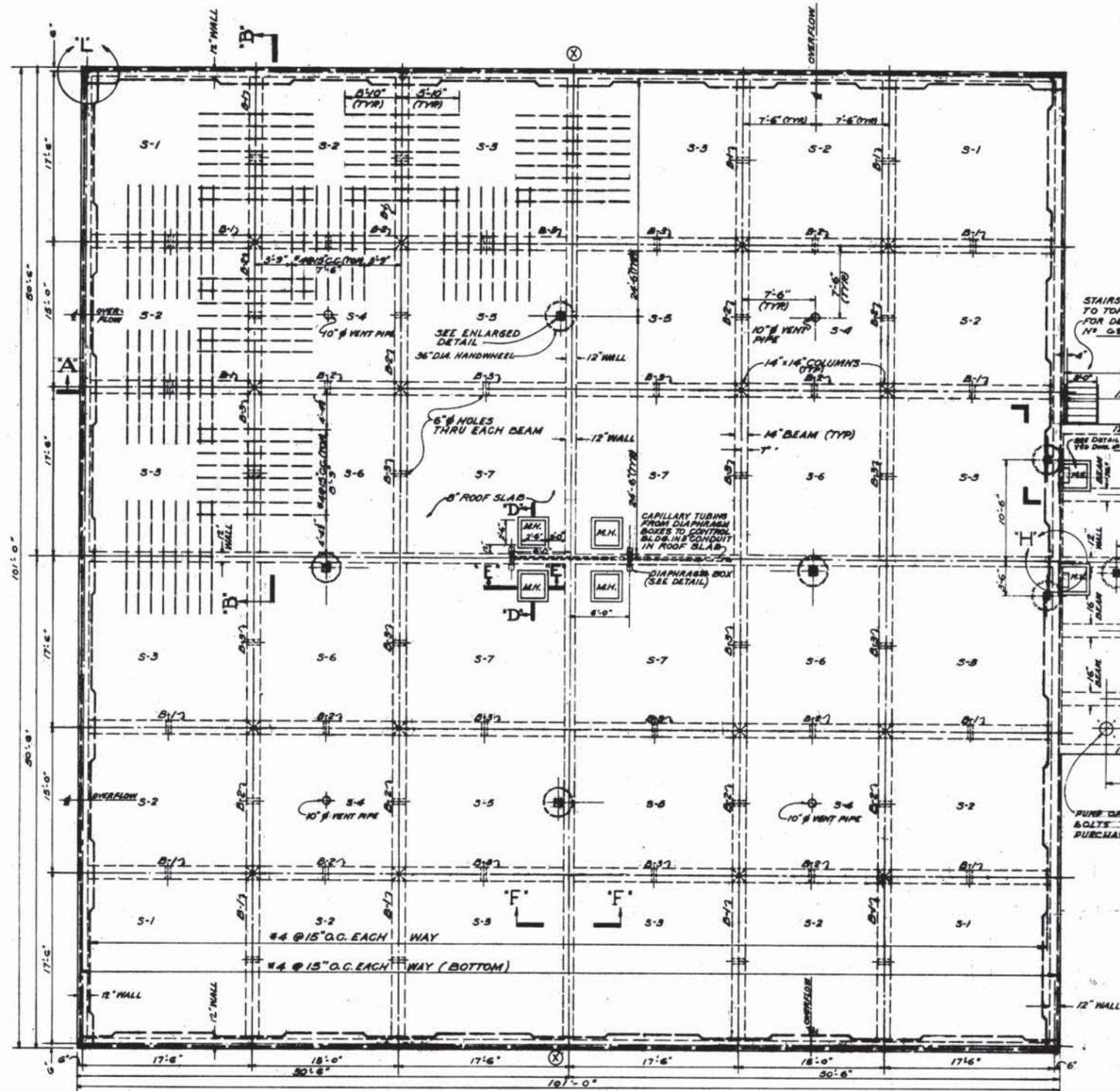


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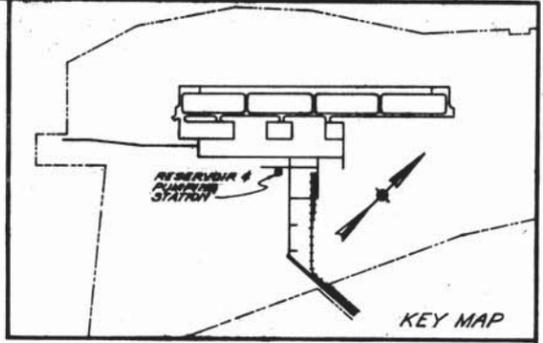
NO.	DESCRIPTION	DATE	APPROVAL
REVISIONS			
1	AS SHOWN		

PROJECT NO. 11382 DRAWN BY: W. T. Patten CHECKED BY: W. T. Patten DATE: 5/14/50	DEPARTMENT OF THE NAVY DISTRICT PUBLIC WORKS OFFICE BEDELL & NELSON - ENGINEERS 509 URIGN ST. NEW ORLEANS 12, LA.	BUREAU OF YARDS & DOCK 8715 NO. NEW ORLEANS, LA.
JOINT AIR RESERVE TRAINING CENTER ALVIN CALLENDER FIELD NEW ORLEANS 22, LA.		
RESERVOIR & PUMPING STATION PILE PLAN		
APPROVED BY: W. T. Patten DATE: 5/14/50	DRAWN BY: W. T. Patten DATE: 5/14/50	PROJECT NO. 11382 SHEET NO. 25 TOTAL SHEETS 43888 DRAWING NO. 633756

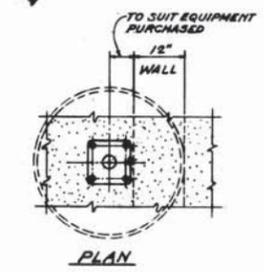
BLOG #25
 541-10



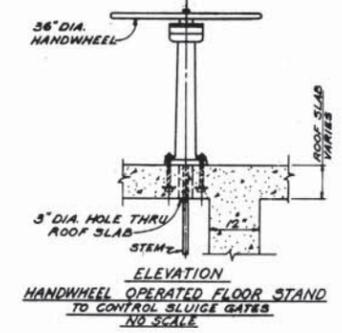
RESERVOIR ROOF PLAN
SCALE: 1/8" = 1'-0"



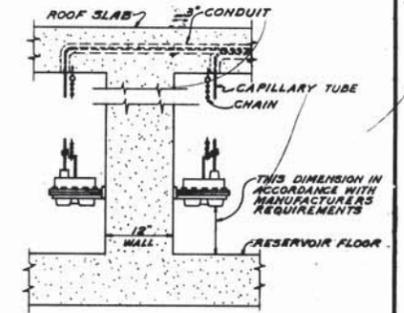
KEY MAP



PLAN



ELEVATION
HANDWHEEL OPERATED FLOOR STAND
TO CONTROL SLUICE GATES
NO SCALE



ELEVATION DETAIL
DIAPHRAGM BOXES
NO SCALE

STAIRS FROM CONC. SLAB
TO TOP OF PUMP PIT.
FOR DETAILS SEE Y&D DWG.
NO. 633751

PUMP CURBING & ANCHOR
BOLTS TO SUIT EQUIP.
PURCHASED. SEE Y&D DWG. NO. 633750

ROOF SLAB STEEL.
#6 @ 12" O.C. ALT. BENT - BOTTOM
#5 @ 8" O.C. TOP
SEE Y&D DWG. NO. 633750

GRAPHIC SCALE

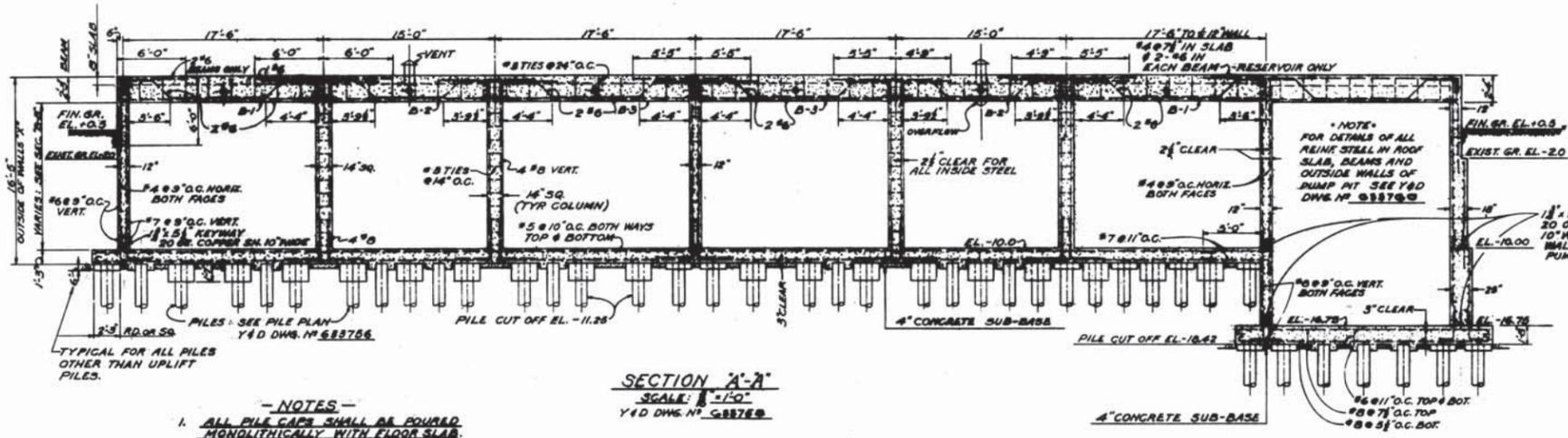


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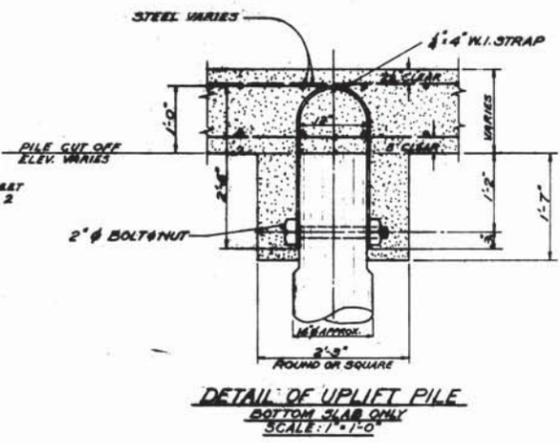
NO.	DESCRIPTION	DATE	APPROVAL
REVISIONS			
1	ISSUED FOR CONSTRUCTION	5/11/68	W.T. Ebbins
DEPARTMENT OF THE NAVY BUREAU OF YARDS & DOCK 8TH FLOOR NEW ORLEANS, LA.			
JOINT AIR RESERVE TRAINING CENTER ALVIN CALLENDER FIELD NEW ORLEANS MILITARY CANAL LA.			
RESERVOIR & PUMPING STATION ROOF PLAN			
W.T. Ebbins 5/11/68		SCALE: 1/8" = 1'-0" SHEET NO. 42888 5-11-68 633758	

BLDG #25

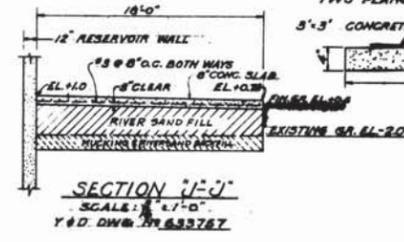
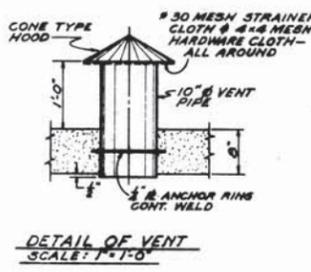
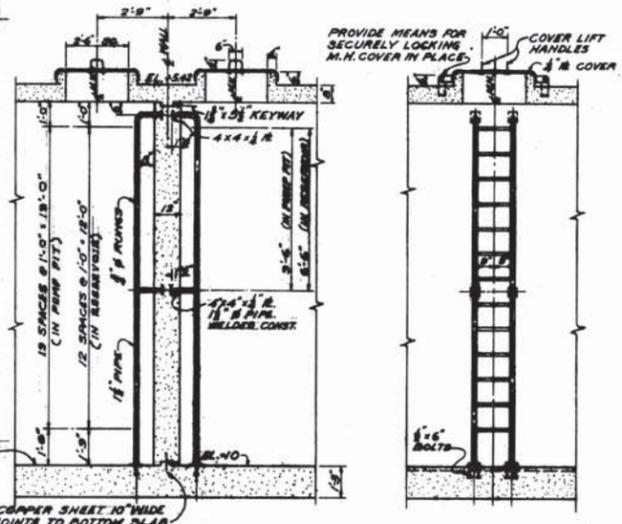
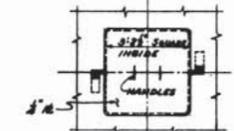
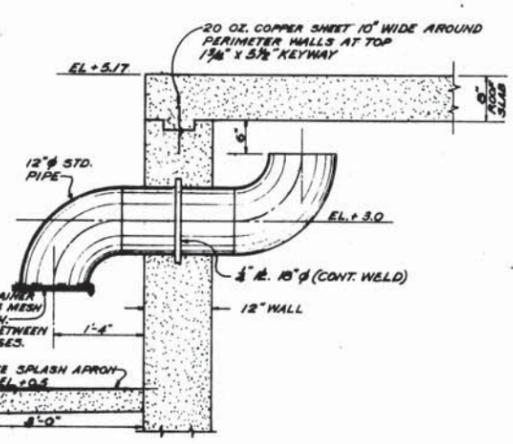
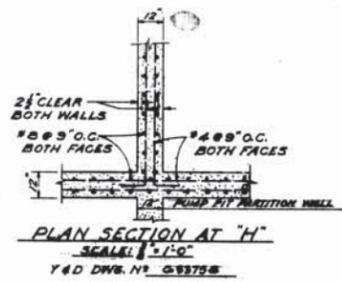
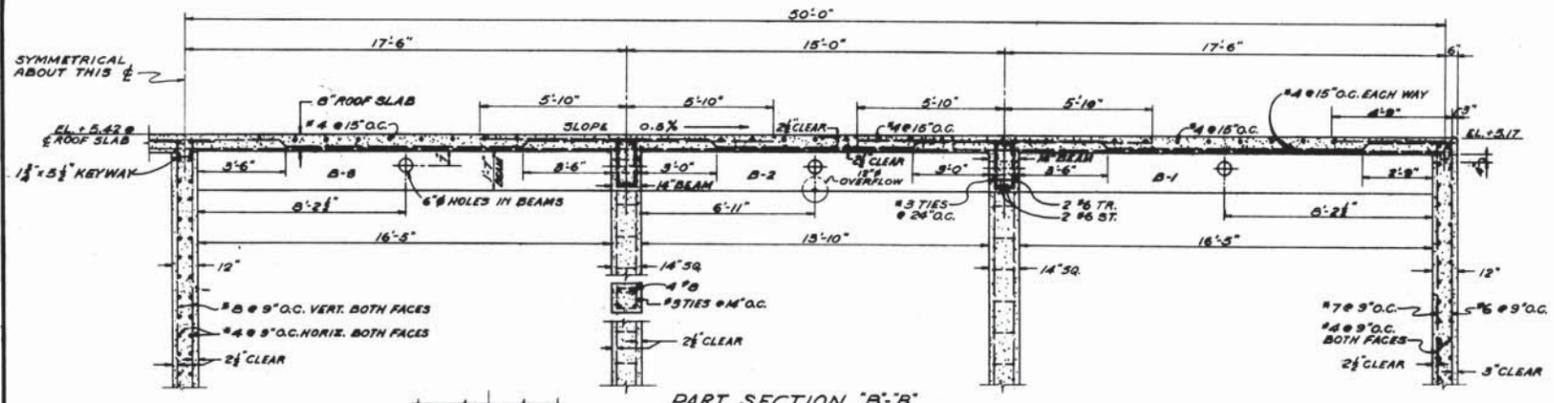
541-10



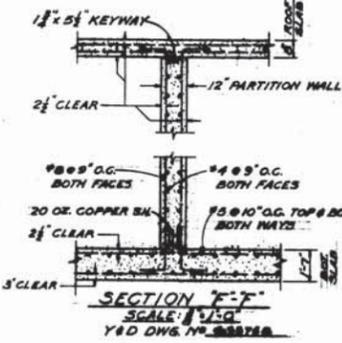
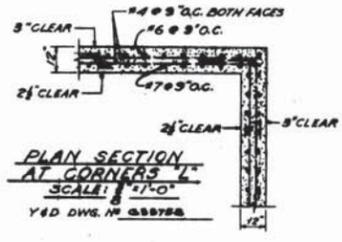
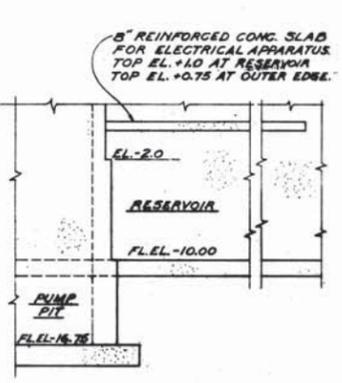
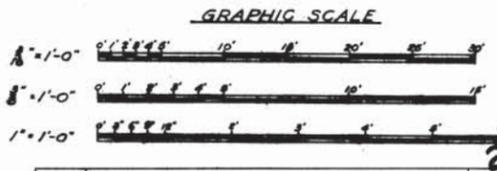
- NOTES**
- ALL PILE CAPS SHALL BE POURED MONOLITHICALLY WITH FLOOR SLAB.
 - WALLS TO BE POURED MONOLITHICALLY FROM M-TRAP TO TRUNK SIDE OF ROOF SLAB. WALL JOINTS TO BE LOCATED TO GIVE FULL BEARING AT EACH JOINT.



NOTE
EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/4" UNLESS NOTED OTHERWISE.



SECTION AT RESERVOIR OVERFLOW
SCALE: 1" = 1'-0"
Y&D DWG. NO. 633758



SECTION D-D
DETAIL OF INSPECTION MANHOLES LADDER
SCALE: 1/2" = 1'-0"
Y&D DWG. NO. 633758

PLAN SECTION AT CORNERS
SCALE: 1/2" = 1'-0"
Y&D DWG. NO. 633758

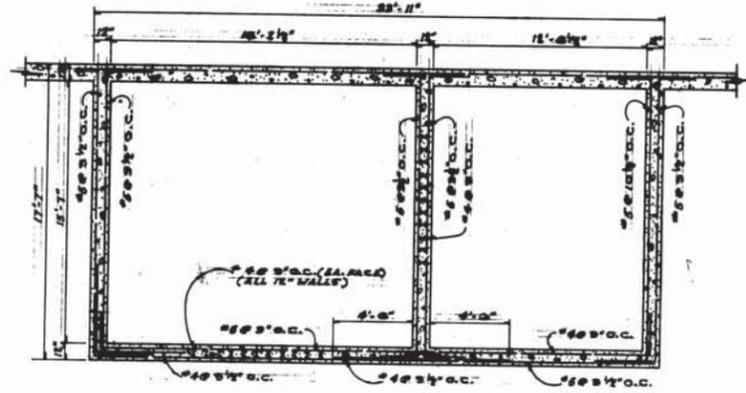
SECTION F-F
SCALE: 1/2" = 1'-0"
Y&D DWG. NO. 633758

NO.	DESCRIPTION	DATE	APPROVAL
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2			
3			
4			
5			

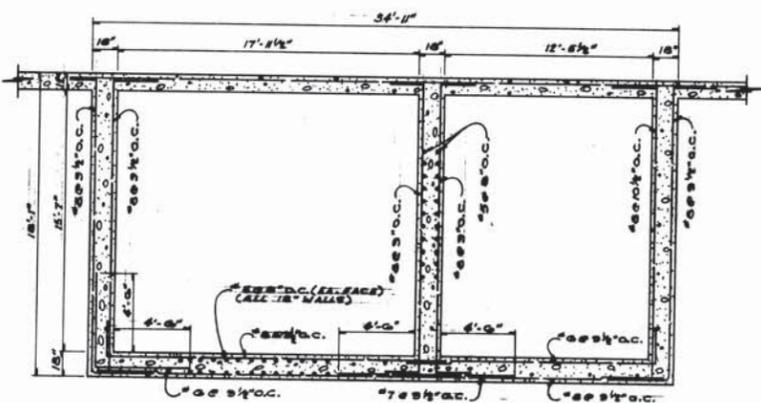
DEPARTMENT OF THE NAVY
 BUREAU OF SHIPS & BOATS
 BEDELL & NELSON - ENGINEERS
 JOINT AIR RESERVE TRAINING CENTER
 ALVIN CALLENDER FIELD
 NEW ORLEANS, LOUISIANA
RESERVOIR SECTIONS AND DETAILS
 W.T. Pugh
 633759

25
REV. 1
SEC. 1
DET. 1
6/11

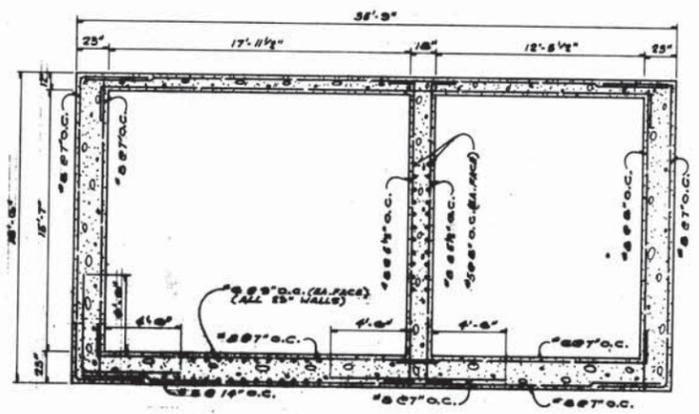
BLDG # 25



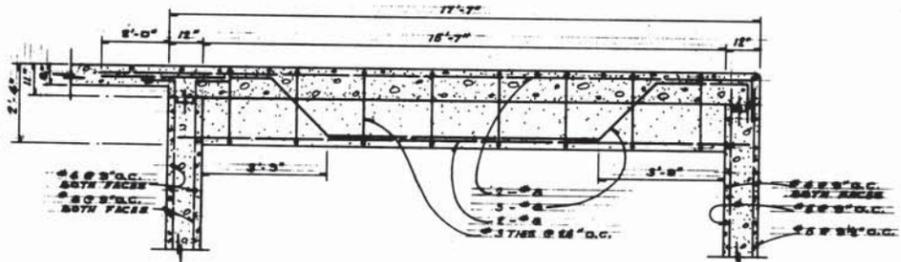
STEEL PLACEMENT - WALLS ABOVE EL. -2.0
SCALE: 1/4" = 1'-0"



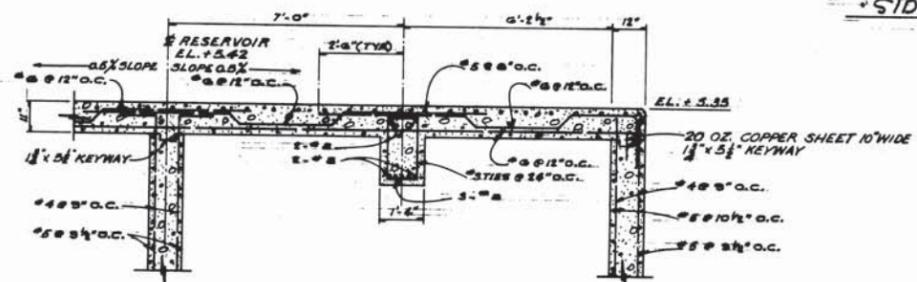
STEEL PLACEMENT - FROM EL. -10.0 TO -2.0
SCALE: 1/4" = 1'-0"



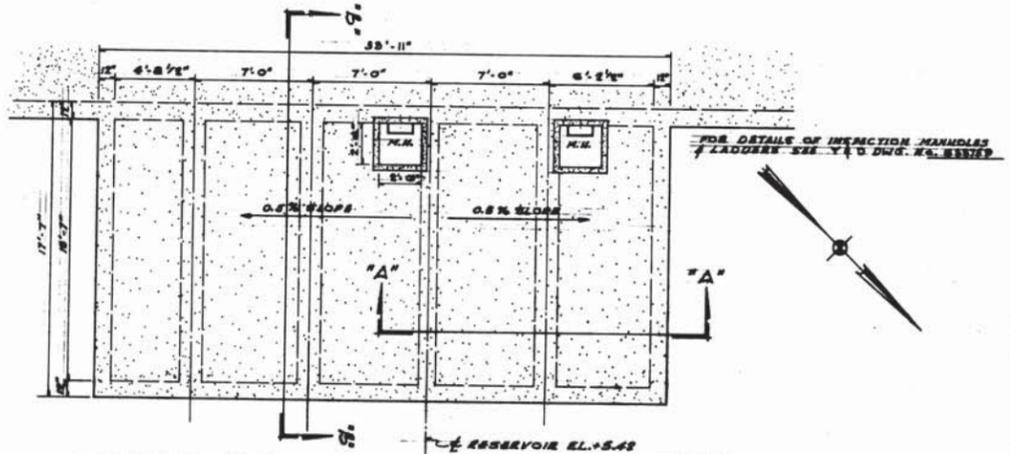
STEEL PLACEMENT FROM EL. -16.75 TO -10.0
SCALE: 1/4" = 1'-0"



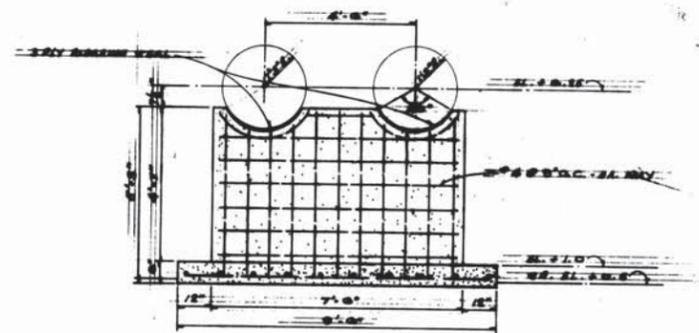
SECT. "B" - "B" - TYP. BEAM REINF.
SCALE: 1/4" = 1'-0"



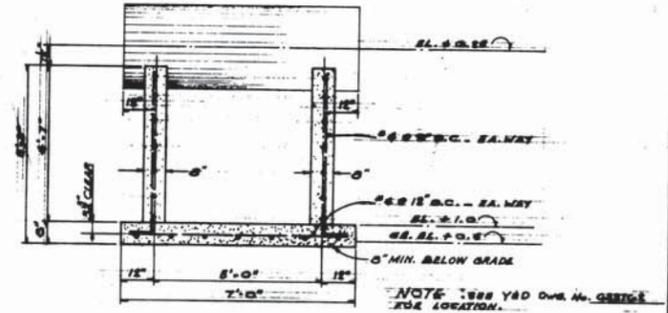
SECT. "A" - "A" - TYP. SLAB REINF.
SCALE: 1/4" = 1'-0"



PLAN - PUMP PIT GRAPHIC SCALE
SCALE: 1/4" = 1'-0"



END ELEV. - CONC. TANK SADDLE
SCALE: 1/4" = 1'-0"



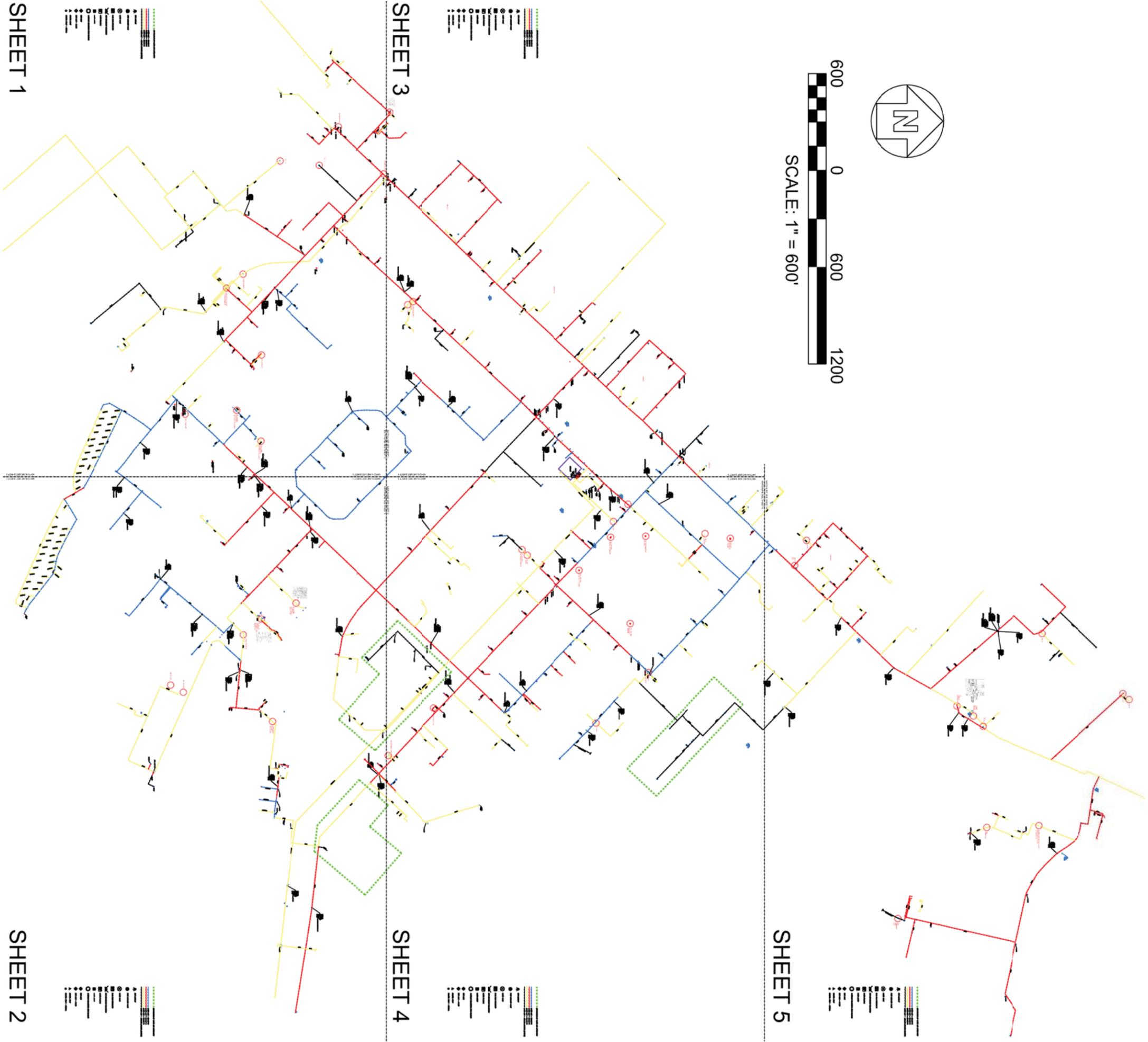
SIDE ELEV. - CONC. TANK SADDLE
SCALE: 1/4" = 1'-0"

25 REVISIONS NO. DESCRIPTION 1 2 3 4 5 6 7 8 9 10		JOINT AIR RESERVE TRAINING CENTER ALVIN CALLENDER FIELD NEW ORLEANS BELLE CHASSE LA. PUMP PIT SECTIONS & DETAILS W.T. Nelson 5/11/68 633749 7-11-68
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25
 PUMP PIT
 SEC. 081
 7/11

APPENDIX E

Existing Water Distribution Survey



SHEET 1

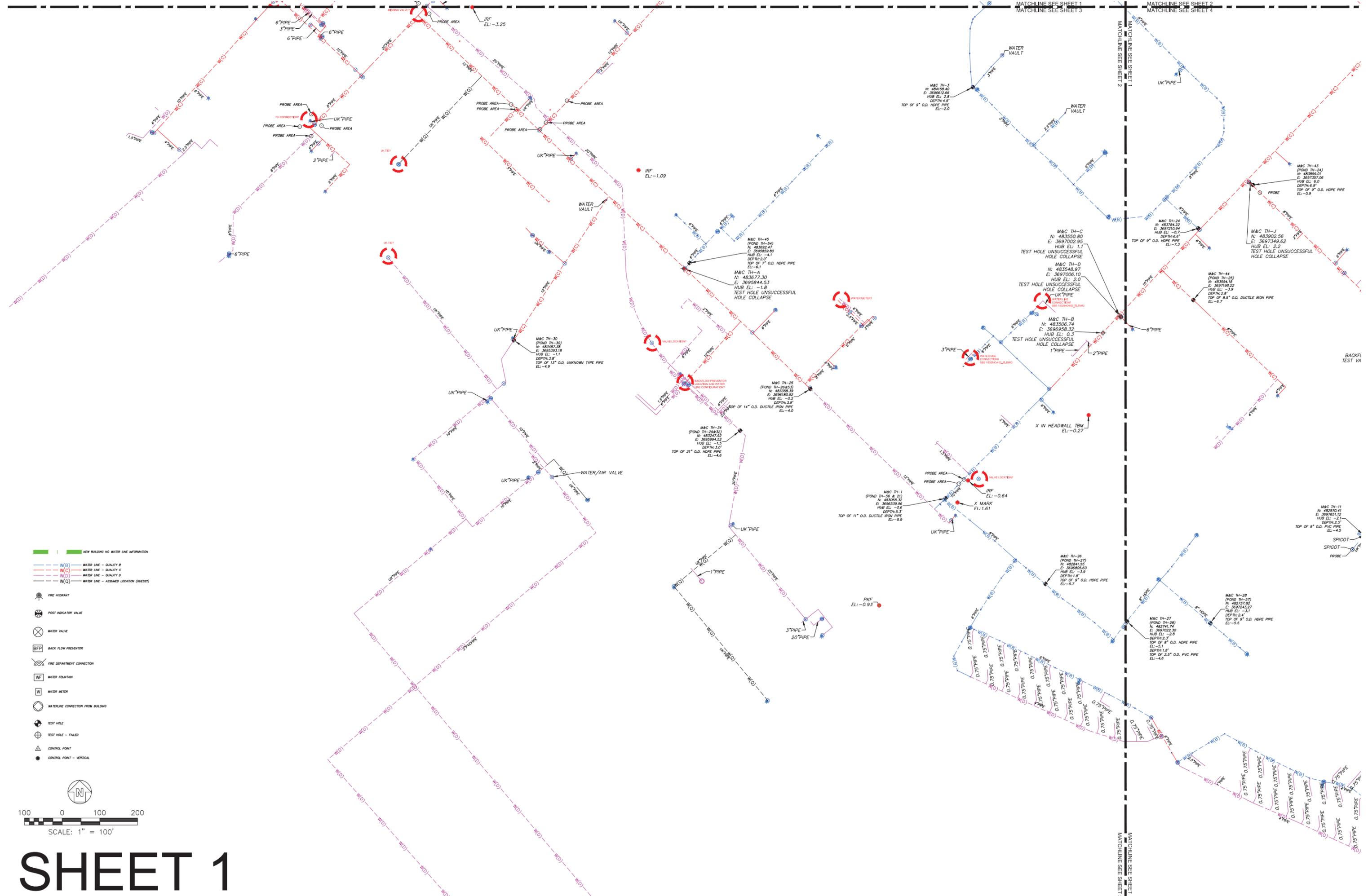
SHEET 2

SHEET 3

SHEET 4

SHEET 5

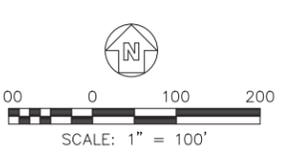
WATER DISTRIBUTION SYSTEM SURVEY



NEW BUILDING NO WATER LINE INFORMATION

(W)(B) WATER LINE - QUALITY B
 (W)(C) WATER LINE - QUALITY C
 (W)(D) WATER LINE - QUALITY D
 (W)(Q) WATER LINE - ASSUMED LOCATION (GUESS)

- FIRE HYDRANT
- POST INDICATOR VALVE
- WATER VALVE
- BACKFLOW PREVENTER
- FIRE DEPARTMENT CONNECTION
- WATER FOUNTAIN
- WATER METER
- WATERLINE CONNECTION FROM BUILDING
- TEST HOLE
- TEST HOLE - FAILED
- CONTROL POINT
- CONTROL POINT - VERTICAL



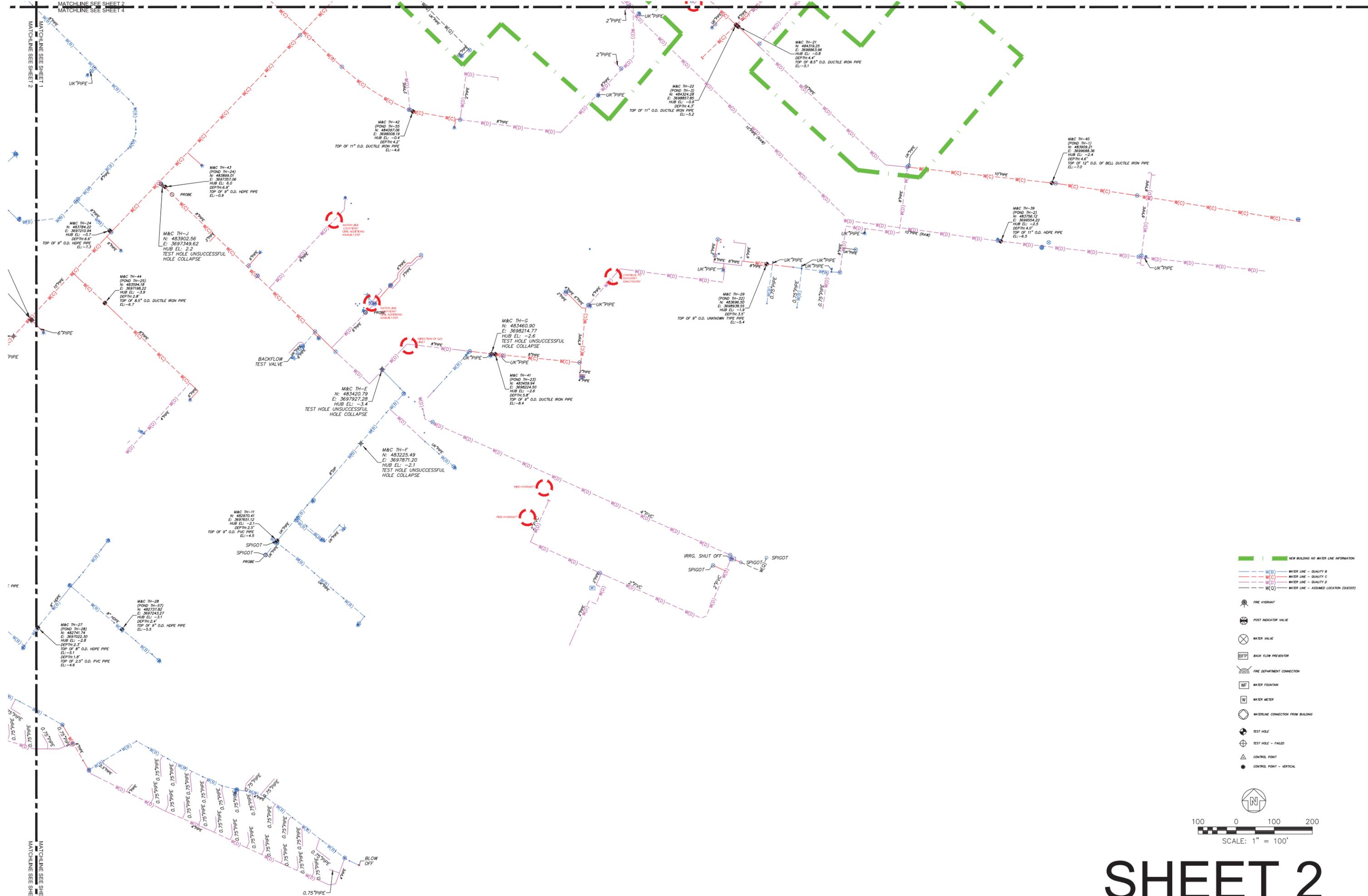
SHEET 1

MATCHLINE SEE SHEET 1
MATCHLINE SEE SHEET 3

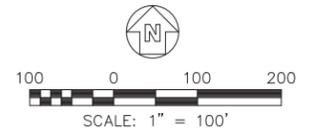
MATCHLINE SEE SHEET 2
MATCHLINE SEE SHEET 4

MATCHLINE SEE SHEET 1
MATCHLINE SEE SHEET 2

BACKFL
TEST VA



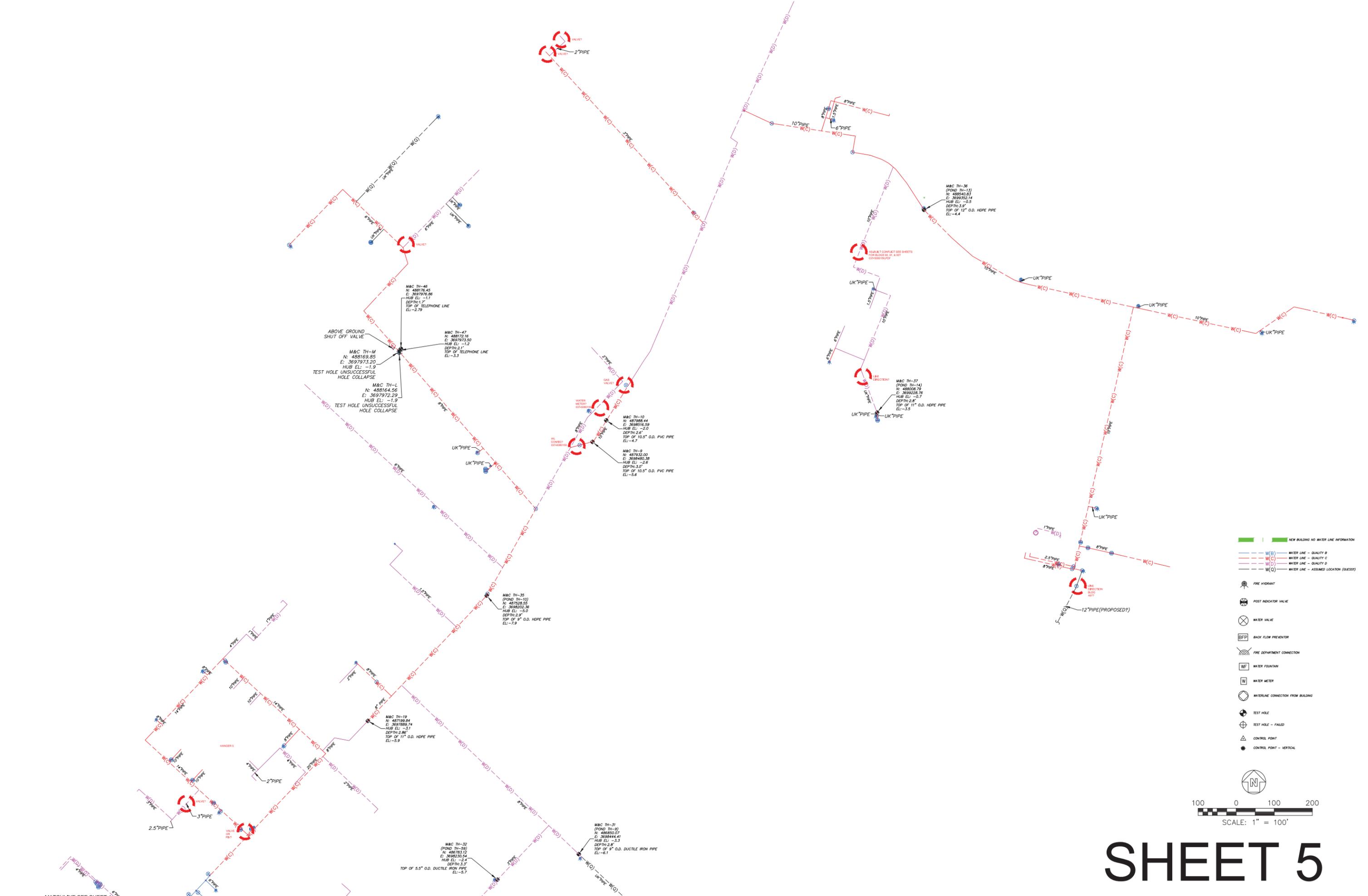
- NEW BUILDING NO WATER LINE INFORMATION
- WATER LINE - QUALITY B
- WATER LINE - QUALITY C
- WATER LINE - QUALITY D
- WATER LINE - ASSUMED LOCATION (GUESST)
- FIRE HYDRANT
- POST INDICATOR VALVE
- WATER VALVE
- BACK FLOW PREVENTOR
- FIRE DEPARTMENT CONNECTION
- WATER FOUNTAIN
- WATER METER
- WATERLINE CONNECTION FROM BUILDING
- TEST HOLE
- TEST HOLE - FAILED
- CONTROL POINT
- CONTROL POINT - VERTICAL



SHEET 2



SHEET 4



M&C TH-46
 N: 488178.45
 E: 3697976.86
 HUB EL: -1.1
 DEPTH: 1.7'
 TOP OF TELEPHONE LINE
 EL: -2.79

ABOVE GROUND
 SHUT OFF VALVE

M&C TH-47
 N: 488172.16
 E: 3697973.50
 HUB EL: -1.2
 DEPTH: 2.1'
 TOP OF TELEPHONE LINE
 EL: -3.3

M&C TH-M
 N: 488169.85
 E: 3697973.20
 HUB EL: -1.9
 TEST HOLE UNSUCCESSFUL
 HOLE COLLAPSE

M&C TH-L
 N: 488164.56
 E: 3697972.29
 HUB EL: -1.9
 TEST HOLE UNSUCCESSFUL
 HOLE COLLAPSE

M&C TH-35
 (POND TH-10)
 N: 487928.56
 E: 3698202.36
 HUB EL: -5.0
 DEPTH: 2.9'
 TOP OF 9" O.D. HDPE PIPE
 EL: -7.8

M&C TH-10
 N: 487988.44
 E: 3698516.59
 HUB EL: -2.0
 DEPTH: 2.6'
 TOP OF 10.5" O.D. PVC PIPE
 EL: -4.7

M&C TH-8
 N: 487932.00
 E: 3698480.38
 HUB EL: -2.4
 DEPTH: 3.0'
 TOP OF 10.5" O.D. PVC PIPE
 EL: -5.6

M&C TH-19
 N: 487199.84
 E: 3691989.74
 HUB EL: -5.1
 DEPTH: 2.86'
 TOP OF 11" O.D. HDPE PIPE
 EL: -5.9

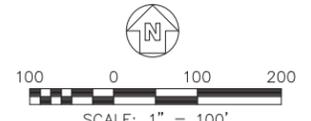
M&C TH-32
 (POND TH-9)
 N: 488233.12
 E: 3698233.54
 HUB EL: -2.4
 DEPTH: 3.3'
 TOP OF 5.5" O.D. DUCTILE IRON PIPE
 EL: -5.7

M&C TH-31
 (POND TH-9)
 N: 488650.07
 E: 3698444.41
 HUB EL: -3.1
 DEPTH: 2.8'
 TOP OF 9" O.D. DUCTILE IRON PIPE
 EL: -6.1

M&C TH-36
 (POND TH-13)
 N: 488540.83
 E: 3699352.14
 HUB EL: -0.5
 DEPTH: 3.9'
 TOP OF 12" O.D. HDPE PIPE
 EL: -4.4

M&C TH-37
 (POND TH-14)
 N: 488008.79
 E: 3699228.79
 HUB EL: -3.7
 DEPTH: 2.8'
 TOP OF 11" O.D. HDPE PIPE
 EL: -3.5

- NEW BUILDING NO WATER LINE INFORMATION
- W(B) WATER LINE - QUALITY B
 - W(C) WATER LINE - QUALITY C
 - W(D) WATER LINE - QUALITY D
 - W(G) WATER LINE - ASSUMED LOCATION (GUESS)
- FIRE HYDRANT
 - POST INDICATOR VALVE
 - WATER VALVE
 - BACK FLOW PREVENTOR
 - FIRE DEPARTMENT CONNECTION
 - WATER FOUNTAIN
 - WATER METER
 - WATERLINE CONNECTION FROM BUILDING
 - TEST HOLE
 - TEST HOLE - FAILED
 - CONTROL POINT
 - CONTROL POINT - VERTICAL



SHEET 5

MATCHLINE SEE SHEET 4
 MATCHLINE SEE SHEET 6

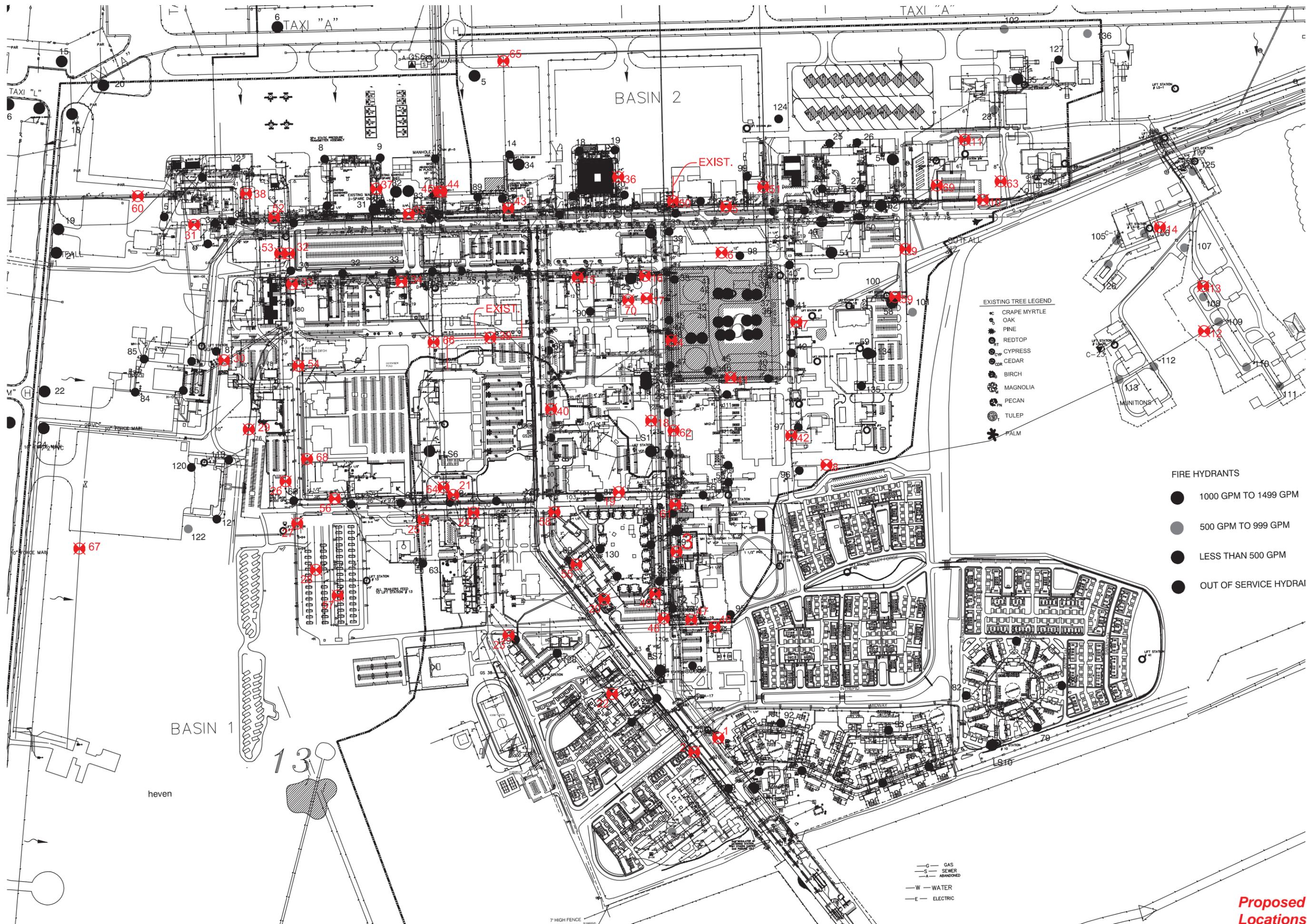
NAS JRB NOLA – SUE Quality Level “A” Test Hole Analysis

The following spreadsheet indicates the following information:

- Test Hole Locations
- Pipe Size per Base provided GIS Map
- Outside diameter of exposed water distribution pipe
- Pipe Material
- Depth of Pipe
- Additional Comments

The information obtained during the Test Hole Analysis has been incorporated into the final survey for this project. The hydraulic pipe model was created based on the final survey for the project. Refer to Final Survey (See this Appendix) for Test Hole Location Map.

Pond Test Hole Number	McKim & Creed Test Hole Number	Pipe Size per GIS Print	Outside Diameter	Material Type	Depth of Utility	Comments
1	40	10"	12"	Ductile Iron	4.56'	Dug on the bell of the pipe
2	39	10"	11"	Blue HDPE	3.98'	
3	22	10"	11"	Ductile Iron	4.27'	
4	20	10"	11"	Ductile Iron	2.70'	
5						Depth
6	14	12"	13"	Ductile Iron	3.36'	
7						Too Deep to dig, Deeper than 6+'
8	17	10"	14"	Blue HDPE	3.0'	
9	31	8"	9"	Ductile Iron	2.77'	
10	35	8"	9"	Blue HDPE	2.88'	
11						Unlocatable, even by probing
12						Water Leak
13	36	10"	12"	Unknown-White Pipe	3.91'	
14	37	10"	11"	Blue HDPE	2.79'	
15	13	20"	23"	Ductile Iron	5.94'	
16	23	20"	23"	Ductile Iron	4.35'	
17	2	20"	23"	Ductile Iron	3.90'	
18	16	10"	12"	Ductile Iron	3.88'	
19	1	10"	11"	Ductile Iron	5.33'	
20						Too Deep to dig, Deeper than 6+'
21	1	10"	11"	Ductile Iron	5.33'	
22	29	8"	9"	Unknown-White Pipe	3.50'	
23	41	8"	9"	Ductile Iron	5.82'	
24	43	8"	9"	Blue HDPE	6.88'	
25	44	8"	8.5"	Ductile Iron	2.81'	
26	25	12"	14"	Ductile Iron	3.88'	
27	26	8"	9"	Blue HDPE	1.80'	
28	27	8"	9"	Blue HDPE	2.34'	
29	34	20"	21"	Blue HDPE	3.04'	
30	30	12"	13"	Unknown-White Pipe	3.79'	
31						Unlocatable, even by probing
32	34	20"	21"	Blue HDPE	3.04'	
33						Too Deep to dig, Deeper than 6+'
34	18	10"	14"	Ductile Iron	4.45'	
35						Too Deep to dig, Deeper than 6+'
36						Too Deep to dig, Deeper than 6+'
37						Concrete
38						Too Deep to dig, Deeper than 6+'
39	33	Unknown	8.5"	Blue HDPE	2.88'	
40	12	10"	11"	Ductile Iron	4.95'	
41	38	10"	12"	Ductile Iron	5.49'	
42	15	12"	14"	Blue HDPE	3.22'	
43						Too Deep to dig, Deeper than 6+'
44						Unlocatable, even by probing
45						No Access- Cargo Boxes
46						Too Deep to dig, Deeper than 6+'
47						Too Deep to dig, Deeper than 6+'
48						Too Deep to dig, Deeper than 6+'
49	16	10"	12"	Ductile Iron	3.88'	
50						Too Deep to dig, Deeper than 6+'
51						No Access
52						Too Deep to dig, Deeper than 6+'
53	25	12"	14"	Ductile Iron	3.88'	
54	45	6"	7"	Blue HDPE	2.04'	
55	42	10"	11"	Ductile Iron	4.19'	
56	1	10"	11"	Ductile Iron	5.33'	
57	28	8"	9"	Blue HDPE	2.38'	
58						Too Deep to dig, Deeper than 6+'
59	32	3"	5.5"	Ductile Iron	3.33'	
60						No Access
61	20	10"	11"	Ductile Iron	2.70'	
62	20	10"	11"	Ductile Iron	2.70'	
63						Unlocatable, even by probing
64	24	8"	9"	Blue HDPE	6.60'	
65						No Access
66	8	8"	9"	Blue HDPE	3.29'	
67						No Access
68						Unlocatable, even by probing
69						Unlocatable, even by probing
70	16	10"	12"	Ductile Iron	3.88'	



EXISTING TREE LEGEND

- ◉ CRAPE MYRTLE
- ◉ OAK
- ◉ PINE
- ◉ REDTOP
- ◉ CYPRESS
- ◉ CEDAR
- ◉ BIRCH
- ◉ MAGNOLIA
- ◉ PECAN
- ◉ TULEP
- ✱ PALM

FIRE HYDRANTS

- 1000 GPM TO 1499 GPM
- 500 GPM TO 999 GPM
- LESS THAN 500 GPM
- OUT OF SERVICE HYDRAI

- G- GAS
- S- SEWER
- A- ABANDONED
- W- WATER
- E- ELECTRIC

Proposed Boring Locations

APPENDIX F

GIS Geospatial Data Delivery and Maintenance Standards



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NAVFACSE GRC Geospatial Data Delivery and Maintenance Standards

1.0 Purpose

Overview:

The GeoReadiness Center (GRC) is the single, authoritative source and distribution point for all geospatial facility data within the region. The GRC houses the most current geospatial information for the entire Region in the GeoReadiness Explorer (GRX) hosted at NITC, and provides access to the comprehensive data set and analysis tools to all Regional and DOD decision makers/managers, sponsored contractors, and other sponsored individuals via a secure government Internet site.

The GRC's primary roles include:

- Act as the single point of contact for all geospatial information and services related issues in the Installation and Environment realm for the Commander Navy Installations Command (CNIC) Region in which it is located.
- Ensure that the geospatial data holdings of the Navy Facility Engineering Commands (FECs) and Regions meet quality control standards for accuracy, currency and standards compliance.

This document describes the standards that must be met for the successful completion of a contracted delivery of data to be incorporated into, or used in tandem with, the Geographic Information System (GIS) at NAVFACSE. This document forms the basis for technical Statements of Work (SOWs) for projects and contracts solicited by **INSTALLATION** at NAVFACSE, which will include a GIS delivery as part of the workflow. The purpose of this document is to provide reliable guidelines with which to create, enhance, or modify NAVFACSE GI&S currently in use at **INSTALLATION**.

Project-specific contract parameters must be added to this baseline document during the creation of a specific SOW. The nature and scope of a given project make it unique, with requirements that will need to be met in regard to graphic and database design, and data acquisition methodologies. This document provides baseline standards that should be built upon for any given contract.



2.0 Project Descriptions

Contractors shall furnish all necessary personnel, material, equipment, services and facilities to perform the work described in the SOW unless otherwise indicated. Services or products, which can be expected to be within a SOW include, but are not limited to, the following:

1. Digitize or scan graphic or textual information sources into a digital format.
2. Create tabular database files.
3. Collect primary data using approved global positioning system (GPS) equipment and/or explicitly stated field data collection methodologies.
4. Compile graphic data using aerial photogrammetric techniques.
5. Create ESRI ArcGIS 10.1 and Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE) 3.01 Navy Data Model (NDM) compliant attributed data files. Contractor should obtain a File Geodatabase from the GRC for which the final data should be delivered.
6. Produce hard copy graphic or tabular data outputs from GIS data.
7. Make approved modifications to existing GIS data provided by NAVFACSE GRC as required to meet specific project requirements.

This document does not apply to contracts that will involve property boundary or other legally binding surveys. Contractors or clients completing such work should contact NAVFACSE GRC during the creation of the SOW for coordination and inputs on a project-specific basis.



3.0 Government-Furnished Property

NAVFACSE GRC or **INSTALLATION** may make source documents available to the contractor as deemed necessary to meet project requirements. Source documents may include, but not be limited to, the following:

1. Digital or paper maps
2. Aerial photographs
3. Tabular GIS data files
4. Data dictionary
5. Metadata

The Government will provide the contractor access to necessary geospatial data, reports, schematics, or other pertinent information either through the regional NAVFAC GRC, or a data copy upon completion of the appropriate request forms and/or security information. All contractors are required to request an account from the regional GRC at the start of the contract.

The contractor must verify with the GRC that they are working with the most recent version of the dataset at the beginning of each contract and must delete any copies of data in their possession at the end of each contract.

When requesting data from the GRC, the contractor will identify the SDSFIE 3.01 NDM data layer names or know which data layers they require. The government POC will be contacted prior to the release of any information to verify requirements. A non-disclosure agreement may need to be completed prior to the release of any data.

Other equipment, such as, but not limited to, GPS receivers may be made available to the contractor by NAVFACSE GRC or the **INSTALLATION** under approval by appropriate authorized personnel. Arrangements for the use of such equipment must be made directly with the source owner of the equipment whether NAVFACSE GRC or the **INSTALLATION**.

The contractor will be responsible for all materials supplied by NAVFACSE GRC or the **INSTALLATION**. Any GIS data, or products resulting from the use of such materials, which are provided to the contractor by the **INSTALLATION** or NAVFACSE GRC may not be further distributed (or otherwise made available) to external parties without prior written permission from **INSTALLATION** or NAVFACSE GIS. The contractor may adapt, convert, reformat, translate, or otherwise modify all or any part, of the provided



NAVFACSE GRC Geospatial Data Delivery and Maintenance Standards

data only for purposes of completing contract requirements. A written record of all changes made will be kept and submitted as part of the required metadata portion of the GIS delivery.



4.0 Delivery Requirements

4.1 System Parameters

NAVFACSE GRC uses SDSFIE 3.01 NDM with Oracle 11g and ESRI ArcGIS version 10.1 as its standard GIS data format and primary database software. However, there are NAVFACSE specific modifications to the SDSFIE 3.01 NDM standards so the contractor must obtain a File Geodatabase from NAVFACSE GRC to ensure they adhere to NAVFACSE GRC data format requirements. Microsoft Windows 7 is the operating system. Front-end software used by NAVFACSE GRC includes ESRI ArcGIS.

GIS files which add to, replace or otherwise modify standard base map graphics files or attribute tables (such as but not limited to roads and buildings) must coordinate with NAVFACSE GRC and the **INSTALLATION**.

All figures included in a report that accompany the project will be delivered in a digital format. Any map-related image data sources (*.tif, *.jpg, etc.) presented in the document, or as part of any presentation made to NAVFACSE GRC or the **INSTALLATION** related to this specific undertaking, will be delivered in digital, georeferenced format.

4.2 Database Design

Contractors shall consult NAVFACSE GRC for the database design standards used from the Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE) by the CADD/GIS Technology Center prior to database design, data collection, or other data creation phases of the project. Standard contracts will require contractors to utilize existing SDSFIE 3.01 NDM definitions of features and predefined attribute table structures. Deviations from, or additions to, the existing SDSFIE 3.01 NDM objects must be approved by the NAVFACSE GRC in writing prior to the delivery of any GIS product. SDSFIE 3.01 NDM documentation is available at NAVFACSE GRC.

The Geodatabase schema shall follow the GIS Data Guide implementation of the SDSFIE data model and data layers will be captured accordingly. Information on the SDSFIE data model can be found at: <http://www.sdsfieonline.org/>

If new data is being created the contractor must provide the GRC with a data dictionary identifying all of the SDSFIE 3.01 NDM Entity Types, attributes, and/or domain values associated with the new feature(s), the geographic area(s) covered by the data and Spatial extent information prior to the creation/editing of GIS data. Acceptable formats: MS Excel, MS Word and PDF. Local attributes (meeting SDS experienced level) will require precise schema definitions.

For stand-alone GIS attribute tables (no graphics) or for tables including point data as coordinates, the preferred delivery format is a comma delimited, ASCII text file with all column headings specified or an MS Access table that is provided to the contractor from



NAVFACSE GRC Geospatial Data Delivery and Maintenance Standards

NAVFACSE GRC. A different data delivery format may be used if approved by, and coordinated with, NAVFACSE GRC prior to file delivery.

4.3 Data Integrity

Data accuracy standards for all deliverables will be in accordance with those set forth in the section entitled GPS Data Collection Specifications.' All deliverables should include an accuracy report in the metadata.

The contractor shall employ appropriate QA/QC standards to ensure that data is topologically correct, accurate and complete (to include):

- No erroneous overshoots, undershoots, dangles or intersections in the line work
- Point and line features will be snapped together where appropriate to support networks. For example, do not break linear features for labeling or other aesthetic purposes.
- Lines should be continuous and point features should be digitized as points. For example, point features, such as manholes, should not be drawn using only a circle (polygon) to represent its location. Preferably, use an attribute block symbol that has an insertion point in the center of the manhole.
- No sliver polygons
- Digital representation of the common boundaries for all graphic features must be coincident, regardless of feature layer
- Geometric network connectivity must be maintained for utility networks.

A summary of the methods used to correct inconsistencies and any remaining errors by case should be included in the metadata under the 'Logical Consistency Report' and 'Completeness Report' sections.

4.4 Graphic Design

Contractors shall deliver graphic files that match the existing geometry type for each type of feature in use on the CNRSE GIS. If a new feature must be created, NAVFACSE GRC must approve its definition and use prior to file delivery. Contractors shall deliver graphics in an ESRI ArcGIS 10.1 File Geodatabase format. If the Contractor needs to submit the delivery in a different format or a combination of multiple formats then NAVFACSE GRC must approve the alternate format prior to delivery. All mapping data will be delivered to NAVFACSE GRC with clean line work using the following parameters:

1. All intersecting lines shall be processed to remove overshoots and undershoots
2. Zero length segments shall be removed
3. All area features must be closed polygon shapes



NAVFACSE GRC Geospatial Data Delivery and Maintenance Standards

4. All delivered files shall be checked to see that they are corruption-free
5. All feature elements shall have a unique Primary key assigned, consult with NAVFACSE GRC for any applicable naming conventions
6. All feature classes shall have metadata, consult with NAVFACSE GRC for minimum metadata requirements
7. All feature classes shall have all specified minimum attribution populated, consult with NAVFACSE GRC for minimum attribute requirements

Graphics delivered in non-preferred formats will be subject to additional line work requirements.

The contractor may request copies of existing graphics appropriate to the SOW as agreed upon by the **INSTALLATION** and/or with NAVFACSE GRC. The NAVFACSE GRC will provide such files in a File Geodatabase.

4.5 Digitizing/Conversion

Where Digitizing/Conversion is stipulated in the contract, the contractor shall digitize/convert features from designated sources (including remotely sensed data, hardcopy scans and vector data) to support various GIS applications. Digitizing/conversion routines will insure that 90 percent of all features will measure within 0.01 inches when reproduced at the scale of original imagery or data source.

4.6 Data Dictionary

Accompanying the final GIS delivery shall be a digital data dictionary file that has been previously approved by the **INSTALLATION** and NAVFACSE GRC in terms of expected content and format. For all parts of the data dictionary that match the SDSFIE 3.01 NDM, the data dictionary may reference the SDSFIE 3.01 NDM stating each feature class table being provided and each column within the table for which data has been populated. If additional codes or values outside of the SDSFIE 3.01 NDM and the current NAVFACSE GRC data structure domains will be utilized to populate a column, these values must first be approved by NAVFACSE GRC and must be provided as part of the data dictionary documentation submittal. All domain list values must be accompanied by a description especially in the case of abbreviations.

4.7 Feature Definitions

Should the contractor need to create new feature classes not in the current CNRSE GIS or the SDSFIE 3.01 NDM, NAVFACSE GRC must first approve them. New features that are created by the contractor for inclusive use into the CNRSE GIS shall be defined in an appendix as part of the data dictionary documentation. Documentation of added feature classes shall follow the SDSFIE 3.01 NDM documentation standards. Elements of the feature that must be declared in this documentation include:



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1. Data Set (Category) name
2. Feature class (table) name with definition
3. Geometry type (point, line, polygon)
4. Associated attributes with definitions
5. Data type, data precision, domain table assignment, Primary Key and Foreign Key assignments, required field assignments, etc.

Any new features, which are created for a GIS delivery to be included in the **INSTALLATION** GIS, must be coordinated with the **INSTALLATION** and NAVFACSE GRC prior to delivery.

4.8 Projected Coordinate System

All geospatial data stored by the GRC resides in the appropriate UTM coordinate system for US States, Territories and insular areas. The Region's geospatial data collection is comprised of data from:

Activity Area	UIC	State	UTM Zone (Schema)
NAVSTA Guantanamo Bay	N60514	Non-US	18
NAS Jacksonville	N00207	Florida	17
NAS Key West	N00213	Florida	17
NAVSTA Mayport	N60201	Florida	17
SUBASE Kings Bay	N42237	Georgia	17
NAS Orlando	N61007	Florida	17
Naval Hospital Beaufort	N50173	South Carolina	17
NAS Pensacola	N00204	Florida	16
NAS Meridian	N63043	Mississippi	16
NSA Panama City	N61008	Florida	16
NAS Whiting Field	N60508	Florida	16
CBC Gulfport	N62604	Mississippi	16
NAS JRB New Orleans	N00206	Louisiana	15
NAS Corpus Christi	N00216	Texas	14
NAS Kingsville	N60241	Texas	14
NAS JRB Ft Worth	N83447	Texas	14



NAVFACSE GRC Geospatial Data Delivery and Maintenance Standards

4.9 Metadata

The contractor will turn over, at a minimum, metadata for each feature class in XML format. The following elements of the FGDC Content Standard for Digital Geospatial Data (CSDGM) that must be included as part of the deliverable. Feature-level metadata may be required at the discretion of the government. Details on the standard can be found at <http://www.fgdc.gov/metadata/geospatial-metadata-standards>

- 1) Identification Information
 - a) Contact (Details) - *contact information for the data steward*
 - i) Person
 - ii) Organization
 - iii) Position
 - iv) Telephone
 - v) Email
 - b) Description – *characterization of the data*
 - i) Abstract
 - ii) Purpose
 - c) Time Period - *explains how current the dataset is*
 - i) Currentness Reference
 - ii) Date
 - d) Keywords – *word/phrase descriptors of the data*
- 2) Data Quality
 - a) Positional Accuracy – *accuracy assessment of the data*
 - i) Horizontal Accuracy Report
 - ii) Vertical Accuracy Report (*if applicable*)
 - b) Source Information – *list of sources and a short citation of each*
 - i) Source Citation (Details)
 - (1) Title
 - (2) Originator
 - (3) Publication Date
 - c) Process Step – *an explanation of how/when the data was created*
 - i) Process Description
 - ii) Process Date
- 3) Spatial Reference
 - a) Horizontal Coordinate System
 - b) Vertical Coordinate System (*if applicable*) – *vertical datum information*
 - i) Datum Name
 - ii) Distance Units



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4.10 GPS Data Collection Specifications

INSTALLATION GIS will accept GPS data only if the positional data are differentially corrected to assure locational accuracy. Exact accuracy levels of each data feature shall be agreed upon with the **INSTALLATION** and NAVFACSE GRC prior to contract start.

Where field data collection is stipulated in the contract, the contractor shall utilize conventional and other methods, such as a total station, or Global Positioning System (GPS) in accordance with the applicable Geospatial Positioning Accuracy Standards published by the Federal Geographic Data Committee (FGDC).

At a minimum, the contractor shall provide resource grade GPS collection at an accuracy level of $\pm < 1\text{m}$ and shall use differential correction to target accuracies of $\pm .5\text{m}$.

Where appropriate (as stipulated in the contract or as otherwise determined by the Government), the contractor shall use survey grade GPS, at an accuracy level of $\pm 2\text{cm}$. Global Positioning System (GPS) data collection activities will be based on a post-processed environment using an accurately sighted base station. Base station files for post processing acquired locally (off-site CORS Continuous Operating Reference Station) will be verified for accuracy.

GPS data on the location of utility lines and other features shall be captured at a minimum every 50ft and at each turn or bend in the line and processed as a line feature type. GPS data on the location of utility points and other features should be captured at the centroid of the feature unless signal obstruction or access prohibits; otherwise points will be captured at a uniform distance and direction from the centroid and the offset captured in the metadata for that feature. Data on polygon features will be collected at every vertex of the feature and processed as a polygon.

All survey-grade data collected shall be provided to the Government in a digital format with an attached Survey Report identifying survey method, equipment list, calibration documentation, survey layout, description of control points, control diagrams, quality control report and field survey data.

A digital Survey Control Database (consisting of a survey marker database and a survey traverse database) will be produced for all survey control points established under this contract, including the horizontal and vertical order and coordinate location of each point.



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5.0 CADD Standards

The Government may approve the use of AutoCAD when it is determined that the format will not compromise the spatial accuracy or structure of the delivered data and that the data will easily integrate with the enterprise GIS system. All CADD data shall be provided in AutoCAD 2010 and shall be in the same projection and use the same coordinate system, datum and units as stated below in the paragraph titled Geospatial Data Projection. Drawing files shall be full files, uncompressed, unzipped and georeferenced.

CADD drawings and data used for the planning, design, construction, operations, maintenance and demolition of Department of the Navy facilities and installations shall be delivered in conformance with the United States National CADD Standard, developed jointly by the National Institute of Building Sciences (NIBS), American Institute of Architects (AIA), Construction Specifications Institute (CSI), Tri-Service CADD/BIM Technology Center and several U.S. Government agencies, including NAVFAC. The United States National CADD Standard may be purchased from NIBS, from the individual publishing agencies (NIBS, AIA, CSI) or at

<http://www.nationalcadstandard.org/>

The Navy's current, network certified CADD software applications are the Autodesk version 2010 suite of CADD programs. This does not prohibit the use of other CADD systems or third party packages designed to work with Autodesk applications. All products developed under this policy shall be saved in a format which is readable by the target system (.dwg). Any objects or entities created by other systems or software must be readable by the target system.

File naming, sheet identification and layer names shall be per the National CADD Standard (NCS).

References:

- NAVFACINST 4250.1, Electronic Bid Solicitation
- NAVFACSE Drawing Format Standards, Chapter 03 of the NAVFACSE CAD Standards, Revision 1, October 2009
- NAVFACSE File Naming Conventions, Chapter 04 of the NAVFACSE CAD Standards, Revision 1, October 2009
- NAVFAC Layer Names Master List, Appendix A, Model File Level/Layer Assignment Tables
- NAVFACSE Layer Naming Standards, Chapter 05 of the NAVFACSE CAD Standards, Revision 1, October 2009



6.0 Quality Assurance / Quality Control

Unless otherwise specified in the SOW the contractor is responsible for performing quality assurance and quality control checks of all GIS data files prior to delivery to the **INSTALLATION** and NAVFAACSE GRC. All data (graphic and non-graphic) must work with the existing **INSTALLATION** and NAVFAACSE GRC system upon submittal. Erroneous files will not be accepted and will be returned to the contractor for review and correction prior to formal acceptance of the GIS product delivery.



7.0 Data Submittal Environment

The contractor will be required to deliver a copy of all data in ArcGIS File Geodatabases specific to each installation and matching the current version of the GRC repository (on a project specific basis as determined by the government POC).

The Contractor will provide one (1) set of ArcGIS File Geodatabase files. Specific transmittal instructions will be provided to the Contractor when the data is ready to be delivered.

7.1 Media Specifications

The **INSTALLATION** and NAVFACSE GRC are currently able to accept deliveries of electronic data on the following media:

- CDs in ISO format
- DVD+Rs
- USB hard drive

CD-ROM is the *preferred format* due to its extended shelf life. Digital media must have an **external label** listing a short description of contents, a sequence number if there are multiple volumes and the date of CD creation.

A **transmittal sheet** must accompany the media containing the information included on the external labels, total number of volumes being delivered, a list of file names *and* file descriptions on each volume and certification that all delivery media is free of known computer viruses.

7.2 Government Review

All contracts, internal or with contractors, that provide for the changing or creation of geospatial data must adhere to the following process for data deliverables as this data will be published in GRX.

1. All data goes through a QA/QC process to check for standards, attribute and contractual compliance. The data structure is checked to ensure it meets current standards.
2. Minimum attributes and metadata information required for the feature data layers are verified. If any of the feature layer table structures, attributes, or metadata do not meet the standards or are incomplete, the data will be returned to the submitter for corrections.



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3. All data submitted to the GRC should be submitted by the Installation or the Business Line GIS POC after the data deliverable(s) has been quality checked for compliance.

Note: Business Line GIS POCs are professionals with expertise in a particular industry, e.g. planning, environmental, facilities. Business Line personnel are the actual data owners of their data layers and are ultimately responsible for the accuracy and integrity of their own data layers. Business Lines can maintain their data integrity in the M&A environment using direct department personnel, contractors, or GRC personnel. Resources and business processes needed to create and maintain their geospatial data are determined by each installation and Business Line.

In instances where BL GIS POCs are not available to review data, the NAVFACSE GRC can provide this service. All contracted GIS work should have prior funding allocated for services performed by the NAVFACSE GRC. In instances where prior funding has not been allocated, the NAVFACSE GRC will determine the level effort and will provide a cost estimate.

7.3 Data Integration

Coordination, management and maintenance of GRX involves collaboration and teaming efforts between the NITC, the GRC, Business Line personnel and geospatial data users.

As stated earlier, the NITC is the centralized information repository for GIS and other source data hosted at Port Hueneme, CA. The NITC is responsible for managing the configuration of the M&A environment and performing system-level administration of Oracle and ArcSDE. This includes assuring user-level application profile settings are properly maintained; loading plot drivers for NMCI approved plotters and printers being used by M&A users; assigning Citrix M&A user accounts and privileges; and assigning ArcSDE Geodatabase accounts for data maintainers. All account requests and privilege levels made to NITC on behalf of a user must be requested through the GRC.

NOTE: ALL DATA ABSOLUTELY MUST BE PUBLISHED IN GRX AND NOT REMAIN CONFINED TO A PARTICULAR PWD, BUSINESS LINE, OR ON ANY INDIVIDUAL'S LOCAL WORKSTATION.

1. Each layer published in GRX will have a designated data editor assigned who will be responsible for maintaining the accuracy and currency of the data. Designated roles are determined by each installation and Business Line.
2. Where data editor responsibilities have not been established, the NAVFACSE GRC can be appointed this role as a reimbursable service. Contact the NAVFACSE GRC to request funding estimate.



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7.4 GRC Staff

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