SECTION 00110
RFP #FL20-02-037
REQUEST FOR PROPOSALS

The City of Greeley, Colorado is soliciting **Request for Construction Manager-At-Risk Proposals RFP #FL20-02-037 Ashcroft Draw Lift Station Sealed** proposals must be received at Water & Sewer, Attention: Linda Ingram, 1001 11th Avenue, Second Floor, Greeley, CO 80631 **before March 24, 2020, at 2:00 p.m.** No late, faxed or electronic bids will be accepted.

The necessary documents are available online at the Rocky Mountain Online Bid System site (Bidnet). Go to http://www.RockyMountainBidSystem.com, in the upper right corner of the screen choose "Login" if your company has a login established or "Register" if it is the first time you are visiting this site. Follow the prompts for the option chosen. Select "Search for Open Bids and Addenda by Agency" and then select "City of Greeley." Bid opportunities will be listed, in bid due date sequence, by project name and bid number.

A pre-proposal meeting will be held on March 4, 2020 at 1:00 p.m. at Water & Sewer, City Center South, 1001 11th Avenue, Second Floor, Greeley, CO 80631. All interested vendors are encouraged to attend.

Proposals submitted must include the information as outlined in the selection criteria section. This is the information the firm will be evaluated upon.

No proposals shall be withdrawn for a period of sixty (60) days after receipt of proposals.

All proposals will be confidential until a contract is awarded and fully executed. At that time, all proposals and documents pertaining to the proposals will be open for public inspection, except for the material that is proprietary or confidential. However, requests for confidentiality can be submitted to the Purchasing Contact provided that the submission is in accordance with the following procedures. This remains the *sole responsibility* of the offeror. The Purchasing Contact will make no attempt to cure any information that is found to be at a variance with this procedure. The offeror may not be given an opportunity to cure any variances after proposal opening. **Neither a proposal in its entirety, nor proposal price information will be considered confidential/proprietary.** Questions regarding the application of this procedure must be directed to the Purchasing Contact listed in this RFP.

"***Public Viewing Copy****: The City is a governmental entity subject to the Colorado Open Records Act, C.R.S. §§ 24-72-200.1 et seq. ("CORA"). Any bids/proposals submitted hereunder are subject to public disclosure by the City pursuant to CORA and City ordinances. Vendors may submit one (1) additional complete bid/proposal clearly marked "FOR PUBLIC VIEWING." In this version of the bid/proposal, the Vendor may redact text and/or data that it deems confidential or proprietary pursuant to CORA. Such statement does not necessarily exempt such documentation from public disclosure if required by CORA, by order of a court of appropriate jurisdiction, or other applicable law. Generally, under CORA trade secrets, confidential commercial and financial data information is not required to be disclosed by the City. Bids/Proposals may not be marked "Confidential" or 'Proprietary' in their entirety.* ***All provisions of any contract resulting from this request for proposal will be public information.***"

The City of Greeley retains the right to reject any and all proposals and to re-solicit if deemed to be in the best interest of the City of Greeley.

Questions pertaining to the project may be directed to Linda Ingram at linda.ingram@greeleygov.com no later than March 13, 2020.

Linda Ingram, Contract Specialist II
City of Greeley, Colorado
Greeley Website - February 21, 2020

CITY OF GREELEY

Purchasing

Request for Construction Manager-At-Risk Proposals

RFP #FL20-02-037

Ashcroft Draw Lift Station

for

Water and Sewer Division

Contents

Section 1. Background

1.1 Introduction

The City of Greeley (Owner) is seeking request for proposals (RFP) for the **Ashcroft Draw Lift Station** (Project) and invites interested Contractors to submit Proposals. The Proposal responses shall meet the requirements set forth in this RFP. As a part of the RFP, Minimum Qualification Requirements have been established and are defined in Attachment G. The Project is to be designed and constructed in two phases using the Construction Manager-At-Risk (CMAR) delivery method. The Proposals will be reviewed and evaluated by the City's selection committee using the evaluation criteria as detailed in this RFP.

Phase 1 services generally consist of preconstruction services that includes value engineering, constructability reviews, cost estimating, schedule development and management, and risk management planning. After collaboration with the Owner and Engineer (Plummer) on the design, the CMAR shall develop a GMP proposal. The GMP proposal shall be based on the Project's design and is anticipated to be set at no less than 90% level of completion from the Owner's project schedule, and will include supporting documentation. Phase 2 services generally encompass completing the Project's construction, startup and commissioning, and warranty. See general descriptions provided below for scope of services included in Phase 1 and Phase 2:

This RFP is subject to revision after the date of issuance via written addenda. Any such addenda will be transmitted to the potential Proposers maintained by the Owner and/or it's Representative. It is each Proposer's responsibility, however, to obtain all RFP addenda prior to submitting its Proposal.

The capitalized terms in this RFP have the meanings as first used in the text of this RFP and/or as defined in Attachment A (Definition of Terms). In no event will the Owner be liable for any costs incurred by any Proposer or any other party in developing or submitting a Proposal.

1.2 RFP Organization

This RFP consists of seven (7) sections and eight (8) attachments for the purposes of defining the structure of the document. The sections include the following:

- Section 1: Background
- Section 2: Project Overview
- Section 3: Construction Manager-At-Risk Services
- Section 4: Procurement Process
- Section 5: Proposal Submission Requirements
- Section 6: Proposal Evaluation and Selection
- Section 7: Conditions for Proposers
- Attachment A: Definition of Terms
- Attachment B: Scope of Construction Manager-At-Risk Services
- Attachment C: Construction Manager-At-Risk Contract Draft
- Attachment D: Project Background Documents
- Attachment E: Forms for Affirmation of Compliance
- Attachment F: Fee and Rate Proposal Form
- Attachment G: Statement of Qualifications Checklist

The contents of the RFP Attachments, which may be adapted to the Owner's specific requirements, should take priority over any conflicting statements in the RFP Sections. Certain project background documents are being made available as Attachment D for the purpose of preparing Proposals. The

Owner is providing these documents only for the purpose of obtaining Proposals for the Project. The extent to which the CMAR may rely on such background documents is set forth in Attachment C (Construction Manager-At-Risk Contract).

1.3 Owner's Objectives and Project Priorities

The Owner's objectives for delivery of the Project are as follows (in alphabetical order):

- **Bidding of Qualified Local Subcontractors and Equipment Suppliers:** To have the ability to select Subcontractors and Equipment Vendors bids based on best-value provisions.
- **Collaboration with Design Elements:** Participate with Owner and Engineer on the selection of design elements that will optimize the balance between project capital construction costs and operation and maintenance costs, through constructability reviews. The CMAR shall work with the Owner and Engineer to find solutions to insure the cost of the proposed improvements is at or below the project budget.
- **Flexibility in construction scheduling:** To meet and/or accelerate the project schedule by preparing Early Work Amendments for equipment and tasks identified as critical path.
- **Minimize Risk for Change Orders:** Achieve an optimal balance of risk allocation between the Owner and other parties and manage the risk to reduce the likelihood of change orders.
- **Project Cost:** Construction of the project within the City's project budget and minimizing life-cycle costs.
- **Project Schedule**: Respondents ability to meet and/or accelerate the project schedule.
- **Quality:** Provide a lift station facility that will reliably convey wastewater that is in full compliance with federal and state regulations.
- **Safety:** Implement an effective safety program incorporating best industry practices that provide safe working conditions for the team during construction as well as long term operational safety.
- **Selection of a Qualified CMAR with available local staff:** Selection of an experienced CMAR firm that understands the Owner's objectives.

By selecting the CMAR delivery method for the Project, the Owner is committed to working with the CMAR to achieve the Project objectives and to obtain a mutually-agreeable GMP for the delivery of the project.

Section 2. Project Overview

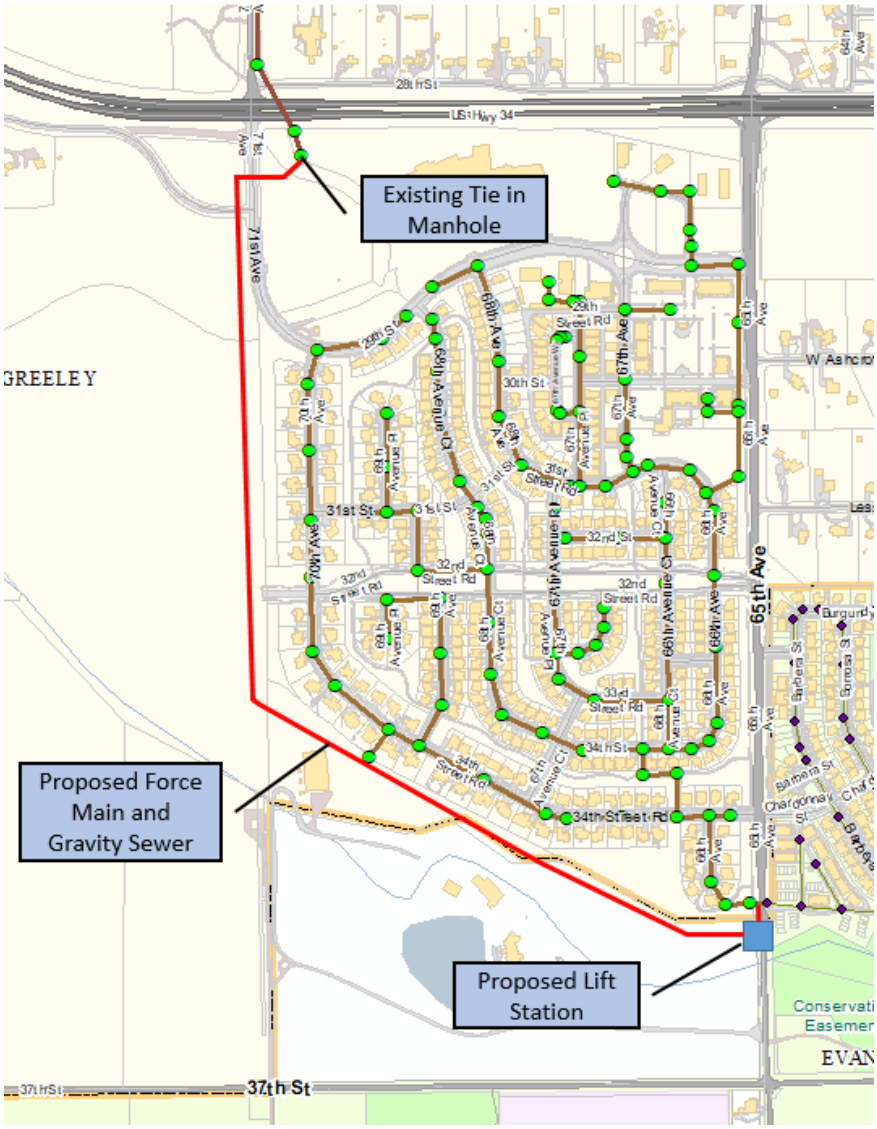
2.1 Project Scope

The City of Greeley (Owner) has decided to use the CMAR delivery method to provide Best Value for the successful and timely completion of the Ashcroft Draw Lift Station Project. It is expected that the selected CMAR will achieve this through seamless collaboration with the Owner and Engineer during both Phase 1 and 2 of the Project.

The Owner and the Engineer have completed a conceptual pre-design where conceptual level drawings were generated along with a Technical Memorandum which establishes the sizing of the proposed lift station. The project drawings also indicate the property and easements anticipated to be obtained by the City for the construction of this project. Refer to Attachment D for the Project Background Documents.

The City of Greeley proposes to construct the Ashcroft Draw Lift Station to deliver sanitary sewer flows within the service area to the City of Greeley. The project will consist of a lift station which will have a capacity of 2.9 MGD at full build out, 5,000 feet of dual force mains, and an additional 1,500 feet of gravity sewer. The proposed lift station is planned to be located along 65th Avenue approximately 900 feet north of 37th Street and the existing downstream tie in manhole is located southeast of the intersection of 71st Ave and Highway 34 Bypass.

The proposed alignment will cross both the Main Boomerang Ditch and the Lower Greeley Loveland Ditch, and a diversion pipe off of the Lower Greeley Loveland Ditch which will all require crossing approvals.



The CMAR will be responsible for tracking the project estimated cost, to provide confirmation that the design and construction is completed within the City's budget. The complete CMAR scope of services is described in greater detail in Section 3 and Attachment B.

Construction Restrictions:

General Project Restrictions

- During construction it is important that traffic flow be maintained with minimal disturbances to the general public.
- The available construction area will be limited to proposed easements and property planned to be acquired by the City of Greeley.

Lift Station

- While the lift station flows will be constructed offline, there are active base sanitary sewer flows being generated by Saint Michaels Subdivision that will need to be maintained during the project.
- Construction of the lift station may require modifications to an existing stormwater detention facility. The improvements will also be located within close proximity to a stream (Ashcroft Draw) that can see flows from adjacent water bodies or irrigation ditch diversions. The CMAR will need to insure that the stormwater facility and drainageway remain operational during construction and that they utilize best management practices to protect the project site from being impacted by storm runoff flows.

Force Main and Gravity Main Improvements

- Construction of the sanitary sewer main at the downstream limits of the project will require coordination with UC Health as the improvements are located adjacent to an active helicopter pad. The completion of these improvements will require close coordination between the CMAR and the hospital. The CMAR will need to maintain site safety to insure that helicopters can utilize the facility with short notice and that all FAA regulations are met.
- Improvements will cross two open channel irrigation ditches (Main Boomerang Ditch and Lower Greeley Loveland Irrigation Ditch) and a piped irrigation diversion. These crossing will need to be constructed when the irrigation ditches are not operational, which is approximately November to March.
- Maintain access to existing oil and gas well pad sites adjacent to the project.

2.2 Project Budget and Funding

The cost for construction of the Project is currently budgeted at $3.0 million. Said budget does not include Owner's other project costs, such as engineering and design services, property or access rights, site investigations, environmental studies, certain governmental approvals, taxes, etc. The Owner intends to self-fund the Project.

The City of Greeley is exempt from all federal excise taxes and all Colorado State and local governmental sales and use taxes. Where applicable, contractor will be responsible for payment of use taxes.

2.3 Project Schedule

As indicated in Section 4, it is anticipated that the CMAR Contract is estimated to be executed in March of 2020. Preliminary Key Project milestones include:

- Completion of 30% Design Drawings — November 2019
- 50% Design Documents — End of February 2020
- 90% Design Documents — End of June 2020
- GMP Contract — August 2020
- Final Acceptance — March 2021

All awards and extensions are subject to annual appropriation of funds. The provisions of the foregoing paragraphs with respect to extensions of the terms of the contract shall be null and void if the contract has been terminated or revoked during the initial term of any extension thereof. All decisions to extend the contract are at the option of the City.

Section 3. CMAR Services

3.1 General

As noted in Section 1 and more fully described in Attachment B (Scope of CMAR Services), the CMAR will provide services in two distinct phases.

Phase 1 services generally includes the CMAR providing input to the design team through value engineering, constructability reviews, cost estimating, schedule development and management, and risk management, in the development of one GMP proposal. A GMP is anticipated to be set at no less than 90% level of completion from the Owner's project schedule, and will include supporting documentation.

Phase 2 services generally encompass completing the Project's construction, startup and commissioning, and warranty. See general descriptions provided below for scope of services included in Phase 1 and Phase 2:

Phase 1 Services

- Develop a preliminary project management plan and project schedule.
- Establish a value engineering process.
- Participate and contribute in design workshops.
- Provide constructability reviews of the project design to ensure that the improvements as proposed provide best value to the City.
- Develop and update a critical path method (CPM) schedule to meet project restrictions.
- Prepare and maintain a project cost model, and submit detailed cost estimates as the design alternatives are advanced. Cost estimates are expected within 20 working days of the completion of 50% design deliverables.
- The CMAR may be requested to provide input on and pre-purchase long lead materials or equipment as a part of Early Work Amendments prior to the 90% GMP.
- Provide additional site investigations including potholing of existing utilities along the force main corridor.
- Assist with completion of applications for utility service to natural gas and electric power providers.
- As a part of 50% Design evaluate open cut crossing versus bored crossings of the Main Boomerang Ditch and Greeley Loveland Irrigation Canal open ditches and crossing of the GLIC's Rubicon 60" RCP and provide recommendations.
- Prepare, implement, and maintain a project risk management plan.
- Develop Construction Management Plan for Phase 2, including a subcontracting and procurement plan.
- Identify Project construction permitting requirements and when certain construction permitting activities should be initiated.
- Develop, submit, and negotiate GMP proposal to complete Phase 2 services.

Phase 2 Services

- Continued value engineering.
- Procure equipment and subcontractors.
- Secure necessary construction related permits.
- Construct the Project.
- Identify manage and mitigate project risks.
- Conduct startup, commissioning and performance testing.

- Provide operator training.
- Provide warranty coverage.

3.2 Roles and Responsibilities

Owner: The Owner will cooperate with the CMAR and will fulfill its responsibilities in a timely manner to facilitate the CMAR's timely and efficient performance of services. Owner responsibilities include:

- Review Phase 1 deliverables and submissions, providing comments to CMAR.
- Furnish existing studies and provide complete, accurate and reliable data and information regarding the Project, including record drawings, preliminary studies, etc.
- Provide information and provide (or engage CMAR to perform) additional studies that may be necessary to complete the Project.
- Provide adequate funding.
- Provide access to the Project site and any necessary easements or property.
- Obtain the governmental approvals and permits. The Owner is responsible for approval of the design by CDPHE and assisting the CMAR in obtaining governmental approvals and permits.
- Provide necessary data and inputs.
- Provide any necessary licensed personnel for start-up services including the oversight of an operator.
- Participation in design review workshops and construction progress meetings.

CMAR: The CMAR will cooperate with the Owner and Design Engineer providing the Phase 1 and Phase 2 in a timely manner to complete the Project scope specified in this RFP. CMAR responsibilities include:

- Participation in Design Review Workshops and construction progress meetings.
- Collaborate with Owner and Design Engineer as required to meet project objectives.
- Prepare construction package and distribute construction package to subcontractors and suppliers.
- Supervise subcontractors and CMAR personnel.
- Obtain certain governmental approvals and permits for construction purposes only.
- Maintain site security and safety.
- Conduct performance and acceptance testing.
- Implement quality-management procedures.
- Implement project health and safety practices.
- Warranty guarantees and insurance.
- Perform risk management and mitigation activities.
- Establish and maintain Change Order Management Plan.

The roles and responsibilities of the Owner and the CMAR are more fully described in Attachment C (Draft Construction Manager-At-Risk Contract).

Engineer: The Engineer will cooperate with the Owner and CMAR and will provide, in a timely manner, the Phase 1 and Phase 2 services necessary to complete the Project scope specified in this RFP. The Design Engineer responsibilities include:

- Preparation of all design documents.
- Participation in Design Review Workshops.
- Assist the Owner in obtaining governmental approvals and permits. Owner is responsible for acquiring approval of the design by CDPHE.
- Provide services during construction that will ensure that the project as constructed

conforms to the design intent and Owner's objectives.

Section 4. Procurement Process

4.1 Communications and Owner Contact

All official communication from the City to Respondents will be via postings on electronic solicitation notification system, the Rocky Mountain Bid System (www.rockymountainbidssystem.com). The Purchasing Contact will post notices that will include, but not be limited to, qualification document, addenda, etc. It is incumbent upon Respondents to carefully and regularly monitor the Rocky Mountain Bid System for any such postings.

On behalf of the Owner, Linda Ingram will act as the sole point of contact for this RFP and shall administer the RFP process. Prospective Respondents may make written inquires by email before the written inquiry deadline concerning this RFP to obtain clarification of requirements. All questions or comments should be directed to the Purchasing Contact as follows:

E-Mail: linda.ingram@greeleygov.com
Subject Line: # FL20-02-037

Response to Respondents inquiries will be published as addenda on the Rocky Mountain Bid System in a timely manner. Respondents cannot rely on any other statement that clarify or alter any term of condition of the RFP.

Should any interested Respondent find any part of the listed terms and conditions to be discrepant, incomplete or otherwise questionable in any respect, it shall be the responsibility of the concerned party to notify the Purchasing Contact of such matters immediately upon discovery.

No oral communications from the Purchasing Contact or other individual is binding. No contact with Owner staff, board members or any public official concerning the Project during the procurement process is allowed. A violation of this provision may result in disqualification of Respondent.

4.2 Procurement Schedule

The current procurement schedule is as follows:

- **Issue RFP: 2/21/2020**
- **Preproposal Meeting 3/04/2020 at 1:00 p.m.**
- **Final questions from proposers 3/13/2020 5:00 p.m.**
- **Final Addendum Issued 3/16/2020 5:00 p.m.**
- **Contractors Proposals Due: 3/24/2020 before 2:00 p.m.**
- **Notification of either Award or Shortlist Interview 4/08/2020**
- **Shortlist Interview (if required) 4/15/2020**

Section 5. Proposal Submission Requirements

5.1 Submittal Place and Deadline

Five paper documents (one original and four copies), as well as one electronic version of the Proposal on flash drive in PDF format, must be received no later than **3/24/2020, before 2:00 pm local time**, addressed to:

Linda Ingram Contract Specialist
City of Greeley
1001 11th Avenue, 2nd Floor
Greeley, CO 80631

Each Proposer assumes full responsibility for timely delivery of their Proposal to the required location**. Any Proposal received after the submittal deadline will be deemed non-responsive and returned unopened.** The delivered packaging containing the Proposal documents must note "Proposal Enclosed" on its face:

Company Name
RFP FL20-02-037
Proposal – Ashcroft Draw Lift Station
Due Date and Time: March 24, 2020, before 2:00 pm.

Proposals may be modified or withdrawn by the Respondent prior to the established due date and time.

5.2 Submission Format

The Proposal must not exceed **15** total pages, with front and back counting as two pages, for Parts 1 through 6 of the proposal. The following items will be excluded from the page count; the transmittal letter, index or table of contents, front and back covers, title pages/separation tabs, and appendices. A maximum of **two** of the total pages may be 11 x 17-inch tri-fold format, with the remainder being 8½ x 11 inch with 1-inch or greater margins. Eleven-point font or larger must be used.

5.3 Submission Content

The content requirements set forth in this RFP represent the minimum content requirements for the Proposal. It is the Proposer's responsibility to include information in its Proposal to present all relevant qualifications and other materials. The Proposal, however, should not contain standard marketing or other general materials. It is the Respondent's responsibility to modify such materials so that only directly relevant information is included in the Proposal.

The Proposal must include the following information in the order listed below:

- Transmittal Letter
- Part 1 – Executive Summary
- Part 2 – CMAR Profile and Minimum Qualifications
- Part 3 – Project Team
- Part 4 – Relevant Project Experience
- Part 5 – Project Approach and Schedule
- Part 6 – Pre-Construction and Construction Fee and Rate Proposal
- Appendix A – Forms for Affirmation of Compliance

- Appendix B – Resumes
- Appendix C – Fee and Rate Proposal.

As a part of Appendix A include Exhibit 1 (Proposal Acknowledgements) and the Debarment/Suspension Certification Statement (Attachment E), and sworn statement attesting to any legal proceedings and judgments.

5.3.1 Transmittal Letter

Proposers must submit a transmittal letter (2 page maximum) on the Proposer's letterhead. It must be signed by a representative of the Proposer who is authorized to sign such material and to commit the Proposer to the obligations contained in the Proposal. The transmittal letter must include the name, address, phone number and e-mail address for the Proposer Contact and must specify who would be the CMAR's signatory to any contract documents executed with the Owner. The transmittal letter may include other information deemed relevant by the Proposer. As a part of the transmittal, please provide any possible concerns on contractual language, proposed edits, or note acceptance of the contract terms.

The Proposer must notify the Owner of any changes subsequent to submission of the Proposal and before the selection process is completed (and, in the case of the selected Proposer, before execution of the Construction Manager-At-Risk Contract).

5.3.2 Part 1 – Executive Summary

The executive summary (maximum 2 pages) must include a concise overview of the key elements of the Proposal. The executive summary shall not be used to convey additional information not found elsewhere in the Proposal.

5.3.3 Part 2 – CMAR Profile and Minimum Qualifications

Proposer shall submit the Qualifications checklist provided as Attachment G to verify that the proposer meets all project minimum requirements as specified by the Owner. The list is established as the minimum requirements to prequalify for the project and the proposer must represent that all minimum requirements have been met to prequalify for the project. The minimum requirements will not be verified until the RFP has been submitted. If it is found during the RFP review process that the proposer does not meet all of the minimum requirements the proposer will immediately be removed from the qualified contractor list, without scoring the proposal. Should the Proposer want to verify that the requirements have been met, include necessary documents so that the Owner can make this determination. Qualification documents can be submitted to Justin Scholz at justin.scholz@greeleygov.com no later than **03/13/2020 by 5:00 pm.**

A detailed and complete description of the CMAR must be provided in Part 2 of the RFP. Information concerning Key Personnel and other firms that may be included on the Project Team, such as sub-consultants and subcontractors, should be provided in Part 3 of the RFP. The CMAR Profile must include the following information.

- **General**

  Provide general information about the CMAR, such as lines of business and service offerings, locations of home and other offices, number of employees (professional and non-professional), and years in business.

- **Project office location**

  Identify where the CMAR intends to maintain its project office(s) and the location of where the construction management work will be performed. An office within 100 mile radius of the City of Greeley is required for the duration of the project. The proposed Construction Project Manager and lead superintendents need to be located in the State of Colorado for the duration of the project. The City prefers local participation from all team members during both phases of project.

- **Payment and performance bonds**

  A letter from the CMAR's surety must be provided to verify the availability of a CMAR to bond at least $3 million per individual project for this Project. The CMAR shall also indicate their individual project and aggregate bonding capacities. The surety must be authorized by law to do business in Colorado and must have an A.M. Best Company Rating of "A" or better. The surety must also be listed in the U.S. Department of Treasury's Circular 570.

- **Minimum Insurance Requirements for Pre-Construction, Phase One Services**

  A letter or Certificate of Insurance from the CMAR's insurance company must be provided stating its ability to acquire and provide the following minimum limits for the required insurance:
  - The ability to name the City of Greeley as "additional insured."
  - Statutory workers compensation insurance (as required by state law)
  - Employer's Liability Insurance in an amount not less than $100,000 for each occurrence.
  - Comprehensive General Liability: bodily injury, $1,000,000 each person, $2,000,000 each occurrence; property damage, $1,000,000 each occurrence.
  - Comprehensive Automobile Insurance: bodily injury, $650,000 single limit bodily injury; and $50,000 property damage.

- **Minimum Insurance Requirements for Construction, Phase Two Services**

  A letter or Certificate of Insurance from the CMAR firm's insurance company must be provided stating its ability to acquire and provide the following minimum limits for the required insurance:

  The CMAR's commercial general motor vehicle and pollution liability insurance, as required, shall be written for not less than the following limits of liability:
  - Commercial General Liability: 1) Personal Injury: $1,000,000 each occurrence; $1,000,000 aggregate; 2) Property Damage: $2,000,000 each occurrence; $5,000,000 aggregate.
  - Commercial Motor Vehicle Liability: 1) Bodily Injury: $1,000,000 combined single limit.
  - Pollution Liability: $2,000,000 each occurrence; $2,000,000 aggregate.
  - Umbrella liability insurance in excess of the liability coverages listed herein in the amount of $5,000,000.
  - Commercial liability insurance may be arranged under a single policy for the full limits required or by a combination of underlying policies with the balance provide by an excess or umbrella liability policy.

  The required insurance must be obtained and maintained from insurance companies that have an A.M. Best Rating of "A" or better and are duly licensed or authorized in Colorado.

The RFP must provide the following additional information pertaining to factors or events that have the potential to adversely impact the CMAR's ability to perform its contractual commitments.

- **Material adverse changes in financial position**. Describe any material historical, existing or anticipated changes in financial position, including mergers, acquisitions, takeovers, joint ventures, bankruptcies, divestitures, or any material changes in the mode of conducting business.
- **Legal proceedings and judgments**. List and briefly describe any pending or past (within 10 years) legal proceedings and judgments, or any contingent liability that could adversely affect the financial position or ability to perform contractual commitments to Owner. If no such proceedings or judgments are listed, provide a sworn statement to that effect from the respondent's legal counsel.
- **Completion of contracts**. Has the CMAR failed to complete any contract, or has any contract been terminated due to alleged poor performance or default within the past 10 years? If so, describe the circumstances.
- **Violation of laws**. Has the CMAR been convicted of any criminal conduct or been found in violation of any federal, state, or local statute, regulation, or court order concerning antitrust, public contracting, employment discrimination or prevailing wages within the past 10 years? If so, describe the circumstances.
- **Debarred from bidding**. Has the CMAR been debarred within the past 10 years, or is it currently under consideration for debarment, on any public (municipal, state or federal) contracts? If so, describe the circumstances.

If any of the above questions are answered in a manner that indicates that any of these unfavorable factors or events are present, it is the Respondent's responsibility to: (1) describe in detail the unfavorable factor or event; and (2) provide sufficient information to demonstrate that the unfavorable factor or event will not adversely impact the CMAR's ability to perform its contractual commitments.

The Respondent must notify the Owner of any changes subsequent to submission of the RFP and before the selection process is completed (and, in the case of the selected Respondent, before executing the Construction Management-at Risk Contract).

5.3.4 Part 3 – Project Team

The composition, organization and management of the CMAR Project Team must be described in two separate subsections.

CMAR/other firms:

- Identify any other firms (such as subcontractors and sub-consultants) included on the Project Team along with the CMAR, and describe the scope of the CMAR's and each firm's services and responsibilities during Phase I and Phase II of the Project.
- Provide Phase I and Phase II organizational charts showing the reporting relationships and responsibilities of the CMAR. Identify any other firms, and describe the CMAR's approach to the management of said firms.
- Provide a list of sub-contractors the CMAR has previous experience with including firms name and address. Identify if said sub-contractor(s), the CMAR has listed, has a local presence in the Greeley (or northern Colorado) marketplace.

Key Personnel

- Identify all Key Personnel (and their firm affiliations) on the Project Team and describe their specific responsibilities during the Project.

- Provide Phase I and Phase II organizational charts showing the reporting relationships and responsibilities of all Key Personnel (along with their firm affiliations) and describe the CMAR's approach to the management of such Key Personnel.
- Indicate the commitment of all Key Personnel in terms of an estimated percentage of time (or total hours) committed to the Project.
- Describe the current workload for Key Personnel in terms of projects underway; include project role, the location of the project (City and State), the anticipated date for project completion and the estimated percentage of time dedicated to the current project.
- Provide resumes for all Key Personnel in Appendix B (Resumes). Resumes must be limited to **two** pages per individual and include their experience as it relates to the Project and to the individual's specified role on the Project.
- Demonstrate that project managers or field superintendents have experience with preconstruction related services.

Any change in the firms or Key Personnel included in the RFP will require approval by the Owner.

5.3.5 Part 4 – Relevant Project Experience

The RFP must describe the performance history and experience of the Project Team on similar projects and provide information concerning safety.

Reference Projects

The Respondent shall submit descriptions of reference projects to demonstrate relevant experience. (Details regarding the preferred scope and size of the reference projects are listed in Attachment G.)

Each project description shall contain at least the following information:

- Name of owner.
- Owner reference and contact information.
- Role of respondent
- Project value including: the original GMP or lump sum, the final completed construction value and the percentage of final GMP or lump sum that was directly related to Owner (including Owner Representative) directed changes.
- Year started and year completed.
- Description of the project showing relevance to this Project.
- Names of firms and Key Personnel that participated in project and are included in this RFP, along with a clear description of the roles and responsibilities of each.

Safety

Provide a summary description of the CMAR's corporate safety program and include safety statistics or records indicating categories of accidents and their incidence or frequency rates for the past three years. The following safety records must be provided for the contractor for the current and past three years:

- The experience modification rate (EMR) calculated by the National Council on Compensation Insurance or similar rating bureau. (The EMR is also referred to as the experience modification rating, experience modification factor, experience modifier or X-mod.) An EMR less than 0.9 is preferred.

- The days-away-from-work injury incident rate (DART - days away, restricted or transferred). A day-away-from-work injury is an injury that prevents an employee from returning to his or her next regularly scheduled shift, one or more restricted days or that resulted in an employee transferring to a different job within the company. The incidence rate is calculated by multiplying the number of days-away-from-work, restrictions or job transfers for the particular year by 200,000 and then dividing the product by the total hours worked by employees during the year covered.

5.3.6 Part 5 – Project Approach

Provide a description of the CMAR's approach for managing and performing its services during Phase 1 and Phase 2 of the Project. The following items should be addressed, with preference given to information specifically relevant to this project and founded in recent, similar experience particularly in a CMAR delivery model:

- Discuss how a collaborative relationship with the Owner and Design Engineer would be established during Phase 1 and the transition into Phase 2 construction services.
- Describe your firm's approach to construction sequencing for this project.
    - If early-out packages could be utilized in the process, define the potential packages, the benefits to the City to approve such packages, and impacts on project schedule.
- Discuss your company's ability to self-perform construction activities, and define what activities you anticipate self-performing on this project (An ability to self-perform a minimum of 50% of the construction is preferred).
- For work that is proposed to be self-performed how do you propose to insure that the City is getting best value.
- Describe the process that will be used to procure sub-contractors and equipment that will insure best value to the City.
- Discuss how your firm will aid in the development of the final project scope of construction at and after the 50% design milestone. Provide examples of your experience on CMAR projects to improve constructability, schedule, and/or cost on similar projects.
- Identify key project risks your firm has identified especially focusing on constructability of the proposed improvements as currently proposed and describe your plan to mitigate those risks across all phases of the project.
- Describe the process for developing the GMP proposal at 90% design milestone (defined by the Owner and including the approach to establishing contingency) and for developing early-out equipment and/or construction package GMP if proposed.
- Provide a narrative on the approach to project safety.
- Provide a narrative on the approach to quality of construction.
- Provide a schedule in the scope along with key milestones and completion dates. The schedule should identify critical path tasks related to the design and construction of the project.

5.3.7 Part 6 – Pre-Construction and Construction Fee and Rate Proposal

The Proposer must complete RFP Attachment F (Fee and Rate Proposal Form) – with all required pricing information as Proposal Appendix C (Fee and Rate Proposal). The scope of CMAR services for which pricing is required is defined in RFP Attachment B (Scope of CMAR Services), which shall correspond to the fee provided for Phase 1: Pre-Construction Services. The Phase 2 CMAR Construction Services Fees shall be included in Attachment F calculated based on the estimated construction cost noted in Section 2.2. The contractor should include estimated project contingencies, general conditions costs, overhead, profit, and Insurances and Bond associated costs. Part 6 of the Proposal should describe the basis for the fee and rate proposal and discuss its viability from the CMAR's perspective.

Be advised that the Owner is not interested in proposed pre-construction fees or rates that provide excessive discounts from the CMAR's anticipated actual costs for the requested services. If Owner determines (at its sole discretion) that the fees and rates included in a Proposal are unacceptably below industry norms or that a Proposer's fees and rates are substantially or unacceptably below other Proposals, the Owner may (at its sole discretion) either declare that Proposal to be non-responsive or seek additional detailed information from that Proposer concerning the cost basis for its fee and rate proposal, prior to rendering a decision on the Proposal's responsiveness.

Section 6. Proposal Evaluation and Selection

6.1 General

The Proposals will be reviewed and evaluated by the Owner's selection committee (with assistance provided by outside advisors if desired by Owner) according to the requirements and criteria outlined in this Section 6. During the Proposal evaluation process, written questions or requests for clarification may be submitted to one or more Proposers regarding its Proposal or related matters. Failure to respond in a timely manner to any such questions or requests may be grounds for elimination of the Proposer from further consideration. An interview may be requested by short-listed offerors prior to award. However, an interview may not be required, and therefore, complete information should be submitted with your proposal. Committee members may revise their initial scores based upon additional information and clarification received in this phase. If your company is invited to present to the committee, these dates may not be flexible.

6.2 Responsiveness

Each Proposal will be reviewed to determine whether it is responsive to the RFP. Failure to comply with the requirements of this RFP may result in a Proposal being rejected as non-responsive. At its sole discretion, however, the selection committee may waive any such failure to meet a requirement of this RFP and may request clarification or additional information to remedy a requirement.

6.3 Minimum Mandatory Qualifications and Comparative Evaluation Criteria

Each responsive RFP will be reviewed to determine whether it meets the Minimum Qualification Requirements and the Comparative Evaluation Requirements outlined in this subsection. At the selection committee's sole discretion, the selection committee may waive any failure to satisfy such requirements and may request clarification or additional information to address any questions that may arise in this regard. Any RFP that does not satisfy all of the following Minimum Qualification Requirements shall be rejected. If the responsive RFP meets the minimum mandatory qualifications, then a Comparative Evaluation will be applied to score the proposals.

The City of Greeley awards contracts to responsible vendors only. The City reserves the right to make its respondent responsibility determination at any time in this RFP process and may not make a responsibility determination for every Respondent. Deletions or incomplete responses in terms of content or aberrations on form may, at the City's discretion, render the Respondent's submittal non-responsive.

The City of Greeley's Municipal Code defines a "Responsible Respondent" as one who has "the capability in all respects to perform fully the contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment, and credit which will assure good faith performance." The City reserves the right to request information as it deems necessary to determine a Respondent's responsibility. If the Respondent fails to supply the requested information, the City shall base the determination of responsibility upon any available information or may find the Respondent non-responsible if such failure is unreasonable. Minimum qualifications are evaluated on a pass/fail basis as part of the minimum submission requirements. The minimum qualifications are listed in Attachment G of this RFP.

In ranking the proposals, the selection committee will utilize a 100-point scale whereby the maximum points awarded for each of the evaluation criteria will be based on the percentage weight set forth above. Total scores will be tabulated and committee member's scores will be normalized to complete the ranking portion of the evaluation.

Proposal Comparative Evaluation Requirements:	Points Available
Part 2 - CMAR Profile and Minimum Qualifications	5
Part 3 - Project Team	25
Part 4 - Relevant Project Experience	15
Part 5 - Project Approach	25
Part 6 - Pre-Construction Fee and Rate Proposal	5
Part 6 - Construction Fee and Rate Proposal	25
Total	100

6.4 Selection

The City of Greeley will base their selection on the results from the combination proposals and interview if required. After the evaluation process is complete, the Owner will select the proposer that submits the proposal that offers the best value based on the published selection criteria and on its ranking evaluation. Total scores will be tabulated and committee member's scores will be normalized to complete the ranking portion of the evaluation.

The Owner shall first attempt to negotiate a contract with the selected proposer. If the Owner is unable to negotiate a satisfactory contract with the selected proposer, the Owner will, formally and in writing, end negotiations with that proposer and proceed to negotiate with the next proposer in the order of the selection ranking until a contract is reached or negotiations with proposers end.

Section 7. Conditions for Proposers

7.1 Owner Authority

Owner is a Home Rule Municipality in the State of Colorado as set forth in Article 20, Section 6 of the Colorado Constitution. The procurement process for this Project is authorized under Article III – Source Selection and Contract Formation.

7.2 Ineligible Firms and Individuals

The following firms and individuals are serving in an advisory capacity to the Owner for this Project and are therefore not eligible to assist or participate with any Respondent that submits a Proposal for the Project.

- Plummer Associates, Inc.

7.3 Conflict of Interest

The following laws mandate the public disclosure of certain information concerning persons doing business or seeking to do business with the Owner, including affiliations and business and financial relationships such persons may have with Owner officers: Greeley is subject to C.R.S. 24-72-201+, Colorado Public Records Law.

7.4 Proprietary Information

All materials provided in the Proposal and during the Proprietary Meetings will be confidential until a contract is awarded and fully executed. At that time, all the associated documents pertaining to the Proposals will be open for public inspection, except for the material that is clearly marked proprietary or confidential. However, requests for confidentiality can be submitted to the Purchasing Contact provided that the submission is in accordance with the following procedures. This remains the sole responsibility of the Proposer. The Purchasing Contact will make no attempt to cure any information that is found to be at a variance with this procedure. The Proposer may not be given an opportunity to cure any variances after proposal opening. **Neither a Proposal package in its entirety, nor any potential proposal price information will be considered confidential/proprietary.** If the Proposal contains proprietary information that the Proposer does not want disclosed, each page containing such information must be identified and marked “PROPRIETARY” at the time of submittal. Failure to identify proprietary information will result in all unmarked sections being deemed non-proprietary and available upon public request. Questions regarding the application of this procedure must be directed to the Purchasing Contact listed in this RFP.

7.5 Rights of the Owner

In connection with this procurement process, including the receipt and evaluation of Proposals and award of the Construction Manager-At-Risk Contract, Owner reserves to itself (at its sole discretion) all rights available to it under applicable law, including without limitation, with or without cause and with or without notice, the right to:

- Cancel, withdraw, postpone, or extend this RFP, in whole or in part, at any time prior to the execution of the Construction Manager-At-Risk Contract, without incurring any obligations or liabilities.
- Modify the procurement schedule.
- Waive deficiencies, informalities and irregularities in a Proposal and accept and review a non-conforming Proposal.
- Suspend and terminate the procurement process or terminate evaluations of Proposals received.

- Permit corrections to data submitted with any Proposal.
- Hold meetings and interviews, and conduct discussions and correspondence, with one or more of the Proposers to seek an improved understanding of any information contained in a Proposal.
- Seek or obtain, from any source, data that has the potential to improve the understanding and evaluation of the Proposals.
- Seek clarification from any Proposer to fully understand information provided in the Proposal and to help evaluate and rank the Proposers.
- Reject a Proposal containing exceptions, additions, qualifications or conditions not called for in the RFP or otherwise not acceptable to the Owner.
- Conduct an independent investigation of any information, including prior experience, included in a Proposal by contacting project references, accessing public information, contacting independent parties, or any other means.
- Request additional information from a Proposer during the evaluation of its Proposal.
- Negotiate the award for services with a sole Proposer in lieu of accepting the Proposal as is, in the event only one (1) responsive RFP is received by the City.

7.6 Obligation to Keep Project Team Intact

Proposers are advised that all firms and Key Personnel identified in the Proposal shall remain on the Project Team for the duration of the procurement process and execution of the Project. (The anticipated dates for award of the Construction Manager-At-Risk Contract and for completion of the Project are set forth in Section 2.3 of this RFP.) If extraordinary circumstances require a change, it must be submitted in writing to the Owner Contact, who, at his sole discretion, will determine whether to authorize a change, recognizing that certain circumstances (such as termination of employment) may occur that are beyond the CMAR's control. Unauthorized changes to the Project Team at any time during the procurement process may result in elimination of the Proposer from further consideration.

7.7 Addenda

If any revisions to the RFP or procurement process become necessary or desirable (at the Owner's sole discretion), the Owner may issue written addenda. **The Owner will post all addenda to bid-net. It is Proposer's responsibility to obtain all addenda prior to submitting its Proposal.**

7.8 Protests

Any actual or prospective firm, Respondent or contractor who is aggrieved in connection with the solicitation or award of a contract must protest in writing to the City Manager as a prerequisite to seeking judicial relief. Protestors are urged to seek informal resolution of their complaints initially with the Purchasing Manager. A protest shall be submitted within ten (10) calendar days after such aggrieved person knows or should have known of the facts giving rise thereto. A protest with respect to an invitation for bids or request for proposals shall be submitted in writing prior to the opening of bids or the closing date of proposals, unless the aggrieved person did not know and should have known the facts giving rise to such protests prior to bid opening or the closing date for submittals.

Stay of procurement during protests. In the event of a timely protest under, the Purchasing Manager shall not proceed further with the solicitation or award of the contract until all administrative and judicial remedies have been exhausted or until the City Manager makes a written determination on the record that the award of a contract without delay is necessary to protect substantial interest of the City. (Ord. 75, 1984 §2 (part))

7.9 Other Conditions under this RFP

Acceptance of RFP Terms: A submission in response to this RFP shall constitute a binding offer. The autographic signature of a person who is legally authorized to execute contractual obligations on behalf of the Proposer shall indicate acknowledgment of this condition. A submission in response to this RFP acknowledges acceptance by the Respondent of all terms and conditions as set forth herein. Respondents shall identify clearly and thoroughly any variations between their Proposal and the RFP in the cover letter. Failure to do so shall be deemed a waiver of any rights to subsequently modify the terms of performance, except as outlined or specified in the RFP.

Assignment and Delegation: Neither party for any resulting contract may assign or delegate any portion of the agreement without the prior written consent of the other party.

Availability of Funds: Financial obligations of the City of Greeley payable after the current fiscal year are contingent upon funds for the purpose being appropriated, budgeted and otherwise made available. In the event funds are not appropriated, any resulting contract will become null and void without penalty to the City.

Incurring Costs: The City is not liable for any cost incurred prior to issuance of a legally executed contract and/or purchase order.

Non-Discrimination: The Respondent shall comply with all applicable state and federal laws, rules and regulations involving non-discrimination on the basis of race, color, religion, national origin, age or sex.

Taxes: The price or prices for the Work will include full compensation for taxes that the Contractor is or may be required to pay. The Contractor shall bear the risk of any added or increased taxes occurring during the prosecution of the Work. A change in taxes shall under no circumstances entitle the Contractor to an adjustment under the Contract.

The Contractor's attention is directed to the fact that this Project is exempt from payment of City of Greeley Sales and Use taxes, and such taxes must not be included in the amount of bid.

The Contractor shall pay all sales and use taxes required to be paid, shall maintain such records in respect of his work, which shall be separate and distinct from all other records maintained by the Contractor and shall be available for inspection by the Owner at any and all reasonable times, and shall furnish the Owner with such data, as may be necessary to enable the Owner to obtain any refunds of such taxes which may be available to the Owner under the laws, ordinances, rules or regulations applicable to such taxes. The Contractor shall require each of his subcontractors to pay all sales and use taxes required to be paid and to maintain such records and furnish the Contractor with such data as may be necessary to enable the Owner to obtain a refund of the taxes paid by such subcontractors.

Attachment A

Definition of Terms

The definitions of some of the capitalized terms used in this RFP are presented below:

Construction Manager-At-Risk (CMAR) – The entity that will enter into the Construction Management-at Risk Contract with the Owner and that will be the single point of accountability to the Owner for delivery of the services and the Project.

Construction Phase (Phase 2) – The portion of the work upon that begins on the acceptance of the Guaranteed Maximum Price through to Final Completion

Contract Documents – The Contract Documents are comprised of the items listed in the Draft Construction Manager-At-Risk Contract, Article 2 (Attachment C).

Engineer – An independent engineering firm that provides professional design services and be in responsible charge of the design, leading to the completion of documents deemed ready for construction.

Draft Construction Manager-At-Risk Contract – The contract, including the agreement and all of its attachments, presented as RFP Attachment C (Draft Construction Manager-At-Risk Contract).

Guaranteed Maximum Price (GMP) – An agreed upon price and schedule for a specified portion of work to be completed by the CMAR as defined in the Contract Documents.

Key Personnel – The individuals, employed by CMAR or other firms included on the Project Team, who would fill certain key roles in delivery of the Project and related services by the CMAR, including the following positions: project manager, safety manager, superintendent, cost estimator, and scheduler.

Minimum Qualification Requirements – The requirements set forth in Attachment G of this RFP that, at a minimum, must be satisfied in order for the Proposal to be evaluated and ranked according to the comparative evaluation criteria.

Owner – City of Greeley

Preconstruction Phase (Phase 1) - The portion of the work prior to the acceptance of the Guaranteed Maximum Price

Project – Ashcroft Draw Lift Station

Project Team – The Construction Manager-At-Risk, Key Personnel and any additional firms (such as subcontractors and sub consultants) included in the Proposal.

Proposer – The entity responding to this RFP by submitting the Proposal.

Work – Work is comprised of all construction and other services required by the Contract Documents, including procuring and furnishing all materials, equipment, services and labor reasonably inferable from the Contract Documents.

Attachment B

Scope of Construction Manager-At-Risk Services

The CMAR Preconstruction Phase services will be provided in accordance with the pricing included in the price proposal provided.

The CMAR will provide the following Preconstruction Phase services:

General

1) This scope provides additional details on work that shall be completed by the CMAR prior to the acceptance of the Guaranteed Maximum Price (GMP) proposal(s) and the construction phase of the work.

2) Work that shall be completed by the CMAR prior to the acceptance of the GMP proposal shall herein be referred to as "Preconstruction" within the preconstruction phase of the project.

Administration for Preconstruction Services

1) CMAR Contract Administration

a) Monthly Status reports and schedules shall be provided with payment applications. Status reports shall describe activities performed during reporting period, anticipated activities during the next period and any problems or anticipated issues that would impact project scope, schedule or budget.

Preconstruction Services

1) Construction Management Plan

a) This plan shall be initiated during the preconstruction phase of the project, and shall be updated and maintained for the entirety of the project. As part of the Construction Management Plan the CMAR shall provide:

i) Project Schedule: Prepare a project schedule for the Project that shall include the estimated start and finish dates for each project activity, all activities through start-up and commissioning, and the estimated critical path. All preconstruction activities including, but not limited to design milestones provided by the Design Engineer shall be included in the schedule. The project schedule shall be submitted to the OWNER and the Design Engineer upon Notice to Proceed, (NTP), of the preconstruction phase services of the project. The CMAR shall be responsible for maintaining an up to date schedule. The schedule will be used during the preconstruction phase services to evaluate progress on the evolving design.

ii) Cost Analysis: Develop and maintain a project cost estimate that will be used during the preconstruction phase services to validate conformance with the project budget.
(1) Develop a work breakdown structure for the project in the cost model which is to be shared with the OWNER and Design Engineer;

iii) Permitting Plan: The plan should identify all construction related permits to be obtained and any other permits OWNER may desire the CMAR to be responsible for managing on their behalf and permits the team has already identified during the preconstruction phase services.

iv) Risk Register: Develop and maintain a project risk register that identifies and quantifies potential project risks and the associated cost, schedule and scope impacts by the potential chance of occurrence.
v) Safety Plan: Develop and maintain a safety plan that identifies and quantifies potential project risks. Provide a means of tracking safety results for the duration of the project focusing on the construction phase.
vi) Environmental Management Plan: Provide an environmental management plan detailing programs for a storm water pollution prevention plan and handling other environmental issues (dust, on site chemicals and fuel, etc.) required to comply with permits and regulations applicable to the Project.
vii) Quality Plan: The quality plan should identify the checks and balance provisions that will be in place during construction to deliver a well-constructed project. Provide details on tracking mechanisms that will be in place to monitor project quality throughout construction. The QC program plan shall focus on the insurance of continuing attention to the production and installation of error-free work.

b) The CMAR shall submit electronic copy (PDF format) of the construction management and control plan to OWNER and to the Design Engineer.

2) Project Design Meetings

a) The CMAR's key personnel including the project manager, superintendent(s), quality manager, lead scheduler, lead estimator and/or procurement specialist shall participate in a two (2) hour formal project kick-off meeting with OWNER.
b) The CMAR shall participate in meetings every other week via conference call with key personnel with the OWNER and the Design Engineer to update the entire team on the design, project schedule, constructability review, and scope conformance; assume each meeting is (1) one hour for the duration of the preconstruction phase services, which is assumed to be 6 months in duration.
c) The CMAR team including the Project Manager, Estimator, Scheduler and Superintendent along with any other necessary personnel shall participate in up to six (6) additional one (1) hour meetings or workshops with the Design Engineer, OWNER or others as needed at OWNER's offices.
d) The CMAR shall prepare budgetary estimates of design alternatives and present the results at the various project meetings.

3) Scope, Schedule, and Budget Tracking:

a) The CMAR shall be responsible for tracking intermediate design changes that impact scope, schedule and or budget between milestones. Changes provided by the Design Engineer shall then be incorporated into the project schedule and budget on a monthly basis.
i) Gaps, overruns and other changes that may potentially impact the overall project shall be brought to the attention of the Owner and Design Engineer in writing.
ii) Through this exercise, advise the Owner of ways to gain efficiency in project delivery or constructability.

4) Review of Design Documents:

a) The CMAR shall provide constructability review and consult on design document clarity and consistency issues in the development of the 50%, and 90% design milestone review packages, including recommendations on design packaging to advance construction, material availability and independent quantity calculations and to propose all items that may provide additional value to the project. Provide written report documenting review comments within three (3) weeks of receipt of design documents.
b) At the aforementioned design milestones, review the design documents being prepared for the project. Within twenty (20) working days of receiving the documents, present in written form constructability reviews, and innovative alternative suggestions that bring value to the

project (with order of magnitude cost and time impacts) to the Design Engineer and OWNER for consideration.

i) The CMAR's team including the Project Manager, Estimator, Scheduler and Superintendent along with any other necessary personnel shall attend design review workshops at the 50% and 90% engineering design review milestones. All of these review workshops will be 2 hours in duration.

ii) The CMAR shall perform and submit independent detailed construction cost estimates for the Project and Critical Path schedules at the 50% design review milestones which shall include project assumptions; and reconciliation with previous estimates and schedules. Present the results of this reconciliation exercise at the workshops.

(1) If there is a budget gap between the cost estimates the CMAR shall identify the gap and provide potential adjustments to solve the gap and compile them into the written design review report;

(2) If there is a gap between milestone schedules, CMAR shall provide project planning and scheduling report in the written report (using critical path methods) to identify non-conformances with the baseline schedule for the design and construction phases to recommend elements of the Project that may need adjustment and/or require less than 100% design in order to alleviate the gap and bring the project back on schedule.

iii) The 50% design milestone workshop will serve to define the project to be continued forward for design and construction. The CMAR shall assist the team in developing the scope of work for the project through cost analysis, schedule review, and present options such as quality project alternatives to be held for future construction if the budget allows. At the 50% design milestone the CMAR shall propose the preferred packages of design elements for construction, including the proposal of early-out packages.

c) The CMAR shall provide alternative pricing at 50% design to estimate the cost to increase the depth of the wet and dry pit. This is for budgetary purposes only.

d) The CMAR shall submit an electronic copy (PDF format) of the design review report to OWNER and Design Engineer.

5) Procurement Plan

a) Develop and implement a Project Procurement Plan which identifies the work packages to be used to facilitate bids, quotes and proposals for the major elements of the Work. The Procurement Plan shall meet OWNER's Purchasing Policies and shall:

i) Describe the procurement process for the selection of construction subcontracts, and quotations for equipment and materials;

ii) Clearly identify and justify any need to implement a prequalification process for subcontractors, vendors and suppliers to meet the estimated project schedule; written approval from OWNER must be obtained prior to the prequalification process.

iii) Identify and recommend which work, if any, should be procured through value based competitive selections, in lieu of low bid;

iv) Identify subcontract work packages, equipment and material requests for quotation.

v) Identify long-lead equipment procurement needs and submit a validation report to OWNER indicating how the equipment will be procured without impacts to the critical path schedule;

vi) Clearly identify Work packages that the CMAR intends to bid with the intent to self-perform the work.

vii) Develop a list of potential bidders, Subcontractors and equipment suppliers.

b) The CMAR shall lead a workshop to review the Procurement Plan with the team and advise the OWNER and the Design Engineer of ways to gain efficiency in project delivery and work packages.

c) The CMAR shall submit an electronic copy (PDF format) of the final procurement plan to OWNER and Design Engineer.

6) Confirmation of existing infrastructure:

a) Complete up to 25 potholes to supplement record data and survey information supplied by the Owner prior to construction. It should be assumed that 5 of the potholes are located within a paved roadway section that will require necessary traffic control and pavement repair per City of Greeley standards. It should also be assumed that half of the potholes will be at a depth ranging from 6 feet to 10 feet and the remainder will be less than 6 feet. The CMAR will complete the ROW permit applications however, the City will cover the cost of the permit fee.

Potholing for verification of existing piping and utility identification and location will be jointly scoped by Owner, CMAR, and Engineer. Intent is for CMAR to assist in defining appropriate locations and level of detail in preconstruction phase to provide information to further develop the design, addressing specific areas of risk, constructability, and sequence of work. CMAR to be responsible for collection and distribution of potholing information, and to track record information for use during construction and for record documentation.

7) Prepare a Guaranteed Maximum Price (GMP) Proposal(s):

a) Finalize the Procurement Plan. Include the list of potential bidders, Subcontractors and equipment suppliers.
b) Prepare a draft GMP Proposal(s) for the 90% submittal and provide the draft to OWNER and Design Engineer at least one week ahead of schedule GMP negotiation workshop;
c) The CMAR shall prepare GMP(s) that include unit cost, quantities and estimation assumptions.
    i) Attend a GMP negotiation and finalization meeting; assume (2) hour, review session upon completion of the 90% deliverable to present the GMP proposal(s) to the team and an additional, (2) hour, negotiation session to review the revised GMP from the original session.
        (1) The GMP(s) will be reviewed by the Design Engineer and compared with the opinion of probable construction cost (OPCC) completed by the Design Engineer at the 90% design milestone.
        (2) Critical unit costs, quantities and assumptions included in the GMP will be compared to the OPCC and any discrepancies will be resolved during GMP negotiations.
d) The CMAR shall submit electronic copy (PDF format) of the initial and final GMP to OWNER and Design Engineer.

Construction Services

The detailed scope of construction services shall be determined at a later date.

Attachment C

Construction Manager-At-Risk Contract

C-1 Owner and Construction Manager at Risk Agreement
C-2 Standard General Condition of the Contract Section 00510
C-3 Special Provisions Section 00620

OWNER AND CONSTRUCTION MANAGER AT RISK AGREEMENT

AGREEMENT

RFP FL#20-02-037

Ashcroft Draw Lift Station

Made this XX day of Date BETWEEN the Owner: City of Greeley, Colorado with an address of 1100 10th Street, Suite 300, Greeley, Colorado 80631

and the Construction Manager at Risk (hereinafter referred to as the "CMAR"): CMAR Contractor

For services in connection with the Project known as: Project Name
As further described in Article 2:

Notice to the Parties shall be given at the above addresses.

The Owner and CMAR, in consideration of their mutual covenants herein, agree as set forth below.

Table of Contents

ARTICLE 1: RELATIONSHIP OF THE PARTIES

1.1 Owner and CMAR: The CMAR and the Owner shall perform as stated in this Agreement and each accepts the relationship between them that is established by this Agreement. This document is to be used in connection with the Standard General Conditions of the Contract between Owner and Construction Manager at Risk attached hereto as Attachment D ("General Conditions").

1.2 Standard of Care: The CMAR covenants with the Owner to furnish its skill and judgment with due care in accordance with applicable federal, state, and local laws and regulations that are in effect on the date of this Agreement first written above.

1.3 Owner and Engineer: The Owner shall contract separately with one or more Engineers to provide architectural and engineering design for the Project, agreement(s) to which the CMAR is not a party. The Project is defined in Article 2 of this Agreement. This Agreement shall not give the Engineer any claim or right of action against the CMAR and this Agreement shall not create a contractual relationship between any parties except the Owner and the CMAR.

1.4 Owner and Contractors: The Owner will require the CMAR to contract directly with Subcontractors as may be necessary for construction or supply of the Project. All such contracts shall be issued consistent with the applicable provisions of this Agreement.

1.5 Relationship of the CMAR to the Engineer and Other Project Participants: In providing construction management services described in this Agreement, the CMAR shall endeavor to maintain a working relationship with the Engineer. Notwithstanding the foregoing, the Engineer shall be solely responsible for the Project design and shall perform in accordance with the Engineer agreement with the Owner and nothing in this Agreement shall be construed to mean that the CMAR is responsible for the design of the Project or that the CMAR assumes any of the contractual or customary duties of the Engineer or any other persons or parties not specified by this Agreement.

ARTICLE 2: PROJECT DEFINITION

2.1 Definitions: The term "Project" when used in the Agreement shall mean the total construction (preconstruction and construction) to be performed under this Agreement. The term "Work" required for the "Project" used in this Agreement shall mean the various parts of total construction to be performed under this Agreement.

ARTICLE 3: CMAR BASIC SERVICES

3.1 CMAR Basic Services: The CMAR shall perform the Basic Services described herein. It is not required that the Basic Services be performed in the sequence in which they are described in this form agreement.

3.1.1 All CMAR services shall be split into two phases, Preconstruction and Construction. For use in this agreement and the general conditions the preconstruction phase shall include the following activities: General Preconstruction Administration Phase, Design Phase, and Procurement Phase.

3.1.1.1 All preconstruction activities shall comply with the detailed scope of services in Attachment A "CMAR Scope of Services".

3.2 General Preconstruction Administration Phase

3.2.1 Project Management

3.2.1.1 Construction Management Plan: The CMAR shall prepare a Construction Management Plan for the Project as more specifically outlined in Attachment A "CMAR Scope of Services". In preparing the Construction Management Plan, the CMAR shall consider the Owner's schedule, budget, and design requirements for the Project as provided in the RFQ and other written documentation delivered by Owner to CMAR. The CMAR shall then develop various alternatives for the sequencing and management of the Project and shall make recommendations to the Owner. The Construction Management Plan shall be presented to the Owner for acceptance.

3.2.1.2 Master Schedule: In accordance with the Construction Management Plan, the CMAR shall prepare a Master Schedule of Contract Times for the Project for review by Engineer, if applicable, and Owner and acceptance by the Owner. The Master Schedule shall specify the proposed Contract Times,

which include the start and finish dates for each project activity and the dates by which certain construction activities must be complete. The CMAR shall submit the Master Schedule to the Owner for acceptance in accordance with the General Conditions.

3.2.1.3 Design Phase Milestone Schedule: The Master Schedule shall include a Milestone Schedule for the Design Phase. The Design Milestone Phase Schedule may be used in the contract for the Engineer and shall be a method for judging progress during the Design Phase.

3.2.1.4 Construction Phase Milestone Schedule: In connection with establishing the Master Schedule, the CMAR shall prepare a Milestone Schedule for the Construction Phase, which Schedule shall be used in connection with soliciting bids from Subcontractors.

3.2.2 Cost Management

3.2.2.1 Construction Market Survey: The CMAR shall conduct a Construction Market Survey at design milestones set forth in the Special Provisions, to provide current information regarding the general availability of local construction services, labor, materials and equipment cost and other economic factors related to the Project. A report of the Construction Market Survey shall be provided to the Owner and the Engineer.

3.2.2.2 Project and Construction Budget: Based on the Construction Management Plan and the Construction Market Survey, the CMAR shall prepare a Project and Construction Budget based on separate divisions of the Work required for the Project. The CMAR shall submit the Project and Construction Budget to the Owner for acceptance. The Project and Construction Budget shall be revised as directed by the Owner.

3.2.2.3 Cost Analysis: The CMAR shall analyze and report to the Owner the cost of various design and construction alternatives. As a part of the cost analysis, the CMAR shall consider costs relating to efficiency, usable life, maintenance, energy, and operation.

3.2.3 Management Information System (MIS)

3.2.3.1 Establishing the Project MIS: The CMAR shall develop the project MIS to establish communication with the Owner, Engineer, Contractors, and other parties on the Project.

3.2.3.2 Design Phase Procedures: As part of the MIS, the CMAR shall establish procedures for reporting, communication, and administration during the Design Phase.

3.3 Design Phase

3.3.1 Project Management

3.3.1.1 Revisions to the Construction Management Plan: During the Preconstruction Phase, the CMAR shall make the recommendations to the Owner regarding revisions to the Construction Management Plan. Revisions approved by the Owner shall be incorporated into the Construction Management Plan.

3.3.2 Project Partnering Meetings:

3.3.2.1 At the start of the Design Phase, the CMAR shall participate in a project meeting attended by the Engineer, the Owner and others as necessary. CMAR shall insure that its key personnel, including the project manager, superintendent(s), quality manager, lead scheduler, safety officer, lead estimator, and/or procurement specialist are in attendance at this meeting. During the Project Conference, the CMAR shall review the Design Phase Milestone Schedule and the Project and Construction Budget. The CMAR shall initiate the Construction Management Plan, the Master Schedule, and the MIS prior to the Project Conference and shall be updated and maintained for the entirety of the project.

3.3.2.2 A second partnering session may be required following a specific percent completion of the design as noted in the CMAR Scope of Services.

3.3.2.3 Progress Meetings: The CMAR shall attend progress meetings as required by the Owner or Engineer. Such meetings shall serve as a forum for the exchange of information concerning the Project and the review of design progress. The Engineer shall prepare and distribute minutes of these meetings to the Owner, CMAR and others.

3.3.3 Review of Design Documents: The CMAR shall review the design documents at the design milestones set forth in the Special Provisions for clarity, consistency, constructability and coordination among

the Contractors. The results of the reviews shall be provided in writing as notations on the documents no later than three weeks following CMAR's receipt of the design documents. Notwithstanding the foregoing, the CMAR shall not be responsible for providing, nor does the CMAR control, the Project design and contents of the design documents. By performing the reviews described herein, the CMAR is not acting in a manner so as to assume responsibility or liability, in whole or in part, for all or any part of the Project design and design documents. The CMAR's actions in reviewing the Project design and design documents and in making recommendations as provided herein are only advisory to the Owner.

3.3.3.1 Design Recommendations: The CMAR shall make recommendations to the Owner and Engineer with respect to constructability, construction cost, sequence of construction, construction duration, time for construction, and separation of the Project contracts for various categories of work. CMAR shall provide written recommendations to Owner and Engineer within 5 working days of receiving the design updates, unless a different time period is agreed to by the parties. In addition, the CMAR shall give to the Engineer all data of which it or the Owner is aware concerning patents or copyrights for inclusion in Contract Documents.

3.3.3.2 Design Review Meetings: The CMAR's team including the Project Manager, Estimator, Scheduler and Superintendent along with any other necessary personnel shall attend design review workshops at the engineering design review milestones as necessary and as set forth in the Special Provisions.

3.3.4 Project Funding: The CMAR shall perform an independent detailed construction cost estimate as more specifically addressed in Attachment A "CMAR Scope of Services". This estimate shall be performed at the design review milestones set forth in the Special Provisions to assist the Owner in preparing documents concerning the Project and Construction Budget and for use in obtaining or reporting on project funding. The cost estimate or cost models shall be updated throughout the preconstruction phase as specified in the CMAR Scope of Services.

3.3.5 Time Management

3.3.5.1 Revisions to Master Schedule: While performing the services provided in Paragraphs 3.3.1, and 3.3.2 as necessary throughout the Preconstruction Phase, the CMAR shall recommend revisions to the Master Schedule in accordance with the General Conditions.

3.3.5.2 Monitoring the Design Phase Milestone Schedule: While performing the services provided in Paragraphs 3.3.2.3 and 3.3.3, the CMAR shall monitor compliance with the Design Phase Milestone Schedule.

3.3.6 Cost Management

3.3.6.1 Project and Construction Budget Revision: The CMAR shall make recommendations to the Owner concerning the design changes that may result in revisions to the Project and Construction Budget and divisions of the Work required for the Project.

3.3.6.2 Cost Control: The CMAR shall prepare an estimate of the construction cost for each submittal of design drawings and specifications from the Engineer. The estimate for each submittal shall be accompanied by a report to the Owner and Engineer identifying variances from the Project and Construction Budget. The CMAR shall within 5 working days of such estimate, coordinate and expedite the activities of the Owner and Engineer when changes to the design are required to remain within the Project and Construction Budget.

3.3.6.3 Value Engineering Studies: The CMAR shall provide value engineering recommendations to the Owner and Engineer for major construction components, including cost evaluations of alternative materials and systems.

3.3.7 Management Information System (MIS)

3.3.7.1 Project Cost Reports: The CMAR shall prepare and distribute project cost reports that indicate estimated costs compared to the Project and Construction Budget and make recommendations to the Owner for corrective action.

3.3.7.2 Cash Flow Report: The CMAR shall prepare and distribute a cash flow report at durations specified in the Contract Documents.

3.4 Procurement Phase

3.4.1 Procurement Plan: CMAR shall develop and implement a Project Procurement Plan which identifies the work packages to be used to facilitate bids, quotes and proposals for the major elements of the Work. The Procurement Plan shall include that information set forth on the CMAR Scope of Services.

3.4.1.1 Procurement Workshop: The CMAR shall conduct a Procurement Workshop to review the Procurement Plan with the team and advise the Owner and the Engineer of ways to gain efficiency in project deliver and work packages.

3.4.2 Prequalification: CMAR shall recommend Subcontractors, subconsultants, Manufacturers and Vendors to prequalify to the Owner for acceptance, who herein are referred to as Bidders. The CMAR shall develop lists of possible Bidders and prequalifying Bidders for subcontracts. This service shall include the following: preparation and transmission of questionnaires; receiving and analyzing completed questionnaires; interviewing possible Bidders, bonding agents, and financial institutions; and preparing summary reports regarding this activity to the Owner. The CMAR shall also prepare a Bidders list for each bid package that identifies work packages the CMAR intends to self-perform.

3.4.3 Time Management.

3.4.3.2 Contractor's Construction Schedule: The CMAR shall provide a copy of the Master Schedule to the Bidders. As part of the Notice of Award, the CMAR shall inform each Bidder of the requirements for the preparation of a construction schedule. The Bidder shall prepare its own construction schedule in accordance with the requirements of the Contract Documents.

3.4.4 Cost Management

3.4.4.1 Estimates for Addenda: The CMAR shall prepare an estimate of costs for all addenda provided by Engineer to Owner, and shall submit the estimates to the Owner for approval. After approval by the Owner, the addenda shall be transmitted to Bidders. The Guaranteed Maximum Price shall be adjusted to reflect the addenda items and the CMAR's compensation shall be adjusted as provided in this Agreement.

3.4.4.2 Analyzing Bids: Upon receipt of price proposals, the CMAR shall evaluate the price proposals, including alternate prices and unit prices.

3.4.5 Management Information System (MIS)

3.4.6 Schedule Maintenance Reports: The CMAR shall prepare and distribute schedule maintenance reports during the Procurement Phase. The reports shall compare the actual price proposals and award dates to scheduled bid and award dates and shall summarize the progress of the Project.

3.4.7 Project Cost Reports: The CMAR shall prepare and distribute the project cost reports during the Procurement Phase. The reports shall specify the actual award prices and construction costs for the Project, compared to the Project and Construction Budget.

3.4.8 Cash Flow Reports: The CMAR shall prepare and distribute cash flow reports during the Procurement Phase. The reports shall be based on actual award prices and construction costs for the Project and the reports shall specify the actual cash flow compared to the projected cash flow.

3.5 Construction Phase

3.5.1 Payments to Subcontractors: CMAR shall make all payments due to Subcontractors. Receipt of payment from the Owner is a condition precedent to payment to the Subcontractors.

3.5.2 Time Management

3.5.2.1 Master Schedule: The CMAR shall adjust and update the Master Schedule and distribute copies to the Owner and Engineer. All adjustments to the Master Schedule shall be made for the benefit of the Project, and in accordance with the General Conditions.

3.5.2.2 Subcontractors' Construction Schedules: The CMAR shall review each Subcontractor's Construction Schedule and shall verify that the schedule is prepared in accordance with the requirements of the Contract Documents and that it establishes completion dates that comply with the requirements of the Master Schedule.

3.5.2.3 Construction Schedule Report: The CMAR shall review the progress of construction of each Subcontractor on a monthly basis, shall evaluate the percentage complete of each construction activity as indicated in each Subcontractor's Construction Schedule and shall review such percentages with the Subcontractor. This evaluation shall serve as data for input to each periodic Construction Schedule report that shall be prepared and distributed to each Subcontractor, the Owner and Engineer. The report shall indicate the actual progress compared to scheduled progress and shall serve as the basis for the progress payment to each Subcontractor. The CMAR shall determine and implement alternative courses of action that may be necessary to achieve contract compliance by each Subcontractor.

3.5.2.4 Recovery Schedules: If the CMAR determines that any specific subcontractors are delaying the Schedule, the CMAR Contractors to prepare and submit a recovery schedule as specified in the Contract Documents.

3.5.3 Cost Management

3.5.3.1 Schedule of Values (Each Subcontract): The CMAR shall determine a Schedule of Values for the Work in accordance with the General Conditions. The Schedule of Values shall be the basis for the allocation of the contract price to the activities shown on each Subcontractor's Construction Schedule.

3.5.3.2 Allocation of Costs to Construction Schedule: The CMAR's Construction Schedule shall have its total Contract Price allocated among each scheduled activity so that each of the CMAR's activities shall be allocated a price and the sum of the prices of the activities shall equal the total Contract Price. The CMAR shall review the Contract Price allocations and verify that such allocations are made in accordance with the requirements of the Contract Documents.

3.5.3.3 Cost Records: In instances where a lump sum or unit price is not determined prior to performing work the CMAR shall provide records of the cost of payroll, materials and equipment and the amount of payments to subcontractors incurred by the CMAR in performing the Work.

3.5.3.4 Trade-Off Studies: The CMAR shall provide trade-off studies for various minor construction components. The results of the trade-off studies shall be in report form and distributed to the Owner and Engineer. The CMAR shall submit three printed copies and one electronic copy (PDF format) of the Trade-Off studies to Owner, as well as two printed copies and one electronic copy (PDF format) to Engineer.

3.5.4 Management Information System (MIS)

3.5.4.1 Schedule Maintenance Reports: The CMAR shall prepare and distribute schedule maintenance reports during the Construction Phase. The reports shall compare the actual construction dates to scheduled construction dates of each separate subcontract and to the Master Schedule for the Project.

3.5.4.2 Project Cost Reports: The CMAR shall prepare and distribute project cost reports during the Construction Phase. The reports shall specify actual project and construction costs compared to the Project and Construction Budget.

3.5.4.3 Project and Construction Budget Revisions: The CMAR shall make recommendations to the Owner concerning construction changes that may result in revisions to the Project and Construction Budget or Guaranteed Maximum Price.

3.5.4.4 Cash Flow Reports: The CMAR shall prepare and distribute cash flow reports during the Construction Phase. The reports shall specify actual cash flow as compared to projected cash flow.

3.5.4.5 Change Order Reports: The CMAR shall periodically prepare and distribute change order reports during the Construction Phase. The report shall list all Owner-approved change orders by number, a brief description of the change order work, the cost established in the change order and percent of completion of the change order work. The report shall also include similar information for potential change orders of which the CMAR may be aware.

3.5.4.6 Progress Payment Reports (Each Contract): The CMAR shall prepare and distribute progress payment reports. The reports shall state the total construction contract price, payment to date, current payment requested, retainage and actual amounts owed this period. A portion of this report shall be a certificate of payment that shall be signed by the CMAR and delivered to the Owner for use by the Owner in making payments to the CMAR.

3.5.4.7 Contractor's Safety Program Report: The CMAR shall review the safety programs of each Subcontractor as required by the Contract Documents and coordinate the safety programs for the Project.

3.5.5 Construction Phase Services

3.5.5.1 Long-Lead Items and Early Work: The CMAR shall recommend to the Owner and Engineer a schedule for procurement of Long-Lead Items or any other Early work related to critical components of the Project which will constitute part of the Work as required for the Project, which shall be procured by the CMAR upon execution of either a Guaranteed Maximum Price Amendment or Early Work Amendment covering such procurement, and approval of such schedule by the Owner. Such Guaranteed Maximum Price Amendments and Early Work Amendments shall be incorporated into the Contract Documents upon full execution.

3.5.5.1.1 The CMAR shall recommend a schedule for Long-Lead Item times after coordination with the Engineer and owner regarding the schedule for preparation of construction documents, and expedite and coordinate delivery of Long-Lead Item time purchases to facilitate their delivery by the required dates.

3.5.5.1.2 CMAR may be required to procure Long-Lead Items by the Owner, in the Owner's sole discretion.

3.5.5.1.3 When directed by the Owner to purchase Long-Lead Items:

3.5.5.1.3.1 The CMAR shall pre-qualify several potential Suppliers, for Owner's approval.

3.5.5.1.3.2 The CMAR shall submit requests for bids including bid documents prepared by the Engineer for the Owner's approval before bids are solicited and shall make such modifications thereto as the Owner deems advisable.

3.5.5.1.3.3 The CMAR shall analyze bids and make recommendations for the award.

3.5.5.1.4 In the alternative, Long-Lead Items may be procured by the Owner, in the Owner's sole discretion.

3.5.5.1.4.1 If such Long-Lead Items are procured by Owner, they shall be procured on terms and conditions reasonably acceptable to the CMAR.

3.5.5.1.4.2 Upon the Owner's acceptance of the CMAR's Guaranteed Maximum Price Proposal, all contracts for such items shall be assigned by the Owner to the CMAR, who shall accept responsibility for such items as if procured by the CMAR.

3.5.5.2 Upon execution of an Early Work Amendment, the CMAR shall provide Construction Phase Services, including without limitation providing and paying for all materials, tools, equipment, labor and professional and non-professional services, and performing all other acts and supplying all other things necessary to fully and properly perform and complete the Work, as required by the Contract Documents.

3.5.5.2.1 The parties may execute one or more Early Work Amendments identifying specific Construction Phase Services that must be performed in advance of submission by the CMAR of the Guaranteed Maximum Price Proposal. CMAR shall be obligated to perform the Early Work only to the extent that the Cost of Work therefore, together with the CMAR fee, does not exceed the Early Work set forth in the Early Work Amendment price; however if CMAR performs Early Work with a cost in excess of the Early Work price, the CMAR shall pay such excess cost without reimbursement. If one or more Early Work Amendments are executed, the CMAR shall diligently continue to work toward development of a Guaranteed Maximum Price Proposal acceptable to Owner, which shall incorporate the Early Work Amendments.

3.5.5.2.2 Prior to commencement of any Construction, CMAR shall provide to Owner a performance bond and a payment bond as required by the Contract Documents in amounts equal to the value of the Early Work Amendment(s). If any Early Work Amendment is executed, CMAR shall provide such bond in the amount of the Early Work price under the Early Work Amendment. CMAR shall provide to Owner additional or replacement bonds at the time of execution of any subsequent Early Work Amendment or submission of the Guaranteed Maximum Price Proposal, in each case prior to execution of the Early Work Amendment and the supplying of any labor or materials for the prosecution of the Work covered by the Amendment, and in each case in a sufficient amount so that the

total bonded sum equals or exceeds the total Early Work Price or the Guaranteed Maximum Price, as the case may be.

3.6 Post Construction Phase

3.6.1 Project Management

3.6.1.1 Record Documents: The CMAR shall coordinate and expedite submittals of information from the Subcontractors for preparation of record drawings and specifications, and shall coordinate and expedite the transmittal of such record documents to the Owner.

3.6.1.2 Organize and Index Operations and Maintenance Materials: Prior to Final Completion of the Project the CMAR shall compile manufacturers' operations and maintenance manuals, warranties and guarantees and bind such documents in an organized manner.

3.6.2 Occupancy Permit: The CMAR shall assist the Owner in obtaining an occupancy permit by accompanying governmental officials during inspections of the Project, preparing and submitting documentation to governmental agencies and coordinating final testing and other activities.

3.6.3 Management Information System (MIS)

3.6.3.1 Closeout Reports: At the conclusion of the Project, the CMAR shall prepare final project accounting and closeout reports.

3.6.3.2 MIS Reports for Move-in, Project Turn over and Occupancy: The CMAR shall prepare and distribute reports associated with the Project Turn Over and Occupancy Plan.

3.6.4 Additional Services

3.6.4.1 At the request of the Owner, the CMAR shall perform the additional services identified in an amendment to this agreement and shall be compensated for the same as provided in Article 5 of this Agreement. The CMAR shall perform the additional services only after the Owner and CMAR have executed a written amendment to this agreement providing for such services.

ARTICLE 4: DURATION OF THE CMAR SERVICES

4.1 CMAR's Basic Services: The duration of the CMAR Basic Services under this Agreement for Preconstruction Phase services (Sections 3.1, 3.1.1, and attachment A "CMAR Scope of Services") shall be a set number of consecutive calendar days from the commencement date as identified in the Special Provisions. The duration of the Construction Phase services (Paragraph 3.4.8 and the approved Guaranteed Maximum Price Proposal) shall be determined upon the Owner's approval of the Guaranteed Maximum Price Proposal.

4.1.1 The CMAR's Basic Services shall be performed for the periods of time indicated in this Agreement. If portions of design and construction occur simultaneously, some of the phase durations may overlap.

4.1.2 The CMAR's Basic Services during the Construction Phase shall be performed for a period defined in the CMAR's Guaranteed Maximum Price Proposal approved by the Owner, specified in Attachments B "Guaranteed Maximum Price Proposal" and C "all related design documents".

ARTICLE 5: COMPENSATION FOR CMAR SERVICES AND PAYMENT

5.1 Compensation for Preconstruction Phase Basic Services: The CMAR shall receive compensation for its Preconstruction phase services in accordance with Section 5.2.

5.2 Time and Materials not to Exceed: The Owner shall compensate to the CMAR for services satisfactorily performed, based on the time and materials not to exceed, which includes all direct charges, indirect charges, and reimbursable expenses stated in the CMAR Scope of Services under the terms and conditions of this Agreement as follows:

5.2.1 The CMAR will bill the Owner on a monthly basis or as otherwise provided for services rendered toward the completion of the Scope of Work.

5.2.2 The amounts billed by the CMAR shall represent the sum of billable time (including overhead and profit) for labor hours expended plus any other

allowable costs and expenses for services stated in the attached document.

5.2.3 The CMAR shall track expenditures and inform the Owner of any possible cost overrun prior to completing work that would overrun the maximum contract sum.

5.2.4 The Owner may choose to increase the budget for the work using a mutually acceptable contract amendment or it may choose not to increase the budget and terminate the work accordingly.

5.3 Compensation for Construction Phase Basic Services: The CMAR shall be compensated for performing the Basic Services in the Construction Phase of the project as described in Paragraphs 5.8.1 and 5.8.1.1, subject to the Guaranteed Maximum Price provisions of Paragraphs 5.8.2 and 5.8.3.1.1.

5.4 Cost Plus Fixed Fee not to exceed the Guaranteed Maximum Price: The Owner shall compensate the CMAR on the basis of the CMAR's cost plus fixed fee and in accordance with the terms and conditions of this Agreement, which is subject to the terms of the Guaranteed Maximum Price Proposal. The Guaranteed Maximum Price Proposal shall be subject to the following:

5.4.1 The cost of employees working on the Project, other than principals, in an amount, which equals the multiples as established in Paragraphs 5.4.2, 5.4.3, 5.4.4, multiplied by the personnel expense for each such employee. Personnel expense for an employee shall be included in the Guaranteed Maximum Price proposal as a percentage of the base hourly wage. Personnel expense includes the base hourly wage, payroll taxes, employee benefits, and Worker's Compensation insurance. The cost of the CMAR's principals shall be paid to the rate as specified in Paragraph 5.5. The specified multiples and rates shall remain constant for a twelve month period following the date of this Agreement. Thereafter, the multiples established in the referenced paragraphs shall be adjusted by the CMAR if the CMAR's personnel expense changes.

5.4.2 Employees assigned to the Project and working at the construction site or employees for which the CMAR provides all office facilities and services, excluding the project manager and assistant project managers, a multiple as identified in the Guaranteed Maximum Price proposal.

5.4.3 Employees assigned to the Project and working in the CMAR's administrative office, including the project manager and assistant project managers, a multiple as identified in the Guaranteed Maximum Price Proposal.

5.4.4 Construction and craft labor personnel stationed at the construction site, a multiple as identified in the Guaranteed Maximum Price Proposal.

5.5 Principals: The principals or project executives of the CMAR who participate in the Project, a fixed rate identified in the Guaranteed Maximum Price Proposal. The Principals to be compensated according to these terms shall be identified in the Special Provisions.

5.5.1 Independent engineers, architects and other consultants employed by the CMAR and performing services related to the Project, a multiple no greater than 5%, over the amount of the invoice for such services.

5.6 Direct Expenses

5.6.1 Direct Expenses shall be included in the Overhead cost proposed in the Guaranteed Maximum Price proposal.

5.6.2 In addition to the compensation for Basic and Additional Services stated herein, the CMAR shall be reimbursed for direct expenses for performing its Basic and Additional Services. Direct expenses are those actual expenditures made by the CMAR, its principals, employees, independent engineers, architects, and other consultants in the interest of the Project, including, without limitation:

5.6.3 Gross receipts taxes, sales or use taxes, services taxes and other similar taxes required to be paid as a result of this Agreement;

5.6.4 The CMAR shall be compensated as indicated in the Guaranteed Maximum Price Proposal for its administrative expenses for the cost of materials, equipment, supplies and Subcontractors related to General Conditions work that is provided by the CMAR at the request of the Owner. Any direct labor provided by the CMAR related to General Conditions work shall

be paid to the CMAR in accordance with Paragraph 5.3 and 5.4.

5.7 Reserved

5.8 CMAR Accounting Records

5.8.1 Progress Payments: Payments to the CMAR shall be made as set forth in the General Conditions.

5.8.1.1 Compensation for Additional Services: The CMAR shall be compensated and payments shall be made for performing Additional Services in the same amount and manner as provided in Article 5 for Basic Services. There shall be an increase in the Fixed Fee set out in Section 12.05.D of the General Conditions in an amount that is mutually agreeable between the Owner and CMAR.

5.8.2 Guaranteed Maximum Price

5.8.2.1 The Guaranteed Maximum Price shall be independently determined and managed as follows:

5.8.2.1.1 During the Preconstruction Phase, but not earlier than the design milestone set forth in the Special Provisions has been achieved, the Owner, at its sole option, may request the CMAR to establish the Guaranteed Maximum Price for the Project. The Guaranteed Maximum Price shall be documented by the CMAR as defined in Article 8 and, once established, the Guaranteed Maximum Price(s) shall be subject to modification only as defined in the Agreement.

5.8.2.2 The Guaranteed Maximum Price shall be submitted to the Owner not more than thirty (30) days after receipt by the CMAR of the Owner's request for the Guaranteed Maximum Price for the Project. The Owner shall accept the proposed Guaranteed Maximum Price Proposal for the Project within fifteen (15) days of the date of the receipt unless such time is mutually agreed to be extended. If the Owner does not accept the Guaranteed Maximum Price Proposal within the time period herein provided, such price shall be presumed to be rejected by the Owner.

5.8.2.3 In the event the Owner does not accept the CMAR's Guaranteed Maximum Price Proposal and elects not to go forward with the Project, the CMAR shall be reimbursed in accordance with the requirements for termination as defined in this Agreement, including the General Conditions.

5.8.2.4 In the event the Owner does not request the CMAR to establish the Guaranteed Maximum Price or does not accept the CMAR's Guaranteed Maximum Price Proposal, but chooses to proceed with the Project, then all provisions of this Agreement regarding the Guaranteed Maximum Price and adjustments thereto shall become null and void. All other provisions of this Agreement shall remain in full force and effect, with all Project costs being reimbursed to the CMAR by the Owner in accordance with this Agreement.

5.8.2.5 In the event that the Guaranteed Maximum Price Proposal is accepted by the Owner within the time stipulated herein, the applicable sections of Article 8 of this Agreement shall be completed and initialed by both parties to this Agreement and the CMAR shall become responsible for the means, methods, sequences, and procedures used in the construction of the Project and shall proceed with the CMAR's Basic Services.

5.8.2.6 Construction contracts for the Work required for the Project shall be between the CMAR and selected Bidders. The CMAR shall request and receive price proposals for each contract and shall make a recommendation to the Owner with respect to award of a contract to the best value price proposal provided by a bidder whom has been deemed to be responsive and responsible. The CMAR shall enter into a contract with that bidder within five (5) days after receipt of approval of award from the Owner.

5.8.2.7 The CMAR shall be eligible to perform work of specific trades on the Project. Should the CMAR elect to do so, it shall be required to offer a price proposal for such parts of the Project. The CMAR's price proposal shall be due on the date established for receipt of the other separate bidder's price proposals. In the event that the CMAR is determined to provide the best value price proposal and has been deemed a responsive and responsible bidder, the Owner shall approve award to the CMAR. The CMAR shall include the price for this work in their Guaranteed Maximum Price Proposal.

5.8.2.8 The Guaranteed Maximum Price is the total cost of the Project, as defined herein plus the CMAR's fee for Construction Phase Basic Services. The

Guaranteed Maximum Price includes the cost of labor, equipment, supplies, materials, services and allowances to complete the Project, including the Early Work Price of each completed Early Work Amendment. The cost data shall be directly correlated to the specific design drawings and specifications in existence at the time the Guaranteed Maximum Price, or the applicable Early Work Amendment, is prepared. The assumptions used in the preparation of the Guaranteed Maximum Price shall be identified by the CMAR as part of the Guaranteed Maximum Price documentation, in accordance with Paragraph 8.1.3.

5.8.2.9 The Guaranteed Maximum Price shall include those taxes applicable to the Project that are legally enacted at the time the Guaranteed Maximum Price is established. Any increase or decrease in taxes that affect the Guaranteed Maximum Price and that are enacted after the Guaranteed Maximum Price is submitted shall be incorporated into that price by change order.

5.8.2.10 The Owner may change the scope of the Project or a part thereof and the Guaranteed Maximum Price shall then be adjusted as provided in Paragraph 5.2.4.

5.8.3 Cost of the Project The term "cost of the Project" shall include all amounts paid by the Owner to the CMAR for payment to all separate subcontractors, suppliers and equipment lessors for all work, material, and equipment supplied to the Project including general conditions items, plus the CMAR's Fee.

5.8.3.1 The cost of the Project shall not include the following:

5.8.3.1.1 All professional fees paid by the Owner to the Engineer or other consultants retained directly by the Owner;

5.8.3.1.2 All costs paid directly by the Owner to contractors or suppliers retained directly by the Owner and outside the scope of the Guaranteed Maximum Price;

5.8.3.1.3 All Additional Services costs as defined herein; or

5.8.3.1.4 All other costs not within the control of the CMAR or identified as being not within the Guaranteed Maximum Price.

5.8.3.2 The cost of the Project may be further defined in the documentation required by Paragraph 8.1.2 of this Agreement. If the requirements of this Paragraph and the documentation required by Paragraph 8.1.2 differ, then the CMAR shall identify and explain the difference, but the documentation provided in accordance with Paragraph 8.1.2 shall be the basis for determining the scope of the Guaranteed Maximum Price.

5.8.4 Adjustments to the Guaranteed Maximum Prices: The CMAR understands, confirms and agrees that its responsibility hereunder is to construct the Project in accordance with the drawings and specifications. It is recognized that the Guaranteed Maximum Price may be determined based upon incomplete design documents and in those instances in which the drawings and specifications are not complete at the time the Guaranteed Maximum Price is established, the CMAR shall exercise reasonable care and judgment to determine the intent of the design and shall calculate the Guaranteed Maximum Price on the basis of the quality of construction, materials, and finishes that can be reasonably inferred from the design documents or other specified sources. The CMAR shall determine unit process and the cost of the Project and shall make those assumptions regarding the Project scope and the quality of the intended construction as may be necessary to fully document the Guaranteed Maximum Price. The Owner and CMAR shall use the documentation specified in Paragraph 8.1.2 in determining whether or not the scope of the Project or a part thereof has been changed and in determining entitlement to an adjustment to the Guaranteed Maximum Price. A determination regarding all requests for adjustment to the Guaranteed Maximum Price shall be made in writing within thirty (30) days from the date of a written request for an adjustment.

5.8.4.1 The amount of adjustment to increase or decrease the Guaranteed Maximum Price resulting from a change in the Project shall be determined in one or more of the following ways:

5.8.4.1.1 By mutual acceptance of a lump sum, properly itemized and supported by cost data; or

5.8.4.1.2 By unit prices defined and listed in Attachment B "Guaranteed Maximum Price Proposal"; or

5.8.4.1.3 If neither of the methods set forth in 5.8.4.1.1 or 5.8.4.1.2 is agreed upon by the Owner, the CMAR, provided it receives a written order signed by the Owner, shall promptly proceed with the work involved. The cost of such work shall then be determined on the basis of the cost records for the changed work. Choice of this method shall not restrict the Owner or the CMAR from submitting the matter to dispute resolution as set forth in the General Conditions as to the justification or right of the CMAR to an increase in the Guaranteed Maximum Price due to such work. In such case, the CMAR shall keep and present in such form as may be agreeable to the Owner an itemized accounting together with appropriate supporting data of the actual cost of the Project.

5.8.4.2 If the unit prices are stated and if the quantities originally contemplated by the CMAR are so changed in a proposed change order or as a result of several change orders that application of the agreed unit prices to the quantities or work proposed cause substantial inequity to the Owner or the CMAR, the applicable unit prices and Guaranteed Maximum Price shall be adjusted.

5.8.4.3 Should concealed or unknown physical conditions be encountered that differ materially from those identified in the drawings or specifications, the affected Guaranteed Maximum Price and its associated completion date shall be adjusted upon claim made by either party to this Agreement within ten (10) calendar days after the first observance of the conditions.

5.8.4.4 The Engineer shall have the authority to order minor changes in the Project consistent with the intent of the drawings and specifications and not involving an adjustment in the Guaranteed Maximum Price or change of the construction completion date. Such changes may be affected by written order only and shall be signed by the Owner and the CMAR prior to the work being performed. The CMAR shall have the right to dispute whether an Engineer-ordered change is minor in character or instead requires the issuance of a change order.

5.8.5 Adjustments to the CMAR's Compensation:
The CMAR shall promptly notify the Owner when changes to the scope of the Project or a part thereof or when delays caused in whole or in part by the Owner or Engineer increase or extend the scope or duration of the CMAR's Basic Services. The CMAR shall be entitled to receive additional compensation and an increase in the duration of this Agreement pursuant to the provision of Article 4 and consistent with the provisions of Article 4 of this Agreement.

5.8.6 Contingency.

5.8.6.1 The Guaranteed Maximum Price shall include two contingency amounts, as specified in the approved Guaranteed Maximum Price Proposal. The two contingencies include a CMAR Contingency, in which the CMAR's has exclusive access to use the CMAR Contingency amount for unanticipated costs it has incurred that are not the basis for a Change Order under the Contract Documents.

5.8.6.1.1 CMAR may use the CMAR Contingency for any purpose relating to the Project, including, but not limited to:

5.8.6.1.1.3 Scope gap;

5.8.6.1.1.4 Subcontractor bid errors;

5.8.6.1.1.5 Delay;

5.8.6.1.1.6 Material or equipment price changes;

5.8.6.1.1.7 CMAR shall not use contingency funds to pay any legal fees or costs related to any claims arising from or related to this Agreement.

5.8.6.1.1.8 CMAR shall provide notice to the Owner of any charges against the CMAR contingency in each Project billing.

5.8.6.1.1.9 To the extent of the CMAR Contingency amount, CMAR may charge and recover costs without regard to fault.

5.8.6.1.2 The CMAR's Contingency is not available for use by or for the benefit of the Owner or any other party, and shall not be used to cover:

5.8.6.1.2.1 Changes to the Work;

5.8.6.1.2.2 Design revisions, errors, or omissions;

5.8.6.1.2.3 Interference of the Owner or third parties for which CMAR is not responsible;

5.8.6.1.2.4 Unknown conditions;

5.8.6.1.2.5 Allowance adjustments;

5.8.6.1.2.6 Items for which CMAR is not responsible.

5.8.6.1.3 The CMAR's Contingency shall be managed by the CMAR.

5.8.6.1.3.1 At an agreed upon construction milestone if the CMAR'S Contingency has not been used the CMAR and the Owner agree that the CMAR'S contingency shall be placed into the Project budget.

5.8.6.1.4 The Owner holds no right to the CMAR Contingency until mutually agreed upon milestones. The CMAR shall include milestones of the Work within the Guaranteed Maximum Price Proposal at which time the remaining funds in the CMAR Contingency will be refunded to the Owner.

5.8.6.1.5 The other contingency is the Project Contingency, which will be managed through the basis of Change Orders under the Contract Documents.

5.8.6.1.6.1 Costs that could be incurred under the Project Contingency include, but are not limited to:

5.8.6.1.6.1.1 Schedule escalation;

5.8.6.1.6.1.2 Additional work.

5.8.6.1.6.2 The Owner holds full rights to the Project Contingency and will be refunded any remaining funds in the Project Contingency upon Final Completion.

5.8.6.2 CMAR shall provide Owner notice of all anticipated charges against the Contingencies, and shall provide Owner as part of the monthly status report required in the General Conditions of this Contract an accounting of each Contingency, including all reasonably foreseen uses or potential uses of any Contingency in the upcoming three (3) months.

5.8.6.3 Each contingency will be developed and established in an open-book format with the Owner.

5.8.6.4 CMAR agrees that with respect to any expenditure from any Contingency relating to a Subcontractor default or an event for which insurance or bond may provide reimbursement, CMAR will in good faith exercise reasonable steps to obtain performance from the Subcontractor and/or recovery from any surety or insurance company.

5.8.6.4.1 CMAR agrees that if CMAR is subsequently reimbursed for said costs, then said recovery will be credited back to the Contingency.

ARTICLE 6: INSURANCE

6.1 Insurance and Indemnity Requirements: In addition to those insurance and indemnity requirements required by the General Conditions, CMAR shall provide the Insurance set forth herein.

6.2 CMAR Insurance: The CMAR shall purchase and maintain such insurance that shall protect the CMAR from the claims set forth below that may arise out of or result from the CMAR's performance of services pursuant to this Agreement:

6.2.1 Claims under Workers' Compensation, disability benefits and other similar employee benefits acts that are applicable to the Work performed;

6.2.2 Claims for damages because of bodily injury, occupational sickness or disease or death of CMAR's employees under applicable employer's liability law;

6.2.3 Claims for damages because of bodily injury or death of any person other than CMAR's employees;

6.2.4 Claims for damages insured by usual personal injury liability coverage that are sustained by any person as a result of an offense directly related to the employment of such person by the CMAR or by any other person.

6.2.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use there from; or

6.2.6 Claims for damages because of bodily injury or death of any person or property damage arising out of ownership, maintenance or use of any motor vehicle.

6.3 The CMAR's commercial general motor vehicle, and pollution liability insurance, as required, shall be written for not less than the following limits of liability:

a. Commercial General Liability

1. Personal Injury:
   1,000,000.00 Each Occurrence
   2,000,000.00 Aggregate
2. Property Damage:
   2,000,000.00 Each Occurrence
   5,000,000.00 Aggregate

b. Commercial Motor Vehicle Liability
1. Bodily Injury:
   1,000,000.00 Combined Single Limit

c. Pollution Liability:
   2,000,000.00 Each Occurrence
   2,000,000.00 Aggregate

d. Umbrella Liability insurance in excess of the liability coverages listed herein in the amount of $5,000,000.00.

6.4 Commercial general liability insurance may be arranged under a single policy for the full limits required or by a combination of underlying policies with the balance provided by an excess or umbrella liability policy.

6.5 Builder's Risk Insurance

6.5.1 The CMAR shall be responsible for purchasing and maintaining insurance to protect the Project from perils of physical loss. The insurance shall provide for the full cost of replacement for the entire Project at the time of any loss resulting from a covered peril as described in the General Conditions.

6.6 Property Insurance

6.6.1 The CMAR shall be named as an additional named insured in any insurance policy for the Project that may be obtained by the Owner and Engineer.

ARTICLE 7: ADDITIONAL PROVISIONS

7.1 Confidentiality: The CMAR will keep all information concerning the Project confidential, except for communications incident to completion of the Project between the CMAR, Engineer, and Contractor, and their independent professional engineers, architects and other consultants and Subcontractors, and accountants and attorneys, and except for publicity approved by the Owner and communications in connection with filings with governmental bodies having jurisdiction over the design or construction of the Project.

7.2 Limitation and Assignment

7.2.1 The Owner and the CMAR each bind itself, its successors, assigns and legal representatives to the terms of this Agreement.

7.2.2 Neither the Owner nor the CMAR shall assign or transfer its interest in this Agreement without the written consent of the other, except that the CMAR may assign accounts receivable to a commercial bank for securing loans without approval of the Owner. However, nothing contained in this paragraph can prevent the CMAR from employing such consultants, associates or Subcontractors as the CMAR may deem appropriate to assist in performance of the services hereunder.

7.3 Governing Law

7.3.1 Unless otherwise provided, this Agreement shall be governed by the law of the State of Colorado.

7.4 Extent of Agreement

7.4.1 This Agreement represents the entire and integrated agreement between the Owner and the CMAR and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the Owner and the CMAR. Nothing contained in this Agreement is intended to benefit any third party. The subcontractors and Engineer are not intended third party beneficiaries of this Agreement.

7.5 Severability

7.5.1 If any provision of this Agreement is held as a matter of law to be unenforceable, the remainder of this Agreement shall be enforceable without such provision.

7.6 Meaning of Terms

7.6.1 References made in the singular shall include the plural and the masculine shall include the feminine or neuter.

7.6.2 The meaning of terms used herein shall be consistent with the definitions expressed in the General Conditions.

7.7 Electronic Signatures

7.7.1 This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same document. This Agreement, including all component parts set forth above, may be executed and delivered by electronic signature by any of the parties and all parties consent to the use of electronic signatures.

ARTICLE 8: SPECIAL GUARANTEED MAXIMUM PRICE PROVISIONS

8.1 Additional Guaranteed Maximum Price

8.1.2 Documentation of the Guaranteed Maximum Price shall be developed by the CMAR from the design drawings and specifications and such other documents as may be specified as follows:

8.1.2.1 The documentation (collectively the "Guaranteed Maximum Price Documentation"), which shall be attached hereto as Attachments B "Guaranteed Maximum Price Proposal" and C "all related design documents" and made a part hereof by reference, shall include budgeted amounts for each of the separately priced divisions of the Work required for the Project and designated amounts of the CMAR Contingency, and the Project Contingency. The Guaranteed Maximum Price is for the total cost of the Project, including any Early Work Amendments, and not the cost for each or any division of the Project, unless otherwise specified.

8.1.2.2 The Guaranteed Maximum Price Documentation shall be prepared by the CMAR and submitted to the Owner with the Guaranteed Maximum Price Proposal. The Guaranteed Maximum Price Documentation may include drawings, sketches, specifications, calculations, bids, quotes, or other data used to identify the basis of the Guaranteed Maximum Price. The Guaranteed Maximum Price Documentation shall also include a scope of work required to complete the Project, a summary of schedule and price components of the work associated with the construction and post construction activities, the Project Contingency and the CMAR Contingency. The Master Schedule which shall be included in the Guaranteed Maximum Price Documentation, shall identify construction milestones such as the start of construction phase work, Substantial Completion, demonstration period, Final Completion, and the end of the warranty. The documents shall clearly define any and all exclusions and assumptions.

8.1.3 To be initialed upon Owner's acceptance of the Guaranteed Maximum Price Proposal: The Guaranteed Maximum Price established for the Project and is for the work described in the documentation attached as Attachments B "Guaranteed Maximum Price Proposal" and Attachment C "all related design documents" that includes all related design documents.

8.1.4 In the event that the cost of the Project exceeds the Guaranteed Maximum Price and any adjustments therein as may be due pursuant to the terms hereof, the CMAR shall continue to perform at no additional cost to the Owner until the Project, has achieved Final Completion. The CMAR shall be responsible for paying all costs, in accordance with the terms of this Agreement that may be necessary to complete the Project, even if such amounts are in aggregate in excess of the Guaranteed Maximum Price.

(Remainder of the page is intentionally left blank.)

Whereas, this Agreement is executed the day and year first written above.

OWNER:
CITY OF GREELEY, COLORADO

APPROVED AS TO SUBSTANCE:

By:_____
Roy Otto, City Manager

AVAILABILITY OF FUNDS:

By:_____
Victoria Runkle, Director of Finance

APPROVED AS TO LEGAL FORM:

By:_____
Doug Marek, City Attorney

CONSTRUCTION MANAGER AT RISK:
CMAR Contractor

Title: Individual Designated to Sign

Attest: _____

SECTION 00510
CITY OF GREELEY, COLORADO

STANDARD GENERAL CONDITIONS OF THE CONTRACT BETWEEN OWNER AND CONSTRUCTION MANAGER AT RISK

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SECTION 00510
ATTACHMENT D
CITY OF GREELEY, COLORADO

STANDARD GENERAL CONDITIONS OF THE CONTRACT BETWEEN OWNER AND CONSTRUCTION MANAGER AT RISK

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Contract Documents and printed with initial capital letters, the following terms have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda:* Written or graphic instruments issued by Owner prior to the opening of Proposals which clarify, correct, or change the Request for Qualifications, Request for Proposals, or the proposed Contract Documents, including the Conceptual Documents.

2. *Agreement:* The written instrument referred to as the "Owner and Construction Manager At Risk Agreement", executed by Owner and Construction Manager at Risk, that sets forth the Contract Price and Contract Times, identifies the parties, and, in coordination with these general conditions, designates the specific items that are Contract Documents.

3. *Application for Payment:* The form which is to be used by Construction Manager at Risk during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Authorized Representative:* The individual designated by a party to represent it with respect to this Contract, as indicated in the Contract Documents.

5. *Change Order:* A document which is signed by Construction Manager at Risk and Owner and authorizes an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

6. *Claim:* A demand or assertion by Owner or Construction Manager at Risk seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A request or proposal for a Change Order is not a Claim.

7. *Conceptual Documents:* The documents prepared by or for the Owner to describe the Work to be performed, issued to Proposers during the Construction Manager at Risk selection process, and expressly identified in the Agreement.

8. *Constituent of Concern:* Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to

(a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other Laws or Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

9. *Construction:* The part of the Work that consists generally of making physical improvements at the Site, and is the result of performing or furnishing of labor, the furnishing and incorporating of materials and equipment into the Work (including any correction of defective Construction), and the furnishing of services and documents, all as required by the Contract Documents and Construction Drawings and Construction Specifications, as duly modified.

10. *Construction Drawings:* Documents prepared by Engineer for CMAR, and approved by Owner for purposes of allowing CMAR to proceed with the Construction or specific portions of the Construction, and consisting of drawings, diagrams, illustrations, schedules, and other data that graphically show the scope, extent, and character of the Construction (or specific portions of the Construction) to be performed by or for CMAR. Construction Drawings are not Contract Documents.

11. *Construction Phase:* The portion of the work upon that begins on the acceptance of the Guaranteed Maximum Price through to Final Completion.

12. *Construction Manager at Risk ("CMAR"):* The individual or entity with which Owner has contracted for performance of the Work, as designated in the Agreement.

13. *Construction Specifications:* Documents prepared by Engineer for the CMAR, and approved by Owner for purposes of allowing CMAR to proceed with the Construction or a specific portion of the Construction, and consisting of written requirements for materials, equipment, systems, standards, workmanship, and administrative procedures as applied to the Construction (or a specific portion of the Construction). Construction Specifications are not Contract Documents.

14. *Construction Subcontract:* A written agreement between CMAR and a Construction Subcontractor for provision of all or a portion of the Construction.

15. *Construction Subcontractor:* An individual or entity (other than a Supplier) having a direct contract with CMAR or with any other Construction Subcontractor for the performance of a part of the Construction, and any delegated Design Professional Services.

16. *Contract:* The entire and integrated written agreement between Owner and CMAR concerning the Work.

17. *Contract Documents:* Those items so designated in Article 3 hereof, and which together comprise the Contract.

18. *Contract Price:* The money that Owner has agreed to pay CMAR for completion of the Work in accordance with the Contract Documents.

19. *Contract Times:* The numbers of days or the dates stated in the master schedule developed under the Agreement to (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) achieve final acceptance.

20. *Drawings:* That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by CMAR. Shop Drawings and other CMAR submittals are not Drawings as so defined.

21. *Early Work:* Early Work shall mean Construction Phase Services authorized by and Early Work Amendment that the parties agree should be performed in advance of establishment of the Guaranteed Maximum Price. Permissible Early Work shall require written Owner authorization and be limited to: early procurement of materials and supplies; early release of bid or proposal packages for site development and related activities; and any other advance work related to critical components of the Project for which performance prior to establishment of the Guaranteed Maximum Price will materially affect the critical path schedule of the Project.

22. *Early Work Amendment:* Early Work Amendment shall mean an Amendment to the Contract Documents executed by and between the parties to authorize Early Work.

23. *Effective Date of the Contract:* The date indicated in the Agreement on which the Contract becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

24. *Engineer:* The Project Design Professional identified as Engineer in the Agreement, and engaged by Owner to provide engineering and related professional services under a separate agreement between Owner and Engineer.

25. *Final Completion*: The time at which the Construction is at a point to where it has been verified and demonstrated to be fully complete and operational in accordance with the Contract Documents by the Owner and/or Engineer and is ready for final payment.

26. *General Conditions*: The General Conditions of the Contract are those terms and conditions contained in this document entitled the "Standard General Conditions of the Contract between Owner and Construction Manager At Risk."

27. *GMP (Guaranteed Maximum Price):* An agreed upon price and schedule for a specified portion of work to be completed by the CMAR as defined in the Contract Documents.

28. *GMP Documentation*: The documentation to be included with the Guaranteed Maximum Price Proposal to be attached to the Agreement as Attachments B "Guaranteed Maximum Price Proposal" and C "all related design documents" upon Owner's acceptance of the Guaranteed Maximum Price Proposal, as specified in Article 8 of the Agreement.

29. *Guaranteed Maximum Price Proposal:* A document prepared by the CMAR and submitted to the Owner providing the CMAR's proposed Guaranteed Maximum Price as outlined in Section 5.8.2 of the Agreement.

30. *Hazardous Environmental Condition:* The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled

and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

31. *Laws and Regulations; Laws or Regulations:* Any and all applicable laws, statutes, rules, regulations, ordinances, binding resolutions, codes, decrees, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

32. *Liens:* Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

33. *Long-Lead Items:* The identification given to material and equipment having an extended delivery time and which may be considered for early procurement and purchase. Items which would be delivered too late for timely installation if their procurement or purchase were included as part of the procurement for the entire contract or project.

34. *Long-Lead Time:* The time interval between purchase and delivery of Long-Lead Items.

35. *Master Schedule*: The master schedule for the Project developed by CMAR and approved by Owner as provided in the Agreement, as such schedule is amended from time to time in accordance with the Contract Documents.

36. *Milestone:* A principal event in the performance of the Work that the Contract requires CMAR to achieve by an intermediate completion date or by a time prior to Substantial Completion, or final acceptance of Construction, as identified in the Master Schedule for the Project.

37. *Notice of Award:* The written notice by Owner to a Proposer stating that Owner will enter into the contract with the Proposer.

38. *Notice to Proceed*: A written notice by Owner to CMAR fixing the date on which the Contract Times will commence to run and on which CMAR shall start to perform the Work.

39. *Owner:* The City of Greeley, Colorado and its divisions, including the Water and Sewer Department, whom CMAR has contracted with regarding the Work, and which has agreed to pay CMAR for the performance of the Work, pursuant to the terms of the Contract.

40. *Owner's Consultant:* An individual or entity with which the Owner has contracted to furnish services to Owner with respect to the Project, and which is identified as such in writing delivered to CMAR.

41. *Owner's Site Representative:* A representative of Owner at the Site, as indicated in Paragraph 10.05.

42. *Preconstruction Phase:* The portion of the work prior to the acceptance of the Guaranteed Maximum Price.

43. *Project:* The total undertaking to be accomplished for Owner by engineers, consultants, CMAR, subcontractors, and others, including planning, study, design, construction, testing, start-up, and commissioning, and of which the Work to be performed under the Contract Documents is a part.

44. *Project Design Professionals:* The Engineer and any other independent entities or individuals, engaged by Owner to provide professional design services with respect to the Work.

45. *Proposal:* The documents submitted by CMAR in response to the Request for Proposals, setting forth technical concepts, proposed prices, and other conditions for the Work to be performed, and stating any proposed revisions, modifications, clarifications, exceptions, or supplements to the proposed Contract Documents.

46. *Proposal Amendment:* A Contract Document that is prepared after submittal of CMAR's Proposal; identifies mutually agreed revisions, modifications, exceptions, supplements, and clarifications to the Proposal or proposed Contract Documents; and is executed by Owner and CMAR.

47. *Proposer:* An entity that submits a Statement of Qualifications or Proposal to Owner.

48. *Record Documents:* The record copy of all Construction Drawings, Construction Specifications, Addenda, Change Orders, Work Change Directives, and approved Submittals maintained by CMAR at the Site, including any annotations to such documents made by CMAR during Construction.

49. *Record Drawings and Record Specifications:* Documents depicting the completed Project, or a specific portion of the completed Project, based on or comprised of the Record Documents delivered to Owner by CMAR at the completion of the Construction.

50. *Request for Proposals:* The document prepared by or for Owner specifying and describing Owner's objectives, the procedures to be followed in preparing and submitting a Proposal, and the process for evaluating Proposals and awarding a contract.

51. *Request for Qualifications:* The document prepared by or for Owner requesting that Proposers submit a Statement of Qualifications with respect to their candidacy for selection as CMAR.

52. *Schedule of Values:* A schedule, prepared and maintained by CMAR, allocating portions of the Contract Price to various portions of the Work, and used as the basis for reviewing CMAR's Applications for Payment.

53. *Site:* Lands or areas indicated in the Contract Documents as being furnished by Owner upon which Construction is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for use of CMAR.

54. *Special Provisions (Section 00620):* The part of the Contract Documents which amends or supplements these General Conditions. The Special Provisions shall include the Section 00620-1 which shall be the General Special Provisions and the Section 00620-2 which shall be the Construction Special Provisions.

55. *Statement of Qualifications:* The document submitted by a Proposer in response to the Request for Qualifications, including any completed forms, attachments, and exhibits.

56. *Submittal*: A written or graphic document, prepared by or for CMAR, which the Contract Documents require the CMAR to submit to the Owner. Submittals may include reports, , cost estimates, progress schedules, cash flow projections, Schedules of Values, shop drawings, product data, samples, delegated designs, certifications, proposed modifications to the Construction Drawings and Construction Specifications, results of tests and evaluations, results of source quality control testing and inspections, results of field or Site quality control testing and evaluations, sustainable design information, information on special procedures, operations and maintenance data, sustainable design

closeout information, record documents, records of spare parts and extra stock materials, and other such documents required by the Contract Documents. Submittals, whether approved or accepted by Owner or not, are not Contract Documents. Claims, notices, Change Orders, Applications for Payment, and requests for information/interpretation are not Submittals.

57. *Substantial Completion:* The time at which the Construction (or a specified part thereof) has progressed to the point where it is sufficiently complete, in accordance with the Contract Documents, so that the Construction (or the specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Construction refer to Substantial Completion thereof.

58. *Supplier:* A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with CMAR or with any Construction Subcontractor to furnish materials or equipment to be incorporated in the Work by CMAR or a Construction Subcontractor, and any lessor of rental equipment used by CMAR or a Construction Subcontractor during Construction at the Site.

59. *Technical Data:* Data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding (a) subsurface conditions at the Site, (b) physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), or (c) environmental conditions at the Site, that are set forth in any geotechnical or environmental report prepared for the Project and relied upon by CMAR in agreeing to a price (either stipulated, or a Guaranteed Maximum Price) that includes Construction.

60. *Underground Facilities:* All underground lines, pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems, including but not limited to those that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, fire or police signal systems, or traffic or other control systems; and any encasements containing such facilities or systems.

61. *Underground Facilities Data:* Information and data shown or indicated in the Contract Documents or otherwise provided to CMAR by Owner with respect to existing Underground Facilities at or adjacent to the Site.

62. *Unit Price Work:* Work to be paid for on the basis of unit prices.

63. *Work:* The entire construction or the various separately identifiable parts thereof required to be performed or furnished by CMAR under the Contract Documents. Work includes work performed under Early Work Amendments. Work includes and is the result of performing or furnishing Construction required by the Contract Documents and all labor, services, and documentation necessary to produce such Construction; furnishing, installing, and incorporating all materials and equipment into such Construction; and related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

64. *Work Change Directive:* A written directive to CMAR, issued on or after the Effective Date of the Contract, signed by Owner, ordering an addition, deletion or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B are not defined terms that require initial capital letters, but when used in the Contract Documents have the indicated meanings.

B. *Intent of Certain Terms or Adjectives:*

1. The word "day" shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

2. The word "defective," when modifying the word "Construction" refers to Construction that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to Owner's final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion) provided that the defect was not caused by Owner.

3. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

4. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials or equipment or equipment complete and ready for intended use.

5. The words "perform" or "provide" when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

6. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CMAR, "provide" is implied.

7. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with that meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds:* When CMAR delivers the executed Agreements to Owner, CMAR shall also deliver to Owner such Bonds as CMAR may be required to furnish in accordance with Paragraph 6.01.A.

B. *Evidence of Insurance*: Before any Work is started, CMAR and Owner shall each deliver to the other those certificates of insurance that CMAR and Owner respectively are required to purchase and maintain in accordance with Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to CMAR two printed copies of the Contract. Additional printed or electronic copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract. Owner shall make such original printed record version of the Contract available to CMAR for review upon request.

2.03 *Conceptual Documents*

A. *CMAR's Review of Conceptual Documents:*

1. CMAR acknowledges that the Conceptual Documents furnished by Owner are preliminary and incomplete, and subject to stated limitations and reservations.

2. CMAR shall carefully review, analyze, and verify the contents and suitability of the Conceptual Documents before proceeding with the Work including but not limited to verifying pertinent figures there and all applicable filed measurements.

3. CMAR shall promptly report in writing to Owner any conflict, error, ambiguity, or discrepancy that CMAR may discover in the Conceptual Documents, whether during such review or at any later point.

4. Upon receipt of a report from CMAR that there is a conflict, error, ambiguity, or discrepancy in the Conceptual Documents, Owner shall either provide a written interpretation, clarification, or correction to CMAR, or authorize CMAR to correct or resolve the issue under a Change Order providing an equitable adjustment in Contract Times or Contract Price, or both.

5. CMAR shall not proceed with any Work affected by a reported conflict, error, ambiguity, or discrepancy in the Conceptual Documents until the issue is resolved.

B. Owner shall not be responsible for any deficiency in the Conceptual Documents that CMAR does not discover or report to Owner.

2.04 *Before Starting the Work*

A. *Preliminary Master Schedules:* After commencement of the Contract Times, CMAR shall submit the following to Owner for timely review by Owner and Engineer:

1. A preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. A preliminary schedule of Submittals (including Design Submittals) which will list each required Submittal and the times for submitting, reviewing, and processing each Submittal;

3. A preliminary Schedule of Values for all of the Work which will include quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work; and

4. A preliminary cash flow projection estimating that portion of the Contract Price to be due during each month of performance.

2.05 *Authorized Representatives*

A. The Authorized Representative for each party has been designated in the Contract Documents. A party may change its Authorized Representative at any time by giving notice to the other party of the name, mailing and delivery addresses, e-mail address, and telephone numbers of the new Authorized Representative.

2.06 *Initial Conference*

A. Before any Work at the Site is started, CMAR will arrange a project kick-off conference attended by Owner, Engineer, CMAR, and others as appropriate to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.04.A, procedures for handling Shop Drawings and other Submittals, processing Applications for Payment, maintaining required records, and other matters.

2.07 *Review of Schedules*

A. Not less than 10 days before submission of the first Application for Payment (unless otherwise provided in the Contract Documents), CMAR will arrange a conference attended by CMAR, Owner, Engineer, and others as appropriate to review and discuss the schedules submitted in accordance with Paragraph 2.04.A. CMAR shall have an additional 10 days after the conference to make corrections and adjustments and to complete and resubmit the schedules for Owner's acceptance. No progress payment shall be made to CMAR until CMAR submits schedules acceptable to Owner and Engineer that comply with the following requirements:

1. CMAR's progress schedule shall provide an orderly progression of the Work to completion within any specified Milestones and the Contract Times.

2. CMAR's schedule of Submittals shall provide a workable arrangement for submitting, reviewing, and processing Submittals in accordance with Article 8.

3. CMAR's Schedule of Values shall provide a reasonable allocation of the Contract Price to component parts of the Work.

2.08 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer and CMAR may transmit, and shall accept, Project-related correspondence, data, documents, drawings, information, and graphics, including but not limited to Submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner and CMAR shall jointly develop such protocols.

C. Unless expressly stated otherwise elsewhere in this Contract, CMAR shall not be obligated to furnish documents (including but not limited to Construction Drawings, Construction Specifications, or Record Drawings and Record Specifications) to Owner in any executable, native-file format.

D. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Contract Documents*

A. The Contract Documents consist of the following:

1. Drawings;

2. Specifications;
3. Standard General Conditions of the Contract between Owner and Construction Manager At Risk ("General Conditions")(Section 00510);
4. Owner and Construction Manager At Risk Agreement including all attachments;
5. General Special Provisions (Section 00620-1);
6. Construction Special Provisions (Section 00620-2);
7. The Request for Proposal;
8. Any Addenda;
9. The Request for Qualifications;
10. Section 00150 House Bill Form (Certification Concerning Contracting with Illegal Aliens);
11. Section 00320 Performance Bond;
12. Section 00330 Payment Bond;
13. Section 00350 Lien Waiver Release form;
14. Section 00360 Debarment Form;
15. Section 00410 Notice to Proceed;
16. Section 00420 Project Manager Notification;
17. Section 00430 Certificate of Substantial Completion;
18. Section 00440 Certificate of Final Acceptance.

B. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

C. It is the intent of the Contract Documents to require the construction of a functionally complete Project (or part thereof).

D. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

E. CMAR will furnish or perform all labor, documentation, services (including professional services), materials, and equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result whether or not specifically called, for at no additional cost to Owner.

3.02 *Reference Standards*

A. *Standards, Specifications, Codes, Laws or Regulations:*

1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect on the Effective Date, except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual, or code, or instruction of a Supplier, shall be effective to change the duties and responsibilities of Owner, CMAR, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Owner or its officers, directors, members, partners, employees, agents, consultants, or subcontractors any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Resolving Discrepancies*

A. In the event of a discrepancy between Drawings or Specifications and the Conceptual Documents, the Drawings will control. The order of control of the documents shall be the order listed in Section 3.01.A, such that an item higher in the list controls over an item lower in the list in the case of a discrepancy.

B. Except as otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

1. The provisions of any such standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

2. The provisions of any such Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Ownership and Reuse of Documents*

A. All documents prepared for or furnished to Owner by CMAR pursuant to this Contract shall become the property of the Owner upon Substantial Completion and/or their acceptance by the Owner and/or upon termination of the services of the CMAR.

B. CMAR and any Subcontractor or Supplier shall not:

1. Have or acquire any title to or ownership rights in any of the Drawings, Specification, or other documents (or copies of any therefor) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or

2. Reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

C. The prohibitions of this Paragraph 3.04 will survive final payment, or termination of the Contract. Nothing herein shall preclude CMAR from retaining copies of the Contract Documents for record purposes.

D. Any use or reuse by Owner or others on Owner's behalf will be at Owner's sole risk, and without liability or legal exposure to CMAR, the Project Design Professionals, or their subconsultants.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times*

A. The Preconstruction Phase Contract Work

1. Times will commence to run on the Effective Date of the Notice to Proceed.

2. Times for each Early Work Amendment will commence to run on the Effective Date of the Notice to Proceed for that Early Work Amendment. A separate Notice to Proceed shall be issued for each Early Work Amendment.

B. The Construction Phase Contract Work

1. Times will commence to run on the Effective Date as indicated in the approved Guaranteed Maximum Price Proposal.

4.02 *Starting the Work*

A. CMAR shall start to perform the Work as of the Effective Date of the Contract. No Construction shall be done at the Site prior to the Effective Date of the Contract unless the parties have executed an Early Work Amendment.

4.03 *Progress Schedule*

A. Owner may rely on the progress schedule established in accordance with Paragraph 2.04, as duly adjusted, in planning and conducting ongoing operations and other work at the Site.

B. CMAR shall adhere to the progress schedule established in accordance with Paragraph 2.04 as it may be adjusted from time to time, as provided below:

1. CMAR shall submit to Owner proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect. Owner shall accept such adjustments provided that Owner, in planning and conducting ongoing operations and other work at the Site, has not reasonably relied on the schedule element that is proposed to be adjusted. If Owner has so relied, then Owner and CMAR shall promptly meet and seek a resolution that addresses the objectives of both parties, or adjust the Contract Price.

2. CMAR shall submit proposed adjustments in the progress schedule that will change the Contract Times (including Milestones) in accordance with the requirements of Paragraph 4.04. Such adjustments may only be made by a Change Order.

C. *Continuing the Work:* CMAR shall continue the Work and adhere to the progress schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as CMAR and Owner may otherwise agree in writing.

4.04 *Delays in CMAR's Progress*

A. If Owner or anyone for whom Owner is responsible delays, disrupts, or interferes with the performance or progress of the Work, then CMAR shall be entitled to an equitable adjustment in the Contract Times and Contract Price. CMAR's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to CMAR's ability to complete the Work within the Contract Times.

B. CMAR shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference within the control of CMAR. Delay, disruption, and interference attributable to and within the control of a Construction Subcontractor, or Supplier shall be deemed to be delays within the control of CMAR.

C. If CMAR's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, CMAR, and those for which they are responsible, then CMAR shall be entitled to an equitable adjustment in Contract Times. CMAR's entitlement to such an adjustment of the Contract Times is conditioned on such adjustment being essential to CMAR's ability to complete the Work within the Contract Times. Such an adjustment shall be CMAR's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. Abnormal weather conditions;
3. Acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 9); and
4. Acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 9.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. CMAR shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of CMAR.

G. If CMAR seeks an adjustment in Contract Price or Contract Times under this paragraph, CMAR shall submit a request for a Change Order to Owner within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify CMAR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CMAR will have to comply in performing the Work. Unless otherwise provided in the Contract Documents, Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CMAR and Owner are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the

Contract Times as a result of any delay in Owner's furnishing the Site, CMAR may make a Claim therefor as provided in Article 17.

B. Upon reasonable written request, Owner shall furnish CMAR with a current statement of record legal title and legal description of the lands upon which the Construction is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws or Regulations.

C. CMAR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. CMAR shall confine construction equipment, the storage of materials and equipment, and the operations of construction workers to the Site and other areas permitted by Laws or Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CMAR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas, resulting from the performance of the Work to the extent caused by or based upon CMAR's negligent performance of the Construction, or the negligent performance of CMAR's subcontractors and assigns.

2. Should any claim be made by any such owner or occupant because of the performance of Work, CMAR shall promptly settle with such other party by negotiation, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law.

3. To the fullest extent permitted by Laws or Regulations, CMAR shall indemnify and hold harmless Owner, Owner's consultants, and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages arising out of or resulting from any claim brought by any such owner or occupant against Owner, or any other party indemnified hereunder to the extent caused by or based upon CMAR's negligent performance of the Construction.

B. *Removal of Debris:* During the performance of the Construction, CMAR shall keep the premises free from accumulations of waste materials, rubbish, and other debris resulting from the Construction. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws or Regulations.

C. *Cleaning:* Prior to Substantial Completion, CMAR shall clean the Site and make it ready for utilization by Owner. At completion of Construction, CMAR shall remove all tools, appliances, construction equipment, temporary construction and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* CMAR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CMAR subject any part of the Construction or adjacent property to stresses or pressures that will endanger it.

5.03 *Reference Points*

A. CMAR shall be responsible for laying out the Work and shall protect and preserve reference points and property monuments established by Owner and/or Engineer, and shall make no

changes or relocations of such reference points or monuments without the prior written approval of Owner. CMAR shall report to Owner whenever any reference point or property monument is lost or destroyed, or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

5.04 *Differing Site Conditions*

A. CMAR shall promptly, and before the conditions are disturbed, give a written notice to Owner of (i) subsurface or latent physical conditions at the Site (whether discovered during investigation of the Site or during Construction) which differ materially from those indicated in the Contract Documents, or in any Technical Data, or (ii) unknown physical conditions at the Site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character called for by the Contract Documents.

B. Owner will investigate the Site conditions promptly after receiving the notice. CMAR shall supplement the notice by promptly submitting to Owner any additional information regarding schedule and cost impacts, and a specific request for a Change Order. Owner shall then make a determination regarding the site condition and the impact, if any, on Contract Price and Contract Times. If the conditions do materially so differ and cause an increase or decrease in the CMAR's cost of, or the time required for, performing any part of the Work, whether or not changed as a result of the conditions, an equitable adjustment shall be made under this clause and the Contract Price or Times modified in writing by Change Order in accordance with Article 12.

C. No request by CMAR for an equitable adjustment under this Paragraph 5.04 shall be allowed unless CMAR has given the written notice required.

D. The provisions of this Paragraph 5.04 are not intended to apply to a Hazardous Environmental Condition or Underground Facility uncovered or revealed at the Site.

5.05 *Underground Facilities*

A. *Procedure for Identifying Underground Facilities:* Promptly after the Effective Date of the Contract, CMAR shall review the Underground Facilities Data furnished by Owner, if any, and use ASCE 38, "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data," as a basis for establishing a procedure ("Underground Facilities Procedure") for the further identification, investigation, and mapping of Underground Facilities at or adjacent to the Site. CMAR shall establish and use the Underground Facilities Procedure to aid in the performance of Construction, and to reduce and manage risks associated with Underground Facilities. Such Underground Facilities Procedure shall take into account the Site and the nature of the Project.

1. The Underground Facilities Procedure shall include a plan to keep Underground Facilities information current as CMAR proceeds with the work, and to add new or relocated Underground Facilities information to the base utility or Site drawings.

2. To manage the potential impact of design changes on Underground Facilities, CMAR shall modify or reapply the Underground Facilities Procedure as the design progresses and changes.

B. *CMAR's Responsibilities:* Unless otherwise expressly provided in the Contract, CMAR shall have full responsibility for the following; and, subject to the provisions of Paragraphs 5.05.C, D, and E, the cost of all of the following will be included in the Contract Price:

1. Establishing and executing the Underground Facilities Procedure referred to in Paragraph 5.05.A, including updating, modification, and reapplication duties;

2. Coordinating the Work with the owners (including Owner) of such Underground Facilities, during the provision of Construction;

3. Verifying the actual location of specific Underground Facilities through exposure, as needed for the Work;

4. Complying with applicable state and local utility damage prevention Laws and Regulations during Construction; and

5. The safety and protection of all existing Underground Facilities at the Site, and repairing any damage to such Underground Facilities resulting from the Construction, subject to the provisions of Paragraph 5.05.D.

C. *Results of CMAR's Execution of Underground Facilities Procedure:* If, during the execution of the Underground Facilities Procedure referred to in Paragraph 5.05.A, the CMAR identifies an Underground Facility that was not shown or indicated in the Underground Facilities Data, or was not shown or indicated with reasonable accuracy, causing an increase or decrease in the CMAR's cost of, or the time required for, performing the Construction, then CMAR shall submit to Owner a request for a Change Order seeking an equitable adjustment to the Contract Price or Times under this clause. Such request shall be made within 30 days of the identification of the Underground Facility in question.

D. *Underground Facility Found During Construction*: If CMAR believes that an Underground Facility that is uncovered, exposed, or revealed at the Site during Construction was not shown or indicated in the Underground Facilities Data, or was not shown or indicated with reasonable accuracy, and also that such Underground Facility was not identified or mapped with reasonable accuracy despite CMAR's adequate establishment and execution of the Underground Facilities Procedure referred to in Paragraph 5.05.A, then CMAR shall promptly give written notice to Owner, and supplement the notice by submitting to Owner a request for a Change Order seeking an equitable adjustment to the Contract Price or Times under this clause. Such request shall be made within 30 days of the uncovering or revealing of the Underground Facility in question.

1. *Owner's Review:* Owner will investigate the Underground Facility found during Construction promptly after receiving the notice. If Owner concurs with CMAR that the Underground Facility that is uncovered, exposed, or revealed at the Site was not shown or indicated in the Underground Facilities Data, or was not shown or indicated with reasonable accuracy, and further was not identified or mapped with reasonable accuracy despite CMAR's adequate establishment and execution of the Underground Facilities Procedure referred to in Paragraph 5.05.A, causing an increase or decrease in the CMAR's cost of, or the time required for, performing any part of the Work, whether or not changed as a result of the actual location, then an equitable adjustment shall be made under this clause and the Contract Price or Times modified in writing by Change Order in accordance with Article 12. If Owner does not concur with CMAR, then Owner shall so indicate in writing, with a specific explanation of the reason for non-concurrence.

2. No request by CMAR for an equitable adjustment under Paragraph 5.05.D shall be allowed unless CMAR has given the written notice required.

E. *Inadequate Establishment or Execution of Underground Facilities Procedure:* If CMAR does not establish an Underground Facilities Procedure that is (1) adequate for the Site and the nature of the Project and (2) consistent with the guidelines set forth in ASCE 38, "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data," or CMAR does not adequately execute a duly established Underground Facilities Procedure, then CMAR shall bear all costs associated with the presence of an Underground Facility that was not identified or located with reasonable accuracy, including but not limited to delay, redesign, relocation, and increased Construction costs, if such Underground Facility would have been identified and located with reasonable accuracy by an adequate and properly executed Underground Facilities Procedure that was consistent with ASCE 38.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reliance by CMAR on Technical Data Authorized:* CMAR may rely on the accuracy of the Technical Data with respect to environmental conditions at the Site but such Technical Data are not Contract Documents.

B. CMAR shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

C. CMAR shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by CMAR, Project Design Professionals, Construction Subcontractors, Suppliers, or anyone else for whom CMAR is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

D. If CMAR encounters, uncovers, or reveals a Hazardous Environmental Condition (whether during Site investigation or during Construction) whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if CMAR or anyone for whom CMAR is responsible creates a Hazardous Environmental Condition, then CMAR shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.16); and (3) notify Owner (and promptly thereafter confirm such notice in writing); (4) CMAR shall relocate work activities to non-impacted area's within 72 hours of notifying owner of Hazardous Environmental Conditions. Owner shall promptly determine whether to retain a qualified expert to evaluate such condition or take corrective action, if any, and take such actions as are necessary to permit Owner to timely obtain required permits and provide CMAR the written notice required by Paragraph 5.06.E. If CMAR or anyone for whom CMAR is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

E. CMAR shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to CMAR either (1) specifying that such condition and any affected

area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

F. If after receipt of such written notice CMAR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then the portion of the Work that is in the area affected by such condition shall be deleted from the Work, following the contractual change procedures in Article 12. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 9.

G. In the event work at any given location must cease due to a suspected Hazardous Environmental Condition, CMAR shall continue work in another area deemed by Owner to be a safe distance away from the hazardous site at the direction of Owner. CMAR shall continue work in this other location within 72 hours of uncovering the suspected or verified Hazardous Environmental Condition.

H. To the fullest extent permitted by Laws and Regulations, CMAR shall indemnify and hold harmless Owner and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the CMAR's failure to control, contain, or remove a Constituent of Concern brought to the Site by CMAR or by anyone for whom CMAR is responsible, or to a Hazardous Environmental Condition created by CMAR or by anyone for whom CMAR is responsible. Nothing in this Paragraph 5.06.H shall obligate CMAR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. CMAR shall furnish a performance bond and a payment bond for the Preconstruction Phase of the Project, each Early Work Amendment, and for the Construction Phase of the Project. All bonds shall be in an amount at least equal to the Contract Price or applicable Early Work Price, as security for the faithful performance and payment of CMAR's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due, or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Special Provisions, or other specific provisions of the Contract. CMAR shall also furnish such other bonds as are required by the Special Provisions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. CMAR shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by CMAR is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then CMAR shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If CMAR has failed to obtain a required bond, Owner may exclude the CMAR from the Site and exercise Owner's termination rights under Article 16.

F. Upon request to either Owner or CMAR from any Construction Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, the recipient of the request shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and CMAR shall obtain and maintain insurance as required in this Article and in the Special Provisions.

B. All insurance required by the Contract to be purchased and maintained by Owner or CMAR shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Special Provisions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. All insurance required by the Contract to be purchased and maintained by CMAR shall be primary and without contribution by insurance maintained by Owner.

D. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly permitted in the Special Provisions.

E. CMAR shall require (a) its Construction Subcontractors (and any other Project Design Professional that is an independent individual or entity) to purchase and maintain commercial general liability, automobile liability, workers' compensation, employer's liability, professional liability (as applicable), and umbrella or excess liability insurance, and (b) its Construction Subcontractors to purchase and maintain CMAR's pollution liability insurance. All such required insurance shall meet the same requirements for the applicable category of insurance established in this Contract for CMAR, unless otherwise indicated in the Special Provisions.

F. CMAR shall deliver to Owner, with copies to each additional insured (as identified in this Article, in the Special Provisions, or elsewhere in the Contract), certificates of insurance establishing that CMAR has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, CMAR shall also furnish other evidence of such required insurance, including but not limited to

copies of policies and endorsements, documentation of applicable self-insured retentions (if permitted) and deductibles, and evidence of insurance required to be purchased and maintained by CMAR's Construction Subcontractors, and any other Project Design Professional that is an independent individual or entity. CMAR may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

G. Failure of Owner to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

H. If CMAR does not purchase or maintain all of the insurance required by the Contract, CMAR shall notify Owner in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

I. If CMAR has failed to obtain and maintain required insurance, Owner may exclude the CMAR from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

J. Without prejudice to any other right or remedy, if CMAR has failed to obtain required insurance, Owner may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

K. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect CMAR or CMAR's interests.

L. The insurance and insurance limits required herein shall not be deemed as a limitation on CMAR's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *CMAR's Insurance*

A. *Workers' Compensation and Employer's Liability:* CMAR shall purchase and maintain workers' compensation and employer's liability insurance for:

1. Claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. Claims for damages because of bodily injury, occupational sickness or disease, or death of CMAR's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered:* CMAR shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of CMAR, on an occurrence basis, against:

1. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CMAR's employees.

2. Claims for damages insured by reasonably available personal injury liability coverage.

3. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content:* CMAR's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. CMAR shall furnish Owner and each other additional insured (as identified in the Special Provisions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of CMAR's contractual indemnity obligations in Paragraph 7.19.

3. Broad form property damage coverage.

4. Severability of interests and no insured-versus-insured or cross-liability exclusions.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If CMAR demonstrates to Owner that the specified ISO endorsements are not commercially available, then CMAR may satisfy this requirement by providing equivalent endorsements.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, shall not include any of the following:

1. Any modification of the standard definition of "insured contract."

2. Any exclusion for water intrusion or water damage.

3. Any provisions resulting in the erosion of insurance limits by defense costs.

4. Any exclusion of coverage relating to earth movement.

5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability.

6. Any limitation or exclusion based on the nature of CMAR's work.

7. Any professional liability exclusion broader in effect than ISO form CG 22 79 07 98.

E. *Automobile liability:* CMAR shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising

out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

F. *Umbrella or excess liability:* CMAR shall purchase and maintain umbrella or excess liability insurance in the amount designated in the Special Provisions and which shall be written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall be procured on a "follow the form" basis as to each and every one of the underlying policies. CMAR may meet the combined limits of insurance (underlying policy plus applicable umbrella or excess) specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policies and an umbrella or excess liability policy that follows the form of the underlying policy, as specified herein.

G. *CMAR's pollution liability insurance:* CMAR shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from CMAR's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

H. *Additional insureds:* The CMAR's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include, and list as additional insureds, Owner and any individuals or entities identified as required additional insureds in the Special Provisions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. CMAR shall obtain all necessary endorsements to support these requirements.

I. *Professional liability insurance:*

1. If in the performance of this Contract any Design Professional Services, or other professional engineering or similar services, are to be performed by an independent design professional, under direct contract to CMAR or at any lower contractual tier, then CMAR shall be responsible for assuring that such independent design professional purchases and maintains professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the independent design professional is legally liable.

2. If a Construction Subcontractor at any tier will provide or furnish design, engineering, or other similar professional services under this Contract, as the result of a delegation of professional design responsibilities or otherwise, then CMAR shall assure that such Construction Subcontractor purchases and maintains applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable.

3. Any professional liability insurance required under this Contract shall be maintained throughout the duration of the Contract and for a minimum of three years after Substantial Completion. For each claims-made professional liability policy furnished and

maintained to satisfy the requirements of this Paragraph 6.03.I, the retroactive date on the policy shall pre-date the commencement of furnishing services on the Project.

J. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. Include at least the specific coverages provided in this Article.

2. Be written for not less than the limits of coverage provided in the Owner and CMAR Agreement, and as may be modified by the Special Provisions, or required by Laws or Regulations, whichever is greater.

3. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.03 will contain a provision or endorsement that the insurance company or its designee must give the Owner and the purchasing policyholder written notice transmitted in paper or electronic format at least 30 days' before coverage is non-renewed by the insurance company and within 10 business days after cancelation of coverage by the insurance company. Within 3 days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to the Owner.

4. Remain in effect at least until final payment and CMAR's departure from the Site (and longer if expressly required elsewhere in this Contract), and at all times thereafter when CMAR may be correcting, removing, or replacing defective Construction as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. Provide applicable protection from claims that may arise out of or result from the performance of the Work, whether such performance is by CMAR, a Project Design Professional, any Construction Subcontractor or Supplier, or anyone directly or indirectly retained by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

6.04 *Owner's Liability Insurance*

A. In addition to the liability insurance required to be provided by CMAR, the Owner, at Owner's option and expense, may purchase and maintain Owner's own liability insurance to protect Owner against claims which may arise with respect to the Project.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by CMAR, and CMAR cannot rely upon Owner's liability policies for any of CMAR's obligations to the Owner or third parties.

C. CMAR's Liability Insurance shall include physical loss or damage to the Work, including materials and equipment in transit, at the Site or at another location as may be approved by Owner.

6.05 *Property Insurance*

A. *Builder's Risk:* Unless otherwise provided in the Special Provisions, CMAR shall purchase and maintain builder's risk insurance upon the Construction on a completed value basis; in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Special Provisions or required by Laws and Regulations). This insurance shall:

1. Include the Owner, CMAR, and the Engineer as named insureds, and all Construction Subcontractors, and any individuals or entities required by the Special Provisions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Special Provisions, the parties required to be insured shall collectively be referred to as "insureds."

2. Be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Construction, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Special Provisions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and CMAR.

3. Cover, as insured property, at least the following: (a) the Construction (including but not limited to all buildings, structures, foundations, excavations, underground property, pilings, underground pipes, flues, drains, wiring, cables, and the like) and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into the Construction, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent Construction but which are intended to provide working access to the Site, or to the Construction, or which are intended to provide temporary support for the Construction, including scaffolding, form work, fences, shoring, lighting, cribbing, falsework, and temporary structures.

4. Cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. Extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. Allow for partial occupation or use of the Construction by Owner, such that those portions of the Construction that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

7. Provide for the waiver of claims and waiver of the insurer's subrogation rights, as set forth in Paragraph 6.06.

8. Provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

9. Not include a co-insurance clause.

10. Include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

11. Include performance/hot testing and start-up.

12. Be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Construction by Owner, until the Construction is complete.

B. CMAR's Property Insurance shall include physical loss or damage to the Work, including materials and equipment in transit, at the Site or at another location as may be approved by Owner. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the insurance company or its designee must give the Owner and the purchasing policyholder written notice transmitted in paper or electronic format at least 30 days' before coverage is non-renewed by the insurance company and within 10 business days after cancelation of coverage by the insurance company. Within 3 days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to the Owner.

C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Construction prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner through CMAR will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Construction that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Construction not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance:* If CMAR elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at CMAR's expense.

F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by CMAR, a Construction Subcontractor, or an employee of CMAR or a Construction Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so, in what amount.

G. *Loss of Use and Delay in Start-up:* Unless otherwise expressly stated elsewhere in this Contract, the Owner is responsible, at its option, for purchase and maintenance of insurance to protect Owner against the loss of use or delays in start-up caused by property damage.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against any Project Design Professional or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and CMAR

waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Construction; and, in addition, waive all such rights against the Engineer, their consultants, all Construction Subcontractors, all individuals or entities identified in the Special Provisions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or CMAR as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any insurance policy maintained by Owner covering any loss, damage, or consequential loss shall contain provisions to the effect that the insured is allowed to waive the insurer's rights of subrogation against CMAR, Project Design Professionals, Construction Subcontractors, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, in a written contract executed prior to the loss, damage, or consequential loss.

C. CMAR shall be responsible for assuring that each Construction Subcontract contains provisions whereby the Construction Subcontractor waives all rights against Owner, CMAR, all individuals or entities identified in the Special Provisions as insureds, the Project Design Professionals, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Project.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall maintain such funds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Construction shall be repaired or replaced, the money so received applied on account thereof, and the Construction and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CMAR'S RESPONSIBILITIES

7.01 *Pre-Construction Phase and Construction*

A. CMAR shall perform and furnish the Pre-Construction Phase Services and Construction pursuant to the Contract Documents, the Construction Drawings, and the Construction Specifications, as duly modified.

B. CMAR shall keep Owner advised as to the progress of the Construction.

7.02 *Supervision and Superintendence of Construction*

A. CMAR shall supervise, inspect, and direct the Construction competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to provide the Construction in accordance with the Contract Documents. CMAR shall be solely responsible for the means, methods, techniques, sequences, and procedures of Construction.

B. At all times during the progress of Construction, the CMAR shall assign a competent resident superintendent who shall not be replaced without written request and approval by the Owner.

7.03 *Labor; Working Hours*

A. CMAR shall provide competent, suitably qualified personnel to perform the Work as required by the Contract Documents. CMAR shall at all times maintain good discipline and order at the Site.

B. CMAR shall coordinate with Owner for site access.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise indicated in the Contract Documents, and in the absence of any Laws or Regulations to the contrary, CMAR may perform the Construction on legal holidays, during any or all hours of the day, and on any or all days of the week, upon the Owner's approval.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, CMAR shall furnish or cause to be furnished and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified by Owner or in the Construction Drawings or Construction Specifications, and unless specified otherwise shall be new and of good quality. All warranties and guarantees specifically called for by the Contract Documents shall expressly run to the benefit of Owner. If required by Owner, CMAR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

7.05 *"Or Equals" and Substitutions*

A. If an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, then during the preparation of the proposed Construction Drawings and Construction Specifications, the CMAR may request that Owner authorize the use of other items of material or equipment, or items from other proposed suppliers. CMAR must specifically include any and all substitutes in the Guaranteed Maximum Price proposal, and include notice to Owner that the proposal contains a variation from the Contract Documents. Owner in its sole discretion may approve the use of the item if Owner determines that the item is functionally equal to that named and sufficiently similar so that no change in related Work will be required, taking into consideration whether the item:

1. Is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2. Will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3. Has a proven record of performance and availability of responsive service; and

4. Is not objectionable.

B. *Effect of Owner's Determination:* The denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

C. *Substitutes:* During the preparation of the Guaranteed Maximum Price proposal, the CMAR may propose a substitute to an item of material or equipment that is required to be furnished by the Contract Documents. Any such proposal shall be made in the Guaranteed Maximum Price proposal with notice to Owner that the proposal contains a variation from the Contract Documents. The proposal shall describe the advantages, disadvantages, and changes in Contract Price or Contract Time associated with the proposed substitute. Approval of the proposed substitute shall be at Owner's sole discretion. If approved, the substitute item shall be incorporated in the Construction Drawings and Construction Specifications.

D. *Construction Drawings and Construction Specifications:* "Or equal" or substitute proposals with respect to items of material or equipment that are required in the Construction Drawings and Construction Specifications shall be considered proposed modifications of the Construction Drawings and Construction Specifications, and shall be governed by the provisions of Paragraph 8.01.

7.06 *Concerning Construction Subcontractors, Suppliers, and Others*

A. CMAR may retain Construction Subcontractors, and Suppliers for the performance of parts of the Work. Such Construction Subcontractors, and Suppliers must be acceptable to Owner.

B. Prior to entry into any binding Construction Subcontract, or purchase order, CMAR shall submit to Owner the identity of the proposed Construction Subcontractor, or Supplier (unless Owner has already deemed such proposed contractual party acceptable, during the bidding process, Guaranteed Maximum Price development process or otherwise). Such proposed contractual party shall be deemed acceptable to Owner unless Owner raises an objection within 10 days.

C. Owner may require the replacement of any Construction Subcontractor, Supplier, or other entity retained by CMAR to perform any part of the Work solely on the basis of objection after due investigation. CMAR shall submit an acceptable replacement for the rejected Construction Subcontractor, Supplier, or other entity. Should owner require the replacement of a subcontractor or supplier and the costs associated result in an increase to the Guaranteed Maximum Price, the CMAR will be compensated accordingly.

D. No acceptance by Owner of Engineer or of any Construction Subcontractor, Supplier, or other entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

E. CMAR shall be fully responsible to Owner for all acts and omissions of the Construction Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work, just as CMAR is responsible for CMAR's own acts and omissions.

F. CMAR shall be solely responsible for scheduling and coordinating the services and work of the Construction Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

G. CMAR shall restrict all Construction Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating directly with Owner or Engineer, except in case of an emergency or a matter involving public health, safety, or welfare, or as otherwise expressly allowed herein.

H. Owner may furnish to any Construction Subcontractor, or Supplier, to the extent practicable, information about amounts paid to CMAR on account of Work performed for CMAR by the requesting party.

I. Nothing in the Contract Documents:

1. Shall create for the benefit of any Construction Subcontractor, Supplier, or other third-party individual or entity any contractual relationship between Owner and such third-party individual or entity; nor

2. Shall create any obligation on the part of Owner to pay or to see to the payment of any money due any Construction Subcontractor, Supplier, or other third-party individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. CMAR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Conceptual Documents or other Contract Documents for use in the performance of the Construction, and if to the actual knowledge of Owner its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, then Owner has disclosed the existence of such rights to CMAR in the Conceptual Documents or other Contract Documents.

B. To the fullest extent permitted by Laws or Regulations, CMAR shall indemnify and hold harmless Owner and Owner's Consultant, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects,

attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the specification or incorporation in the Work of any invention, design, process, product or device, except those required by the Contract Documents.

7.08 *Permits and Utility Charges*

A. The Contract Documents allocate responsibility for obtaining and paying for specified permits, licenses, certificates of occupancy, and approvals of governmental authorities having jurisdiction over the Work. Each party shall assist the other, when necessary, in obtaining such permits, licenses, certificates, and approvals.

B. CMAR shall pay all charges of utility owners for temporary service to the Work. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work, and for capital costs related thereto.

7.09 *Taxes*

A. CMAR shall pay all sales, consumer, use, and other similar taxes required to be paid by CMAR in accordance with the Laws or Regulations of the place of the Project which are applicable during the performance of the Work. This project is exempt from payment of City of Greeley Sales and Use taxes.

7.10 *Laws and Regulations*

A. CMAR shall give all notices required by and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, Owner shall not be responsible for monitoring CMAR's compliance with any Laws or Regulations.

B. If CMAR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CMAR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work.

C. Changes in Laws or Regulations that occur after the date on which the CMAR committed to the Contract Price (whether by negotiation or making an offer or proposal) and affect the cost or time of performance shall be the subject of an equitable change in Contract Price or Contract Times.

7.11 *Record Documents*

A. CMAR shall maintain the Record Documents in good order, in a safe place at the Site. CMAR shall annotate the Record Documents to show all changes and clarifications made (whether in the field or otherwise) during performance of Construction. The Record Documents, as annotated, will be available to Owner and Engineer for reference. Upon completion of the Construction, CMAR shall deliver the Record Documents, as annotated, to Owner.

B. After receipt and review of the Record Documents from CMAR upon completion of Construction, the Owner may comment on any possible inaccuracies. After Owner and CMAR collaboratively address any such comments, the Record Documents shall be deemed to be Record Drawings and Record Specifications.

C. The Record Drawings and Record Specifications are Contract Documents, and are binding upon CMAR with respect to its obligations to comply with the Contract Documents, including but not limited to correction period responsibilities and warranty obligations.

7.12 *Safety and Protection*

A. CMAR shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Construction Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. CMAR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. All persons on the Site or who may be affected by the Work;

2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. Other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation, or replacement in the course of Construction.

B. CMAR shall comply with applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CMAR shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. CMAR shall comply with the applicable requirements of Owner's safety programs, if any. The Special Provisions identify any Owner's safety programs that are applicable to the Work.

D. CMAR shall inform Owner of the specific requirements of CMAR's safety program with which Owner, Engineer and their employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by CMAR, any Construction Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CMAR.

F. CMAR's duties and responsibilities for safety and for protection of the Construction shall continue until such time as all the Work is completed, Owner has issued a notice to CMAR in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion), and CMAR has left the Site.

G. CMAR's duties and responsibilities for safety and protection shall resume whenever CMAR or any Construction Subcontractor, Supplier, or other representative returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. CMAR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. CMAR shall be responsible for coordinating any exchange of safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CMAR is obligated to act to prevent threatened damage, injury or loss. CMAR shall give Owner prompt written notice if CMAR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If a change in the Contract Documents is required because of the action taken by CMAR in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Post-Construction Phase*

A. CMAR shall:

1. Provide assistance in connection with the start-up and testing of any equipment or system.

2. Assist Owner in training staff to operate and maintain the Work.

3. Assist Owner in developing systems and procedures for control of the operation and maintenance of and record keeping for the Work.

7.17 *CMAR's General Warranty and Guarantee*

A. CMAR warrants and guarantees to Owner that CMAR will perform and complete the Construction as required by the Contract Documents, and that all Construction will be in accordance with the Contract Documents, the Construction Drawings, and the Construction Specifications (as duly modified in accordance with the Contract), and will not be defective.

B. CMAR's warranty and guarantee hereunder excludes defects or damage caused by:

1. Abuse, modification or improper maintenance or operation by persons other than CMAR, Construction Subcontractors, or Suppliers or any other individual for whom CMAR is responsible; or

2. Normal wear and tear under normal usage.

C. CMAR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance by Owner of Work that is not in accordance with the Contract Documents or a release of CMAR's obligation to perform the Work in accordance with the Contract Documents, unless expressly stated otherwise in writing:

1. Observations by Owner or Engineer;

2. Recommendation by Engineer or the making of any progress or final payment;

3. The issuance of a certificate of Substantial Completion;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Submittal;

6. Any inspection, test, or approval by others; or

7. Any correction of defective Construction by Owner.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, CMAR shall indemnify and hold harmless Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, and subcontractors, from losses, damages, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, damages, or judgment is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of CMAR, any Construction Subcontractor, any Supplier, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

B. In any and all claims or actions against Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of CMAR, any Construction Subcontractor, any Supplier, any individual or entity directly or indirectly employed or retained by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CMAR, or any Construction Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of CMAR under Paragraph 7.18.A shall not extend to the liability of Engineer, other consultants or design professionals of Owner, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, designs, or specifications.

7.19 *Delegation of Professional Design Services*

A. CMAR will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out CMAR's responsibilities for construction means, methods, techniques, sequences and procedures. CMAR shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of CMAR by the Contract Documents, Owner

and Engineer will specify all performance and design criteria that such services must satisfy. CMAR shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to CMAR all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 7.19, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 8.01.D.1.

E. CMAR shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 8 – SUBMITTALS

8.01 *CMAR's Preparation of Submittals*

A. CMAR shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings:

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment CMAR proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 8.01.D.

2. Samples:

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 8.01.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of CMAR.

C. Submittal Procedures:

1. Before submitting each Shop Drawing or Sample, CMAR shall have:

    a. Reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

    b. Determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

    c. Determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

    d. Determined and verified all information relative to CMAR's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that CMAR has satisfied CMAR's obligations under the Contract Documents with respect to CMAR's review and approval of that submittal.

3. With each submittal, CMAR shall give Owner and Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Owner and Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings as specified in the Contract Documents and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve CMAR from responsibility for any variation from the requirements of the Contract Documents unless CMAR has complied with the requirements of Paragraph 7.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve CMAR from responsibility for complying with the requirements of Paragraph 8.01.C.1.

E. Resubmittal Procedures:

1. CMAR shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. CMAR shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

ARTICLE 9 – OTHER CONSTRUCTION

9.01 *Other Work*

A. In addition to and apart from the Work to be performed and furnished by CMAR under the Contract Documents, the Owner may perform other construction work at or adjacent to the Site during the course of the Project. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give CMAR written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work at or adjacent to the Site, Owner shall provide such information to CMAR.

C. CMAR shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and to Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. CMAR shall do all cutting, fitting, and patching of the Construction that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CMAR shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that CMAR may cut or alter others' work with the written consent of Owner and the others whose work will be affected.

D. If the proper execution or results of any part of the Construction depends upon work performed by others under this Article 9, CMAR shall inspect such other work and promptly report to Owner in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of the Construction. CMAR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with the Construction, except for latent defects and deficiencies in such other work.

9.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Special Provisions or provided to CMAR prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. If the Special Provisions do not identify the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors, Owner shall have sole authority and responsibility for such coordination.

9.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Construction or to the property of CMAR or the Construction Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Construction, through actions or inaction, then CMAR shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to CMAR in the Contract Documents, and any provisions in Laws or Regulations concerning utility action or inaction, or related remedies. When applicable, any such equitable adjustment in Contract Price shall be conditioned on CMAR assigning to Owner all CMAR's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. CMAR's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to CMAR's ability to complete the Work within the Contract Times.

B. CMAR shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If CMAR fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to CMAR, and assign to such other contractor or utility owner the Owner's contractual rights against CMAR with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, CMAR shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of CMAR's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to CMAR.

D. If CMAR damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through CMAR's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of CMAR's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against CMAR or Owner, then CMAR shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and its officers, directors, members, partners, employees, agents, consultants and subcontractors from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals

and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 10 – OWNER'S RESPONSIBILITIES

10.01 *Communications to CMAR*

A. Except as otherwise provided in the Contract Documents, Owner shall issue all communications to CMAR through either Owner's Consultant, if any, Owner's Site Representative, or Engineer as specified in the Contract Documents.

B. In case of termination of the employment of Owner's Consultant or Engineer, Owner shall appoint an Owner's Consultant or Engineer to whom CMAR makes no reasonable objection, whose status under the Contract Documents shall be that of the former Owner's Consultant or Engineer.

10.02 *General*

A. Owner shall do the following in a timely manner so as not to delay the services of CMAR:

1. If requested in writing by CMAR, furnish reasonable evidence satisfactory to CMAR that sufficient funds are available and committed for the entire cost of the Project. Unless such reasonable evidence is furnished, CMAR is not required to commence or continue any Work, or may, if such evidence is not presented within a reasonable time, stop Work upon 15 days' notice to the Owner;

2. Make payments to CMAR promptly when they are due, as provided in Paragraph 15.01 and 15.06;

3. Furnish the Site as set forth in Paragraph 5.01; arrange for safe access to and make all provisions for CMAR to enter upon public and private property as may reasonably be required for CMAR to perform Work under the Contract.

4. Furnish to CMAR, as required for performance of the Work, the following information if in the possession of Owner, all of which CMAR may use and rely upon in performing services under this Agreement:

a. Property, boundary, easement, right-of-way, and other special engineering surveys or data if any;

b. Property descriptions if any;

c. Zoning, deed, and other land use restrictions if any;

d. Explorations and tests of subsurface conditions at or adjacent to the Site if any; geotechnical reports and investigations if any;

e. Assistance to CMAR in filing documents required to obtain necessary permits, licenses, and approvals of governmental authorities having jurisdiction over the Project; and

5. Provide information if currently known to Owner relating to the presence of materials and substances at the Site that could create a Hazardous Environmental Condition.

B. If an obligation ascribed to Owner in Paragraph 10.01.A is expressly assigned to CMAR, in the description of the Work or elsewhere in the Contract Documents, then such express assignment to CMAR shall supersede the provision in Paragraph 10.01.A.

C. Examine all studies, reports, alternate solutions, sketches, drawings, specifications, proposals, Submittals and other documents presented by CMAR, and if a decision is required with respect to any such document, render such decision in writing pursuant to any specific schedule, or if no specific schedule pertains, within a reasonable time after receipt of the document.

10.03 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, CMAR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CMAR to comply with Laws or Regulations applicable to the furnishing or performance of the Work. Owner will not be responsible for CMAR's failure to perform the Work in accordance with the Contract Documents.

10.04 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility with respect to undisclosed Hazardous Environmental Conditions uncovered or revealed at the Site is set forth in Paragraph 5.06.

10.05 *Owner's Site Representative*

A. Owner may furnish an Owner's Site Representative to observe the performance of Construction. The duties, responsibilities and limitations of authority of any such Owner's Site Representative and assistants will be as provided in the Special Provisions.

10.06 *Owner's Consultants and Managers*

A. All Owner's Consultants, including the Engineer are identified in the Contract Documents.

B. Owner shall advise CMAR of the identity and scope of services of any other independent consultants or managers retained by Owner to perform or furnish services in regard to the Project, including, but not limited to, cost estimating, project peer review, value engineering, constructability review, program management, project management, or contract administration.

C. Neither Engineer, Owner's Site Representative, nor any other consultant or manager retained by Owner, has any duties, responsibilities, or authorities with respect to CMAR, unless expressly provided in the Contract Documents. Engineer and such other consultants and managers shall not supervise, direct, or have control or authority over, nor be responsible for, CMAR's means, methods, techniques, sequences, or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CMAR to comply with Laws or Regulations applicable to the furnishing or performance of the Work; and will not be responsible for CMAR's failure to perform the Work in accordance with the Contract Documents.

10.07 *Safety Programs*

A. While at the Site, Engineer, Owner and their employees and representatives shall comply with the specific applicable requirements of CMAR's safety programs of which Owner has been informed pursuant to Paragraph 7.12.D.

B. Owner shall inform CMAR of any specific requirements of safety or security programs that are applicable to CMAR while at the Site.

10.08 *Permits and Approvals*

A. Owner shall obtain reviews, approvals, certificates, and permits from governmental authorities having jurisdiction over the Project as indicated in the Contract Documents.

ARTICLE 11 – ENGINEER'S STATUS DURING CONSTRUCTION

11.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

11.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CMAR's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 11.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of CMAR's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for CMAR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CMAR to comply with Laws and Regulations applicable to the performance of the Work.

11.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Special Provisions, and limitations on the responsibilities thereof will be as provided in Paragraph 11.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Special Provisions.

11.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on CMAR, who shall perform the Work involved promptly. If

Owner or CMAR believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in Article 17.

11.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 14.02, whether or not the Work is fabricated, installed, or completed.

11.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 8.01.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 7.19.

C. In connection with Engineer's authority as to Change Orders, see Article 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 15

11.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by CMAR. Engineer will review with CMAR the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and CMAR, subject to the provisions of Article 17.

11.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 11 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to CMAR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for CMAR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CMAR to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for CMAR's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of CMAR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06 will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 11.08 shall also apply to the Resident Project Representative, if any, and assistants, if any.

11.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of CMAR's safety programs of which Engineer has been informed pursuant to Paragraph 7.12.

ARTICLE 12 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

12.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order or a Work Change Directive as provided in this Article and in the Special Provisions.

B. *Change Orders:* If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

C. *Work Change Directives*: The Work modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order. When a Work Change Directive is issued, the parties will promptly meet to attempt to negotiate the Work Change Directive's effect, if any, on the Contract Times and Contract Price. The effect, if any, on Contract Times and Contract Price, together with the Work Change Directive's addition, deletion, or revision to the Work, will be set forth in a subsequently issued Change Order.

D. Either Owner or CMAR may propose or request a Change Order. With respect to certain events, this Contract may indicate specific times in which such requests or proposals must be submitted to the other party. With respect to all other events, the request or proposal shall be submitted to the other party within 30 days of the event giving rise to the request or proposal.

12.02 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, and notwithstanding any other provision of the Contract, Owner may, at any time or from time to time, order or authorize additions, deletions, or revisions in the Work within the general scope of the Contract. Such changes may be accomplished by a Change Order, if Owner and CMAR have agreed as to the effect, if any, of the changes on Contract Times; or by a Work Change Directive. Upon receipt of any such document, CMAR shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with

respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate CMAR to undertake work that CMAR reasonably concludes cannot be performed in a manner consistent with CMAR's safety or professional obligations under the Contract Documents or Laws and Regulations.

12.03 *Unauthorized Changes in the Work*

A. CMAR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents, as duly amended, except in the case of an emergency as provided in Paragraph 7.15, or in the case of uncovering Construction as provided in Paragraph 14.03.A.3.

12.04 *Changes Involving the Design*

A. To the extent a change, whether proposed by CMAR or Owner, ordered by Owner, or set forth in a proposed Change Order or in a Work Change Directive, involves the design (as set forth in the Construction Drawings, Construction Specifications, or otherwise) or other engineering or technical matters, such changes must be reviewed and approved by the Engineer.

12.05 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim regarding an adjustment in the Contract Price shall be presented to the Engineer and the other party in accordance with Paragraph 17.01.

B. If the Contract Price is based on Cost of the Work, then the provisions in the Agreement regarding Cost of the Work and changes in the CMAR's fee, Contract Price, Guaranteed Maximum Price, and Guaranteed Maximum Fee, apply.

C. The value of any Work covered by a Change Order or of any adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.02; or

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.05.D); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents, and agreement to a lump sum is not reached under Paragraph 12.05.C.2, then on the basis of the Cost of the Work for price adjustments (determined as provided in the Cost of the Work provisions in the Agreement, if applicable, or in Paragraph 12.01), plus a CMAR's Fee for overhead and profit (determined as provided in Paragraph 12.05.D).

D. *CMAR's Fee:* The CMAR's fee for overhead and profit on Change Orders shall be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B. and 13.01.B.2, the CMAR's fee shall be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, 13.01.B.4, and 13.01.B.5, the CMAR'S fee shall be 5 percent;

c. With respect to Construction Subcontracts, where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of this Contract is that the CMAR's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraph 13.01 by the subcontractor that actually performs the Work, at whatever tier, and (2) with respect to CMAR's itself, and to any Construction Subcontractors of a tier higher than that of the Construction Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Construction Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Construction Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized in Paragraph 13.01.C;

e. The amount of credit to be allowed by CMAR to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CMAR's fee by an amount equal to 5 percent of such net decrease; and

f. When both additions and credits are involved in any one change, the adjustment in CMAR's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.05.D.2.a through 12.05.D.2.e, inclusive.

12.06 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim regarding an adjustment of the Contract Times shall be presented by written notice to the other party pursuant to Paragraph 17.01.

B. CMAR's entitlement to an adjustment of the Contract Times under this Contract is conditioned on such adjustment being essential to CMAR's ability to complete the Work within the Contract Times.

12.07 *Execution of Change Orders*

A. Owner and CMAR shall execute appropriate Change Orders recommended by Engineer covering:

1. Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 12.02, (b) required because of Owner's correction of defective Work under Paragraph 14.05 or Owner's acceptance of defective Work under Paragraph 14.07, or (c) agreed to by the parties (all subject to the need for review and approval by the applicable Engineer pursuant to Paragraph 12.04); and

3. Changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Article 12 and Article 17.

4. If Owner or CMAR refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 12.07, it shall be deemed to be of full force and effect, as if fully executed.

12.08 *Notice to Sureties*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CMAR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

ARTICLE 13 – COST OF THE WORK ADJUSTMENTS; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Costs of the Work Adjustment:* When the price of Work covered by a Change Order or an adjustment in Contract Price is to be determined on the basis of Cost of the Work, the Cost of the Work adjustment means the sum of all costs necessarily incurred and paid by CMAR in the proper performance of the specific portion of the Work. The costs to be reimbursed to CMAR will be only those additional or incremental costs required because of the change of the Work or because of the event giving rise to the adjustment. If the Agreement contains Cost of the Work provisions, such provisions shall govern in determining the Cost of the Work for Change Order or adjustment purposes. If the Agreement does not contain Cost of the Work provisions, then the provisions in Paragraph 13.01 shall apply.

B. *Costs Included:* The Cost of the Work adjustment does not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items with respect to the subject Work:

1. Payroll costs for employees in the direct employ of CMAR in the performance of the subject Work, under schedules of job classifications agreed upon by Owner and CMAR in advance of such performance.

    a. Such employees shall include without limitation superintendents, foremen, and other personnel employed full-time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the subject Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, sick leave, vacation, and holiday pay applicable thereto. The expenses of performing the subject Work outside the hours or days permitted by this Contract shall be included in the above to the extent such performance of Work is authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the subject Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CMAR unless Owner deposits funds with CMAR with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of

surplus materials and equipment shall accrue to Owner, and CMAR shall make provisions so that they may be obtained.

3. Cost of permits obtained by CMAR.

4. Payments made by CMAR to Construction Subcontractors for subject Work performed or furnished by such Construction Subcontractors. If any subcontract provides that the Construction Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Construction Subcontractor's Cost of the Work and fee shall be determined in the same manner as CMAR's Cost of the Work and fee.

5. Costs of special consultants (not including Project Design Professionals), including but not limited to testing laboratories, attorneys, and accountants, retained for services specifically related to the subject Work.

6. Supplemental costs including the following items:

    a. The proportion of necessary transportation, travel, and subsistence expenses of CMAR's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the Site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed that remain the property of CMAR.

    c. Rentals of all construction equipment and machinery, and their parts, whether rented from CMAR or from others in accordance with rental agreements approved by Owner, and the costs of transportation, loading, unloading, installation, dismantling and removal of such equipment, machinery, and parts. All such costs shall be in accordance with the terms of such rental agreements. The rental of any such equipment, machinery, or parts shall cease when its use is no longer necessary for the Work.

    d. Sales, consumer, use, and other similar taxes related to the subject Work, and for which CMAR is liable, imposed by Laws or Regulations.

    e. Deposits lost for causes other than negligence of CMAR, any Construction Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses, damages, and related expenses caused by damage to the subject Work not compensated by insurance or otherwise, sustained by CMAR in connection with the furnishing and performance of the Work provided they have resulted from causes other than the negligence of CMAR, any Construction Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CMAR's fee.

    g. The cost of utilities, fuel, and sanitary facilities at the Site, as applicable to the subject Work.

h. Minor expenses such as long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. Cost of premiums for all Bonds and insurance CMAR is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CMAR's officers, executives, principals (of partnerships and sole proprietorships), general managers, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by CMAR whether at the Site or in CMAR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B., all of which are to be considered administrative costs covered by the CMAR's fee.

2. Expenses of CMAR's principal and branch offices other than CMAR's office at the Site.

3. Any part of CMAR's capital expenses, including interest on CMAR's capital employed for the subject Work and charges against CMAR for delinquent payments.

4. Costs due to the negligence of CMAR, any Construction Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind, and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *CMAR's Fee*: When the value of the Work covered by a Change Order is determined on the basis of Cost of the Work, CMAR's fee shall be determined as set forth in Paragraph 12.05.D.

E. *Documentation:* Whenever the cost of any Work is to be determined pursuant to Paragraph 12.01.B and 12.01.C, CMAR will establish and maintain cost records in accordance with generally accepted accounting practices and submit in a form acceptable to Owner an itemized cost breakdown together with supporting data.

13.02 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all of Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CMAR will be made by Engineer.

B. If CMAR's compensation is based on Cost of the Work, this Contract will not include compensation under unit prices unless expressly stated otherwise.

C. Each unit price will be deemed to include an amount considered by CMAR to be adequate to cover CMAR's overhead and profit for each separately identified item.

D. CMAR or Owner may seek an adjustment in the Contract Price if:

1. The quantity of any item of Unit Price Work performed by CMAR differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. Such an adjustment would not duplicate, and is coordinated with, any other related adjustments of Contract Price; and

3. CMAR has incurred additional expense, or less expense, as a result of the variation in quantity.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE CONSTRUCTION

14.01 *Access to Construction*

A. Owner, Engineer, Owner's Consultant, Owner's Site Representative, and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Construction at reasonable times approved by the Owner for their observation, inspecting, and testing. CMAR shall provide them proper and safe conditions for such access and advise them of CMAR's Site safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. CMAR shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. By the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. By Laws and Regulations, unless the Contract Documents or Laws and Regulations expressly allocate responsibility for a specific inspection or test to Owner;

3. To attain Owner's acceptance of materials or equipment to be incorporated in the Construction;

4. By manufacturers of equipment furnished under the Contract Documents;

5. To meet the requirements of the Construction Drawings and Construction Specifications;

6. For testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Construction; and

7. For acceptance of materials, mix designs, or equipment submitted for approval prior to CMAR's purchase thereof for incorporation in the Construction.

14.03 *Uncovering Construction*

A. If Owner considers it necessary or advisable that covered Construction be observed by Owner or inspected or tested by others, then CMAR, at Owner's request, shall uncover, expose or otherwise make available for observation, inspection, or testing, as Owner may require, that portion of the Construction in question, furnishing all necessary labor, material, and equipment.

1. If the Construction had been covered contrary to the written request of Owner or Engineer; or contrary to a requirement of the Contract Documents, then uncovering it for Owner's observation and re-covering it shall be at CMAR's expense, regardless of whether it is defective.

2. If it is found that the covered Construction is defective, CMAR shall pay all costs and damages caused by or resulting from such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement, re-covering, or reconstruction (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals, all court or arbitration or other dispute resolution costs, and all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price.

3. If the covered Construction is not found to be defective, CMAR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, re-covering, and reconstruction, subject to the provisions of Paragraph 12.05.C.

14.04 *Defective Construction*

A. It is CMAR's obligation to assure that the Construction is not defective.

B. Owner shall give CMAR prompt written notice of all defective Construction of which Owner has actual knowledge. Owner may reject, accept, or correct defective Construction.

C. Promptly after receipt of written notice of defective Construction, unless Owner expressly indicates that it will accept the defective Construction, CMAR shall correct all such defective Construction, whether or not fabricated, installed, or completed; or, if Owner has rejected the defective Construction, remove it from the Project and replace it with Construction that is not defective.

D. When correcting defective Construction, CMAR shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Construction.

14.05 *Owner May Correct Defective Construction*

A. If CMAR fails within a reasonable time after written notice from Owner to correct defective Construction or to remove and replace rejected Construction, or if CMAR fails to perform the Construction in accordance with the Contract Documents, or if CMAR fails to comply with any other provision of the Contract Documents, Owner may, after 10 days' written notice to CMAR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.04, Owner shall proceed expeditiously. In connection with such corrective and remedial action, Owner may exclude CMAR from all or part of the Site, take possession of all or part of the Construction, and suspend CMAR's services related thereto, and incorporate in the Construction all materials and equipment stored at the Site or for which Owner has paid CMAR but which are stored elsewhere. CMAR shall allow Owner, Owner's Consultant, Owner's Site Representative, and Owner's other representatives, agents, employees, and contractors, access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

14.06 *Costs*

A. CMAR shall bear all costs arising out of or relating to the correction, removal, or replacement of defective Construction, including but not limited to repair of adjacent Work or property; delay costs and impacts; fees and charges of engineers, and architects.

B. All costs, losses, and damages (included but not limited to fees and charges of engineers and architects, and all costs of repair or replacement of work of others) incurred or sustained by Owner in exercising its rights and remedies arising from defective Construction under this Article will be charged against CMAR, by set-off against payment or otherwise.

C. CMAR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to defective Construction.

14.07 *Owner's Acceptance of Defective Construction*

A. If, instead of requiring correction or removal and replacement of defective Construction, Owner prefers to accept it, Owner may do so. If such acceptance is proposed prior to final payment, it shall be subject to confirmation by the applicable Engineer that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety. CMAR shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Construction. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents, and Owner shall be entitled to an appropriate decrease in the Contract Price reflecting the diminished value of the Construction so accepted.

14.08 *Owner May Stop Construction*

A. If Construction is defective, or CMAR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform Construction in such a way that the completed Construction will conform to the Contract Documents, Owner may order CMAR to stop Construction or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop Construction will not give rise to any duty on the part of Owner to exercise this right for the benefit of CMAR or any other party.

ARTICLE 15 – PAYMENTS TO CMAR; COMPLETION

15.01 *Progress Payments*

A. *Basis for Progress Payments:* The Schedule of Values established as provided in Paragraph 2.04 will serve as the basis for progress payments. Progress payments on account of Unit Price Work will be based on the number of units completed.

B. *Application for Progress Payment:* On or about the date established in the Agreement for submission of each application for progress payment (but not more often than once a month), CMAR shall submit to Engineer for review an Application for Payment filled out and signed by CMAR covering the Work completed as of the date indicated on the Application and accompanied by supporting documentation as required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other

documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect Owner's interest therein, all of which will be satisfactory to Owner.

C. *Payment of Obligations:*

1. Beginning with the second Application for Payment, each Application shall include an affidavit of CMAR stating that all previous progress payments received on account of the Work have been applied on account to discharge CMAR's legitimate obligations associated with prior Applications for Payment.

2. If CMAR contends that it has withheld payment of underlying obligations for good cause, then CMAR shall inform Owner of the identity of the entity from which CMAR has withheld payment, the amount of the withholding, and the reason for the withholding.

D. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

E. *Review of Applications:*

1. Engineer will, within 10 days of receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to CMAR indicating in writing its reasons for refusing to accept the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. The Work has progressed to the point indicated;

b. The quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. The conditions precedent to CMAR's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. Inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. There may not be other matters or issues between the parties that might entitle CMAR to be paid additionally by Owner or entitle Owner to withhold payment to CMAR.

4. Neither Engineer's review of CMAR's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. To supervise, direct, or control the Work, or

   b. For the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

   c. For CMAR's failure to comply with Laws and Regulations applicable to CMAR's performance of the Work, or

   d. To make any examination to ascertain how or for what purposes CMAR has used the money paid on account of the Contract Price, or

   e. To determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.E.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

   a. The Work is defective, requiring correction or replacement;

   b. The Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which CMAR is responsible; or

   e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by CMAR and therefore justify termination for cause under the Contract Documents.

7. Payment will be made by Owner within 15 days after each Application for Payment is approved by the Project Manager and Department Head. If Owner should fail to pay CMAR at the time the payment is due, then CMAR may, at any time thereafter, upon serving written notice that he will stop the Work within 7 days after receipt of the notice by Owner, and after such 7-day period, stop the Work until payment of the amount owing has been received. Written notice shall be given as provided in Paragraph 19.01.

8. In making such Progress Payments, five percent of the estimated amount will be retained until Final Acceptance of the Contract work; in addition, the Owner shall retain from all Progress Payments an amount equal to all statutory claims filed against the CMAR. Also, whenever the work is substantially complete, the Owner if it considers the amount

retained to be in excess of the amount adequate for its protection may release to the CMAR all or a portion of such excess amount.

9. No Progress Payment nor any partial or entire use or occupancy of the Project by Owner shall constitute an acceptance of any Work not in accordance with the Contract Documents.

F. *Reduction in or Refusal to Make Payment:*

1. Owner may impose a set-off against the whole or any part of any such payment, or nullify any previous payment because of subsequently discovered evidence or the results of subsequent inspections or tests, to the extent that is reasonably necessary to protect Owner from loss because:

   a. Claims have been made against Owner on account of CMAR's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of CMAR's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from breach of warranty, workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

   b. CMAR has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

   c. CMAR has failed to provide and maintain required bonds or insurance;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which CMAR is responsible;

   e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

   f. The Construction is defective, requiring correction or replacement;

   g. Owner has been required to correct defective Construction in accordance with Paragraph 14.05, or has accepted defective Construction pursuant to Paragraph 14.07;

   h. The Contract Price has been reduced by Change Orders;

   i. An event that would constitute a default by CMAR and therefore justify a termination for cause has occurred;

   j. Liquidated damages, special damages, or performance damages have accrued under the Contract Documents as a result of CMAR's failure to achieve Milestones, Substantial Completion, final completion of the Work, or performance requirements, as applicable;

   k. Liens have been filed in connection with the Work, except where CMAR has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such liens; or

   l. There are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, Owner will give CMAR immediate written notice stating the reasons for such action and the specific amount of the reduction, and promptly pay CMAR any amount remaining after deduction of the amount so withheld. Owner shall promptly pay CMAR the amount so withheld, or any adjustment thereto agreed to by Owner and CMAR, if CMAR remedies the reasons for such action. The reduction imposed shall be binding on CMAR unless it duly presents a written notice of Claim contesting the reduction.

15.02 *CMAR's Warranty of Title*

A. CMAR warrants and guarantees that title to all Construction, materials, and equipment covered by any Application for Payment, whether already incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

15.03 *Substantial Completion*

A. When CMAR considers the entire Work ready for its intended use, CMAR shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. CMAR shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after CMAR's notification, Owner, CMAR, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify CMAR in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have fourteen days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within twenty days after submission of the preliminary certificate to Owner, notify CMAR in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said twenty days, execute and deliver to Owner and CMAR a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and CMAR will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and CMAR agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work,

property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the CMAR shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases CMAR may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude CMAR from the Site after the date of Substantial Completion subject to allowing CMAR reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Construction which (1) has specifically been identified in the Contract Documents, or (2) Owner and CMAR agree constitute a separately functioning and usable part of the Construction that can be used by Owner for its intended purpose without significant interference with CMAR's performance of the remainder of the Construction, subject to the following:

1. Owner at any time may request CMAR in writing to permit Owner to use or occupy any such part of the Construction that Owner believes to be ready for its intended use and substantially complete. If CMAR agrees that such part of the Work is substantially complete, CMAR and Owner will follow the procedures of Paragraph 15.03 for that part of the Construction.

2. CMAR at any time may notify Owner in writing that CMAR considers any such part of the Work ready for its intended use and substantially complete and request Owner to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner and CMAR shall make an inspection of that part of the Work to determine its status of completion. If Owner does not consider that part of the Work to be substantially complete, Owner will notify CMAR in writing giving the reasons therefor. If Owner considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

15.05 *Final Inspection*

A. Upon written notice from CMAR that the entire Work or an agreed portion thereof is complete, Owner and/or Engineer will make a final inspection with CMAR and will notify CMAR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CMAR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment:*

1. After CMAR has completed all such corrections to the satisfaction of Owner and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance, certificates of

inspection, and Record Documents, CMAR may make application for Final Acceptance and final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (unless previously delivered) by:

   a. All documentation called for in the Contract Documents;

   b. Consent of the surety, if any, to final payment;

   c. Satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment;

   d. A list of all disputes that CMAR believes are unsettled; and

   e. Complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of such releases or waivers of Liens specified in Paragraph 15.06.A.2, and as approved by Owner, CMAR may furnish receipts or releases in full and an affidavit of CMAR that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed, and (b) all payrolls, material and equipment bills and other indebtedness connected with the Work for which Owner might in any way be responsible, or which in any way might result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Project Design Professional, Construction Subcontractor, or Supplier fails to furnish such a release or receipt in full, CMAR may furnish a Bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Final Payment and Acceptance:* If Owner is satisfied that the Work has been completed and CMAR's other obligations under the Contract Documents have been fulfilled, Owner will, within 14 days after receipt of the final Application for Payment, give written notice to CMAR that the Work is acceptable and issue the Final Acceptance form. Otherwise, Owner will return the Application to CMAR, indicating in writing the reasons for refusing to process final payment, in which case CMAR shall make the necessary corrections and resubmit the Application.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment.

1. After the Work has been accepted by the Owner, a final payment due the CMAR under this Contract shall be paid upon the presentation of properly executed voucher and after the CMAR shall have furnished the Owner with a release of all claims against the Owner arising by virtue of this Contract, other than claims in stated amounts as may be specifically excepted by the CMAR from the operation of the release. If the CMAR's claim to amounts payable under the contract has been assigned under the assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), a release may also be required of the assignee.

2. If any mechanic's or material man's lien or notice of claim of such lien is filed or recorded against the project for labor, materials, supplies or equipment claimed to have been furnished to or incorporated into the Work, or for other alleged contribution thereto, the Owner will have the right to retain from payments otherwise due the CMAR, in addition

to other amounts properly withheld under this Article or under other provisions of the Contract, an amount equal to such lien or liens claimed.

3. Further, the Owner will have the right to retain from final payment an amount equal to all liquidated damages claimed by the Owner.

4. Retainages held by the Owner for any state or federal statutory claim arising out of the project will be held by the Owner in addition to all retainages held under the provisions of the Contract.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against CMAR. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from CMAR's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from unresolved disputes or Claims presented by Owner, or from CMAR's continuing obligations under the Contract.

B. The acceptance of final payment by CMAR will constitute a waiver by CMAR of all claims and rights against Owner other than those pending matters that have been duly submitted to dispute resolution under the provisions of Article 17.

15.08 *Correction Period*

A. If within two years after the date of Final Acceptance of the entire Work or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Construction is found to be defective, CMAR shall promptly, without cost to Owner and in accordance with Owner's written instructions, (1) correct such defective Construction, or, if it has been rejected by Owner, remove it from the Site and replace it with Construction that is not defective, and (2) satisfactorily correct or remove and replace any damage to other Construction or the work of others resulting therefrom. If CMAR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Construction corrected or the rejected Construction removed and replaced, and all costs, losses, and damages caused by or resulting from such removal and replacement (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals, all court or arbitration or other dispute resolution costs, and all costs of repair or replacement of work of others) will be paid by CMAR.

B. In special circumstances where a particular item of equipment is placed in continuous service before Final Acceptance of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Contract Documents, and written approval from the Owner.

C. Where defective Construction (and damage to other Construction resulting therefrom) has been corrected, or removed or replaced, under this Paragraph 15.08, the correction period hereunder with respect to such Construction will be extended for an additional period equal to that of the original warranty duration after such correction or removal and replacement has been satisfactorily completed.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 days by notice in writing to CMAR, which will fix the date on which Work will be resumed. CMAR shall resume the Work on the date so fixed. CMAR shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CMAR makes a claim therefore as provided in Paragraph 17.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events justifies termination for cause:

1. CMAR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the progress schedule as duly adjusted).

2. CMAR's disregard of Laws or Regulations of any public body having jurisdiction.

3. CMAR's violation in any substantial way of provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 16.02.A occurs, Owner may, after giving CMAR (and the surety, if any) 7 days' written notice, terminate the services of CMAR, take possession of any completed Submittals prepared by or for CMAR, exclude CMAR from the Site, take possession of the Work, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid CMAR but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case CMAR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all costs, losses and damages sustained by Owner arising out of or resulting from completing the Work (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) such excess will be paid to CMAR. If such costs, losses and damages exceed such unpaid balance, CMAR shall pay the difference to Owner. Such costs, losses and damages incurred by Owner will be incorporated in a Change Order. When exercising any rights or remedies under this paragraph Owner shall not be required to obtain the lowest price for the Work performed.

C. Notwithstanding Paragraph 16.02.B, CMAR's services will not be terminated if CMAR begins, within 7 days of receipt of notice of intent to terminate, to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

D. Where CMAR's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against CMAR then existing or which may thereafter accrue. Any retention or payment of moneys due CMAR by Owner will not release CMAR from liability.

E. If and to the extent that CMAR has provided a performance bond under the provisions of this Agreement, the termination procedures of that bond shall supersede the provisions of Paragraphs 16.02.B and 16.02.C.

16.03 *Failure to Accept the Guaranteed Maximum Price Proposal.*

A. Unless the Owner accepts the Guaranteed Maximum Price Proposal in writing on or before the date specified in the Guaranteed Maximum Price Proposal for such acceptance and so notifies the Construction Manager, the Guaranteed Maximum Price Proposal shall not be effective.

B. If the Owner fails to accept the Guaranteed Maximum Price Proposal, or rejects the Guaranteed Maximum Price Proposal, the Owner shall have the right to:

1. Suggest modifications to the Guaranteed Maximum Price Proposal.

Direct the Construction Manager to proceed on the basis of reimbursement as provided in Paragraph 5.5.29 of the Agreement without a Guaranteed Maximum Price, in which case all references in this Contract to the Guaranteed Maximum Price shall not be applicable and in such case the parties may establish a date of substantial completion and a date of final completion.

3. Terminate the Contract for convenience in accordance with section 16.04.

16.04 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to CMAR, Owner may, without cause and without prejudice to any other right or remedy of Owner, elect to terminate the Contract. In such case, CMAR shall be paid (without duplication of any items) for:

1. Completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. Amounts paid in settlement of terminated contracts with Project Design Professionals, Construction Subcontractors, Suppliers and others (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs incurred in connection with such terminated contracts); and

4. Reasonable expenses directly attributable to termination.

B. CMAR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

16.05 *CMAR May Stop Work or Terminate*

A. If, through no act or fault of CMAR, the Work is suspended for a period of more than 90 days by Owner or under an order of court or other public authority, Owner fails to act on any Application for Payment within 30 days after it is submitted, or Owner fails for 30 days to pay CMAR any sum finally determined to be due, then CMAR may, upon 7 days' written notice to Owner, and provided Owner does not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.A. In lieu of terminating the Contract and without prejudice to any other

right or remedy, if Owner has failed for 30 days to pay CMAR any sum finally determined to be due, CMAR may upon 7 days' written notice to Owner stop the Work until payment is made of all such amounts due CMAR, including interest thereon. The provisions of this paragraph are not intended to preclude CMAR from obtaining an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CMAR's stopping Work as permitted by this paragraph.

ARTICLE 17 – DISPUTES

17.01 General

Notwithstanding any other provisions of this Contract, disputes and disagreements by and between the Owner and the CMAR shall be resolved through progressive, sequential process of negotiation, mediation, and in certain cases, arbitration. For contracts which are for $250,000 or less, amounts in dispute which are less than $10,000 shall not progress beyond negotiation and shall ultimately be decided by the Owner if not by mutual agreement. For contracts which are for more than $250,000, amounts in dispute which are less than $25,000 should not progress beyond negotiation. For all contracts, amounts in dispute greater than those amounts set forth above, but less than $100,000 shall be resolved through a sequential process of negotiation, mediation, and binding arbitration. Amounts in dispute which are $100,000 or more shall be resolved through a sequential process of negotiation, mediation, and thence either arbitration or litigation.

17.02 Notice of Claim

If Owner and CMAR are not in agreement regarding a proposed or requested Change Order, other proposed adjustment of Contract Price or Contract Times, a Work Change Directive issued by Owner, or any other relief proposed or requested under the Contract, then either party may provide written notice of a Claim to the other party. Such notice of Claim shall be given within 90 days of: the proposal or request for a Change Order; such other proposed adjustment of Contract Price or Contract Times; the issuance of the Work Change Directive; or the proposal or request for other relief under the Contract. The notice of Claim shall be given within the 90 days regardless of whether the other party has responded to such proposal, request, or issuance, and regardless of whether discussions or negotiations are in progress; provided, however, that the parties may extend the time to give such notice of Claim by mutual written agreement. The notice of Claim shall include a statement of position, specification of the remedy sought, and supporting documentation.

17.03 Response

Within 30 days of the date of notice of Claim, the receiving party shall respond with a written statement of position and any supporting documentation.

17.04 Direct Negotiations

Owner and CMAR agree to directly negotiate all Claims between them in good faith for a period of 60 days from the date of the Response to the Notice of Claim.

A. The representatives of the parties shall meet promptly in recognition of mutual interests and in a good faith effort to resolve the dispute. Either the CMAR or the City shall arrange for this meeting at a time and place within the City of Greeley, mutually acceptable to both parties, within fifteen (15) days of the date of the Response to the Notice of Claim. Seven (7) days prior to the meeting, the initiating party shall deliver to the other party, a written and complete summary of the evidence and arguments substantiating its claim.

B. If the parties do not reach a solution after the 60 day period of Direct Negotiation, then upon notice of either party to the other, the dispute, claim, question, or difference, may be referred to a mediator. The parties can extend the negotiation period by mutual written agreement.

17.05 Mediation

If the dispute, claim, question, or difference is not resolved by negotiation within thirty (30) days after the initial meeting between the parties or within the extended period agreed upon, the parties agree to next request that the American Arbitration Association provide a mediator to assist the Owner and CMAR in resolving the dispute, claim, question, or difference. The rules of mediation shall be the Construction Industry Mediation Rules of the American Arbitration Association. A different mediation/dispute resolution agency may be selected for mediation upon the mutual written agreement between the parties. The dispute resolution agency shall select a qualified mediator who shall have a background in construction. The selected mediator may be rejected by the parties only for bias. The mediator shall have thirty (30) days from the time of appointment to meet with the parties and sixty (60) days from the time of the appointment to resolve the dispute unless the parties mutually consent to an extension of the sixty day deadline. All reasonable fees, costs, and expenses of the mediator, the mediator's association and the mediation agency, shall be borne equally by the parties. Each party shall bear the expense of its own counsel, experts, witnesses, and preparation and presentation of proofs at mediation.

17.06 No Delay

The CMAR shall not cause a delay of work during mediation proceedings except by mutual agreement. All mediation proceedings shall be conducted in the City of Greeley, unless an alternate location is agreed upon in writing by the Owner and the CMAR.

17.07 Minor Amounts

Amounts in dispute which are less than $10,000 shall not progress beyond mediation.

17.08 Litigation prerequisites

The procedures enumerated in Sections 17.04 and 17.05 shall be a prerequisite to the filing of any litigation between the parties to the Contract. Failure of the CMAR to follow the provisions of Section 17.04 and Section 17.05 shall be a complete defense, and grounds for immediate dismissal of any litigation filed prior to CMAR engaging in negotiation and mediation with the City of Greeley as provided above. Litigation may be filed only if the amount in dispute is $100,000 or more. In the event litigation is filed by and between the parties after mediation, venue and jurisdiction of any and all suits and causes of action in connection with this Contract shall lie exclusively in Weld County, Colorado.

17.09 Arbitration

After mediation, instead of litigation, any remaining unresolved controversy or claim arising out of or relating to this Contract or the performance or breach thereof, may be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. For amounts in dispute which are $100,000 or more, arbitration shall be engaged only upon mutual written agreement by the Owner and the CMAR, and the written agreement shall specify whether the arbitration shall be binding or nonbinding; however, amounts in dispute which are less than $100,000 shall necessarily be settled by binding arbitration. The sole arbitrator shall be appointed by the Arbitration Association, unless a different arbitrator or dispute resolution agency is mutually agreed upon. The award of the arbitrator shall be

accompanied by a reasoned opinion, and shall include findings of fact and conclusions. All fees and expenses of the arbitration, including the expense of each party's counsel, experts, witnesses, and preparation and presentation of proofs, shall be borne by the party against whom arbitration judgment is made.

17.10 Litigation

Each party shall bear its own litigation fees and expenses, including the expense of its counsel, experts, witnesses, and preparation and presentation of proofs, regardless of the prevailing party.

ARTICLE 18 – LIQUIDATED DAMAGES

18.01 The CMAR acknowledges that the Owner will sustain damages as a result of the CMAR's failure to complete Work within the Interim and Contract Times. Time is of the essence with regarding to this Project. Each Early Work Amendment shall establish a completion date for the Work covered by the Early Work Amendment, and may establish interim completion dates for that Work. The Guaranteed maximum Price Proposal shall establish a Substantial and Final Completion Date. As described herein, liquidated damages shall be applied to each of the established Early Work, Substantial and Final Completion dates and shall be determined by the Owner based on the value of the Early Work Amendment and/or the Guaranteed Maximum Price, as applicable.

18.02 Recovery of lost time

The Owner and the CMAR agree that timely completion of the Work is essential to the success of the Project, and that approval for time extension shall be granted only as a last resort. The CMAR agrees to make every effort to recover "lost" time.

18.03 Liquidated Damages

In the event the CMAR fails to achieve Substantial Completion of the Work within the Contract Time, after due allowance for any extension or extensions of time made in accordance with the Contract Documents, the CMAR shall pay to the Owner as fixed, agreed and liquidated damages the sum of $500.00 for each calendar day of delay unless otherwise stated in the Special Provisions. Such liquidated damages shall be assessed for each and every day that the CMAR shall be in default. The Owner shall have the right to deduct said liquidated damages from any amount due or that may become due the CMAR, or to collect such liquidated damages from the CMAR or its surety.

18.04 Additional Damages and Costs

Liquidated damages in the amount stipulated do not include any sums of money to reimburse the City for actual damages which may be incurred between Substantial Completion and Final Completion because of the CMAR’s failure to achieve Final Completion within the Contract Time. For such failure to reach Final Completion, the CMAR shall reimburse the City, as a mitigation of City damages and not as a penalty, those administrative costs incurred by the City as a result of such failure.

Liquidated damages in the amounts stipulated do not include any sums of money to reimburse the City for extra costs which the City may become obligated to pay on other contracts which were delayed or extended because of the CMAR's failure to complete the Work within the Contract Time. Should the City incur additional costs because of delays or extensions to other contracts resulting from the CMAR's failure of timely performance, the City will assess these extra

costs against the CMAR, and these assessments will be in addition to the stipulated liquidated damages.

18.05 Reservation of Rights

The City reserves all of its rights to actual damages from the CMAR for injury or loss suffered by the City from actions or omissions of the CMAR, including but not limited to any other breach or default of the Contract, outside of the scope of the above sections.

ARTICLE 19 – MISCELLANEOUS

19.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice to the other party to this Contract, it will be deemed to have been validly given if delivered to the Authorized Representative of the other party as identified in the Contract Documents:

1. In person, by a commercial courier service or otherwise; or
2. By registered or certified mail, postage prepaid; or
3. By e-mail, with the words "Formal Notice" or similar in the e-mail's subject line.

19.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

19.03 *Cumulative Remedies*

A. Unless expressly stated otherwise in this Contract, the duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, or waiver of, any rights and remedies available to any or all of them which are otherwise imposed or available by:

1. Laws or Regulations; or
2. Any special warranty or guarantee; or
3. Other provisions of the Contract.

B. The provisions of Paragraph 19.03.A will be as effective as if repeated specifically in the Contract in connection with each particular duty, obligation, right and remedy to which they apply.

19.04 *Limitation of Damages*

A. With respect to this Contract and any and all Claims and other matters at issue, Owner shall not be liable to CMAR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CMAR on or in connection with any other project or anticipated project.

19.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

19.06 *Survival of Obligations*

A. All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Contract.

19.07 *Controlling Law*

A. The Contract Documents will be construed in accordance with the law of Colorado. Jurisdiction shall lie in Weld County, Colorado.

19.08 *Colorado Labor*

A. In accordance with C.R.S. §8-17-101, all parties contracting with the City of Greeley on public works projects shall employ Colorado labor to perform the work to the extent of not less than eighty percent (80%) of each type or class of labor in the several classifications of skilled and common labor employed on this project.

19.09 *Counterparts and Electronic Signatures*

A. The Contract Documents may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same document.

B. The Contract Documents, including all component parts set forth above, may be executed and delivered by electronic signature by any of the parties and all parties consent to the use of electronic signatures.

19.10 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

19.11 *Obligation to Keep Project Team Intact*

A. CMAR shall not remove or replace any members of the team set forth in this agreement for the duration of this contract without written approval of the Owner. In the event of a team member's discontinued service or replacement, the CMAR shall submit a written statement providing good cause for such action. Further, if any member is to be replaced the CMAR shall promptly submit a qualified individual as a replacement. All replacements must be approved by the Owner in writing. All team member removals or replacements shall be subject to a $25,000 deduction in the contract fee.

19.12 *Agreement Subject to Appropriation*

A. Pursuant to law, this Agreement is subject to adequate appropriation in any given fiscal year of the City of Greeley. Should adequate funds not be appropriated in any fiscal year to maintain payments under the terms and conditions of this Agreement, the parties agree that the contract shall immediately terminate. It is expressly understood and agreed by and between the parties hereto that the only expenditures to be made by the City are those expenditures specifically provided for herein.

SECTION 00620-1

GENERAL SPECIAL PROVISIONS

STANDARD GENERAL CONDITIONS OF THE CONTRACT BETWEEN OWNER AND CONSTRUCTION MANAGER AT RISK

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Definitions*

24. Engineer: The Project Design Professional identified as Engineer in the Agreement, and engaged by Owner to provide engineering and related professional services under a Design Agreement. The Engineer on this project is:

Plummer Associates, Inc.
1221 Auraria Pkwy.
Denver, CO 80204

40. Owner's Consultant: An individual or entity with which the Owner has contracted to furnish services (typically including planning, preparation of Conceptual Documents, and advisory services) to Owner with respect to the Project, and which is identified as such in the Agreement. The Owner's Consultant on this project is:

ARTICLE 2 – PRELIMINARY MATTERS

2.05 B. The Authorized Representative for each party is as follows:

For the City of Greeley:
Justin Scholz
Civil Engineer III
1001 11th Avenue, 2nd Floor
Greeley, CO 80631
Office: 970-350-9826
Cell: 970-371-3727

For CMAR:
Authorized Representative

2.09 Work days shall be Monday through Friday, 7:00 a.m. to 5:00 p.m. The contractor will be restricted to working on normal City of Greeley business days unless prior approval has been obtained from the Project Manager. Any request to work outside of normal City of Greeley working days shall be requested at least 48 hours in

advance.

2.10 All construction shall conform to any and all applicable codes or standards. It is the Contractor's responsibility to give sufficient notification and acquire approval from all agencies of jurisdiction for deviations from original plans/procedures.

2.11 All dimensions on the drawings shall be checked against actual field conditions by the Contractor. Any discrepancies shall be brought to the attention of the Owner and resolved prior to commencing any work on the affected portion of the project.

2.12 The XXXX Superintendent or construction documents and specifications will designate an area at the site for the contractor's use to stage activities and store material and equipment.

2.13 Contractor shall maintain the work site in a neat and orderly fashion.

ARTICLE 6 – BONDS AND INSURANCE

6.02 *Insurance – General Provisions*

E.1 CMARs Subcontractor shall not be required to obtain insurance in the same amounts as that required of CMAR. CMAR shall require it subcontractors to obtain insurance in sufficient amounts given the nature of the subcontractors work on the Project.

6.05.A. Strike 6.05A in its entirety. Owner will be responsible for providing Builder's Risk insurance.

ARTICLE 7 – CMAR'S RESPONSIBILITIES

7.17 *CMAR's General Warranty and Guarantee*

A.1 Except where longer periods of warranty are indicated for certain items, the Contractor warrants work under the Contract to be free from faulty materials and workmanship for a period of not less than two years from date of Final Acceptance of system as designated in the Design Documents, which two year period shall be covered by the Performance Bond and Payment Bond as specified in this Contract. The Contractor shall immediately remedy, repair, or replace, without cost to the Owner and to the entire satisfaction of the Owner, defects, damages, or imperfections due to faulty materials or workmanship appearing in said work within said period of not less than two years. Remedied work shall carry the same warranty as the original work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve him of any obligation under this Contract.

A.2 The Contractor, at no additional expense to the Owner, shall also remedy damage to equipment, the site, or the building or the contents thereof which is the result of

any failure or defect in the Work, and restore any work damaged in fulfilling the requirements of the Contract. Should the Contractor fail to remedy any such failure or defect within a reasonable time but no longer than ten (10) days after receipt of notice thereof, the Owner will have the right to replace, repair, or otherwise remedy such failure or defect at the Contractor's expense.

A.3 Subcontractors', manufacturers', and suppliers' warranties and guarantees, expressed or implied, respecting any part of the Work and any material used therein shall be deemed obtained and shall be enforced by the Contractor for the Benefit of the Owner without the necessity of separate transfer or assignment thereof.

A.4 The rights and remedies of the Owner provided in this Article are in addition to and do not limit any rights and remedies afforded by the Contract or by law.

ARTICLE 8 – SUBMITTALS

8.01 *CMAR's Preparation of Submittals*

D. Engineer's Review

4. For scheduling purposes, CMAR may assume a period of two week are necessary for Engineer's Review of Shop Drawings and submittals.

ARTICLE 14 – TESTS AND INSPECTIONS, CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTION CONSTRUCTION

14.02 B. Owner will arrange for compaction and concrete cylinder testing.

ARTICLE 3: CMAR BASIC SERVICES

3.3.3 Review of Design Documents: The CMAR shall review the design documents at the 50% and 90% design milestones for clarity, consistency, constructability and coordination among the Contractors.

3.3.3.2 Design Review Meetings: The CMAR's team including the Project Manager, Estimator, Scheduler and Superintendent along with any other necessary personnel shall attend design review workshops at the 50% and 90% engineering design review milestones.

3.3.4 Project Funding: The independent detailed construction cost estimate shall be performed at the 50% and 90% design review milestones.

ARTICLE 4: DURATION OF THE CMAR SERVICES

4.1 The duration of the CMAR's Basic services under this Agreement for Preconstruction Phase services (Articles 3.1, 3.1.1, and attachment A) shall be 120 calendar days from the commencement date that will correspond to the Notice to Proceed.

ARTICLE 5: COMPENSATION FOR CMAR SERVICES AND PAYMENT

5.5 The Principals of CMAR who will be compensated at a fixed rate as identified in the Guaranteed Maximum Price Proposal are:

_____
_____
_____

5.8.2.1.1 During the Preconstruction Phase, but not later than the 90% design milestone has been achieved or earlier at the sole option of the Owner, may request the CMAR to establish the Guaranteed Maximum Price(s) for the Project.

5.8.2.7 Strike 5.8.2.7 in its entirety. The CMAR shall be eligible to perform work of specific trades on the Project. Owner shall approve award to CMAR. The CMAR shall include the price for this work in their Guaranteed Maximum Price proposal. The CMAR shall obtain additional pricing proposals if requested by the owner.

ARTICLE 6: INSURANCE

6.3 c. Pollution Liability:
2,000,000.00 Each Occurrence
2,000,000.00 Aggregate

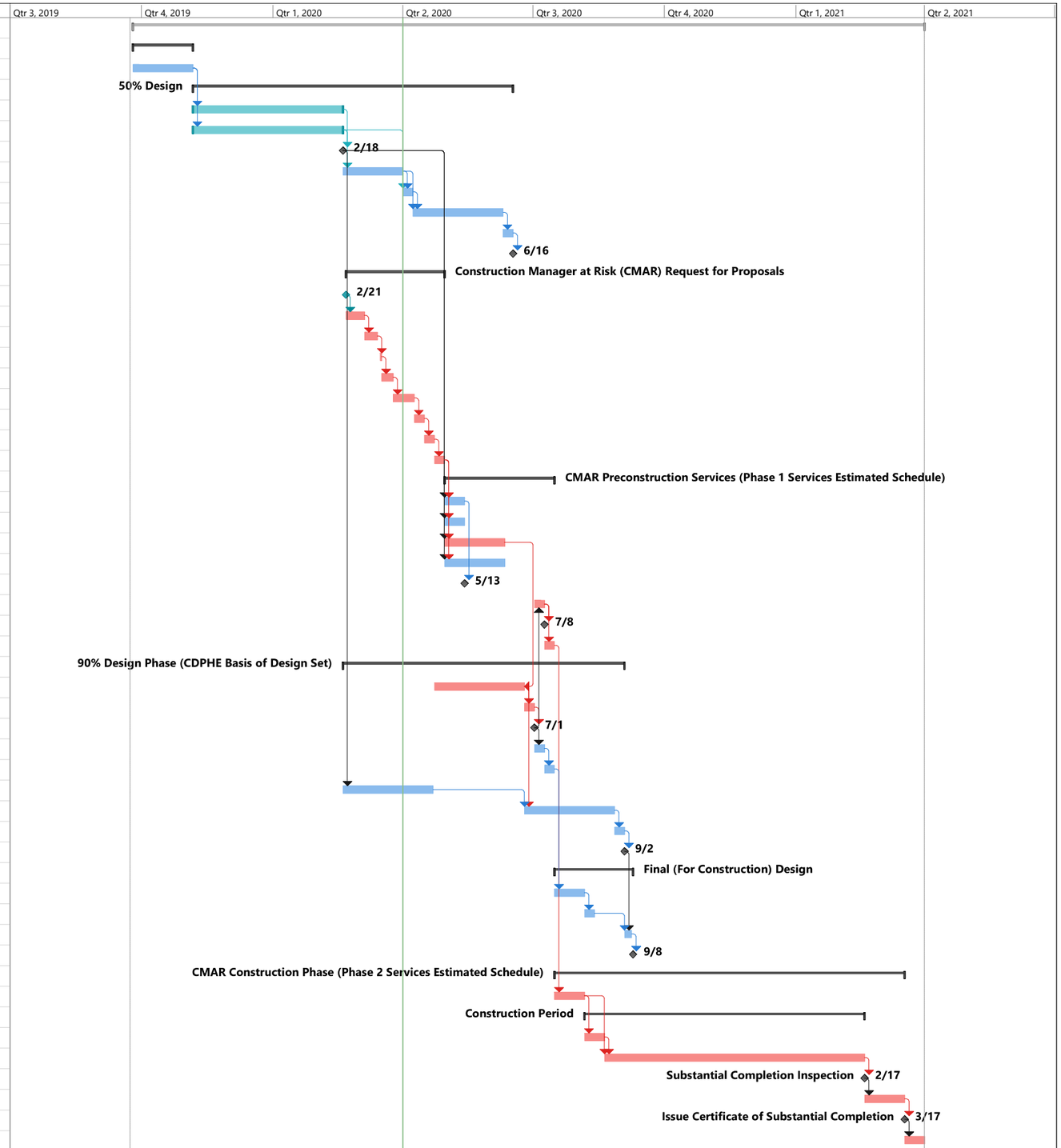
6.5.1 The Owner shall be responsible for purchasing and maintaining Builder's Risk insurance to protect the Project from perils of physical loss as described in the General Conditions.

Attachment D

Project Background Documents

Project Design Schedule
50% Design Drawings (To be issued as a part of an Addendum)
Summary Technical Specifications
Division 1 Specifications

ID	Task Name	Duration	Start	Finish	Predecessors
0	**Ashcroft Lift Station - Design Project Schedule**	**396 days**	**Wed 9/25/19**	**Wed 3/31/21**	
1	**1 30% Design Phase**	**30 days**	**Wed 9/25/19**	**Tue 11/5/19**	
2	1.1 30% Design Phase	30 days	Wed 9/25/19	Tue 11/5/19	
3	**2 50% Design**	**160 days**	**Wed 11/6/19**	**Tue 6/16/20**	
4	2.1 50% Design Engineering	75 days	Wed 11/6/19	Tue 2/18/20	2
5	2.2 Prepare Site Application/Engineering Report	75 days	Wed 11/6/19	Tue 2/18/20	2
6	2.3 Submit 50% Design Package to City	0 days	Tue 2/18/20	Tue 2/18/20	5
7	2.4 Negotiate & Finalize Preliminary Easements	30 days	Wed 2/19/20	Tue 3/31/20	4
8	2.5 Submit Site Application/Engineering Report to CDPHE	5 days	Wed 4/1/20	Tue 4/7/20	7,5
9	2.6 CDPHE Review Period	45 days	Wed 4/8/20	Tue 6/9/20	8,7
10	2.7 Address CDPHE Comments	5 days	Wed 6/10/20	Tue 6/16/20	9
11	2.8 Receive CDPHE Site Location Approval	0 days	Tue 6/16/20	Tue 6/16/20	10
12	**3 Construction Manager at Risk (CMAR) Request for Proposals**	**49 days**	**Fri 2/21/20**	**Wed 4/29/20**	
13	3.1 Advertisement/Invitation CMAR Request for Proposal	0 days	Fri 2/21/20	Fri 2/21/20	
14	3.2 Pre-Proposal Conference	9 days	Fri 2/21/20	Wed 3/4/20	13
15	3.3 Final Questions Due	7 days	Thu 3/5/20	Fri 3/13/20	14
16	3.4 Final Addendum Issued	1 day	Mon 3/16/20	Mon 3/16/20	15
17	3.5 Contractor Proposals Due	6 days	Tue 3/17/20	Tue 3/24/20	16
18	3.6 Recommendation of Award or Shortlist Interview	11 days	Wed 3/25/20	Wed 4/8/20	17
19	3.7 Shortlist Interview (If Required)	5 days	Thu 4/9/20	Wed 4/15/20	18
20	3.8 Notice of Award	5 days	Thu 4/16/20	Wed 4/22/20	19
21	3.9 Contract Execution and Notice to Proceed	5 days	Thu 4/23/20	Wed 4/29/20	20
22	**4 CMAR Preconstruction Services (Phase 1 Services Estimated Schedule)**	**55 days**	**Thu 4/30/20**	**Wed 7/15/20**	
23	4.1 Value Engineering Review	10 days	Thu 4/30/20	Wed 5/13/20	6,21
24	4.2 Project Cost Model / Project Risk Plan	10 days	Thu 4/30/20	Wed 5/13/20	6,21
25	4.3 Utility Investigation	30 days	Thu 4/30/20	Wed 6/10/20	6,21
26	4.4 Pre-procurment Packages (Long Lead Equipment, if required)	30 days	Thu 4/30/20	Wed 6/10/20	6,21
27	4.5 VE Workshop	0 days	Wed 5/13/20	Wed 5/13/20	23
28	4.6 GMP Development by CMAR	5 days	Thu 7/2/20	Wed 7/8/20	34
29	4.7 Receive GMP from CMAR	0 days	Wed 7/8/20	Wed 7/8/20	28
30	4.8 City / Engineer Review GMP	5 days	Thu 7/9/20	Wed 7/15/20	28
31	**5 90% Design Phase (CDPHE Basis of Design Set)**	**141 days**	**Wed 2/19/20**	**Wed 9/2/20**	
32	5.1 90% Engineering	45 days	Thu 4/23/20	Wed 6/24/20	25FF+10 days
33	5.2 90% Design Internal Quality Review	5 days	Thu 6/25/20	Wed 7/1/20	32
34	5.3 Submit 90% to CMAR for GMP and City for Review	0 days	Wed 7/1/20	Wed 7/1/20	33
35	5.4 90% Review Meeting with City	5 days	Thu 7/2/20	Wed 7/8/20	34
36	5.5 90% Design Documents Complete	5 days	Thu 7/9/20	Wed 7/15/20	35
37	5.6 Prepare CDPHE Basis of Design Report	45 days	Wed 2/19/20	Tue 4/21/20	6
38	5.7 Submit 90% and BDR / CDPHE Review Period	45 days	Thu 6/25/20	Wed 8/26/20	37,32
39	5.8 Address CDPHE Comments	5 days	Thu 8/27/20	Wed 9/2/20	38
40	5.9 Receive CDPHE Basis of Design Approval	0 days	Wed 9/2/20	Wed 9/2/20	39
41	**6 Final (For Construction) Design**	**39 days**	**Thu 7/16/20**	**Tue 9/8/20**	
42	6.1 Final (For Construction) Engineering	15 days	Thu 7/16/20	Wed 8/5/20	36
43	6.2 For Construction Set Internal Quality Review	5 days	Thu 8/6/20	Wed 8/12/20	42
44	6.3 Compile Final For Construction Set	3 days	Thu 9/3/20	Mon 9/7/20	43,40
45	6.4 Submit Self Certification to CDPHE	0 days	Tue 9/8/20	Tue 9/8/20	44FS+1 day
46	**7 CMAR Construction Phase (Phase 2 Services Estimated Schedule)**	**175 days**	**Thu 7/16/20**	**Wed 3/17/21**	
47	7.1 Negotiate and Finalize GMP / Phase 2 Services Contract	15 days	Thu 7/16/20	Wed 8/5/20	30
48	**7.2 Construction Period**	**140 days**	**Thu 8/6/20**	**Wed 2/17/21**	
49	7.2.1 Notice to Proceed and CMAR mobilization	10 days	Thu 8/6/20	Wed 8/19/20	47
50	7.2.2 Construction	130 days	Thu 8/20/20	Wed 2/17/21	49,47
51	7.3 Substantial Completion Inspection	0 days	Wed 2/17/21	Wed 2/17/21	50
52	7.4 Complete Punchlist Items/Equipment Commissioning	20 days	Thu 2/18/21	Wed 3/17/21	51
53	7.5 Issue Certificate of Substantial Completion	0 days	Wed 3/17/21	Wed 3/17/21	52
54	8 Project Closeout & Final Payment	10 days	Thu 3/18/21	Wed 3/31/21	53



Project: Greeley Ashcroft Lift Station Design Schedule for RFP
Date: Fri 2/21/20

Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Critical Split
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline	Progress
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Critical	Manual Progress

City of Greeley
Ashcroft Lift Station

50% Design Set Outline Technical Specifications

February 2020
Project #: 3048-001-01

PLUMMER

CITY OF GREELEY
ASHCROFT LIFT STATION

OUTLINE TECHNICAL SPECIFICATIONS

DIVISION 3: CONCRETE

03 11 00 Concrete Forming

A. Includes requirements for cast in place concrete forming requirements.

B. Form Requirements:

1. Plywood: PS 1, waterproof resin-bonded, exterior type Douglas Fir; face adjacent to concrete Grade B.
2. Fiberboard: FS LL-B-810, Type IX, tempered, waterproof, screen back, concrete form hardboard.
3. Lumber: Straight, uniform width and thickness: and free from knots, offsets, holes, dents, and other surface defects.
4. Chamfer strips: Clear, white pine, surface against concrete planed.
5. Form ties: Removable end, permanently embedded body types with waterstops not requiring auxiliary spreaders, with cones on both ends, embedded portion 1-inch minimum back from concrete face. If not provided with threaded ends, constructed for breaking off ends without damage to concrete.

C. Prefabricated Form Manufacturers:

1. The Burke Company.
2. Symons – Dayton Superior.
3. UFP Concrete Forming Systems.
4. Or Approved Equal.

D. Form Coating products:

1. The Burke Company.
2. L&M Construction Chemicals.
3. Protex.
4. Or Approved Equal.

E. Form Tie Manufacturers:

1. The Burke Company.
2. Or Approved Equal.

03 15 00 Concrete Accessories

A. Includes requirements for cast in place concrete accessories.

1. Void form, forms, chamfer strips, form coating, form ties.

2. Expansion joint filler: ASTM D1751, asphalt impregnated fiber board, 1/2-inch thickness.
3. Membrane curing compound.
    a. General use: Curing compound conforming to ASTM C309.
    b. In potable water chambers: Sodium silicate, certified by the manufacturer as suitable for potable water use.
4. Bonding admixture and agent manufacturers:
    a. Sika – Sikalatex.
    b. Euclid Chemical – Akkro-7T.
    c. Euclid Chemical – Tammsweld.
    d. Or Approved Equal.
2. Expansion and contraction joint shear bar grease manufacturers.
    a. No-Ox-ID axle grease.
    b. Or Approved Equal.

03 15 13 Waterstops

A. Includes requirements for hydrophilic and hydrophobic type waterstops.

B. Type 1 Hydrophobic Waterstop manufacturers:
    1. Rubber: Dumbbell type, 6 inches wide by 3/8 inches thick with 3/4-inch bead on each edge.
    2. PVC: Ribbed or serrated, 6-inch wide by 3/8-inch-thick, with "U" or "O" bulb closed center section.

C. Type 2 Hydrophilic Waterstop manufacturers.
    1. General: Adeka Ultra Seal MC-201OM.
    2. Sealant, pipe penetrations, base joints, irregular joint surfaces: Adeka Ultra Seal P201.
    3. Adhesive: 3M Company 3M-2141.

03 20 00 Concrete Reinforcing

A. Includes requirements for furnishing and installation of steel bars and welded wire fabric for concrete reinforcement.

B. Reinforcing: Bars and Beam Stirrups: ASTM A615, Grade 60.
    1. Size as determined by Engineer as shown on Drawings.

C. Includes tie wire, bar supports, welded wire fabric, and mechanical splice and connection requirements.

03 30 00 Cast-in-Place Concrete

A. Section includes requirements for cast-in-place concrete for slab on grade, foundations, equipment pads, and other items identified within the Contract Drawings.

B. Cement specifications:
    1. ASTM C150, Type I/II.
    2. Aggregates: ASTM C33.

3. Admixture specifications: ASTM C494.
4. Water to cementitious material (cement plus fly ash) ratio: 0.45 (maximum).
5. Minimum compressive strength conforming to ASTM C39:28 day - 4,000 pounds per square inch or as stated otherwise on Drawings.
6. Maximum slump at point of placement: 4 inches or as stated otherwise on Drawings.
7. Volumetric air content at point of placement: 5 to 7 percent or as stated otherwise on Drawings.

03 48 53 Precast Polymer Concrete

A. Includes requirements for precast polymer concrete for the lift station wet well and sanitary sewer manholes.

B. Precast concrete manufacturer to design, wet stamp, and seal proposed concrete mix design by a Professional Engineer registered in the State of Colorado.

C. Precast concrete manufacturer to design, wet stamp, and seal all structures by a Professional Engineer registered in the State of Colorado.

D. Design requirements:
   1. Mix Design shall consist of thermosetting resin, sand, and aggregate. No Portland cement shall be allowed as part of the mix design matrix. All sand and aggregate shall be inert in an acidic environment.
   2. Reinforcement shall use acid resistant reinforcement (FRP Bar) in accordance with ACI 440.1R-06 as applicable for polymer concrete design.

E. Allowable manufacturers:
   1. Armorock LLC.
   2. No Substitutions.

03 60 00 Grouting

A. Includes requirements for Non-Shrink, Non-Metallic Grout.

B. Design requirements:
   1. Factory premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 4,000 psi in one day and 8,000 psi in 7 days.

DIVISION 5: METALS

05 05 19 Post-Installed Concrete Anchors

A. Includes requirements for concrete anchors.

B. Bolts, nuts, washers, and threaded rods:
   1. General use: Galvanized carbon steel ASTM A325.
   2. Class 1, Division 1 or Class 1 Division 2 service: Stainless steel ASTM 193, Grade 303 or 305.
   3. Pipe Sleeves: ASTM A53, hot dip galvanize.

4. Expansion anchors: 304/316 Stainless steel.
5. In hardened concrete and grouted masonry:
6. Type "A": Wedge type, FS FF-S-325, Group II, Type 4, Class 1.
7. Type "B": Self-drilling, FS FF-S-325, Group III, Type 1, Flush type.
8. Type "C": Non-drilling, internally threaded, FS FF-S-325, Group VIII, Type 1 Drop in.
9. Type "D": Non-drilling, externally threaded, FS-S-325, Group VIII, Type 2.
10. In hollow and solid masonry:
11. Type "E": Lag shield FS FF-S-325, Group II, Type 1, Class 1.
12. Type "F": Split sleeve, FS FF-S-325, Group II, Type 3, Class 3.

05 59 00 Metal Specialties

A. Includes requirements for miscellaneous metal fabrications:
   1. Loose bearing and leveling plates.
   2. Steel angle nosing and thresholds.
   3. Rough hardware.
   4. Sleeves for penetrations.
   5. Fixed metal ladders.
   6. Ship style ladders.

DIVISION 8: OPENINGS

08 11 10 Metal Doors and Frames

A. Includes requirements for steel doors, steel door frames, fire-rated door and frame assemblies, and fire-rated window frames.
   1. General standard hollow metal doors: ANSI/SDI A250.8.
   2. Design: Flush panel.
   3. Insulation: Polyurethane Core w/ thermal rating not less than 10.
   4. Exterior doors: Comply with ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level.
   5. Standard hollow metal frames:
   6. Exterior Frames: Fabricated from metallic-coated steel sheet.
   7. Frames: 14 gauge minimum.
   8. Masonry Jamb Anchors: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (50 mm) wide by 10 inches (250 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
   9. Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick, and as follows: Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive

fasteners.

08 31 00 Access Doors and Panels

A. Section includes access doors and frames for walls, ceilings, floors, and roofs.
   1. Bilco Type JD-AL Aluminum hatches and stainless steel non draining floor hatches.

08 71 00 Door Hardware

A. Includes requirements for door hardware.

B. Commercial door hardware for swinging doors and other doors to the extent indicated, and cylinders for doors specified in other Sections.
   1. Hinges: Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish.
   2. Geared Continuous Hinges: Tested and approved by BHMA for ANSI A156.26-1996 Grade 1.
   3. Cylindrical Type Locks and Latchsets: Tested and approved by BHMA for ANSI A156.2, Series 4000, Operational Grade 1, Extra-Heavy Duty, and be UL10C listed.
   4. Exit Devices: Tested and approved by BHMA for ANSI 156.3, Grade 1.

DIVISION 9: FINISHES

09 97 00 Coatings for Water and Wastewater Treatment Facilities

A. Includes requirements for coatings of exterior and interior surfaces throughout the Project including surface preparation, prime coat (first coat), finish coats (second and third coats), inspection, cleaning, and touch-up of surfaces and equipment. Shop preparation, prime coat, and finish coats to be shop-applied, may be specified elsewhere, so that a complete system is specified and coordinated.
   1. High performance coating systems:
      a. Tnemec Company, Inc.
      b. PPG Industries.
      c. Sherwin Williams.

DIVISION 10: SPECIALTIES

10 50 00 Miscellaneous Specialties

A. Includes requirements for fire extinguishers and first aid kits.

B. Wall mounted fire extinguishers:
   1. Provide units conforming with ANSI/UL 711.
   2. Provide dry Chemical Type: UL 299, Cast steel tank, with pressure gage; Class B.C, Size 10 with formed steel, galvanized, white enamel finish wall bracket.

C. First aid kits:
   1. Zee First Aid Kit: Medium, 4-Shelf, Plastic Cabinet, Model Number “0152”.

DIVISION 23: HEATING VENTILATION AND AIR CONDITIONING

23 05 29 Hangers and Supports for HVAC Equipment

A. Includes requirements for hangers and supports for HVAC equipment.

B. Supporting Steel: Provide support steel hangers and anchors necessary to support indicated equipment from the building structure.

23 05 53 Identification for HVAC Piping and Equipment

A. Includes requirements for Identification markers, tags, and signs for pipe, valves, and equipment.

23 09 93 Sequence of Operation for HVAC Controls

A. Includes written descriptions of HVAC system sequences of operation.

B. Furnish and install a complete system of automatic temperature controls. The system shall be complete in all respects including all labor, materials, equipment and services necessary.

1. Provide a complete, operational Temperature Control System (TCS).
2. Electric unit heaters: Controlled by factory provided thermostat. Thermostat to cycle fan and enable electric heat to meet thermostat set point. The heater and fan will be disabled when setpoint is attained. Thermostats shall be user adjustable.
3. Exhaust Fans: Fan to operate continuously in as signaled from building process control panel.
4. Fan shall be normally operated at a low speed (exhausting a minimum of 40 -50 CFM to provide ventilation of 1 cfm per square foot).
5. Chemical Room: When room door to the chemical storage is opened, the exhaust fan shall be commanded to high speed using an EC motor 0-10 vdc motor input.

23 31 13 Metal Ducts

A. Includes requirements for rectangular, round, and oval metal ducts, and fiber glass lining.

1. Rectangular ductwork: 316 stainless steel 2B finish with welded or seam lock joints.
2. Round ductwork: 316 stainless steel welded or longitudinal seam lock formed with 2B finish.
3. Outdoor odor control supply ductwork: Galvanized steel.
4. Odor control supply ductwork (interior spaces exposed to raw wastewater): 316 stainless steel.

23 34 00 HVAC Fans

A. Includes requirements for sidewall exhaust fans:

1. Manufacturer: Greenheck or equal.
2. Provide bird screen, disconnect switch, ECM motor and speed control, back-draft damper.
3. Size and quantity: As shown on Drawings.

23 37 13 Diffusers, Grilles, Registers, and Louvers

A. Includes requirements for diffusers, grilles, and registers:

1. Manufacturer: Titus or equal, with opposed blade damper.

2. Material: Aluminum with enamel coated finish.
3. Louvers: Ruskin or equal, with mill finish and standard frame.
4. 375D Extruded aluminum, 4" deep, 50% free area, 0.01 oz water penetration per sqft and 0.15" W.C. pressure drop at 1000 fpm free area velocity for louvers 24" or more in height.
5. Size and quantity: As shown on Drawings.

23 82 39 Electric Unit Heaters

A. Includes requirements for propeller unit heaters with electric-resistance heating.
   1. Manufacturers: Raywall/Markel Products; a division of TPI Corporation, or equal.
   2. Size and quantity: As shown on Drawings.

DIVISION 26: ELECTRICAL

26 05 19 Low-Voltage Electrical Power Conductors and Cables

A. Section specifies wires, cables, and connectors for power, lighting, signal, control, and related systems.
   1. General
      a. All conductors shall be copper. Aluminum conductors' size #1/0 and larger may be substituted for copper and used for phase and neutral conductors for transformer feeders, switchboard feeders, and panelboard feeders. All ground conductors shall be copper.
      b. Aluminum conductors shall not be used for serving individual motors, chillers, VFD's and motor controllers.
      c. The following requirements shall be met when aluminum conductors are used:
         i. Aluminum alloy conductors shall be compact stranded conductors of a recognized Aluminum Association 8000 Series aluminum alloy conductor material (AA-8000 series alloy).
      d. It is the responsibility of the contractor to increase the size of the conduit, wire gutter, or enclosure, if necessary, to accommodate the aluminum conductors and meet allowable code requirements.
      e. It is the responsibility of the contractor to increase the size of the aluminum conductor and associated termination lugs to match the ampacity of the copper conductor circuit shown on the Drawings.
      f. The contractor shall submit a feeder schedule to the Engineer for all conductor substitutions indicating the aluminum conductor wire size and the conduit size. The contractor shall not begin the installation until written approval is granted by the Engineer.
      g. All aluminum conductors shall terminate on a mechanical screw-type connector or mechanical compression-type connector. Connector shall be dual rated (AL7CU or AL9CU) and Listed by UL for use with aluminum and copper conductors and sized to accept aluminum conductors of the required ampacity. When using compression-type

connectors, the lugs shall be marked with wire size, die index, number and location of crimps and shall be suitably color-coded. Using a suitable stripping tool, remove insulation from the required length of the conductor. Wire brush the conductor and apply a listed joint compound. Tighten or crimp the connection per the connector manufacturer's recommendation. Wipe off any excess joint compound.

h. When terminating aluminum conductors to aluminum bus, prepare a mechanical screw-type or compression-type connection. Bolts shall be anodized alloy and conform to current ANSI and ASTM chemical and mechanical property limits. Nuts shall be aluminum alloy and conform to current ANSI standards. Washers shall be flat aluminum alloy, Type A plain, standard wide series conforming to current ANSI standards. Lubricate and tighten the hardware per manufacturer's recommendations.

i. When terminating aluminum conductors to copper bus, prepare a mechanical screw-type or compression-type connection. Bolts shall be plated or galvanized medium carbon steel; heat treated, quenched and tempered equal to current ASTM standard or SAE grade 5. Nuts shall conform to current ANSI standards. Washers shall be steel, Type A plain, standard wide series conforming to current ANSI standards. Belleville conical spring washers shall be of hardened steel, cadmium plated or silicone bronze. Lubricate and tighten the hardware per manufacturer's recommendations.

j. The final tightening torque shall be recorded for all aluminum conductor mechanical screw-type connections and provided in report form, in the completed O&M manuals.

k. The contractor shall perform an infrared survey of all aluminum conductor connections after the installation is complete and in normal service. Infrared surveys shall be performed during periods of maximum possible loading with at least 30% of rated load of the equipment being inspected. All connections with elevated temperatures shall be corrected by the contractor. The infrared survey results shall be provided in report form, in the completed O&M manuals.

l. Insulation shall have a 600-volt rating.

m. All conductors shall be stranded.

n. Stranded conductors may only be terminated with UL OR ETL listed type terminations or methods: e.g. stranded conductors may not be wrapped around a terminal screw but must be terminated with a crimp type device or must be terminated in an approved back wired method.

o. Building Wire

   i. Description: Single conductor insulated wire 90-degree C.

   ii. Insulation: Type THHN/THWN-2, XHHW-2 insulation.

p. Service Entrance Conductors

   i. Description: Single conductor or multi-conductor insulated wire; 90 degree C sized at the 75 degree C table.

   ii. Insulation: Type USE-2, XHHW-2 insulation for service entrance conductors routed from exterior source to exterior termination location.

   iii. Type XHHW-2 insulation for services entrance conductors routed from exterior source

to interior termination location.

q. Variable Frequency Drive (VFD) Wire:
   i. All power wiring from the VFD output to the motor shall be type XHHW-2 insulation, single conductor wire.

r. Above Ground Wire for Exterior Work:
   i. Description: Single conductor insulated wire, 90-degree C.
   ii. Insulation: Type THHN/THWN-2, XHHW-2 insulation.

s. Underground Wire for Exterior Work:
   i. Description: Stranded single or multiple conductor insulated wire, 90-degree C.
   ii. Insulation: Type USE-2, XHHW-2, RHW-2 insulation.
   iii. This wiring shall be used in all underground feeder and branch circuit applications, except THHN/THWN-2 is permitted when run in a concrete-encased ductbank.

t. Wiring Connectors:
   i. Split Bolt Connectors: Not acceptable.
   ii. Solderless Pressure Connectors: High copper alloy terminal. May be used only for cable termination to equipment terminals. Not approved for splicing.
   iii. Twist Type Wire Connectors: Solderless twist type spring connector (wire-nut) with insulating cover for copper wire splices and taps. Use for conductor sizes 10 AWG and smaller. The manufacturer's wire fill capacity must be followed.
   iv. All wire connectors used in underground or exterior pull boxes or hand holes shall be gel filled twist connectors or a connector designed for damp and wet locations. Gel filled twist type connectors can be used for copper conductor sizes 6 AWG and smaller for site lighting applications. The manufacturer's wire fill capacity must be followed.
   v. Mechanical Connectors: Bolted type tin-plated; high conductivity copper alloy; spacer between conductors; beveled cable entrances.
   vi. Compression (crimp) Connectors: Long barrel; seamless, tin-plated electrolytic copper tubing; internally beveled barrel ends. Connector shall be clearly marked with the wire size and type and proper number and location of crimps. Connector must be installed with a crimper tool listed for use with the manufacturer and type of compression connector.
   vii. Insulation Piercing Connectors: Molded insulated body, copper teeth, wrench tightened, UL 486B Listed. May be used only for connection of a tap conductor in run and tap type applications when main conductor is 8 AWG and larger.

26 05 26 Grounding and Bonding for Electrical Systems

A. Section specifies electrical grounding and bonding as indicated on drawings and schedules and as specified herein. Grounding and bonding work is defined to encompass systems, circuits, and equipment.
   1. Rod Electrode:
      a. Material: Sectional type; copper clad steel.

b. Diameter: 5/8 inch in diameter minimum.

c. Length: 96 inches minimum. Rod shall be driven at least 9' 6" deep.

d. Concrete-Encased Grounding Electrode for Pole Bases:

e. Fabricate per NFPA 70, Article 250.52 (A)(3) using 20 feet (6m) of bare copper wire not smaller than #4 AWG. If concrete foundation is less than 20 feet (6m) long, coil excess conductor within the base of the foundation. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts.

2. Bolted Connectors:

a. Bolted-pressure-type connectors, or compression type.

3. Welded Connectors:

a. Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.

4. Mechanical Connectors:

a. The mechanical connector bodies shall be manufactured from high strength, high conductivity cast copper alloy material. Bolts, nuts, washers and lock washers shall be made of Silicon Bronze and supplied as a part of the connector body and shall be of the two bolt type.

b. Split bolt connector types are NOT allowed. Exception: the use of split bolts is acceptable for grounding of wire-basket type cable tray, and for cable shields/straps of medium voltage cable.

c. The connectors shall meet or exceed UL 467 and be clearly marked with the catalog number, conductor size and manufacturer.

5. Compression Connectors:

a. The compression connectors shall be manufactured from pure wrought copper. The conductivity of this material shall be no less than 99% by IACS standards.

b. Each connector shall be factory filled with an oxide-inhibiting compound.

c. The connectors shall meet or exceed the performance requirements of IEEE 837, latest revision.

d. The connectors shall be clearly marked with the manufacturer, catalog number, conductor size and the required compression tool settings.

e. The installation of the connectors shall be made with a compression tool and die system, as recommended by the manufacturer of the connectors, and shall be irreversible.

f. Pre-crimping of the ground rod is required for all irreversible compression connections to a ground rod.

g. Terminal lug for communication system grounding shall be compression type and conform to the following:

h. Material: Tin Plated Copper (aluminum not permitted).

i. Wire Size: to match conductor.

j. Number of Stud Holes: 2.

k. Stud Hole Size: 3/8”.

l. Bolt Hole Spacing: per ANSI Joint Standard J-STD-607-A.

m. Tongue Angle: Straight.

6. Exothermic Connections:
   a. As manufactured by Cadweld or similar.
7. Conductors:
   a. For insulated conductors, comply with Section 26 05 19.
   b. Material: Stranded copper (aluminum not permitted).
   c. Grounding Electrode Conductor: Size as shown on drawings, specifications or as required by NFPA 70, whichever is larger.
   d. Equipment Grounding Conductors: Insulated with green-colored insulation.
8. Foundation Electrodes: As shown on drawings.
   a. Primary Manhole, Main Switchgear room and Vault Bonding: No. 4/0 minimum.
   b. Feeder and Branch Circuit Equipment Ground: Size as shown on drawings, specifications or as required by NFPA 70, whichever is larger. Differentiate between the normal ground and the isolated ground when both are used at the same facility.
   c. Branch Circuit Equipment Grounds shall be increased in size when routed with phase conductors increased in size due to voltage drop calculations.
9. Conductors for Telecommunications shall be as follows:
   a. Telecommunications Bonding Conductor (TMGB to Service Ground): No. 3/0 minimum or as shown on drawings.
   b. Telecommunications Bonding Backbone (TBB; TMGB to TGB): No. 3/0 minimum or as shown on drawings.
   c. Telecommunications Grounding Equalizer (GE): No. 3/0 minimum or as shown on drawings.
   d. Bonding Conductors shall be insulated with a Green Jacket or jacket marked with Green Tape or labeled per NEC Guidelines.
   e. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.
   f. Bare Copper Conductors: Comply with the following:
   g. Solid Conductors: ASTM B 3.
   h. Assembly of Stranded Conductors: ASTM B 8.
   i. Tinned Conductors: ASTM B 33.
10. Bus/Busbar:
    a. Material: Copper (aluminum not permitted).
    b. Size:
       i. All Power systems: 1/4" X 2", length as needed (24” minimum).
       ii. Telecommunications Main Ground Busbar (TMGB): 1/4" x 4" x 20" long (minimum).
       iii. Telecommunications Grounding Busbar (TGB): 1/4" x 2" x 12" long (minimum).

c. Busbars:
   i. Be pre-drilled to accommodate two-hole lugs.
   ii. 3/8” stud hole size; hole spacing per ANSI J-STD-607-A.
   iii. Incorporate insulators and stand-off brackets that electrically isolate busbar from mounting surface.
   iv. Provide main ground busbar located adjacent to main electrical service equipment to terminate all ground conductors. Refer to DFD grounding detail 26 05 26-1.

26 22 00 Low-Voltage Transformers

A. Section includes single-phase and three-phase, individually mounted dry-type transformers and shielded isolation type transformers rated less than 600 volts and less than 2,500 kVA.
   1. General:
      a. Obtain each transformer type through one source from a single manufacturer.
      b. Factory-assembled and -tested, air-cooled units for 60-Hz service.
   2. Distribution Transformers:
      a. Comply with NEMA ST 20, and list and label as complying with UL 1561.
      b. Provide transformers that are constructed to withstand seismic forces specified in Division 26.
      c. Cores: Grain-oriented, non-aging silicon steel.
      d. Coils: Continuous windings without splices except for taps.
      e. Enclosure: Ventilated, NEMA 250, Type 2. 1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
      f. Transformer Enclosure Finish: Comply with NEMA 250.
      g. Finish Color: ANSI 61 gray.
      h. Taps for Transformers Smaller than 3 kVA: One 5 percent tap above normal full capacity.
      i. Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above, and one 5 percent tap below normal full capacity.
      j. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity.
      k. Insulation Class: H. 220 deg C, UL-component-recognized insulation system with a maximum of 115 deg C rise above 40 deg C ambient temperature.
      l. Energy Efficiency for Transformers Rated 15 kVA and Larger:
         i. Complying with NEMA TP 1, Class 1 efficiency levels.
         ii. Tested according to NEMA TP 2.
      m. K-Factor Rating: Transformers indicated to be K-factor rated shall comply with UL 1561 requirements for nonsinusoidal load current-handling capability to the degree defined by designated K-factor.
      n. Unit shall not overheat when carrying full-load current with harmonic distortion corresponding to designated K-factor.

o. Indicate value of K-factor on transformer nameplate.

p. Electrostatic Shielding: Each winding shall have an independent, single, full-width copper electrostatic shield arranged to minimize interwinding capacitance.

q. Arrange coil leads and terminal strips to minimize capacitive coupling between input and output terminals.

r. Include special terminal for grounding the shield.

s. Shield Effectiveness:

i. Capacitance between Primary and Secondary Windings: Not to exceed 33 picofarads over a frequency range of 20 Hz to 1 MHz.

ii. Common-Mode Noise Attenuation: Minimum of minus 120 dBA at 0.5 to 1.5 kHz; minimum of minus 65 dBA at 1.5 to 100 kHz.

iii. Normal-Mode Noise Attenuation: Minimum of minus 52 dBA at 1.5 to 10 kHz.

t. Wall Brackets:

i. Manufacturer's standard brackets.

u. Fungus Proofing:

i. Permanent fungicidal treatment for coil and core.

v. Low-Sound-Level Requirements: 55 dBA or a minimum of 3 dBA less than NEMA ST-20 standard sound levels.

26 24 13 Switchboards

A. Section covers the furnishing of switchboards and all associated equipment as specified herein.

1. Switchboard construction and ratings:

a. Switchboard electrical rating and short circuit current rating shall be as shown on the Drawings and as required by short circuit/coordination study.

b. The switchboard and overcurrent devices contained within shall be fully-rated.

c. Main Section Devices: Individually mounted.

d. Distribution Section Devices: Group-mounted and/or individually mounted, complete with bus in an integrated assembly. All breakers shall be bolted, quick-make, quick-break, trip indicating and common trip on all multi-pole breakers. No handle ties will be permitted.

2. Buses:

a. The switchboard bussing (and all other current carrying parts such as fingers, neutral and ground buses) shall be plated copper. The bussing shall be of sufficient cross-sectional area to meet UL 891 temperature rise requirements.

b. For 4-wire systems, the neutral bus shall be the equivalent ampacity as the phase bus bars.

c. Provide a copper ground bus through the length of the switchboard sized per UL 891 and NFPA requirements.

d. Ground bus shall be continuous throughout the length of the switchboard. Factory supplied bus jumpers shall be utilized for field connection of ground bus between shipping

splits. Field fabricated jumpers are not permitted.

e. Distribution sections shall be fully bussed and fully equipped for the future breakers, including all connectors and mounting hardware.

f. Line and load terminations shall be rated for the size, number of conductors and conductor material.

g. Line and Load Terminations: Accessible from the front only of the switchboard, suitable for the conductor materials used.

3. Enclosure:

a. Factory assembled, dead front, metal enclosed, and self-supporting switchboard assembly conforming to NEMA PB2, and complete from incoming line terminals to load side terminations.

b. All closure plates shall be screw removable and small enough for easy handling by one person.

c. Finish: Manufacturer's standard medium gray enamel over external surfaces. Coat internal surfaces with minimum one coat corrosion resistant paint, or plate with cadmium or zinc.

d. Enclosure shall be NEMA PB 2 Type 1 - General Purpose

e. Front accessible only.

f. The center grip of the operating handle of all switches or circuit breakers, when at the highest position, shall not be more than 6 feet – 3.5 inches high in the switchboard enclosure. Note: When the switchboard is mounted on 3.5-inch housekeeping pad the height of the operating handle shall not exceed 6 feet -7 inch above the floor.

g. Provide metering transformer compartment for Utility Company's use. Compartment size, location, bus spacing and drilling, door, and locking and sealing requirements shall meet the requirements of the local utility company. Compartment shall be in compliance with local utility service requirements.

4. Pull box (Top Hat):

a. Same construction as switchboard, width and depth to match switchboard. The top and sides shall be removable.

B. Pull Section:

c. Same construction as switchboard, width, depth and height to match switchboard. The top and sides shall be removable.

d. Provide a pull section on all switchboards fed with incoming cables.

e. Compartment shall include switchboard bus extension drilled and tapped for the incoming cable terminations.

f. Compartment width shall be minimum 30”

g. Circuit breakers are the preferred overcurrent protective devices. However, fuses may be needed in some applications to address coordination requirements. The consultant shall determine the devices needed for the application and delete the requirements for devices not used on the project.

5. Main Circuit Breaker:
    a. The main circuit breaker in 208V switchboards shall be an individually mounted and bussed molded case circuit breaker, 80% rated, with a full function electronic trip unit.
    b. The main circuit breaker in 480V switchboards shall be an individually mounted and bussed molded case circuit breaker, 80% rated, with a full function electronic trip unit.
    c. Individually mounted mains shall be located bottom per manufacturers requirements based on location of cabling entrance into section. Provide minimum distance between cable entry opening and termination lugs of main OCPD per manufacturer and local utility
    d. Provide Infrared inspection window to inspect line and load side termination lugs of individually mounted main OCPD.
    e. Ground fault protection shall be included at the main disconnect for 480/277volt switchboards 1000 amperes and larger. Ground fault trip shall be of the residual type and an integral part of the breaker. The ground fault system shall include a memory circuit for positive tripping action despite intermittent arcing ground faults. Provide an integral means of testing the ground fault system to meet the on-site testing requirements of NEC Article 230-95(c).
    F. Circuit Breaker Distribution Sections:
    g. Distribution circuit breakers shall be group mounted in frame sizes 100 amp through 1200 amp. Frame sizes larger than 1200 amp shall be individually mounted.
    h. Frame sizes larger than 1200 amp, individually mounted circuit breakers shall be provided with infrared inspection windows to inspect line and load side termination lugs. Mounting locations shall allow for front inspection.
    i. The circuit breakers are to be totally front accessible and mounted in the switchboard to permit installation, maintenance and testing without reaching over line side bussing. The circuit breakers are to be removable by the disconnection of only the load side terminations and line and load side connections are to be individual to each circuit breaker. Common mounting brackets or electrical bus connectors are not acceptable.
    j. Circuit breakers shall be provided with provisions for mounting handle padlock attachments.
    k. Breaker feeder lugs shall be dual rated for use with either aluminum or copper conductors.
    l. Each circuit breaker is to be furnished with an externally operable mechanical means to trip the circuit breaker, enabling maintenance personnel to verify the ability of the circuit breaker trip mechanism to operate, as well as exercise the circuit breaker operating mechanisms.
    m. A minimum of 20% future circuit breaker spaces shall be included. Spaces for future circuit breakers shall be “prepared” spaces. These spaces shall be provided with the necessary mounting hardware and bus extensions so that when future breakers are added, only the breaker itself needs to be purchased by the installer.
    n. Circuit breakers in 480V switchboards shall be fully adjustable LSI circuit breakers with electronic trip for frame sizes 400A and greater. When ground fault protection is required

on the main overcurrent device, fully adjustable LSIG circuit breakers with electronic trip units shall be provided for feeder circuit breaker frame sizes 400A and greater.

6. Circuit Breakers:
    a. Electronic Trip Circuit Breakers: As scheduled on the drawings, electronic circuit breakers shall have, at a minimum, adjustments for long time, short time and instantaneous trip. Provide integral ground fault sensing with adjustable ground fault trip where indicated on the drawings.
    b. Molded Case Circuit Breakers: As scheduled on the drawings, integral thermal and instantaneous magnetic trip elements in each pole.
    C. Coordination of overcurrent protection devices:
    d. Provide a coordination study of the electrical system and recommend set points for all of the overcurrent and ground fault trip adjustments on the equipment provided. The coordination study and set point recommendations shall be submitted to the consulting engineer for approval. Submittal shall be on or before date of switchboard and panelboard equipment submittal. The study shall meet the requirements of Section 26 05 73.
7. Surge Protective Device:
    a. Provide a surge protective device meeting the requirements of Section 26 43 13. Surge protective devices shall be served from an overcurrent protective device within the switchboard.
    b. Surge protective device shall be installed external to the switchboard.

26 24 16 Panelboards

A. Section specifies panelboards, including cabinets and boxes, as indicated by drawings and schedules, and as specified.
1. Power Distribution Panelboards:
    a. Power Distribution Panelboards shall be limited to 300A or less. Requirements for equipment larger shall utilize switchboards.
2. Panelboards: Circuit breaker type.
    a. The panelboard and overcurrent devices contained within shall be fully-rated.
    b. Enclosure: NEMA Type 1 Minimum cabinet size: 6.5 inches (165 mm) deep; 26 inches (660 mm) wide. Constructed of galvanized code gauge steel.
    c. Cabinet front cover and cabinet shall be Type 4X, in wet and damp locations.
    d. Power distribution panelboards installed in electrical rooms and mechanical rooms shall utilize a standard dead front cover. In all other areas provide cabinet front with hinged door, flush lock and hinged trim (door-in-door) to allow access to wiring gutters without removal of panel front. Hinged trim shall be held in place with screw fasteners. Finish in manufacturer's standard gray enamel.
    e. Provide metal directory holders with clear plastic covers.
    f. Provide panelboards with copper bus (phase buses, bus fingers, etc.), ratings as scheduled on Drawings. Provide ground bars in all panelboards. Neutral and ground bars can be dual

rated ALCU9. All spaces shall have bus fully extended and drilled for the future installation of breakers.

g. Minimum System (i.e. individual component) Short Circuit Rating: As shown on the Drawings and as required by short circuit/coordination study.

h. Main breakers shall be individually mounted. Back feed mains shall NOT be utilized.

i. The circuit breakers are to be totally front accessible and mounted in the panelboard to permit installation, maintenance and testing without reaching over line side bussing. The circuit breakers are to be removable by the disconnection of only the load side terminations and line and load side connections are to be individual to each circuit breaker. Common mounting brackets or electrical bus connectors are not acceptable.

j. Circuit breakers shall be provided with provisions for mounting handle padlock attachments.

k. Breaker feeder lugs shall be dual rated for use with either aluminum or copper conductors.

l. Each circuit breaker is to be furnished with an externally operable mechanical means to trip the circuit breaker, enabling maintenance personnel to verify the ability of the circuit breaker trip mechanism to operate, as well as exercise the circuit breaker operating mechanisms.

m. A minimum of 20% future circuit breaker spaces shall be included. Spaces for future circuit breakers shall be “prepared” spaces. These spaces shall be provided with the necessary mounting hardware and bus extensions so that when future breakers are added, only the breaker itself needs to be purchased by the installer.

n. Circuit breakers serving single motor loads shall be magnetic only, instantaneous trip. Overload protection shall be part of the motor combination controller.

o. Circuit breakers in 480V power distribution panelboards shall be fully adjustable LSI circuit breakers with electronic trip for frame sizes 400A and greater.

3. Circuit Breakers:

a. Electronic Trip Circuit Breakers: As scheduled on the drawings, electronic circuit breakers shall have, at a minimum, adjustments for long time, short time and instantaneous trip. Provide integral ground fault sensing with adjustable ground fault trip where indicated on the drawings.

b. Molded Case Circuit Breakers: As scheduled on the drawings, integral thermal and instantaneous magnetic trip elements in each pole.

4. Branch Circuit Panelboards:

a. Lighting and Appliance Branch Circuit Panelboards: Circuit breaker type.

b. The panelboard and overcurrent devices contained within shall be fully-rated.

c. Enclosure: Type 1. Minimum cabinet size: 5-3/4 inches (144 mm) deep; 20 inches (508 mm) wide with 5" minimum gutter space top and bottom. Constructed of galvanized code gauge steel. Panel enclosure (back box) shall be of non-stamped type (without KO's) to avoid concentric break out problem.

d. Cabinet front cover and cabinet shall be Type 4X, 304 stainless steel in wet and damp

locations.

e. Provide as shown on drawings cabinet front with concealed trim clamps, concealed hinge and flush cylinder lock all keyed alike. Front cover shall be hinged to allow access to wiring gutters without removal of panel trim. Hinged trim shall be held in place with screw fasteners. Finish in manufacturer's standard gray enamel.

f. Provide metal directory holders with clear plastic covers.

g. Provide panelboards with copper bus (phase buses, bus fingers, etc.), ratings as scheduled on Drawings.

h. Provide ground bars in all panelboards. Phase, neutral and ground bar terminations can be dual rated ALCU9. All spaces shall have bus fully extended and drilled for the future installation of breakers.

i. Incoming conductors shall terminate at lug landing pads rated for the panelboard.

j. Provide compression type lugs to accommodate the conductor shown on drawings.

k. Minimum System (i.e. individual component) Short Circuit Rating: As shown on the Drawings and as required by short circuit/ coordination study.

l. Molded Case Circuit Breakers: Bolt on type thermal magnetic trip circuit breakers. Provide UL Class A ground fault interrupter circuit breakers where shown on Drawings. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.

m. Do not use tandem circuit breakers.

n. Circuit breakers shall be bolt-on type with common trip handle for all poles. No handle ties of any sort will be approved.

o. Provide a minimum of 10% spare circuit breakers in branch panelboards.

p. All of the panelboards provided under this section shall be by the same manufacturer.

q. All sub-feed panelboards installed side by side shall utilize same enclosure height.

r. The Engineer shall review panelboard sizes and use of traditional single and double tub installations. Use of a single panelboard with greater than 42 circuits shall be discussed with Engineer.

5. Enclosures:

a. Surface-mounted cabinets. NEMA PB 1, Type 1.

b. Rated for environmental conditions at installed location.

c. Other Wet or Damp Indoor Locations: NEMA 250, Type 3R or 4.

d. Enclosures in hazardous locations must be carefully selected to meet the division and group listing of the environment.

e. Front: Secured to box with hinged cover per drawing detail.

f. Retain subparagraph above or below.

g. First three subparagraphs below are optional features. Coordinate with Drawings.

h. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.

i. Directory Card: With transparent protective cover, mounted in metal frame, inside panelboard door.

6. Phase and Ground Buses:
   a. Material: Hard-drawn copper, 98 percent conductivity.
   b. Subparagraphs below are optional features. Coordinate with Drawings.
   c. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.

26 27 26 Wiring Devices

A. Section includes switches, receptacles, and plates.

1. Wall switches: Heavy duty use toggle switch, rated 20 amperes and 120/277 volts AC. Switches shall be UL20 Listed. All switches shall be heavy duty Specification Grade.
2. Receptacles: NEMA Type 5 20R, ivory nylon or high impact resistant face. Receptacles shall be UL498 Listed and meet Federal Specification WC-596. All duplex receptacles shall be heavy duty Specification Grade, 20 amp rated.
3. Disconnect Switches:
4. Fusible Switch Assemblies (use only when overcurrent protection is required): NEMA Type Heavy Duty; quick make, quick break, load interrupter, enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: designed to accommodate Class R, Class J or Class CC (motors) cartridge type fuses.
5. Non-Fusible Switch Assemblies: NEMA Type Heavy Duty; quick make, quick break, load interrupter, enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
6. Fuses:
   a. Fuses 600 Amperes and Less: Dual element, time delay, 600-volt, UL Class RK 1. Interrupting Rating: 200,000 rms amperes.
   b. Fuses 601 Amperes and Larger: Low Peak, time delay, 600-volt, UL Class L. Interrupting Rating: 200,000 rms amperes.
   c. Fuses 30 Amperes and less: Time-Delay, 600-volt, UL Class CC. Interrupting rating: 50,000 rms amperes.
7. Provide cabinet/enclosure for spare fuses sized to accommodate all required spare fuses for entire facility. Cabinet shall have hinged and latched cover. Label cabinet “Spare Fuses”. Locate cabinet in main electrical room.

26 28 16.16 Enclosed Switches

A. Section includes switches, receptacles, and plates.

1. Type HD, Heavy Duty, Single Throw, 240-V and 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

26 29 00 Low Voltage Controllers

A. Section covers the furnishing of variable frequency drives (VFDs) with all associated labor, material, tools, equipment, appurtenances, and service.

26 36 23 Automatic Transfer Switches

A. Section covers the furnishing of automatic transfer switches and all associated equipment as specified.

1. Comply with Level 2 equipment according to NFPA 110.
2. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning, unless otherwise indicated.
3. Transfer Switches Based on Molded-Case-Switch Components: Comply with NEMA AB 1, UL 489, and UL 869A.
4. The transfer switch shall have an in-phase monitor which allows the switch to transfer between live sources if their voltage waveforms become synchronous within 20 electrical degrees within 10 seconds of transfer initiation signal. A switch must be provided to bypass this feature if not required. If the in-phase monitor will not allow such a transfer, the control must default to time delay neutral operation. Switches with in-phase monitors which do not default to time delay neutral operation are not acceptable.
5. Signal before transfer contacts, wired to an identified terminal strip, used to supply a signal to selected loads prior to the operation of the transfer switch adjustable from 1 to 30 seconds.
6. A solid-state under-voltage sensor shall monitor all phases of the normal source and provide adjustable ranges for field adjustments for specific application needs. Pick-up and drop-out settings shall be adjustable from a minimum of 70% to a maximum of 95% of nominal voltage. A utility sensing interface shall be used, stepping down system voltage of 277/480 VAC 3 phase to 24 VAC, helping to protect the printed circuit board from voltage spikes and increasing personnel safety when troubleshooting.
7. Time delay for override of normal-source voltage sensing delays transfer and engine start signals. Adjustable from zero to six seconds, and factory set for five second.
8. Voltage/Frequency Lockout Relay: Prevents premature transfer to generator. Pickup voltage is adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency is adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
9. Time Delay for Retransfer to Normal Source: Adjustable from 0 to 30 minutes, and factory set for 10 minutes. Provides automatic defeat of delay on loss of voltage or sustained under-voltage of emergency source, provided normal supply has been restored.
10. Test Switch: Simulates normal-source failure.
11. Switch-Position Pilot Lights: Indicate source to which load is connected.
12. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.
13. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
14. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."

15. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V AC.
16. Transfer Override Switch: Overrides automatic retransfer control so automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
17. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
18. Signal the engine-generator to stop after the load retransfers to normal. A solid state engine cooldown timer, adjustable from 1-30 minutes, shall permit the engine to run unloaded to cooldown before shutdown. Should the utility power fail during this time, the switch will immediately transfer back to the generator.
19. Retransfer the load to the line after normal power restoration. A return to utility timer, adjustable from 1-30 minutes, shall delay this transfer to avoid short term normal power restoration.
20. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods are adjustable from 10 to 30 minutes. Factory settings are for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:
    a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
    b. Push-button programming control with digital display of settings. Integral battery operation of time switch when normal control power is not available.

26 43 00 Surge Protective Devices

A. Section describes the requirements for a high energy transient voltage surge suppression (TVSS) and electronic filtering system used to protect AC power systems from the effects of lightning, utility switching events, and voltage impulses generated internally within the facility.
    1. Manufacturer: Schneider Electric/Square D.
    2. The SPD shall be listed in accordance with UL 1449, Fourth Edition. The product and ratings shall be included in the database of the UL.com web site.
    3. The surge protective device (SPD) shall be designated a location Type 1 or Type 2 device intended for installation on the load side of the service equipment overcurrent device, including SPDs located at the branch panel.
    4. The SPD shall be connected in parallel with the facility's electrical system.
    5. The SPD shall be made up of metal oxide varistors (MOV's), or a combination of MOV's with selenium cells or silicon avalanche diodes, ensuring that all of the performance requirements are met. Gas tubes shall not be used.
    6. The entire SPD shall be enclosed in a metal or ABS enclosure, NEMA rated for the location. SPDs at main service equipment shall be mounted outside the switchboard or panelboard (not integral to or installed within the switchboard or panelboard). SPDs for branch panelboard (2nd

tier) locations may be mounted outside of, or integral to, the branch panelboard. SPDs installed internal to the distribution equipment shall be of the same manufacturer as the equipment.

7. The SPD shall have a maximum continuous operating voltage (MCOV) rating not less than 115% of nominal voltage of the system it is protecting.
8. Protection Modes:
   a. The SPD shall have line to neutral (L-N), line to ground (L-G), line to line (L-L) and neutral to ground (N-G) protection modes for three-phase grounded wye configured systems. For a three-phase delta configured system, the device shall have line to line (L-L) and line to ground (L-G) protection modes.
9. Voltage Protection Rating (VPR):
   a. The UL 1449 Voltage Protection Rating (VPR) for the device shall not exceed the following:
10. 208Y/120-volt applications: 800V L-N, L-G, N-G; 1200V L-L.
11. 480Y/277-volt applications: 1200V L-N, L-G, N-G; 2000V L-L.
12. 480-volt delta applications: 2000V L-G, 2000V L-L.
13. Nominal Discharge Current (In):
   a. The UL 1449 Nominal Discharge Current Rating (In) shall not be less than the following:
   b. 20kA for service entrance, switchboard, and main distribution panel locations.
   c. 10kA for branch panelboard (2nd tier) locations.
14. Short Circuit Current Rating (SCCR):
   a. The SPD shall have a UL 1449 Short Circuit Current Rating (SCCR) of not less than 200kA.
15. Surge Current Rating:
   a. The single-pulse (8 X 20 microsecond waveform as specified in ANSI/IEEE Standard C62.41) surge current capacity shall not be less than the following:
      i. 100kA per mode (200kA per phase) for service entrance, switchboard, and main distribution panel locations.
      ii. 50kA per mode (100kA per phase) for branch panelboard (2nd tier) locations.
      iii. Each SPD shall include externally-mounted LED visual status indicators that indicate the on-line status of the unit, for each phase.
      iv. At service entrance, switchboard, and main distribution panel locations each SPD shall include the following features:
16. Audible diagnostic monitoring by way of an audible alarm function.
17. One set of NO/NC dry contracts for alarm conditions.

26 50 00 Lighting

A. Section specifies lighting fixture work as indicated on drawings and schedules.
   1. LED.
   2. Manufacturer: Lithonia or equal.
   3. Provide manufacturers and models as shown on the Contract Drawings luminaire schedule.

DIVISION 31: EARTHWORK

31 11 00 Clearing and Grubbing

A. Section includes site preparation activities and certain items of earthwork common to other related Work.

B. Strip and stockpile topsoil. Limit stockpile height to 6 feet.

31 23 00 Excavation and Fill

A. Section includes all necessary excavation, filling, and backfilling for structures.

1. Excavation Requirements: Over excavate for structures in accordance with geotechnical study recommendations.
2. Backfill Requirements: Backfill with onsite or imported material in accordance with geotechnical study recommendations.
3. Structural Fill Requirements: Reference geotechnical study for structural fill recommendations.
4. Testing Requirements:

In accordance with ASTM D698.

31 23 19 Dewatering

A. Includes CDPHE dewatering discharge permit application requirements.

B. Permit to be submitted by Contractor.

C. Permit fees to be paid by Contractor.

DIVISION 32: EXTERIOR IMPROVEMENTS

32 92 19 Site Reclamation

A. Includes requirements for landscaping and finishing of site.

B. Conduct reclamation between February 15 to May 1st or September 1st to October 1st.

C. Seeding requirements (where specified).

D. Hydro-mulching requirements (where specified).

E. Sodding requirements (where specified).

DIVISION 33: UTILITIES

33 05 05 Buried Piping Installation

A. Section includes handling, installation and testing of pipe, fittings, specialties, and appurtenances as indicated or specified.

1. Includes general buried piping installation execution requirements.
2. Testing requirements:

a. Ductile iron pipe: AWWA C-600, Section 4.1.5, 4.1.6.

b. Thermoplastic pipe: Section 7 of ANSI/AWWA Standard C605.

3. Thrust restraint requirements:

a. At each fitting and joint, provide mechanical and concrete block thrust restraint on pressure piping systems.

b. Install mechanical joint restraint devices as specified in Section 33 05 09 at all fittings.

c. Install concrete thrust blocking at all valve, fitting, and bend locations.

33 05 07.24 Casing Piping for Utility Jacketing

A. includes casing pipe, carrier pipe insulators, and end seals where indicated on Drawings.

1. Casing Pipe: New, smooth wall, welded steel pipe fabricated from ASTM A36 plate or ASTM A570 sheet with a minimum yield point of 36,000 psi, conforming to AWWA C200. Pipe shall be furnished in minimum lengths of 20 feet. No mid-weld or spiral weld pipe shall be allowed..

2. Coatings and Linings:

a. Coat exterior of all casing pipe with red iron oxide coating applied at 1.5 mils minimum.

3. Pipe joint restraints:

a. Furnish pipe joint restraints for each bell and spigot joint within the casing pipe.

33 05 09 Piping Specials for Utilities

A. Includes piping specials for buried utilities.

1. Ductile Iron Pipe Mechanical Joint Fitting Restraint Harness:

a. EBAA Iron, Inc., 1100 Series.

b. Or Approved Equal.

2. Ductile Iron Pipe Push-on Joint Restraint Harness:

a. EBAA Iron, Inc., 1700 Series.

b. Or Approved Equal.

3. Polyethylene Pressure Pipe Restrained Flange Adapter:

a. EBAA Iron, Inc., 2100 Series.

b. Or Approved Equal.

4. Couplings:

a. Romac, 501 Series.

b. Or Approved Equal.

33 05 07.24 Utility Horizontal Directional Drilling

A. Includes Horizontal directional drilling systems, equipment, piping and procedures.

1. Develop and submit to the Engineer a preliminary Horizontal Directional Drilling Installation Plan for each HDD location.

2. Utility Locating and Marking:

a. Locate and clearly mark all utilities prior to start of excavation or drilling.

b. Potholing with test holes and vertical elevations identified for all marked utilities is required prior to construction.

3. Entrance/Exit Pits:
   a. Maintain entrance and exit pits within the designated easements and limits of construction.
4. Drilling Fluid:
   a. High quality Bentonite-water slurry drilling fluid to ensure hole stability, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the product pipe.
5. Restraint System for PVC Pipe:
   a. Certainteed C900/RJ – Certa-lok Restrained Joint System.

33 05 31.11 Polyvinyl Chloride Gravity Sewer Pipe

A. Includes PVC SDR 35 pipe for buried service.
   1. PVC Flexible Joint Plastic Pipe: ASTM D3034, Type PSM, Poly (Vinyl Chloride) (PVC) material; bell and spigot style rubber ring sealed gasket joint.
      a. Pipe Class: SDR 35.
      b. Fittings: PVC conforming to pipe specifications.
      c. Joints: ASTM-D 3212, elastomeric gaskets.

33 05 31.13 Polyvinyl Chloride Pressure Pipe

A. Includes PVC C900 pressure pipe for buried service.
   1. PVC Pressure Pipe: AWWA C900, Poly (Vinyl Chloride) (PVC) material; bell and spigot style rubber ring sealed gasket joint.
      a. Pipe Class: DR 18.
      b. Pressure Rating: 235 psi.
      c. Fittings: PVC conforming to pipe specifications.
      d. Joints: ASTM-D 3139.

33 05 61 Concrete Manholes

A. Reference Division 3 for precast polymer concrete manholes.

DIVISION 40: PROCESS INTERCONNECTIONS

40 05 05 Exposed Piping Installation and Testing

A. Section includes requirements for installation and testing for exposed process pipe.
B. Install exposed pipe and valves per manufacturer's published instructions.
C. Testing:
   1. Test all piping.

2. All tests paid for by Contractor.
3. Process Liquid Pipe Testing:
   a. Test duration: 120 minutes.
   b. Ductile iron pipe: AWWA C-600, Section 4.1.5, 4.1.6.
   c. Thermoplastic pipe: Section 7 of ANSI/AWWA Standard C605.
   d. Others: Reference applicable ANSI/AWWA manual or standard that applies to the piping system.

40 05 06 Couplings, Adapters, and Specials for Process Piping

A. Section includes flexible mechanical couplings, flanged adapters, various expansion joints for piping, and dielectric connections.
   1. Flanges: ANSI B16.1, Class 125.
   2. Restrained Flanged Coupling Adapter Manufacturers:
   3. Ductile iron and steel pipe connections 3 to 24 inch: Model RFCA, as manufactured by Romac Industries.
   4. PVC connections 3 to 24 inch: Model RFCA-PVC, as manufactured by Romac Industries.

40 05 07 Hangers and Supports for Process Piping

A. Section includes requirements for pipe and equipment hangers, supports, anchors, saddles and shields.
   1. Hangers and supports: Type 304 or 316 stainless steel.
   2. Nuts, bolts, and washers: Type 304 or 316 stainless steel.
   3. Pipe Supports and Hanger Systems: Carpenter & Patterson Inc.
   4. Metal Framing Systems: Unistrut.

B. Provide stamped design calculations for each support and/or hanger performed by a Colorado Professional Engineer for record documentation. Engineer will not review and/or approve calculations.

40 05 19 Ductile Iron Process Pipe

A. Section includes requirements for ductile iron pipe and appurtenances.

B. Flanged Pipe for Process Systems (Exposed), 24 inch and smaller:
   1. Pipe barrels: ANSI/AWWA C151/A21.51.
   2. Pressure Class 350, AWWA C115/21.15.
   3. Flanges:
      a. Drill and face: ANSI B16.1 Class 125.
      b. 200 psi pressure rating.
      c. Facings: Raised face, ANSI B16.1 / AWWA C207 Class D.
   4. Bolts:
      a. Comply with ANSI B18.2.1.
      b. Exposed: ASTM A307, Grade B.

c. Buried or Submerged: ASTM A193, Grade B8M, Class 2, Heavy hex, Type 316 stainless steel.

5. Nuts:
   a. Comply with ANSI B18.2.2.
   b. Exposed: ASTM A563, Grade A, Heavy hex.
   c. Buried or Submerged: ASTM A194, Grade B8M, Heavy hex, Type 316 stainless steel.
6. Fittings:
   a. Standard Fittings: ANSI/AWWA C110/A21.10.
   b. Compact Fittings: ANSI/AWWA C153/A21.53.
7. Drill and face: ANSI B16.1 Class 125.
8. Pressure Class: ANSI/AWWA C110/A21.10.
9. Gaskets:
   a. Suitable for the service conditions specified, specifically designed for use with ductile iron pipe and fittings.
   b. Compliant with NSF 61 for use in potable water systems.
   c. Style: Full face.
   d. Thickness: 1/8-inch, ANSI/AWWA C115/A21.15.
10. Pressure rating: Match pressure rating of specified flange.
11. Elastomers:
    a. SBR (styrene butadiene rubber).

40 05 57 Actuators for Process Valves and Gates

A. Section includes manual and powered actuators for process equipment, valves, and gates.

B. Manual Handwheel Actuators:
   1. Totally enclosed worm gear or traveling nut.
   2. Handwheel diameter: 6-24 inches.
   3. Max pull: 80 pounds.
   4. Withstand 200-pound pull without damage.

40 05 62 Plug Valves

A. Section Includes 2-1/2 inch to 12-inch plug valves for process and buried systems.

B. Design requirements:
   1. Non-lubricated eccentric plug valves:
   2. Port area: Shall be capable of passing solids 2/3 of pipe size
   3. Port design: Rectangular or round.
   4. Body, gate: Cast iron, ASTM A126 CL B.
   5. Plug: Supported on integral trunnions, fully encapsulated with EPDM elastomer molded to

ductile iron.

6. Opening motion eccentric, lifting plug away from body seat
7. Provided with fully adjustable plug position stops
8. Valve bonnet stuffing box sufficiently deep for 4 packing rings on 4-inch and larger valves
9. Valve body plainly marked to indicate seat end
10. Actual length within 1/16 inch ± of specified or theoretical length
11. Valve packing adjustment accessible without removing actuator from valve

40 05 63 Ball Valves

A. Section includes ball valves for process equipment and piping.

B. Design requirements:

1. Plastic Ball Valves: 4-inch diameter and smaller.
2. PVC ASTM D1784-12454B.
3. For chemical service: CPVC ASTM D1784-23477-B.
4. Ball Seat: Teflon.
5. O-rings: Viton.

40 05 65.23 Swing Check Valves

A. Section includes swing check valves for process equipment and piping.

B. Design requirements:

1. Basis of design manufacturer: Val-matic, Series 7200 Surgebuster.
2. Full size top access port.
3. Screw-type backflow actuator with stainless steel “T” style handle.
4. Rising stem type backflow device indicating position.
5. Mechanical disc position indicator for 3 inch and larger valves.

40 05 97 Identification for Process Equipment

A. Section includes equipment identification requirements via use of nameplates, tags, stencils, markers, labels, lockout devices, warning signs, and warning tags.

40 06 00 Schedules for Process Interconnections

A. Section Includes:

1. Piping schedule, designations, materials, locations, and test conditions.
2. Valve schedule, designations, materials, locations, and test conditions.
3. Reference respective piping and valve specifications for products and execution.
4. Reference process and instrumentation drawings for equipment, process pipe, and valve tag designations.

40 61 00 Process Control and Instrumentation Systems General Provisions

A. Section includes general requirements applicable to all Process Control and Instrumentation Work.

40 61 96 Process Control Descriptions

A. Section includes programming, control logic, and narratives for new control systems.
   1. Reference process and instrumentation diagrams for equipment and valve identification.

40 62 63 Operator Interface Terminal

A. Section includes Human Machine Interface (OIT) control systems hardware and software.
   1. Operator interface must be compatible with the City of Greeley's existing communication system.

40 63 43 Programmable Logic Controllers

A. Section includes programmable logic controller (PLC) based control systems hardware.

B. Basis of design:
   1. Rockwell Automation CompactLogix.
   2. PLC Programming software system: Rockwell Automation RSLogix Studio 5000.

40 70 00 Instrumentation for Process Systems

A. Section consists of furnishing and installing free standing instrument panels, wall mounted instrument panels, main control panels, panel mounted instruments and devices, and field mounted instruments and devices.

B. Wall Mounted Enclosures:
   1. Front: 14-gauge minimum steel plate.
   2. Sides, top and doors: 14-gauge steel.
   3. Indoor, controlled environment: NEMA 12, unless otherwise specified.
   4. Indoor, corrosive environment: NEMA 4X, unless otherwise specified.
   5. Outdoor: NEMA 3R.
   6. Internal instrument and device wiring:
   7. Analog: 18 American Wire Gauge (AWG) minimum, stranded copper, twisted, shielded, with drain.
   8. Digital and power: Sized for the current to be carried (14 AWG minimum), stranded copper, 600-volt, Type moisture and heat resistant thermoplastic (MTW).
   9. Interconnecting wiring and wiring for external connections:
   10. Stranded copper, sized as shown in the Drawings or for the current to be carried (12 AWG minimum).
   11. 600 volts insulation.
   12. Heat and moisture-resistant and flame-retardant non-metallic covering.
   13. Flexible cable at hinges.
   14. Instrumentation power supply protected by fuse or circuit breaker, with fuse or circuit breaker easily accessible, and provided with isolation transformers and transient protection:

C. Analog Signals:

1. EDCO; Model PC-642 or SRA-64.
2. 120 V AC Lines:
3. EDCO; Model HSP-121.
4. All analog or other DC circuits shall be separated by at least 6 inches from any parallel AC power or control wiring.
5. Terminal blocks for panels, consoles, racks, and cabinets:
6. Provide for external wiring:
7. Power supply circuits.
8. Signal circuits.
9. Wire-through circuits.
10. Shielded cable shields.
11. 20 percent additional (4 minimum).
12. Size all terminal block components to allow insertion of all necessary wire sizes and types and to accommodate current to be carried.
13. Suitable for 16 AWG to 12 AWG copper conductors.

40 71 00 Flow Measurement

A. Section includes requirements for flow measurement elements and transmitters for associated process equipment and piping.

B. Process flow metering basis of design: Endress Hauser Proline Series.

40 72 00 Level Measurement

A. Section includes requirements for level measurement elements and transmitters for associated process equipment and piping.

B. Water on floor level switch basis of design: Gems Sensors, Model LS270 Series.

C. Wet well level measurement basis of design:
   1. Level Control System: MPE Bubbler/Pressure transducer SC100.
   2. Four (4) float backup system – MJK Automation or equal.

40 73 00 Pressure, Strain, and Force Measurement

A. Section includes diaphragm and annular seal elements for process systems.

B. Provided with all communication and power supply interconnecting cables for complete operating system.

C. Pressure Indicators (gauges): Amtek: Model 540 or equal.

D. Single input pressure gauges shall have stainless steel case, 4-1/2-inch dial with suitable range, phosphorous bronze Bourdon tube, corrosion resistant movement, and adjustable steel pointer, 1% of full-scale accuracy, Duro Series 800 or approved equal.

E. Differential pressure gauges shall have 4-inch dial, 3% accuracy of full scale, Dwyer series 4000 with ASF adjustable signal flag.

F. Transmitter: One Analog output; 4-to-20 mA, output proportional to pressure.

40 78 00 Panel Mounted Instruments

A. Section includes panel mounted instruments for process systems.
   1. Pilot Devices basis of design: Allen-Bradley; Model 800T.
   2. Relays and Timers: Allen-Bradley basis of design: Model 700 P.

DIVISION 43: PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT

43 23 13.19 Overhung Self-Priming Centrifugal Pumps

A. Includes self-priming pumps with an "autostart" standby engine system and appurtenances.

B. Design requirements:
   1. Proposed system (as part of this Contract): Two self-priming, horizontal, centrifugal, v-belt motor driven sewage pumps and motors; one water cooled, natural gas standby engine; and valves, shipped loose for field installation by Contractor. Manufacturer to include all electrical and controls provisions for the future system as described below; provisions under this contract shall include ability for future installation to be "plug and play", where all electrical, instrumentation, and cabinet space for the future pump and standby engine system is provided for the future pump and engine. Suction and discharge piping to be supplied by the Contractor.
   2. Future system (to be supplied and installed under separate contract): Future system will include a single self-priming, horizontal, centrifuged v-belt motor driver sewage pump with one water cooled, natural gas stand by engine.
   3. A pump motor control panel with thermal-magnetic circuit breakers, variable frequency drives with by-pass, automatic liquid level control systems for normal and standby operation, and internal wiring. Control panel to be sized for proposed and future system.
   4. Provide certified performance testing and certified curve before shipment.
      a. Provide reprime performance testing.
      b. Factory system test of pump performance within design conditions specified herein.
   5. Start-up, Commissioning, and Training – minimum of 8 hours onsite.

C. Performance Requirements:
   1. Quantity: 2 self-priming pumps (1 installed duty; 1 installed standby) with 1 standby engine.
      a. Provisions for additional (1) installed self-priming pump and standby engine (future).
   2. Flowrate Capacity: 987 gpm (each pump) at peak hour flow conditions (maximum flow rate).
   3. Total Dynamic Head: 185 feet at peak hour flow conditions (maximum flow rate).
   4. Static Head: 125 feet.
   5. NPSHr: 14 feet.
   6. Maximum Re-priming Lift: 16 feet.
   7. Minimum Submergence Depth: 2 feet.
   8. Motor starters: Variable Frequency Drives.

9. Primary Power: 3 phase, 480 volts, 3 wire.

D. Manufacturer:

1. Gorman Rupp Ultra V Series Self Priming Pumps.
   a. Model VS6AB-1.
   b. No Substitutions.

C. Accessories:

1. All accessories to be preassembled at the factory and tested as a complete package system prior to shipment. All items to be shipped loose to site location for field installation by Contractor.
2. Flanged connections: ANSI Class 125 flanges.
3. Check Valves: Full flow capable of passing 3 inch solid.
4. Automatic Air Release Valve:
   a. An automatic air release valve shall be furnished for each pump designed to permit the escape of air to the atmosphere during initial priming or unattended repriming cycles. Upon completion of the priming cycle or repriming cycle, the valve shall close to prevent recirculation. Valves shall provide visual indication of valve closure and shall operate solely on discharge pressure. Valves which require connection to the suction line shall not be acceptable.
5. Gauge kit:
   a. Each pump shall be equipped with a glycerin-filled compound gauge to monitor suction pressures, and a glycerin-filled pressure gauge to monitor discharge pressures. Gauges shall be a minimum of 4 inches in diameter and shall be graduated in feet water column. Rated accuracy shall be 1 percent of full-scale reading. Compound gauges shall be graduated -34 feet to +34 feet water column minimum. Pressure gauges shall be graduated 0 to 200 feet water column minimum.

D. Drive Unit:

1. 125 HP, 3 phase, 60 hertz, 460/230 VAC, horizontal ODP, 1750 RPM, NEMA design B with cast iron frame with copper windings, induction type, with class F insulation and 1.15 SF.

E. Standby Engine:

1. Standby engine shall be a four (4) cylinder or six (6) cylinder, (LPG/natural gas) fueled water cooled type and shall have continuous duty power rating suitable for the horsepower requirements of the pump, after derating to factors set forth under performance. Engine shall be cooled by an integral water-cooling system capable of maintaining safe engine operating temperature under expected operating loads, and subject to the expected maximum ambient temperatures in the pump station enclosure.
   a. 12 Volt dc electrical system including starter and alternator
   b. Storage battery, 84 ampere-hour capacity minimum
   c. Elapsed running time meter
   d. Sensors for engine temperature, oil pressure, and overspeed
   e. Critical grade exhaust silencer to limit engine exhaust noise.
   f. Switch for manual operation of the cranking motor, mounted on or near the engine
   g. Voltmeter

h. Solenoid fuel lock-off valve suitable for use with natural gas or LPG service
i. Lube oil pressure gauge
j. Jacket water temperature gauge
k. Tachometer

F. Variable Frequency Drives
1. Variable frequency drives with by-pass starters are to be provided for each pump motor.
2. Overload reset pushbuttons shall be mounted through the door of the control panel in such a manner as to permit resetting the overload relays without opening the control panel door.

G. Liquid Level Control System:

1. Provide bubbler system and backup mechanical level switch control system.
2. The level control system shall utilize an electronic pressure switch which shall continuously monitor the wet well level, permitting the operator to read wet well level at any time. Upon operator selection of automatic operation, the electronic pressure switch shall start the motor for one pump when the liquid level in the wet well rises to the "lead pump start level". System to modulate speed to maintain user-defined wet well level. When the liquid is lowered to the "lead pump stop level", the electronic pressure switch shall stop this pump. These actions shall constitute one pumping cycle. Should the wet well level continue to rise and the pump is at full speed, the electronic pressure switch shall start the second and/or third pump (if required) when the liquid reaches the "lag pump start level", or “standby pump start level” so that all pumps are operating. These levels shall be adjustable.

H. Engine Control System:

1. Provide transducer and backup mechanical level switch control system.
2. Permit the operator to select mode of engine operation, providing manual start and stop of the engine to override the level control system and cranking circuit if required.

I. Spare parts:

1. One spare pump mechanical seal (complete), and with it all gaskets, seals, sleeves, O-rings, and packing required to be replaced during replacement of the seal.
2. One set of impeller clearance adjustment shims.
3. One set cover plate O-ring.
4. One rotating assembly O-ring.
5. Three (3) spare belts.
6. 1-year supply of all greases and lubricants.

END OF OUTLINE SPECIFICATIONS

City of Greeley
Ashcroft Lift Station

50% Design Set
Division 1 Specifications

February 2020
Project #: 3048-001-01

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.1 SUMMARY OF WORK

A. Work Covered by Contract Documents:

1. In general, the Work consists of furnishing all labor, materials, equipment (with the exception of Owner supplied equipment, if applicable) and incidentals, and performing all construction, installation, and testing of improvements, modifications, and additions described or specified on the Contract Drawings or in the Project Manual.

2. Contractor's Work included in the project is to provide and install all materials, accessories, and appurtenances required for the Ashcroft Lift Station and miscellaneous appurtenances required to successful complete the Project.

3. The Ashcroft Lift Station Work includes, but not limited to, the following:

a. The Work is generally described as the construction of the following: The project will entail the construction of a new lift station, force main, and gravity collection sewer. The construction will include a below grade, self-priming lift station (dry pit) and separate precast polymer wet well. The self-priming pumps, controls, and electrical system will be pre-packaged and shipped loose by Gorman Rupp for field installation by the Contractor. The lift station's force main is approximately 5,500 feet in length and will consist of 8 inch and 12 inch C900, parallel force mains installed in the same trench. Approximately 1,100 feet of gravity sewer and manholes will be installed at the latter portion of the alignment for connection into the City of Greeley's existing collection system.

B. Work Sequence:

1. General: Construction sequence shall be determined by Contractor subject to Engineer and Owner's approval.

1.2 WORK RESTRICTIONS

A. Access to Site:

1. Without prior written authorization, Contractor shall limit Work hours to 7:00 a.m. to 5:00 p.m., Monday through Friday; and with written consent from the Owner, 8:00 a.m. to 5:00 p.m., Saturday. Other than small engines necessary for on-going continuous maintenance requirements (for example, dewatering pumps), no machinery engines shall run, or other activities generating appreciable noise allowed, outside of the hours stated herein. Unless having written consent from Owner, Contractor shall not perform Work on Sunday or government identified holidays.

2. Contractor to limit access to areas identified on the Contract Drawings. If alternate access points are required to complete the Work, written consent from the Owner must be obtained.

3. Maintain vehicle tracking control and best management practices at all access points identified on the Contract Drawings.

B. Coordination with Occupants:

1. Contractor is responsible for coordination and scheduling of Work with Owner and Engineer.
2. Contractor shall coordinate construction activities with the other contractors in the general Project vicinity.

C. Use of Site:
1. Limited Use:
a. During the construction period, Contractor shall have full use of the premises for execution of the Work. Use of premises is limited only by Owner's right to perform duties and functions as stated in the GENERAL CONDITIONS and in this Section. Premises of the site is defined within the Limits of Construction as delineated on the Contract Drawings.
b. Coordinate all staging areas with the Owner prior to commencement of Work. Do not stage materials and/or equipment outside the delineated Limits of Construction.
c. Coordinate with Owner to avoid interference of operations.
d. Conduct operations as to ensure the least inconvenience to Owner and the general public. This shall include coordination with Owners staff for operation of the adjacent facilities.
2. Owner's Use of Premises:
a. Partial Owner Occupancy: The Owner and local utilities reserve the right to occupy the Site prior to Substantial Completion for the continued use of existing utilities. Partial occupancy and testing of the constructed facilities shall not constitute acceptance of the Work.
3. Historical and Archaeological:
a. If during the course of construction, evidence of deposits of historical or archaeological interest is found, the Contractor shall cease operations affecting the find and shall notify the Owner. No further disturbance of the deposits shall ensue until the Contractor has been notified by the Owner that Contractor may proceed. Compensation to the Contractor, if any, for lost time or changes in construction resulting from the find, shall be determined in accordance with changed or extra Work provisions of the Contract Documents.

D. Work in Public Rights-of-Way: Not Used.

1.3 PROJECT UTILITY SOURCES

A. Utility Service Connections:
1. Telephone / Fiber Optic: TBD
2. Natural Gas: TBD
3. Electric: TBD

B. Utility Service Locates
1. Any known sewers, water mains, gas mains, telephone conduits, electric cables, and other underground structures are shown on the Contract Drawings only to the extent such information has been made available to or discovered by the Engineer. It is

expected that there may be discrepancies and omissions in the location and quantities of utilities and structures shown. This information is shown for the convenience of the Contractor, but is not guaranteed to be either correct or complete and all responsibility for the accuracy and completeness thereof is expressly disclaimed by Owner and Engineer. The Contractor shall make such investigation as he thinks necessary to verify its correctness and completeness. The Contractor shall, ahead of excavation, locate all underground utilities and structures so that they will not be accidentally damaged by his construction operation.

2. Contractor shall be responsible for contacting all utilities concerning location of all above and below ground facilities before proceeding with the Work.

3. Contractor is responsible for potholing all existing utilities to be crossed no later than 48 hours prior to making crossing.

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION – NOT APPLICABLE

END OF SECTION

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SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 PROJECT COORDINATION

A. This Section includes the following administrative and procedural requirements:

1. Project Meetings:
    a. Preconstruction conference.
    b. Site Mobilization Meetings.
    c. Progress meetings.
    d. Coordination meetings.
    e. Preinstallation Meetings

1.2 PROJECT MEETINGS

A. Preconstruction Conference

1. Engineer will administer a meeting within 10 days after the Commence Times dates as stated in the Notice to Proceed, to review items stated in the following agenda and to establish a working understanding between the parties as to their relationships during conduct of the Work.
2. Preconstruction Conference Shall Be Attended By:
    a. Contractor and his superintendent.
    b. Engineer and Resident Project Representative if any.
    c. Representatives of Owner.
    d. At Owner's option, representatives of principal Subcontractors and Suppliers.
3. Agenda:
    a. Construction schedules.
    b. Critical Work sequencing.
    c. Major equipment deliveries and priorities
    d. Designation of responsible personnel.
    e. Project coordination.
    f. Procedures and Processing of:
        1) Request for Information/Interpretation.
        2) Work Change Directives.
        3) Field Orders.
        4) Substitutions.
        5) Submittals.
        6) Change Orders.
        7) Applications for payment.
    g. Procedures for testing.

h. Use of Premises:
    1) Office, work, and storage areas.
    2) Owner's requirements.
i. Construction facilities, controls, and construction aids.
j. Temporary Utilities
k. Equipment start up and training
l. Safety and first aid.
m. Security.
n. Testing and Commissioning
o. Substantial and Final Completion

4. Reporting:
    a. Within 5 working days of the meeting, Engineer will prepare and distribute minutes of the meeting to Owner and Contractor.
    b. Contractor shall provide copies to Subcontractors and major Suppliers.
5. Engineer may administer coordination meetings to be attended by Owner or his representative and prime contractors at the Site. Contractor shall participate in such conferences, accompanied by Subcontractors as requested by Engineer.

B. Site Mobilization Meeting
1. Engineer will administer a meeting during the first month of construction to finalize the initial coordination schedules prior to mobilization.
2. The meeting shall be attended by:
    a. Contractor and his superintendent.
    b. At Owner's option, Representatives of principal Subcontractors and Suppliers.
    c. Engineer and Resident Project Representative if any.
    d. Representatives of Owner

C. Progress Meetings
1. Engineer will schedule and administer a meeting a minimum of once each month and at other times requested by Owner. Representatives of the Owner, Engineer, and Contractor shall be present at each meeting. With Engineer's concurrence, Contractor may request attendance by representatives of Subcontractors, Suppliers, or other entities concerned with current program or involved with planning, coordination, or performance of future activities. All participants in the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.
2. Contractor and each Subcontractor represented shall be prepared to discuss the current construction progress report and any anticipated future changes to the schedule. Each Subcontractor shall comment on the schedules of Contractor and other Subcontractors and advise if their current progress or anticipated activities are compatible with that Subcontractor's Work.
3. If one Subcontractor is delaying another, Contractor shall issue such directions as are necessary to resolve the situation and promote construction progress.

4. Agenda:
    a. Review previous meeting minutes and discuss unresolved issues.
    b. Review of construction progress since previous meeting.
    c. Field observations, interface requirements, conflicts.
    d. Problems which impede construction schedule.
    e. Off-site fabrication and delivery schedules.
    f. Submittal schedules and status.
    g. Site utilization.
    h. Temporary facilities and services.
    i. Hours of Work.
    j. Hazards and risks.
    k. Housekeeping.
    l. Quality and Work standards.
    m. Change orders; effect of proposed changes on progress schedule and coordination.
    n. Documentation of information for payment request.
    o. Corrective measures and procedures to regain construction schedule if necessary.
    p. Revisions to construction schedule.
    q. Review of quality and work standards.
    r. Review of proposed activities for succeeding Work period.
    s. Adjacent property owner relations
    t. Review proposed Contract modifications for:
        1) Effect on construction schedule and on completion date.
        2) Other business.
5. Location of Meetings: At or near Project Site.
6. Reporting:
    a. Within 3 working days of each meeting, Engineer will prepare and distribute minutes of the meeting to Owner and Contractor.
    b. Contractor shall distribute copies to principal Subcontractors and Suppliers.

D. Coordination Meetings:
1. Engineer may administer coordination meetings to be attended by Owner or his representative and prime contractors at the Site. Contractor shall participate in such conferences, accompanied by Subcontractors as requested by Engineer.
2. Agenda will be similar to that stated above for Progress Meetings.

E. Preinstallation Meetings
1. Contractor shall convene pre-installation conference no less than 7 days prior to commencing work associated with the following specifications sections:
    a. 03 30 00 - Cast-in-Place Concrete.

b. 09 97 00 - Coatings for Water and Wastewater Treatment Facilities.

c. 40 61 96 - Process Control Descriptions.

d. 40 70 00 - Instrumentation for Process Systems.

e. 43 24 13.13 - Vertically Suspended Lineshaft Centrifugal Pumps.

2. Require attendance of parties directly affecting, or affected by, work of the specific Section.

3. Notify Engineer four days in advance of meeting date

4. Prepare agenda, preside at conference, record meeting notes, and distribute copies within two days after conference to participants, with two copies to Engineer

5. Review conditions of installation, preparation and installation procedures, and coordination with related work

6. Follow-up meetings may be required to address changes in personnel, schedule or nature of specific work items

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 SCHEDULING OF WORK

A. Initial Coordination Schedules:

1. Prepare and submit an erosion control plan within 10 days of Notice to Proceed
2. Within 5 days after the Commence Times dates as stated in the Notice to Proceed, Contractor shall submit to Engineer for review and acceptance:
    a. A preliminary construction progress schedule. The schedule shall show the Work in a horizontal bar chart or other graphic format and indicate the times (number of days or dates) for starting and completing the various stages of the Work including any milestones specified in the Contract Documents.
    b. A preliminary procurement schedule of Equipment and Materials.
    c. A preliminary schedule of values for partial pay purposes as identified in Section 01 20 00 – Price and Payment Procedures.

1.2 CONSTRUCTION PROGRESS SCHEDULE

A. After submittal of preliminary construction progress schedule as stated above, submit a detailed construction progress schedule within 10 days after the Commence Times dates as stated in the Notice to Proceed. Base the schedule on the preliminary construction progress schedule and incorporate review comments and other feedback. Submit 5 copies to Engineer for review and acceptance.

B. The schedule shall show the Work in a horizontal bar chart or other graphic format suitable for displaying scheduled and actual progress and will preferably include:

1. The schedule shall indicate phase of the Work; starting date, major milestones, and dates of Substantial Completion and Final Completion.
2. Breakdown Work phases into separate time bar for each significant construction activity entry, with dates Work is expected to begin and be completed. Within each time bar, indicate estimated completion percentage in 10 percent increments.
3. Scale and spacing shall allow room for notations and revisions.
4. Sheet Size: 11" x 17".

C. Provide sub-schedules to define in more detail critical portions of schedules, including inspections and tests.

D. Coordinate construction progress schedule with schedule of values, Submittal schedule, procurement schedule, progress reports, and payment requests.

E. Engineer will review and comment on construction progress schedule and, upon agreement between Engineer and Contractor on necessary changes:

1. Contractor shall print and distribute 5 copies of the accepted schedule to Engineer. Contractor shall print additional copies for Subcontractors and other parties required to comply with scheduled dates; one copy to each party.

F. Revise the construction progress schedule after each meeting, event, or activity where revisions have been recognized and accepted in accordance with the General Conditions.

G. Update and submit 5 copies to Engineer of the revised schedule at least once every month to show actual progress compared to the originally accepted schedule and any proposed changes in the schedule of remaining Work. Include with construction progress report.

1.3 SUBMITTALS SCHEDULE

A. Within 5 days after the Commence Times dates as stated in the Notice to Proceed, Contractor shall submit to Engineer for review and acceptance.

1. A preliminary schedule of Submittals, as stated in Section 01 33 00 - Submittal Procedures.

1.4 SURVEY AND LAYOUT DATA

A. Contractor shall furnish and set construction stakes establishing all lines, grades, and measurements necessary to the prosecution of the Work contracted under these Specifications. Construction stakes shall also clearly define limits of construction and site access as defined on the Drawings. Additional surveying required for construction of the Project shall also be provided by the Contractor. Contractor shall also be required to complete all necessary surveying for record drawings to be provided to the Engineer prior to final payment. All surveying shall be conducted under direct supervision of a land surveyor registered in the State of Colorado.

1.5 CONSTRUCTION PROGRESS REPORTING

A. General:

1. Submit a report on actual construction progress on a weekly basis. More frequent reports may be required should the Work fall behind the accepted schedule.
    a. Submit a weekly report to coordinate with and supplement the monthly construction progress report and which details Work scheduled for the following one-week interval, including:
        1) Work activities which will occur.
        2) Number and size of crews.
        3) Construction equipment on Site.
        4) Major items of Equipment and Material to be installed.
    b. Format shall be on 8-1/2" x 11" paper, submitted to Engineer in 3 copies.
2. Construction progress reports shall consist of the revised construction progress schedule and a narrative report which shall include but not be limited to the following:
    a. Comparison of actual progress to planned progress shown on originally accepted schedule.
    b. Summary of activities completed since the previous construction progress report.
    c. Identification of problem areas.
    d. A description of current and anticipated delaying factors, if any.
    e. Impact of possible delaying factors.
    f. Proposed corrective actions.
3. Submit a construction progress report to Engineer with each application for payment. Work

reported complete but not readily apparent to Engineer must be substantiated with supporting data when requested by Engineer. Copies of the weekly site photographs (see Section 01 32 00 - Construction Progress Documentation) shall be attached to each application for payment.

4. If a schedule update reveals that, through no fault of Owner, the Work is likely to be completed later than the Contract completion date, Contractor shall establish a plan for making up lost time and submit to Owner and Engineer for review before implementing the plan. All actions necessary to get the Work back on schedule shall be at Contractor's expense.

B. Schedule of Values:

1. Submit as specified in General Conditions, based on the schedule of values outlined above and on the Bid Form

C. Special Reports:

1. When an event of an unusual and significant nature occurs at the site, prepare and submit a special report. List the chain of events, persons participating, response by Contractor's personnel, an evaluation of the results or effects, and similar pertinent information. Advise the Owner in advance when such events are known or predictable.
2. Submit original report to Owner and copy to Engineer.

D. List of Subcontractors and Major Suppliers:

1. Contractor shall submit to Owner, at Pre-Construction Conference, a list of all subcontractors and major suppliers complete with contact person, address, telephone number, and fax number for each of them.

1.6 PERIODIC WORK OBSERVATION

A. Refer to Article 10, Section 00 72 00 – Standard General Conditions of the Construction Contract.

1.7 PHOTOGRAPHIC DOCUMENTATION

A. Photographic Requirements:

1. Submit prints as specified in Section 01 33 00 - Submittal Procedures and as defined below.
2. Photographer shall submit two sample prints of the type and quality required during construction, for review and acceptance by Engineer.
3. Photographer shall submit two examples of prior work of the type and quality required during performance of Work, for review and acceptance by Engineer.
4. Photographs shall be delivered to Engineer no less than once per month with each Contractor’s Application for Payment.

B. PROGRESS SITE PHOTOGRAPHS:

1. Contractor shall be responsible for photographs of the site to show the existing and general progress of the Work. Engineer will advise as to which views are of interest. Photographs shall be taken of the following areas and at the following times.
    a. Existing Site conditions before Site Work is started. Number of views shall be adequate to cover the Site.

b. Progress of the Work from clearing throughout construction. There shall be at least 12 different views taken every week.

c. Finished Project after completion of Work. Number of views shall be adequate to show the finished Work.

d. If Project is not completed during the Contract Time, or authorized extensions, photographs shall continue to be taken at no increase in Contract Price.

2. Photographs shall be taken with a digital camera.

3. Provide a legible copy of the log that identifies all photographs with the Contract name and Contract number, name of Contractor, description of view, and date (and time) photograph was taken. Log shall also identify the photographer's name.

4. Digital archive on a CD or DVD.

5. Deliver CD/DVD to Engineer with each Application for Payment.

C. ROUTE PHOTOGRAPHS:

1. Contractor shall be responsible for photographs along the entire construction route showing the condition of the terrain previous to any alterations by Contractor and before construction is started. These same views shall be re-photographed after completion of all construction. Five days' notice shall be given to Engineer and Owner prior to this Work to allow them to accompany photographer.

2. The principal reason for obtaining photographs is so that items such as cracked curbs, shrubs, lawns, broken pavement or sidewalks, plugged culverts, building damage, or other problems along the construction route may be more clearly shown and recorded. This will to some degree preclude the possibility of post-construction litigation with the Owner.

3. Photographs shall be taken with a digital camera.

4. Photographs shall be taken at intervals of not more than 100 feet and at other intervals deemed necessary to record detailed conditions, possible field conflicts, and as may be designated by Engineer.

5. Daily photos showing progress prior to backfilling to include alignment stationing and other utility crossings or conflicts and resolutions.

6. Each photograph shall be identified in the view using an identification board stating the Contract name and Contract number, station number, street or other suitable identification, date, and sequential view number.

7. Contractor shall keep a log of all photographs noting detailed information or comments pertinent to that photograph.

8. CD/DVD shall be provided with Contract name and number, date of exposure, or other general identifying information.

9. Deliver CD/DVD to Engineer with each Application for Payment.

D. ADDITIONAL PHOTOGRAPHS:

1. From time to time Engineer may issue requests for photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order, and are not included in the Contract Price or an Allowance.

a. Engineer will give the photographer 3 days’ notice, where feasible.

b. In emergency situations, the photographer shall take additional photographs within 24 hours of Engineer's request.

c. Circumstances that could require additional photographs include, but are not limited to:

1) Substantial Completion of a major phase or component of Work.

2) Owner's request for special publicity photographs.

3) Special events planned at Project Site.

4) Immediate follow-up when on-site events result in construction damage or losses.

5) Photographs to be taken at fabrication locations away from Project Site.

2. Extra record photographs at time of final acceptance.

1.8 VIDEO MONITORING AND DOCUMENTATION

A. Audio/video recordings shall be completed before disturbing of the Site is started and shall be submitted to and approved by the Engineer prior to the first application for payment. A second audio/video recording shall be produced after completion of all construction operations, showing the same view or views as close as possible, to illustrate "before" and "after" conditions. This is the responsibility of Contractor. Two day notice shall be given to Engineer and Owner prior to this Work to allow them to accompany photographer.

B. The principal reason for producing videos is so that items such as conditions of site or other problems may be more clearly shown and recorded. This will to some degree preclude the possibility of post construction litigation.

C. All required equipment, accessories, materials, and labor for the timely production of this documentation shall be arranged and furnished through Contractor.

1. The audio/video system camcorder used by the photographer shall have the following capabilities and features:

a. Mini DVD format.

b. Playback capability (in the field) with a B/W viewfinder built in.

c. HD recording.

d. Advanced Image Server low-light mode.

e. 34X optical zoom.

f. Image stabilization.

2. The audio/video system shall be capable of producing bright, sharp, clear visual images which render accurate colors free from imperfections and distortions that might obscure recorded information during playback. The simultaneous audio record shall be made directly onto the original tapes, and shall record narration of the photographer clearly and audibly, with adequate volume, free from unnecessary interruptions and distortions that might eliminate recorded information during playback.

D. Zone of Influence: Unless otherwise indicated by Engineer or Owner, the "Zone of Influence" which might be affected by the construction operations and, therefore, shall be documented in these a/v recordings, shall be whichever of the following includes the greatest area.

1. All areas within the temporary construction right of ways and grading limits, as indicated on

the Contract Drawings.

2. The permanent easement for the completed improvements, as indicated on the Contract Drawings.

3. All areas within 35 feet of the proposed improvements.

E. Audio/Video Production Procedures:

1. It is recommended that the audio/video recordings be produced while actually walking the construction site NOT through the use of wheeled vehicles.

2. All video recordings shall display digital information continuously; this information shall include the current time and date, showing the month, day, and year. This information shall be audibly acknowledged by the photographer at appropriate times during recording sequences.

3. Each recording tape shall begin with a visual of the photographer's name, followed by the current date and time on digital display, plus audible and visual, if possible, indication of Contract name and numbers, municipality, name of Contractor, and other pertinent information. Thereafter, each recording sequence should begin with the current time and date, followed by the location of the photographer, direction of view, and description of the scene being recorded. Continuous updates of this information, plus other pertinent comments, shall be given throughout the recording sequence. Such audio and video records shall include, but not be limited to, conditions of existing pavement, curbs, sidewalks, driveways, culverts, ditches, berms, fences, shrubs and landscaping, major structural conditions of commercial buildings, fences, signs, headwalls, general terrain, and similar items.

4. A representative of the Engineer, Owner, and Contractor shall accompany the photographer during recording sessions, to assist with location of the alignment and areas of construction activity, and identification of items and conditions to be recorded. A log sheet showing the recording sequences shall be maintained; it shall list the start and stop time/date for each sequence, plus a brief description of the areas documented. The end of each recording tape shall include a visual record of the original log sheet to preserve this information in the event of loss or damage.

5. All recordings shall be completed during periods of adequate lighting and visibility. Sufficient lighting must be available to provide proper illumination of shadowed areas, and proper exposure adjustments shall be made where required. No taping shall be completed during precipitation, mist, fog, or when more than 10 percent of the ground surface has snow cover.

F. Ownership and Authenticity of Originals:

1. All original audio/video recordings shall become the property of Owner, plus one duplicate of each shall be provided to Engineer. Each shall be provided in a protective sleeve or case, identified as to Contract name and number, production date of original recording, name of Contractor, and photographer's name or trademark; a legible copy of the log shall be included.

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 GENERAL INFORMATION:

A. Definitions:

1. Shop Drawings, product data, and samples are technical submittals prepared by Contractor, Subcontractor, manufacturer, or Supplier and submitted by Contractor to Engineer as a basis for approval of the use of Equipment and Materials proposed for incorporation in the Work or needed to describe installation, operation, maintenance, or technical properties.
    a. Shop Drawings include custom prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.
    b. Product data includes standard printed information on materials, products and systems; not custom prepared for this Project, other than the designation of selections from available choices.
    c. Samples include both fabricated and unfabricated physical examples of materials, products, and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or for more detailed testing and analysis. Mock-ups are a special form of Samples which are too large to be handled in the specified manner for transmittal of Sample Submittals.
2. Informational Submittals are those technical reports, administrative Submittals, certificates and guarantees not defined as Shop Drawings, product data, or Samples.
    a. Technical reports include laboratory reports, tests, technical procedures, technical records, and Contractor's design analysis.
    b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, Bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, Project record data, security/protection/safety data, and similar type Submittals.
    c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the manufacturer or Supplier is called for in the Specifications.
3. Refer to ARTICLES 1.3 and 1.4 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements:

1. Submittals such as Shop Drawings and product data shall be of the quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducibles shall be usable for further reproduction to yield legible hard copy.
2. Documents submitted to Engineer that do not conform to these requirements shall be subject to rejection by Engineer, and upon request by Engineer, Contractor shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such

requirements. Contractor's (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve Contractor (or his Subcontractors) from meeting the required schedule for Submittal of Shop Drawings and product data.

C. Language and Dimensions:

1. All words and dimensional units shall be in the English language.

D. Submittal Completeness:

1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable Engineer to review the information effectively.
2. Where standard drawings are furnished which cover a number of variations of the general class of Equipment, each such drawing shall be individually annotated to describe exactly which parts of the drawing apply to the Equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" is not an acceptable means of annotating Submittals. Such annotation shall also include proper identification of the Submittal permanently attached to the drawing.
3. Reproductions or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. Contractor may use a reproduction of Engineer prepared Contract Drawings for erection drawings such as to indicate information on erection or to identify detail drawing references. Where the drawings are revised to show this additional Contractor information, Engineer's title block shall be replaced with a Contractor's title block, and Engineer's professional seal shall be removed from the drawing. The Contractor shall revise these erection drawings for subsequent Engineer revisions to the Contract Drawings.

1.2 TECHNICAL SUBMITTALS:

A. Items shall include, but not be limited to, the following:

1. Manufacturer's specifications.
2. Catalogs, or parts thereof, of manufactured Equipment.
3. Shop fabrication and erection drawings.
4. General outline drawings of Equipment showing overall dimensions, location of major components, weights, and location of required connections.
5. Detailed Equipment installation drawings, showing foundation details, anchor bolt sizes and locations, baseplate sizes, location of Owner's connections; and all clearances required for erection, operation, and disassembly for maintenance.
6. Bills of material and spare parts list.
7. Instruction books and operating manuals.
8. Material lists or schedules.
9. Performance tests on Equipment by manufacturers.
10. Concrete mix design information.
11. Samples.
12. All drawings, catalogs or parts thereof, manufacturer's specifications and data, samples, instructions, and other information specified or necessary:

a. For Engineer to determine that the Equipment and Materials conform with the design concept and comply with the intent of the Contract Documents.

b. For the proper erection, installation, operation and maintenance of the Equipment and Materials which Engineer will review for general content but not for substance.

c. For Engineer to determine what supports, anchorages, structural details, connections, and services are required for the Equipment and Materials, and the effects on contiguous or related structures and Equipment and Materials.

B. Schedule of Submittals:

1. Prepare for Engineer's concurrence, a schedule for submission of all Submittals specified or necessary for Engineer's approval of the use of Equipment and Materials proposed for incorporation in the Work or needed for proper installation, operation, or maintenance. Submit the schedule with the procurement schedule and construction progress schedule. Schedule submission of all Submittals to permit review, fabrication, and delivery in time so as to not cause a delay in the Work of Contractor or his Subcontractors or any other contractors as described herein.

2. In establishing schedule for Submittals, allow 20 days in Engineer's office for reviewing original Submittals and 20 days in Engineer's office for reviewing resubmittals.

3. The schedule shall indicate the anticipated dates of original submission for each item and Engineer's approval thereof and shall be based upon at least one resubmission of each item.

4. Schedule all Submittals required prior to fabrication or manufacture for submission within 7 days of the Notice to Proceed Commence Times date. Schedule Submittals pertaining to storage, installation and operation at the Site for Engineer's approval prior to delivery of the Equipment and Materials.

5. Resubmit Submittals the number of times required for Engineer's "Submittal Approved." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining approval of Submittals, will not be grounds for extension of the Contract Times, provided Engineer completes his reviews within the times stated above.

6. Submit a complete submittal schedule and list of all items requiring submission in a matrix form, to include:

a. A separate row for each submittal and submittal type required by the Contract Documents

b. A separate column for each of the following organized from left to right in the order listed:

1) Specification section

2) Submittal number

3) Submittal type

4) Resubmittal

5) Specification section title

6) Description of the item with the name of manufacturer, trade name and model number

7) Intended submission date

8) Order release date

9) Lead time to delivery

10) Anticipated delivery date

c. A submittal for a specification section would indicate:

1) Specification section (11310)

2) Submittal Number (01, 02, 03, etc)

3) Resubmittal number (R1, R2, R3, etc.)

4) EXAMPLE:

a) First Submittal: 08305 – 01 – Access Doors.

b) Second Submittal: 08305 – 02 – Lift Station Hatch

i. Resubmittal: 08305-02-R1 - Lift Station Hatch Resubmittal"

d. Identify any items that require expedited review to meet the Project schedule

e. Present in tabular format with appropriately labeled columns acceptable to Engineer for both electronic and hard copy versions. Submit updated version to Engineer on monthly basis

C. Transmittal of Submittals:

1. All Submittals for Equipment and Materials furnished by Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor.

2. After checking and verifying all field measurements, transmit all Submittals to Engineer for approval as follows:

a. Identify each Submittal by Project name and number, and the Specification Section and Article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.

b. Check and stamp Submittals of Subcontractors, Suppliers, and manufacturers with Contractor's approval prior to transmitting them to Engineer. Contractor's stamp of approval shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or Contractor assumes full responsibility for doing so, and that Contractor has coordinated each Submittal with the requirements of the Work and the Contract Documents.

c. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from the requirements of the Contract Documents.

d. Make all modifications noted or indicated by Engineer and return revised prints, copies, or samples until approved. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by Engineer on previous Submittals. After Submittals have been approved, submit copies thereof for final distribution. Prints of approved drawings transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.

e. Following completion of the Work and prior to final payment, furnish record documents and approved Samples and Shop Drawings necessary to indicate "as constructed" conditions, including field modifications, in the number of copies

specified. Furnish additional copies for insertion in Equipment instruction books and operating manuals as required. All such copies shall be clearly marked "PROJECT RECORD."

f. Work requiring a Submittal shall not be commenced or shipped until the Submittal has been stamped "Submittal Approved" or "Submittal Approved as Noted" by Engineer.

g. Keep a copy or sample of each Submittal in good order at the site.

3. Quantity Requirements:

a. Except as otherwise specified, transmit all manufacturers' or fabricators' Shop Drawings in the quantity as follows:

1) Submittals shall be submitted electronically in pdf format.

2) As-Constructed Prints: 2 printed copies to Engineer.

b. Owner may copy and use for internal operations and staff training purposes any and all document Submittals required by this Contract and approved for final distribution, whether or not such documents are copyrighted, at no additional cost to Owner. If permission to copy any such Submittal for the purposes stated is unreasonably withheld from Owner by Contractor or any Subcontractor, manufacturer, or Supplier, Contractor shall provide 5 copies plus the number of copies required by Contractor to Engineer for final distribution.

4. Copies of the Equipment erection drawings and other Submittals required for the installation of Equipment furnished by others under separate contract for installation under this Contract will be transmitted to Contractor by Engineer in the final distribution of such Submittals.

5. Information to Manufacturer's District Office: Manufacturers and Suppliers of Equipment and Materials shall furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the manufacturer's district office servicing the Owner. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.

D. Engineer's Review:

1. Engineer will review and return Submittals to Contractor with appropriate notations. Instruction books and similar Submittals will be reviewed by Engineer for general content but not for detailed substance.

2. Engineer's approval of Submittals will not relieve Contractor from Contractor's responsibility as stated in the General Conditions.

3. Engineer shall review each submittal a maximum of 2 times at no cost to the Contractor, not including record copies of submittals. Contractor shall be responsible for the cost of Engineer's review of any submittal after the second review of a particular submittal. The cost of any such reviews will be billed to the Contractor at a rate of $140.00 per hour and at a minimum of 1 hour each review after the second submittal. Any outstanding amount due to Engineer shall be withheld from the final payment to the Contractor.

E. Submittal Action Stamp:

1. Engineer's review action stamp, appropriately completed, will appear on all Submittals of Contractor when returned by Engineer. Review status designations listed on Engineer's

action stamp are defined as follows:

APPROVED: Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work. Contractor is to proceed with fabrication or procurement of the items and with related Work. Copies of the Submittal are to be transmitted to Engineer for final distribution.

APPROVED AS NOTED: Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is approved for incorporation in the Work in accordance with Engineer's notations. Contractor is to proceed with fabrication or procurement of the items and with related Work in accordance with Engineer's notations.

REVISE AND RESUBMIT: Signifies Equipment and Material represented by the Submittal appears to conform with the design concept and comply with the intent of the Contract Documents but information is either insufficient in detail or contains discrepancies which prevent Engineer from completing his review. Contractor is to resubmit revised information responsive to Engineer's annotations on the returned Submittal or written in the letter of transmittal. Fabrication or procurement of items represented by the Submittal and related Work is not to proceed until the Submittal is approved.

REJECTED: Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the Work. Contractor is to provide Submittals responsive to the Contract Documents.

FOR REFERENCE, NO APPROVAL REQUIRED: Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to Engineer or Owner in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. Engineer reviews such Submittals for general content but not for substance.

F. Instruction Books and Operating Manuals:

1. Equipment instruction books and operating manuals shall be prepared by the manufacturer and shall include the following:
    a. Index and tabs.
    b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers.
    c. Applicable drawings.
    d. Warranties and guarantees.
    e. Address of nearest manufacturer-authorized service facility.
    f. All additional data specified.

1.3 INFORMATIONAL SUBMITTALS:

A. Informational Submittals are comprised of technical reports, administrative Submittals, and guarantees which relate to the Work, but do not require Engineer approval prior to proceeding with the Work. Informational Submittals include:

1. Hydrostatic testing of pipes.
2. Field test reports.
3. Concrete cylinder test reports.
4. Certification on Materials:
    a. Cement tests.
5. Soil test reports.
6. Temperature records.
7. Piping stress analysis.
8. Shipping or packing lists.
9. Job progress schedules.
10. Equipment and Material delivery schedules.
11. Progress photographs.
12. Warranties and guarantees.

B. Transmittal of Informational Submittals:

1. All informational Submittals furnished by Subcontractors, manufacturers, and Suppliers shall be submitted to Engineer by Contractor unless otherwise specified.
    a. Identify each informational Submittal by Project name and number, and the Specification Section and submittal number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
    b. At the time of each submission, call to the attention of Engineer in the letter of transmittal any deviations from the requirements of the Contract Documents.
2. Quantity Requirements:
    a. Except as otherwise specified, transmit all manufacturers' or fabricators' Shop Drawings in the quantity as follows:
        1) Submittals shall be submitted electronically in pdf format.
3. Test Reports:
    a. Responsibilities of Contractor, Owner, and Engineer regarding tests and inspections of Equipment and Materials and completed Work are set forth elsewhere in these Contract Documents.
    b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports as follows:
        1) Owner: Two copies.
        2) Engineer: One copy.

3) Resident Project Representative: One copy.

4) Contractor: Two copies.

5) Manufacturer or Supplier: One copy.

C. Engineer's Review:

1. Engineer will review informational Submittals for indications of Work or Material deficiencies.

2. Engineer will respond to Contractor on those informational Submittals which indicate Work or Material deficiency.

PART 2 PRODUCTS - NOT APPLICABLE.

PART 3 EXECUTION - NOT APPLICABLE.

END OF SECTION

SECTION 01 41 00
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION

A. Except where otherwise expressly required by applicable Laws and Regulations, neither the Owner nor Engineer shall be responsible for monitoring the Contractor's compliance with those requirements. The Contractor is responsible for keeping building department, fire department, and other authorities completely informed of any changes in the work in a timely manner. This includes contract modifications, amendments, additions, shop drawings, and the like, current as of the Contract Document date.

B. The Contractor is responsible for gaining approval as required for Owner occupancy within contract schedule requirements.

C. Make any and all adjustments or modifications as required to conform to ordinances, and regulations.

1.2 COMPLIANCE REQUIREMENTS

A. Referenced codes establish minimum requirement levels. Where provisions of various codes or standards conflict, the more stringent provisions govern. Promptly submit to Engineer written notice of observed contract document variations from legal requirements.

B. Compliance requirements include, but are not limited to the following:

1. International Building Code, as adopted by the Owner.
2. The Life Safety Code NFPA 101.
3. Fire Doors/Windows, NFPA 80.
4. Rules and Regulations for the Colorado Department of Public Health and Environment.
5. Mechanical, Plumbing & Fire Suppression Work:
    a. International Mechanical Code.
    b. International Plumbing Code.
    c. National Fire Protection Association Codes.
    d. International Fire Code.
6. Electrical Work:
    a. Underwriters' Laboratories (UL).
    b. National Manufacturers' Association.
    c. National Fire protection Association, National Electric Code (NEC), National Electric Safety Code.
7. Factory Mutual (FM).
8. Industrial Risk Insurers (IRI).
9. Occupational Safety and Health Administration (OSHA).

C. Drawings and Specifications govern whenever Drawings and Specifications require higher standards than are required by governing codes, regulations, and the like.

1.3 SUBMITTALS

A. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established in conjunction with compliance with standards and regulations bearing upon performance of the Work prior to Final Completion.

1.4 LAWS, CODES, AND REGULATIONS

A. Contractor shall comply with all federal, state, and local laws, codes, regulations, and ordinances applicable to the work.

1.5 PERMIT REQUIREMENTS

A. The following specific permits apply to the Work of this Contract:

1. County Building Permits, if applicable:
    a. Applied for by Contractor.
    b. Paid for by Contractor.
    c. Executed by Contractor.
2. City Building Permits, if applicable:
    a. Applied for by Contractor.
    b. Paid for by Contractor.
    c. Executed by Contractor.
3. Construction Dewatering Permit
    a. Reference Division 31 for requirements and copy of application.
    b. Applied for by Contractor.
    c. Paid for by Contractor.
    d. Executed by Contractor.

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 01 42 00
REFERENCES

PART 1 GENERAL

1.1 ABBREVIATIONS AND ACRONYMS

A. See Table 1 at the end of this Section.

1.2 DEFINITIONS

A. Basic contract definitions used in the Contract Documents are defined in the General Conditions. Definitions and explanations are not necessarily either complete or exclusive but are general for the Work.

B. General Requirements are the provisions or requirements of DIVISION 1 Sections, and which apply to the entire Work of the Contract.

C. Definitions used in this Article are not intended to change the meaning of other terms used in these Contract Documents, such as "specialties," "systems," "structures," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "Material," "Equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature that is current as of the date of the Contract Documents.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational or non-operational parts, whether motorized, or manually operated, that may require service connections, such as wiring or piping.

D. Project System: Specific system, consisting of an independent arrangement of equipment, structures, components, piping, wiring, materials or incidentals that performs an identifiable function which is both operational and safe.

E. Pre-Demonstration Period: Period of time, prior to and separate from the Demonstration Period of unspecified duration after initial construction and installation which Contractor, with assistance from manufacturer's authorized representative, completes all work necessary, to make the system ready for the Demonstration Period.

F. Demonstration Period: Period of time, of specified duration, following Pre-Demonstration Period, during which Contractor, with assistance from manufacturer's authorized representative, completes all work necessary to complete the Demonstration Period and commission the systems.

G. Related System: Equipment or subsystem whose function is necessary for the start-up, testing and operation of the Project System as a whole.

H. Project Milestones: Reference Section 01 10 00 – Summary.

I. Substantial Completion: Reference the following:

1. Section 00 72 00 - General Conditions.
2. Section 00 73 00 - Supplementary Conditions.
3. Section 01 10 00 - Summary of Work.
4. Section 01 70 00 - Execution and Closeout Requirements.

1.3 REFERENCE STANDARDS

A. Specification Format and Content Explanations:

1. Specification format: The Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's (CSI) Division format and Master Format numbering system. Some portions may not fully comply and no particular significance will be attached to such compliance or noncompliance.
    a. Divisions and Sections: For convenience, a basic unit of Specification text is a "Section," each unit of which is numbered and named. These are organized with related Sections, organization and sequencing of Specifications. The Section title is not intended to limit meaning or content of Section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.
    b. Section Numbering: Used for identification and to facilitate cross-references in Contract Documents. Sections are placed in numeric sequence; however, numbering sequence is not complete, and listing of Sections in Table of Contents at beginning of the Project Manual must be consulted to determine numbers and names of Specification Sections in the Contract Documents.
    c. Page Numbering: Numbered independently for each Section. Section number is shown with page number at bottom of each page, to facilitate location of text.
    d. Parts: Each Section of Specifications generally has been subdivided into three basic "parts" for uniformity and convenience (PART I – GENERAL, PART 2 – PRODUCTS, PART 3 – EXECUTION). These "Parts" do not limit the meaning of text within. Some Sections may not contain all three "Parts" when not applicable or may contain more than three "Parts" to add clarity to organization of Section.
    e. Underscoring of Titles: Used strictly to assist reader of Specification in scanning text for key words in content. No emphasis on or relative importance is intended except where underscoring may be used in body of text to emphasize a duty, critical requirement, or similar situation.
    f. Project Identification: Project identification is recorded at the bottom of each page of Specifications to minimize possible misuse of Specifications, or confusion with other Project Specifications.
2. Specification Content:
    a. These Specifications apply certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
        1) Imperative and Streamlined Language: These Specifications are written in imperative and abbreviated form. This imperative language of the technical Sections is directed at the Contractor, unless specifically noted otherwise.

Incomplete sentences shall be completed by inserting “shall,” “The Contractor shall,” and “shall be,” and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words “shall be” shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, fulfill (perform) all indicated requirements where stated imperatively or otherwise.

2) Specifying methods: The techniques or methods of specifying requirements varies throughout the text, and may include “prescriptive,” “compliance with standards,” “performance,” “proprietary,” or a combination of these. The method used for specifying one unit of Work has no bearing on requirements for another unit of Work.

3) Overlapping and Conflicting Requirements: Where compliance with two or more industry standards or sets of requirements is specified, and overlapping those different standards or requirements establishes different or conflicting minimums or levels of quality, notify Engineer for a decision.

4) Abbreviations: Throughout the Contract Documents are abbreviations implying words and meanings which shall be appropriately interpreted. Specific abbreviations have been established, principally for lengthy technical terminology and in conjunction with coordination of Specification requirements with notations on Drawings and in schedules. These are normally defined at first instance of use. Organizational and association names and titles of general standards are also abbreviated.

3. Assignment of Specialists: In certain instances, Specification text requires that specific Work be assigned to specialists in the operations to be performed. These specialists shall be engaged for performance of those units of Work, and assignments are requirements over which Contractor has no choice or option. These assignments shall not be confused with, and are not intended to interfere with, enforcement of building codes and similar regulations governing Work, local and union jurisdictions, and similar conventions. Nevertheless, final responsibility for fulfillment of Contract requirements remains with Contractor.

4. Trades: Except as otherwise specified or indicated, the use of Titles (such as “carpentry” in Specification text) implies neither that the Work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as “carpenter”), nor that specified requirements apply exclusively to work by tradesperson of that corresponding generic name.

B. Drawings:

1. Except as otherwise indicated, graphic symbols used on Drawings are those symbols recognized in the construction industry for purposes indicated. Refer instances of uncertainty to Engineer for clarification.

C. Industry Standards:

1. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made part of the Contract Documents by reference and are stated in each Section.

a. Referenced standards, referenced directly in Contract Documents or by governing regulations, have precedence over non-referenced standards which are recognized in industry for applicability to the Work.

b. Where compliance with an industry standard is required, standard in effect shall be as stated in the Agreement.

c. Where an applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected, the Engineer will decide whether to issue a Change Order to proceed with the updated standard.

d. In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements.

e. Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.

    1) Where copies of standards are needed for performance of a required construction activity, Contractor shall obtain copies directly from publication source.

f. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION – NOT APPLICABLE

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Table 1 - Abbreviations and Acronyms

ORGANIZATIONS AND STANDARDS	
AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Antifriction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
ASCE	American Society Civil Engineers
ASHRAE	American Society Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWPA	American Wood Products Association or American Wood Preservers Association
AWPB	American Wood Preserver's Board
AWWA	American Water Works Association
CIPRI	Cast Iron Pipe Research Institute
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturer’s Association of America
CRSI	Commercial Standard
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
FS	Federal Specification
HMI	Hoist Manufacturer's Institute
IEEE	Institute Electrical and Electronics Engineers
IFI	Industrial Fasteners Institute
IPCEA	Insulated Power Cable Engineers Association
MIL	Military Specification
MMA	Monorail Manufacturer's Association
NAAMM	National Association Architectural Metals Manufacturers
NBHA	National Builders Hardware Association
NEC	National Electric Code

ORGANIZATIONS AND STANDARDS	
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association or National Forest Products Association
NHPMA	Northern Hardwood and Pine Manufacturer's Association
NSF	National Sanitation Foundation Testing Laboratory
NWMA	National Woodwork Manufacturer's Association
OSHA	Occupational Safety and Health Administration
PCI	Prestressed Concrete Institute
PS	Product Standard
RCSHSB	Red Cedar Shingle and Hand-Split Shake Bureau
RIS	Redwood Inspection Service
SAE	Society of Automotive Engineers
SCPRF	Structural Clay Products Research Foundation
SJI	Steel Joist Institute
SPI	Society of the Plastics Industry
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
UL	Underwriter's Laboratories
US	U.S. Bureau of Standards
USBR	U.S. Bureau of Reclamation
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California
WWPA	Western Wood Products Association

OTHER ABBREVIATIONS	
ac	alternating current
amp	ampere
AV	air vent
AWG	American wire gage
BIL	basic impulse level
BCY	bank cubic yard
C	centigrade or Celsius
CIP	Complete-in-place
cu	cubic
dc	direct current
diam	diameter

OTHER ABBREVIATIONS	
F	Fahrenheit
ft (')	foot
ga	gage
gal	gallon
GSP	galvanized steel pipe
hp	horsepower
Hz	hertz
hrs(s)	hour(s)
IBBM	iron body, bronze mounted
in(")	inch
IPS	iron pipe size
kV	kilovolt
kVA	kilovoltampere
lb	pound
lf	lineal foot
mA	milliampere
max	maximum
MG	million gallons
MH	manhole
NPT	national pipe thread
PL	plate
PVC	polyvinyl chloride
sq	square
vf	vertical foot
yd	yard

SYMBOLS	
°	degree
'	feet
"	inch
%	percent

END OF SECTION

SECTION 01 43 00
QUALITY ASSURANCE

PART 1 GENERAL

1.1 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality.

B. Comply fully with manufacturer's instructions, including each step in sequence.

C. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to provide workmanship of specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

H. Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities shall comply with Conditions of the Contract.

I. Certification of products: Respective sections of specifications.

J. Laboratory tests required and standards for testing: Respective sections of specifications.

1.2 TESTING AND INSPECTION QUALIFICATIONS

A. Qualification of Laboratory

1. Perform all tests to determine compliance with Contract Documents by an independent commercial testing firm acceptable to Engineer.
2. Meet “Recommended Requirements for Independent Laboratory Qualification,” published by American Council of Independent Laboratories.
3. Testing firm’s laboratory: Staffed with experienced technicians, properly equipped and fully qualified to perform tests in accordance with specified standards.
4. Laboratory qualifications:
    a. Provide statement of qualifications from testing firm and testing firm personnel for review and acceptance by Engineer.
    b. Provide one copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.
5. Meet basic requirements of ASTM E 329, “Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction” as

applicable.

6. Authorized to operate in the State in which the Project is located.
7. Testing equipment:
    a. Calibrated at reasonable intervals by devices of accuracy traceable to either:
        1) National Bureau of Standards
        2) Accepted values of natural physical constants

1.3 TOLERANCES

A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of the highest quality.

B. Comply with manufacturer's tolerances. Should manufacturer's tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Adjust Products to appropriate dimensions, position before securing Products in place.

1.4 REFERENCES AND STANDARDS

A. For products and workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue of Contract Documents, except where a specific date is established by code.

C. Obtain copies of standards and instructions where required by product specification sections.

D. Neither the contractual relationships, duties nor responsibilities of the parties in Contract nor those of the Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference documents.

E. Assure manufacturer's instructions are adhered to so specified warranties can be obtained.

1.5 MANUFACTURER'S CERTIFICATES

A. When required by individual Specification Sections, submit manufacturers' certificate, in duplicate, that products meet or exceed specified requirements.

1.6 MANUFACTURER'S FIELD SERVICES

A. Coordinate and pay for the services of manufacturers' representatives to perform the specified services.

B. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting and balancing of equipment and, as applicable, to initiate instructions when necessary.

C. Representatives shall submit written report to Engineer listing observations and recommendations.

D. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

E. Qualification of Manufacturer's Representative: Authorized representative of the manufacturer; experienced in the application and installation of the subject equipment.

F. Provide qualifications of observer to Engineer 30 days in advance of required observations. Observer subject to acceptance of Engineer/Owner.

G. Provide reports to Engineer through Contractor certifying that:

1. Equipment is properly installed and lubricated.
2. Equipment is in accurate alignment.
3. Equipment is free from any undue stress imposed by connecting piping and anchor bolts.

H. Equipment has operated satisfactorily under full load conditions.

I. Inspect, check and adjust equipment as required and approve installation.

J. Be present when equipment is placed in operation.

K. Revisit the site as often as required to correct all problems and until equipment installation and operation are acceptable to Engineer.

L. Instruct Owner's personnel in operation and maintenance of the equipment in accordance with Section 01 79 00 and respective sections of specifications.

M. Services Required:

1. Services with Equipment and Materials Furnished Under this Contract:
    a. Furnish the services of qualified field personnel from the Suppliers or manufacturers of Equipment furnished and installed under this Contract, as required to perform all manufacturer's Field Services called for in the Specifications. Field personnel shall be certified by the Supplier or manufacturer of the specific product or system as having the necessary knowledge and experience to perform the required functions.
    b. Where such service is specified, Contractor shall not perform any Work related to the installation or operation of Equipment furnished and installed under this Contract without direct observation and guidance of the Supplier's or manufacturer's field personnel unless Engineer concurs otherwise.
    c. Contractor shall arrange for the Supplier's or manufacturer's field personnel to perform the following:
        1) Observe the erection, installation, start-up and testing of Equipment.
        2) Instruct and guide Contractor in proper procedures.
        3) Supervise the initial start-up, operational check, and any required adjustments of Equipment.
        4) Instruct Owner's designated personnel in proper operation and maintenance of all Equipment.
        5) Furnish a written report to Engineer covering all Work done at least once each week and when Work on each item of Equipment or system is completed.

d. Advise Owner and Engineer of arrival at the Site of all Supplier's and manufacturer's field personnel.

N. Operation and Testing:

1. Place all Equipment in Operation:

a. Place all Equipment installed under this Contract into successful operation according to instructions of the Supplier, manufacturer, or field representative, including making all required adjustments, tests, operation checks, and the following:

1) Cleaning, sounding, blowing-out, and flushing of lubricating oil and water systems, and other pipelines.

2) Lubrication.

3) Tests of lubrication system safety interlocks and system performance.

4) Final alignment checks and measurements made under observation of Owner. Alignment checks shall include opening connections, if required, to ensure there are no abnormal stresses on Equipment from pipes, ducts, or other attachments. Alignment shall be within tolerances specified by the manufacturer, and measurements shall be recorded and furnished to Engineer and Owner.

5) Motor rotation checks before connecting couplings.

6) Inspection of sleeve bearings for adequate contact.

7) Checking of anchor-bolt tensions, trout, and shims. Tighten anchor bolts with calibrated torque wrenches using care not to over stress bolts.

b. After "run-in" and acceptance of alignment, affix major Equipment in place using standard tapered dowels with jack-out nuts at head end to facilitate removal.

c. Record all above operations on forms furnished by Engineer.

d. Furnish all necessary attendants and personnel as part of the work to accomplish the above operations until such time as individual items, systems, Equipment or sections of the plant are acceptable for operation by Owner.

e. Provide attendants on a continuous basis as required to complete events without interruption once they have been started.

f. Contractor shall provide fuel, electricity, water, and lubricants for placing Equipment in operation. Owner's operating personnel will assist.

2. Performance Tests:

a. Equipment Furnished Under this Contract:

1) Owner may conduct acceptance tests after installation to determine if the Equipment installed as part of the Work perform in accordance with Contract Documents. Substantial Completion will be based on acceptable results of such tests.

2) No tests will be conducted on Equipment for which Supplier's or manufacturer's Field Service is specified unless Supplier's or manufacturer's field representative is present and declares in writing that the Equipment is ready for such test.

3) Contractor will be notified by Owner so that Contractor can have a representative or manufacturer's representative present during any tests of Equipment for which Supplier's or manufacturer's Field Service is not specified.

4) The tests will be made as set forth in the Contract Documents unless the interested parties mutually agree upon some other manner of testing.

1.7 REPORTING

A. The QC representative shall maintain in an appropriate format a daily record of all inspections and tests performed for each shift of Subcontractor operations. These records shall provide factual evidence that continuous QC inspections and tests have been performed, including any defects, causes for rejection, proposed remedial action and corrective actions taken.

1.8 TRANSMITTAL OF DOCUMENTATION

A. Submit copies of previous weeks Contractor's hand written Contractor Quality Control Daily Reports and Contractor's Quality Control Test Report forms to the Engineer and Owner at each weeks progress meeting.

1.9 FIELD SAMPLES

A. Install field samples at the site as required by individual specifications sections for review.

B. Acceptable samples represent a quality level for the Work.

C. Where field samples are specified in individual sections, remove, and clear area after field sample has been accepted by Engineer.

1.10 MOCKUPS

A. General mock-up requirements:

1. Intent of mock-up is to ascertain element's designed fit into space provided and to provide Contractor with opportunity to coordinate Subcontractor Work.
2. Maintain quality control over Work of various Sections of Specifications, manufacturers, products, services, workmanship, and site conditions to produce mock-ups in accordance with the Contract Documents.
3. Mock-ups include, but are not necessarily limited to, the following:
    a. Concrete Paving.
    b. Concrete Work.
    c. Masonry.
    d. Others.

B. Submittals: Complete required submittals prior to construction of mock-ups including but not limited to product data, samples and shop drawings as required.

C. Construction Schedule: Include mock-up activities including administrative and procedural submittals and materials ordering and assembly on Schedule per the requirements of Section 01 32 00 - Construction Progress Documentation. Identify every element required for each mock-up. Allow ample advance time for preparation and approval of mock-ups prior to placement of final orders for work without delay to progress or completion of the work.

D. Workmanship:

1. Comply with standards specified. Provide qualified personnel to produce mock-up of specified quality.

E. Assemble and erect complete, with specified attachment and anchorage devices, flashings, seals and finishes. Secure mock-ups in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1. Provide finish to match approved samples. When required in individual Specification Sections, install full-scale mock-up of assembly at Project site at location acceptable to the Representative.

F. Approval:

1. Maintain approved mock-ups as standard for evaluating Work until Work is completed and removal is approved by the Owner's Representative.

2. Acceptable mock-ups shall not be retained in completed Work unless noted otherwise.

G. Remove unacceptable mock-ups. Mock-ups not incorporated into finished Work shall be removed from the site immediately as approved by the Owner's Representative.

1. Mock-ups shall be approved by the Owner's Representative in writing, as a condition precedent to approval of shop drawings for work represented by the mock-up.

1.11 TESTING AND INSPECTION

A. Contractor's Responsibilities Regarding Testing Laboratory:

1. Secure and deliver to Testing Laboratory adequate quantities of representative samples of materials proposed for use as specified.

2. Submit to Testing Laboratory the preliminary design mixes proposed to be used for concrete and other materials that require review by Testing Laboratory.

3. Submit copies of product test reports as specified.

4. Furnish incidental equipment, labor and facilities:

a. To provide Testing Laboratory access to the Work to be tested.

b. To obtain and handle samples at the Project site or at the source of the product to be tested.

c. To facilitate inspections and tests.

d. For storage and curing of test samples.

5. Provide notice to Owner's Representative sufficiently in advance of operations to allow for Testing Laboratory assignment of personnel and scheduling of tests.

6. When tests or inspections are cancelled after such notice due to work not being ready for testing, Contractor shall reimburse Testing Laboratory personnel and travel expenses incurred.

B. Tests and Inspections:

1. Tests, inspections, and acceptance of portions of the Work required by the Contract Documents or by Applicable Code Requirements shall be made at the appropriate times. Except as otherwise provided, Contractor shall make arrangements for such tests,

inspections, and acceptances with Testing Laboratory. Contractor shall give the Owner's Representative timely notice of when and where tests and inspections are to be made.

2. If such procedures for testing, inspection, or acceptance reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Owner's Representative's services and expenses.

3. If the Owner's Representative is to observe tests, inspections, or make acceptances required by the Contract Documents, Owner's Representative will do so promptly and, where practicable, at the normal place of testing.

4. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

5. Certain portions of the Work will be tested and inspected at various stages. Nothing in any prior acceptance or satisfactory test result shall govern, if at any subsequent time the Work, or portion thereof, is found not to conform to the requirements of the Contract Documents.

C. Additional Testing and Inspection:

1. If initial tests or inspections made by Testing Laboratory or Geotechnical Engineer reveal that any portion of the Work does not comply with the Contract Documents, or if the Owner's Representative determines that any portion of the Work requires additional testing or inspection, additional tests and inspections shall be made as directed.

   a. If such additional tests or inspections establish that such portion of the Work complies with the Contract Documents, all costs of such additional tests or inspections shall be paid by the Contractor.

   b. If such additional tests or inspections establish that such portion of the Work fails to comply with the Contract Documents, all costs of such additional tests and inspections, and all other costs resulting from such failure, including compensation for the Owner's Representative, Engineer and Contractor shall not be reimbursed for the costs.

D. Test Reports:

1. Testing Laboratory shall submit 2 copies of all reports to Contractor, indicating observations and results of tests and indicating compliance or non-compliance with the Contract Documents.

2. Contractor will distribute 2 copies of the reports to the Owner and Engineer.

3. The number of copies for the Owner and Supplier being tested will be determined upon commencement of the Contract.

E. Closing in Uninspected Work:

1. Do not allow or cause Work to be covered or enclosed before it has been inspected and approved by the Owner's Representative. Should any Work be enclosed or covered before it has been approved, it shall be uncovered, inspected, approved or repaired, and covered. Make all repairs necessary to restore Work of others to the condition in which it was found at time of cutting, at no additional cost to the Owner.

F. Engineer:

1. All excavation, filling, and compaction shall be subject to observation by Engineer. The

Owner will retain and pay expenses of the Engineer to perform the observation functions, except that the costs of any additional observation made necessary by inadequate compaction, replacement of unacceptable material or other Work not complying with the Contract Documents shall be borne by the Contractor and may be deducted from the Contract Sum. The Engineer shall communicate with the Owner's Representative who will relay any appropriate instructions to the Contractor.

2. Source Quality Control: Contractor will sample and test fill material from the source designated by the Owner. Contractor shall pay for the Laboratory transportation expenses, if the source is more than 50 miles from the Project site.

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 45 00
QUALITY CONTROL

PART 1 GENERAL

1.1 QUALITY CONTROL PROCEDURES

A. Summary

1. The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with these specifications. The Contractor Quality Control (CQC) system shall consist of plans, procedures, and organization necessary to provide materials, equipment, workmanship, fabrication, construction, and operations, both on-site and off-site, that complies with contract requirements and is keyed with the construction schedule. The Contractor shall review and certify as correct and complete, and in compliance with contract requirements, all shop drawings and lists of materials, fixtures, and equipment as required by technical specifications.
2. Recurring Deficiencies: If recurring deficiencies indicate that the CQC System is not adequate, corrective action shall be taken as directed by Engineer. Progress payments may be withheld until such corrective action has been completed per the General Conditions.
3. Provide copies of written reports for materials testing, equipment or systems as scheduled at the end of this section. Reference each report by respective specification number.
4. Definable Feature of Work: A "definable feature of work" is a task which is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each Section of the specifications may generally be considered as a definable feature of work, there is frequently more than one definable feature under a particular Section.

B. Quality Control System

1. The 3 phase inspection system shall include the following minimum requirements:
    a. Preparatory Inspection: This shall be an integral part of pre-installation meeting for designated portion of work to be performed prior to beginning any such work, and shall include:
        1) A review of applicable specifications.
        2) A review of the contract plans.
        3) A check to assure that all materials and/or equipment have been tested, submitted and approved.
        4) A check to assure that provisions have been made to provide control inspection and testing.
        5) Examination of the work area to assure that all required preliminary work has been completed and is in contract compliance.
        6) A physical examination of required materials, equipment and sample work to assure that they conform to approved shop drawings or submitted data and are properly stored.

7) Discussion of procedures for constructing the work, including repetitive deficiencies, construction tolerances and workmanship standards specified in the documents.

b. Initial Inspection: This shall be performed as soon as work begins on a definable feature of work and the following shall be accomplished:

1) A check of preliminary work to ensure that it is in contract compliance. Review of the preparatory meeting minutes.

2) Verification of full contract compliance and verify required control inspection and testing is underway.

3) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare work with sample panels, etc., as appropriate.

4) Resolve all differences.

5) This inspection phase should be repeated for new crew on site performing the work or any time standards are not being met.

c. Follow-Up Inspection: These should be performed daily to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The Owner or Owner's representative may require joint State-Contractor inspections at any time and on a periodic basis to evaluate the effectiveness of the quality control system.

2. As-Builts: The Contractor shall maintain full size marked-up drawings, survey notes, sketches, nameplate data, pricing information, description, and serial numbers of all installed equipment as well as other information depicting as-built conditions. This information shall be updated daily and be maintained in a current condition at all times until completion of work and shall be available for review by Owner or Owner's representative at all times. Upon completion of the work, this information shall be furnished to the Owner in conformance with requirements of Section 01 70 00, Execution and Closeout Requirements.

3. Section 01 78 00, Close-Out Submittals.

4. Tests: All operation and acceptance tests, where specified, are to be performed to verify control measures are adequate. These tests are to be documented and a copy provided to the Owner and Engineer.

C. Quality Control Organization

1. The Contractor shall identify a Quality Control (QC) organization, describing lines of authority and acknowledgment that the QC staff shall implement the inspection program. The staff shall include a full time, on-site representative (e.g. Superintendent) who shall report to the Project Manager or someone higher in the Contractor's organization. Project Manager in this context shall mean the individual with responsibility for the overall management of the project including quality and production, and shall be subject to approval by the Owner.

2. The Contractor's site representative shall be on the work site during progress of the work with complete authority to take action necessary to ensure compliance with the Contract Documents. Additional staff, if needed, for the QC organization is to be at a satisfactory level as required to perform the activities outlined in this Section, subject of Owner's approval.

3. Contractor shall submit full resumes giving experience and qualifications of all personnel proposed for Contractor's QC organization. Owner shall reserve the right to reject any person proposed for Contractor's QC organization based on Owner's review of each resume.

D. Contractor Quality Control Plan

1. The Contractor shall submit its QC plan to the Engineer for review prior to the start of construction. Allow 15 working days after receipt in the Engineer's office for Engineer and Owner review and comments. The plan shall include the following elements:

a. A statement of how the plan will operate and a supporting organization chart to show the individual on the Contractor's staff responsible for implementing and controlling the plan and staffing of the testing and inspection activities.

b. Identify a Contractor QC Representative, if other than the Contractor's superintendent, who shall be on the site at all times during progress of the work with complete authority to take action necessary to assure compliance with the contract documents.

c. A staffing plan for Contractor inspectors which is consistent with the scope and Construction Schedule for the project.

d. Resume(s) of proposed inspector(s) showing their experience and qualifications for the proposed inspection activities. Experience must be of the same type as will be required for this project.

e. A coordination plan showing how the efforts of the Contractor's quality control staff will be coordinated with the Engineer, retained special inspectors, and engineers.

f. Procedures for scheduling, reviewing, certifying and managing submittals.

g. Methods to be used for documenting the 3 phase inspection system.

h. Procedures for tracking contractor identified construction deficiencies and NCN's, from identification through corrective action and establishing verification that deficiencies have been corrected.

i. Copy of Contractor's QC Daily Report. Report shall include entries for identifying weather conditions (temperature, dry, wet, amount of rain), trade activities (classification of workers within the trade, staffing number for each trade, what work trade was performing on the project), equipment on site (rented and contractor owned, what equipment was being used for each day), important communications with Engineer, Owner, Inspectors, Supplier or specific Trade, factual record containing specification reference for the work being performed, and QC activities. The report shall include entries for the QC Representative's signature certifying that all materials and supplies incorporated into the work are in compliance with the Contract Documents and Engineer approved modifications. This report will not be accepted as the daily QC report unless it also incorporates the specific requirements of this Section.

j. Copy of inspection form for the different activities which will be inspected including but not limited to the following:

1) For concrete elements inspection forms shall include pre-placement, placement, and post-placement inspection items:

a) Foundation inspection.

b) Slab on grade inspection.
   i. Subgrade preparation.
   ii. Reinforcing.
   iii. Concrete placement/curing.

2) Structural steel inspection.

3) Welding inspection.

4) The Contractor shall prepare inspection forms with check-off items for key construction elements to be signed off by the Contractor's inspectors and reviewed from time to time by the Engineer.

k. Procedure for tracking and inspecting "As-Built" plans.

E. Coordination Meeting / Acceptance of Plan

1. Before start of construction, the Contractor shall meet with the Owner and Engineer representatives to discuss the QC Plan. During the meeting, a mutual understanding of the system details shall be developed. Acceptance of the QC Plan is conditional and will be predicated on satisfactory performance during construction. The Owner shall be notified of any changes to the plan, and those changes are subject to review and acceptance by the Owner.

F. Contractor's Pre-Installation Quality Control

1. Well in advance of the installation of every major unit of work, which requires coordination with other work, the Contractor shall ensure that the unit of work can be installed and function as intended and required in conjunction with other work which has preceded or will follow. In the event of conflict, the Contractor shall determine corrective action required, inform the Engineer, and proceed with the Engineer's concurrence.

2. Perform inspection of all products and equipment immediately following delivery to the Project site to determine conformance with the Contract Documents and any evidence of damage.

1.2 FIELD QUALITY CONTROL PROCEDURES

A. Cooperate with laboratory personnel and provide access to Work

B. Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other material mixes which require control by the testing laboratory

D. Furnish copies of product test reports as required

E. Furnish incidental labor and facilities:

1. To provide access to Work to be tested

2. To obtain and handle samples at the project site or at the source of the product to be tested

3. To facilitate inspections and tests

4. For storage and curing of test samples

F. Cooperate with independent testing firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested:

1. Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services to allow for scheduling of tests and laboratory assignment of personnel
2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

1.3 TESTING AND INSPECTING SERVICES

A. Shop Tests

1. Coordinate and pay all costs associated with specified shop tests of equipment, including retesting of items which fail original tests specifically identified in the technical specifications.
2. Prepare and submit five (5) copies of written reports detailing the results of the test identifying corrective action for materials and equipment which fails to pass shop tests.
3. Where the specifications call for a shop test to be witnessed by a representative of the Engineer, notify Engineer not less than 14 days prior to the scheduled test date.
    a. Owner is to pay for all costs of Engineer’s first visit.
    b. When subsequent visits by Engineer are required because of incomplete tests, retesting or subsequent tests, reimburse Owner for all costs of the subsequent visits.

B. Field Testing

1. Contractor shall pay all costs associated with field testing of materials and equipment as required in respective sections of the specifications
2. Provide all required materials, labor, equipment, water, and power required for testing
3. Perform all tests in presence of Engineer or Owner and provide one copy of field test results to Engineer same day of tests.
4. Prepare and submit to Engineer 5 copies of written reports detailing the results of the test and identifying corrective action for materials and equipment which fails to pass field test
5. Repair with no additional compensation all materials and equipment which fail during testing
6. Contractor shall be liable to Owner for all costs of Engineer and other consultants of Owner due to failed tests, delays in testing or premature requests for testing services

1.4 TESTING LABORATORY SERVICES

A. Inspection and Testing Laboratory Services

1. Owner will employ and pay for services of an independent testing laboratory to perform specified services and testing of materials only where the technical specifications specifically obligate the Owner to provide services. Owner will only pay for first required tests of materials and equipment as coordinated by Contractor; any subsequent testing costs due to contractor’s nonconformance with specifications shall be borne by Contractor.
    a. Cooperate with the Owner’s laboratory or testing company to facilitate execution of their required services. Owner will not have any liability for Contractor’s

unpreparedness for laboratory or testing services coordinated or scheduled by Contractor

b. Owner's employment of laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract Documents

2. Contractor shall employ and pay for the services of an independent testing laboratory to perform all specified services and testing not specifically identified in the technical specifications to be provided by Owner related to the design of mixes, products and equipment, to Engineer's review of proposed materials and equipment before, during and after incorporation in the Work and to retest materials and equipment which fail original tests:

   a. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract

3. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm with instructions by the Engineer. Payment for retesting will be the responsibility of the Contractor.

4. Perform all tests to determine compliance with Contract Documents by an independent commercial testing firm acceptable to Engineer.

B. Qualification of Laboratory

1. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.

2. Testing firm's laboratory: Staffed with experienced technicians, properly equipped and fully qualified to perform tests in accordance with specified standards

3. Meet basic requirements of ASTM E 329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction" as applicable.

4. Authorized to operate in the State in which the Project is located.

5. Testing equipment:

   a. Calibrated at reasonable intervals by devices of accuracy traceable to either:

      1) National Bureau of Standards

      2) Accepted values of natural physical constants

C. Laboratory Duties

1. Cooperate with Engineer and Contractor; provide qualified personnel after due notice.

2. Perform specified inspections, sampling, and testing of materials and methods of construction:

   a. Comply with specified standards.

   b. Ascertain compliance of materials with requirements of Contract Documents.

3. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products.

D. Limitations of Authority of Testing Laboratory

1. Laboratory is not authorized to:

a. Release, revoke, alter or enlarge on requirements of Contract Documents

b. Approve or accept any portion of the Work.

E. Laboratory test reports:

1. Provide written reports of each test and inspection to Engineer. Each report shall include:

a. Date issued

b. Project title and number

c. Testing laboratory name, address and telephone number

d. Name and signature of laboratory inspector

e. Date and time of sampling or inspection

f. Record of temperature and weather conditions

g. Date of test

h. Identification of product and specification section

i. Location of sample or test in the Project

j. Type of inspection or test

k. Results of tests and compliance with Contract Documents

l. Interpretation of test results when requested by Engineer

F. Field test reports: Provide reports detailing results of the tests. Indicate compliance or non-compliance with Contract Documents. Identify corrective action for materials and equipment which fails to pass field tests.

1.5 TESTING AND SERVICES SCHEDULE

A. Testing laboratory services shall be provided for, but shall not be limited to, the following:

Specification	Type of Material, Equipment or System
03 30 00	Concrete
31 23 00	Excavation and Fill

1.6 SHOP TESTING

A. Shop testing shall be provided for, but shall not be limited to, the following:

Specification	Type of Material, Equipment or System
40 05 57	Actuators for Process Valves and Gates
40 05 62	Plug Valves
26 29 23	Variable Frequency Drives
40 63 43	Programmable Logic Controllers

1.7 MANUFACTURER'S FIELD SERVICES

A. Manufacturer's field services shall be provided for, but shall not be limited to, the following:

Specification	Type of Material, Equipment or System
40 05 57	Actuators for Process Valves and Gates
40 05 62	Plug Valves
26 29 23	Variable Frequency Drives
40 63 43	Programmable Logic Controllers

1.8 FIELD TESTING

A. Field testing shall be provided for, but shall not be limited to, the following:

Specification	Type of Material, Equipment or System
03 30 00	Concrete
03 60 00	Grouting
09 97 00	Special Coatings
26 02 35	Electrical Testing
26 29 23	Variable Frequency Drives
31 23 00	Excavation and Fill
40 05 19	Ductile Iron Process Pipe
40 05 57	Actuators for Process Valves and Gates
40 05 62	Plug Valves
43 26 20	Scum Pump
40 43 00	Clarifier Equipment
40 63 43	Programmable Logic Controllers

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 TEMPORARY UTILITIES:

A. General

1. Provide new materials and equipment. If acceptable to Engineer, undamaged previously used materials and equipment in serviceable condition may be used. Provide materials and equipment suitable for the use intended, of capacity for required usage, and meeting applicable codes and standards.
2. Engage the appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
3. Provide adequate utility capacity at each stage of construction. Prior to availability of temporary utilities at the site, provide trucked-in services as required for start-up of construction operations.
4. Obtain and pay for temporary easements required to bring temporary utilities to the Project site, where the Owner's permanent easement cannot be utilized for that purpose.
5. Furnish, install, and maintain temporary utilities required for adequate construction, safety, and security. Modify, relocate, and extend systems as Work progresses. Repair damage caused by installation or use of temporary facilities. Grade the areas of Site affected by temporary installations to required elevations and grades and clean the area. Remove on completion of Work or until service or facilities are no longer needed.
6. The types of temporary construction utilities and facilities required include, but not by way of limitation, water distribution, drainage, dewatering equipment, enclosure of Work, heat, ventilation, electrical power distribution, lighting, hoisting facilities, stairs, ladders, and roads.
7. Inspect and test each service before placing temporary utilities in use. Arrange for required inspections and tests by governing authorities and obtain required certifications and permits for use.
8. Materials used for temporary service shall not be used in the permanent system unless so specified or acceptable to Engineer.
9. Removal: Remove temporary materials, equipment, and services when construction needs can be met and allowed by use of permanent construction, or at completion of the Project.
10. Repair: Clean and repair damage caused by installation or by use of temporary facilities.
    a. Remove foundations and underground installations for construction aids.
    b. Grade the areas of the Site affected by temporary installations to required elevations and clean the area.

B. Temporary Electricity

1. New Service:
    a. Arrange with utility company and provide service required for power and lighting.

b. Connect temporary service in a manner directed by utility company officials. Provide separate meter for metering of power used by all entities authorized to be at or perform Work at the Project Site.

c. The electric service shall be of sufficient capacity and characteristics for the various construction tools, machinery, lights, heating and air conditioning, pumps, and other tools required by Contractor and his Subcontractors.

d. Provide weatherproof, grounded, power distribution system sufficient to accommodate construction operations requiring power, use of power tools, electrical heating, and lighting. Provide overload protection.

e. Provide all necessary temporary wiring, panel boards, switches, outlets, and other devices so that power is available throughout the construction area.

2. Use of Existing System:

   a. Owner's existing system shall not be used for temporary electricity.

   b. Contractor may use existing receptacle outlets for small power tools with 120V, single phase, 15 amp and grounding connection plugs at no charge for power energy:

      1) Use of existing receptacle outlets shall be in such a manner to minimize inconvenience to Owner and his employees. Contractor may only use existing receptacles at Owner's discretion and expressed consent in areas where Owner's operations coincides with Work

      2) Contractor shall provide any required extension cords

      3) Extension cords shall be supported or guarded to positively prevent any hazard of any kind to Owner's personnel

3. Use of Permanent System:

   a. Prior to use of permanent system for construction purposes, obtain written permission of Owner.

   b. Maintain permanent system as specified for temporary facilities.

4. Costs of Installation and Operation:

   a. Pay fees and charges for permits and applications.

   b. Pay costs of installation, maintenance, removal of temporary services, and restoration of any permanent facilities used.

   c. Pay costs of electrical power used.

   d. Obtain and pay costs for temporary easements required across properties other than that of Owner.

5. Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

6. Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

7. Equipment testing:
    a. Owner shall pay for energy
    b. Contractor shall pay all costs for temporary wiring, if required

C. Temporary Fire Protection
    1. General:
        a. Contractor shall be responsible for development of a fire prevention and protection program for all Work under this Contract.
        b. The program shall comply with the applicable provisions for safety and protection as set forth in the GENERAL CONDITIONS and with applicable parts of the NFPA 10 and 241.
        c. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher at each building.
        d. Store combustible materials in containers in fire-safe locations.
        e. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
        f. Provide supervision of welding operations and similar sources of fire ignition.
        g. Post warning and instructions at each extinguisher location and instruct construction personnel on proper use of extinguishers and other available facilities at Project Site. Post local fire department telephone number on or near each telephone instrument at Project Site.
    2. Permanent Fire Protection:
        a. Complete fire protection facilities at earliest reasonable date, and place into operation, and make ready for emergency use.
        b. Instruct personnel at Site on availability and proper use.
    3. Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

D. Temporary Heating, Cooling, and Ventilating
    1. General:
        a. Provide temporary heat, ventilation and cooling as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage. Protect from adverse effects of low temperatures or high humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
        b. Methods of heating and fuel shall be suitable for particular purposes. Portable heaters shall be standard approved units with controls.
        c. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

2. Use of Existing Systems:
    a. Existing Systems shall not be used for temporary heating, cooling, or ventilating.
3. Use of Permanent System:
    a. Prior to use of permanent system, obtain written permission of Owner, which will define:
        1) Conditions of use.
        2) Provisions relating to guarantees on equipment.
    b. Prior to operation, verify that inspection has been made by proper authorities and installation has been approved for operation.
    c. Install temporary filters for air-handling units and for permanent ducts. Install new filters upon Substantial Completion.
4. Costs of Installation and Operation:
    a. Pay fees and charges for applications, permits, and inspections.
    b. Pay costs of installation, operation, maintenance, removal of equipment, and restoration of existing or permanent facilities if used.
    c. Pay cost of power and fuel used
5. Provide temporary heating units that have been tested and labeled by UL or another recognized trade association related to the type of fuel being consumed.
6. Provide temporary ventilation units that have been tested and labeled by UL or another recognized trade association related to the type of fuel being consumed.

E. Temporary Lighting
1. Provide all necessary temporary wiring, panel boards, switches, outlets, and other devices so that lighting is available throughout the construction area.
2. Provide adequate artificial lighting for all areas of Work when natural light is not adequate for Work.
    a. Sufficient light shall be provided for general construction areas and floor areas, with additional sufficient lighting for specific tasks and to meet safety requirements.
3. Provide and maintain lighting to exterior staging and storage areas after dark for security purposes as required.
4. Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. Temporary Natural-Gas
1. New Service:
    a. Arrange with utility company to provide service required for natural gas requirements.
    b. Connect service in a manner directed by utility company officials. Provide separate meter and shutoff valve near connection to main gas line.
    c. The gas service shall be of sufficient capacity for the various construction service and systems required.

d. Install all necessary piping and fittings so that gas is available to area needed. Protect piping and fittings from damage and leakage.

2. Use of Permanent System:

a. Prior to use of permanent system for construction purposes, obtain written permission of Owner.

b. Prior to use of system, obtain inspection and approval of governing authority.

c. Maintain permanent system as specified for temporary facilities.

3. Costs of Installation and Operation:

a. Pay all costs for installation, maintenance, and removal.

b. Pay costs of gas used.

G. Temporary Telecommunications

1. General:

a. Arrange with local telephone company and provide direct line telephone/DSL service at the construction Site for the use of construction personnel and project representatives.

b. Contractor to provide and maintain all telephone and high-speed internet services (DSL or cable modem) to field office starting with time of project mobilization until project Final Completion.

c. Minimum Service Required:

1) DSL in superintendent's field office.

2) DSL in Resident Project Representative's field office.

d. Arrange with local cellular/mobile phone companies and provide mobile telephone service for use by Contractor and so Contractor can be reached at construction Site during normal working hours.

e. Contractor's on-site Superintendent shall possess a project cell phone.

2. Costs of Installation and Operation:

a. Pay all costs for installation, maintenance and removal, and service charges.

H. Temporary Water

1. Contractor shall obtain water from Owner's existing fire hydrants in accordance with applicable Owner rules, regulations, policies, and procedures. Contractor is responsible for the cost of labor, equipment, and material to convey the water from the existing fire hydrants to the site of the Work.

2. Contractor shall obtain backflow preventer, meter, and valve from Owner, and in all other ways comply with Owner requirements for obtaining construction water from Owner hydrant.

3. Contractor will not be allowed to employ pumps which have their suction connected to Owner's hydrants. Flow from the fire hydrant must discharge to atmosphere prior to booster pumping.

4. Owner reserves the right to limit flow rate from fire hydrants so as not to adversely affect pressure and flow to adjacent residents.

5. Contractor may obtain water from other sources at his discretion and expense.
6. Provide Potable water to the site. Pay all associated costs.
7. Provide 3/4-inch, heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
8. Costs of Installation and Operation:
    a. Pay all costs for installation, maintenance, and removal.
    b. Cost of water used will be paid by Contractor.
    c. Contractor to provide all permits as required.

1.2 CONSTRUCTION FACILITIES

A. Field Offices and Sheds

1. General:
    a. Existing facilities at the Site shall not be used for field offices.
    b. Provide trailers, mobile buildings, or buildings constructed with floors raised aboveground, with steps, landings, and railings at entrance doors.
    c. Buildings shall be structurally sound, secure, and weathertight.
    d. Provide appropriate type fire extinguishers at each office and storage area.
    e. Maintain offices during progress of the Work until final completion.
    f. Install office spaces ready for occupancy 15 days after date stated in Notice to Proceed.
2. Location, Installation and Maintenance:
    a. Place temporary buildings, trailers and stored materials in locations acceptable to Owner or Engineer.
    b. Install field offices and sheds to resist winds and elements of the locality where installed.
    c. Remove when no longer needed at the Site or when Work is completed.
    d. Keep approach walks free of leaves, mud, water, ice, or snow.
    e. Mount 10” outdoor thermometer at convenient outside location, not in direct sunlight.
    f. At completion of Work, remove temporary buildings and trailers, foundations (if any), utility services, and debris.
    g. Prepare ground or paved areas as specified.
3. Contractor's Office:
    a. Provide a field office for Contractor's superintendent on the Site.
    b. Provide the following minimum requirements:
        1) The office shall be of suitable height and of ample size to accommodate the furniture and equipment listed below, without crowding (at least 400 sq. ft. of floor area). The office shall be subdivided and contain one private office (two offices; if Resident Project Representative is used) of approximately 150 sq. ft.

for use by Resident Project Representative and the remainder of the trailer shall be a general purpose/conference room. The office shall be weathertight; the walls and roof shall be insulated with at least 1/12-inch insulating board and suitably ventilated; and the floor shall be tight and of double-thick construction. The office shall have at least three screened windows which can be both opened and locked shut, and the door shall have a cylinder lock with two keys. There also shall be a screen door and storm windows or double glazed windows. If trailer is furnished, provide weather skirt around trailer base. Storm doors are required at all entrances.

2) Contractor shall also provide acceptable toilet facilities.

3) The Contractor shall furnish the following furniture, equipment, supplies, and services:

   a) One plan table or sloping plan shelf, about 3 feet by 5 feet, with a reasonably smooth top, and one suitable swivel stool.

   b) Two conference tables, each approximately 30 inches by 72 inches and 10 additional folding chairs.

   c) Shelves, counters, and tackboard as directed.

   d) Electric lights and outlets as directed. Contractor shall pay all charges for the energy used.

   e) Broom and dustpan.

   f) Two desks for general office use, each about 3 feet by 5 feet, with two swivel type office chairs.

   g) Two four-drawer, legal size metal filing cabinets, each with lock and two keys.

   h) Two portable ABC type fire extinguishers of at least 4-lb capacity.

   i) Supply of drinking water with a suitable electric water cooler.

   j) Thermostatically controlled heating units or system of adequate capacity to maintain a minimum temperature of not less than 70°F under all cold weather conditions. Contractor shall provide all fuel or power used and service necessary.

   k) Thermostatically controlled, refrigerant type, air conditioners of adequate capacity to maintain a maximum temperature of not more than 72°F under a hot weather conditions. Contractor shall provide all service necessary and provide all power used.

   l) Lighting: 50 foot-candles at desktop height. Exterior lighting at entrance door.

   m) Electrical Service: Minimum of two circuits, 110V, 60-hertz. Minimum of four 110V duplex convenience outlets.

   n) Toilet facilities.

4. Resident Project Representative's Office (if used):

   a. Provide a field office for Engineer's Resident Project Representative on the Site.

   b. Provide the following minimum requirements:

1) The office shall be in accordance with the requirements defined in the Contractor's Office section above and the criteria below.

2) One private office of approximately 150 sq. ft. for use by Resident Project Representative and the remainder of the trailer shall include the Contractor's office and be a general purpose/conference room.

5. Storage Sheds and Trailers:

a. On Site:

1) Provide temporary buildings or trailers needed for storage of Equipment and Materials installed under this Contract.

2) Existing facilities at the site shall not be used for storage. Permanent facilities shall not be used for field offices or for storage.

3) Provide ventilation and heating as required by Equipment and Material stored.

b. Off Site:

1) Advise Engineer of any arrangements made for storage of Equipment and Materials in a place other than Owner's Site. Furnish evidence of insurance coverage with Application for Payment in conformance with the GENERAL CONDITIONS.

B. Safety and Health Facilities

1. Contractor shall be responsible for development of safety and health programs for personnel at Project Site as specified in the GENERAL CONDITIONS.

C. Sanitary Facilities

1. Contractor-Furnished Facilities:

a. Furnish, install, and maintain temporary sanitary facilities for use through construction period. Remove on completion of Work.

b. Provide for all construction workers under this Contract and representatives at the Site. Not less than 1 sanitary facility for every 20 persons.

c. Toilet facilities shall be of the chemical-aerated recirculation or combustion type, properly vented, and fully enclosed with a glass- fiber-reinforced polyester shell or similar nonabsorbent material.

d. Supply and maintain toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility. Provide appropriate covered waste containers for used material.

2. Use of Existing Facilities:

a. Existing restroom facilities shall not be used.

3. Sewers and Drainage:

a. General: Where sewers or drainage facilities are not available for discharge of effluent, provide containers to remove and dispose of effluent off the Site in a lawful manner. If existing sewers are available for temporary drainage near the Site prior to completion of permanent sewers, provide temporary connections to remove effluent that can be lawfully discharged into the sewers. If existing sewers cannot be used for

discharge, provide facilities to remove effluent that can be lawfully discharged in that manner.

b. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy usage, restore to normal conditions promptly. Provide and maintain temporary earthen embankments and similar barriers in and around construction excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rainstorms.

1.3 TEMPORARY CONSTRUCTION

A. Temporary Bridges

1. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.

1.4 CONSTRUCTION AIDS

A. General:

1. Provide construction aids and equipment required by personnel and to facilitate the execution of the Work, including, but not limited to: scaffolds, staging, ladders, stairs, ramps, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.
2. Materials may be new or used, must be suitable for the intended purpose, and meet the requirements of applicable codes, regulations, and standards.
3. Maintain all existing facilities and equipment in a condition equivalent to or better than condition at beginning of usage.
4. Relocate construction aids as required by progress of construction, storage limitations, or Work requirements and to accommodate requirements of Owner and other contractors at the Site.
5. Completely remove temporary materials, equipment, and services at completion of the Project.
6. Clean, repair damage caused by installation or by use of temporary facilities:
   a. Remove foundations and underground installations for construction aids.
   b. Grade the areas for the site affected by temporary installations to required elevations and slopes and clean the area.

B. Temporary Hoists

1. Contractor may, at his own risk, use existing hoists and cranes at the site and hoists and cranes installed hereunder:
   a. Coordinate with Engineer and Owner.
   b. Do not exceed rated capacity of hoists and cranes.
   c. Replace or repair any damaged units.
2. Owner makes no representation as to the suitability, serviceability, or safety of new or existing hoists and cranes and assumes no responsibility for their safe use by construction personnel.

1.5 VEHICULAR ACCESS AND PARKING

A. Temporary Access Roads, Parking Areas, Driveways and Entrances

1. Temporary Access Roads and Parking:
    a. Contractor shall access the Project Site via the existing improved access road. Any issues pertaining to the road integrity will be coordinated with the Owner.
    b. Contractor shall maintain conditions of access road to site such that access is not hindered as the result of construction-related deterioration.
    c. Locate roads, drives, walks, and parking facilities to provide access to construction offices, mobilization, Work, storage areas, and other areas required for execution of the Contract.
        1) Consult with Owner and Engineer regarding any desired deviation therefrom.
        2) Size of parking facilities shall be adequate to provide for needs of Contractor's personnel, Resident Project Representatives, and visits to Site by Engineer and Owner.
        3) Contractor shall access the Project Site via the existing improved access road. Any issues pertaining to the road integrity will be coordinated with the Owner.
    d. Provide access for emergency vehicles. Maintain driveways a minimum of 15 feet wide between and around combustible materials in storage and mobilization areas.
    e. Maintain traffic areas free of excavated materials, construction equipment, snow, ice, and debris.
    f. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
    g. Keep fire hydrants and water control valves free from obstruction and accessible for use.
2. Driveways and Entrances:
    a. The following requirements apply to the construction near and along public and private driveways and entrances, subject to conditions indicated on the drawing.
        1) Vehicular access to all private driveways shall be maintained throughout the contract except during the specified periods described below.
        2) Contractor shall work closely with abutting business to minimize impact on daily operation of businesses. Stage construction drives may be required.
    b. The Contractor shall notify the Owner of each driveway to be affected by temporary closure not less than 48 hours prior to closure to provide the owner/tenant reasonable opportunity to make arrangements for temporary removal of his vehicle or modify plan of operation.
3. Materials:
    a. Crushed Rock:
        1) Crushed rock shall consist of hard, durable particles of crushed aggregate from an approved quarry, free from an excess of flat, elongated or disintegrated pieces, dirt, or other objectionable matter.
    b. Gradation shall meet the following requirements:
        1) Shall be uniformly graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa.

Sieve Designation Square Inch	Percentage By Weight Passing
2 inch	100
1-1/2 inch	95-100
3/4 inch	75-95
No. 4	40-65
No. 100	30-55
No. 200	8-20

4. Construction:
    a. Clear areas required.
    b. Fill, compact, and grade areas as necessary to provide suitable support for vehicular traffic under anticipated loadings. Materials and construction shall be as specified in DIVISION 2.
    c. Provide for surface drainage of facilities and surrounding areas.
    d. Maintain roads, walks, and parking areas in a sound, clean condition. Repair or replace portions damaged during progress of Work.
    e. The Contractor shall place four (4) inches of temporary crushed rock surfacing or permanent patch along the excavation to maintain vehicular access.
    f. The Contractor will add crushed rock, shape, and maintain temporary crushed rock driveway as directed by the Engineer.
    g. Place crushed rock to uniform depth of four (4) inches over the entire area to be surfaced.
5. Removal:
    a. Completely remove temporary materials and construction when construction needs can be met by use of permanent installation, unless construction is to be integrated into permanent construction. Remove and dispose of compacted materials to depths required by various conditions to be met in completed Work.
    b. Restore areas to original, better, or specified condition at completion of Work.

B. Traffic Control
1. Provide, operate, and maintain equipment, services, and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at site entrances, on-site access roads, and parking areas. This includes traffic signals and signs, flagmen, flares, lights, barricades and other devices or personnel as necessary to adequately protect the public.
2. Remove temporary equipment and facilities when no longer required. Restore grounds to original, better or specified condition when no longer required.
3. Provide and maintain suitable detours or other temporary expedients if necessary.
4. Bridge over open trenches where necessary to maintain traffic.
5. Consult with governing authorities to establish public thoroughfares which will be used as haul routes and Site access. All operations shall meet the approval of owners or agencies having jurisdiction.
6. Repair roads, walkways, and other traffic areas damaged by operations. Keep traffic areas

as free as possible of excavated materials and maintain in a manner to eliminate dust, mud and hazardous conditions.

7. All operations and repairs shall meet the approval of owners or agencies having jurisdiction.

1.6 TEMPORARY BARRIERS AND ENCLOSURES

A. General:

1. Provide for the safety and protection of the Work as set forth in GENERAL CONDITIONS.
2. Provide protection at all times against rain, wind, storms, frost, freezing, condensation, or heat so as to maintain all Work and Equipment and Materials free from injury or damage. At the end of each day, all new Work likely to be damaged shall be appropriately protected.
3. Notify Engineer immediately at any time operations are stopped due to conditions which make it impossible to continue operations safely or to obtain proper results.
4. Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations, floors, pits, trenches, manholes, and ducts free of water.
5. Concrete floors less than 28 days old shall not be loaded without written permission from Engineer.

B. Property Other than Owners:

1. Provide for the safety and protection of property as set forth in the GENERAL CONDITIONS. Report immediately to the owners thereof and promptly repair damage to existing facilities resulting from construction operations.
2. Names and telephone numbers of representatives of agencies and utilities having jurisdiction over streets and utilities in the Work area can be obtained from Owner for the utilities listed below. Concerned agencies or utilities shall be contacted a minimum of 24 hours prior to performing Work, closing streets and other traffic areas, or excavating near underground utilities or pole lines.
    a. Water.
    b. Gas.
    c. Sanitary sewers.
    d. Pipeline companies.
    e. Telephone.
    f. Electric.
    g. Municipal streets.
    h. State highways.
    i. Fire.
    j. Police.
3. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.
4. The applicable requirements specified for protection of the Work shall also apply to the protection of existing property of others.
5. Before acceptance of the Work by Owner, restore all property affected by Contractor's operations to the original or better condition.

C. Temporary Dust Barriers

1. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

D. Temporary Noise Barriers

1. Comply with all OSHA and County restrictions and regulations.

E. Temporary Barricades

1. Furnish, install, and maintain suitable barricades as required to prevent public entry, protect the public, and to protect the Work, existing facilities, trees, and plants from construction operations. Remove when no longer needed or at completion of Work.
2. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards or regulatory agencies.
3. Barricades shall be of a neat and reasonable uniform appearance, structurally adequate for the required purposes.
4. Maintain barricades in good repair and clean condition for adequate visibility.
5. Relocate barricades as required by progress of Work.
6. Repair damage caused by installation and restore area to original or better condition. Clean the area.

F. Temporary Fencing

1. Where fences are to be breached on private property, the owners thereof shall be contacted and arrangements made to ensure proper protection of any pets, livestock or other property thus exposed.
2. Provide temporary commercial grade 6 foot high chain link fence around areas where required to secure site; equip with vehicular gates and locks.

G. Temporary Security Barriers

1. Provide security as required to insure public safety, look after the interest of Contractors and keeping unauthorized personnel away from the construction area, Equipment and Material storage areas, and possible threats to the Work and other property by rain, wind, fire, malicious damage, and other hazards. Situations requiring attention shall be reported to the proper persons immediately or as soon as possible.
2. Provide temporary commercial grade 6 foot high chain link fence around construction areas where required to secure site; equip with vehicular gates and locks.
3. Provide Owner two keys to lock.

H. Temporary Security Enclosures

1. Provide temporary enclosure as required as Work progresses, to provide acceptable working conditions, weather protection for interior materials, allow for effective temporary heating, and to prevent entry of unauthorized persons.
2. Provide temporary exterior doors with hardware, including being lockable.
    a. Other enclosures shall be removable as necessary for Work and for handling of materials.
3. Provide temporary roofing as required to protect work and equipment.

4. Provide security and facilities to protect Work from unauthorized entry, vandalism, or theft.
5. Coordinate with Owner's security program.

1.7 TEMPORARY CONTROLS

A. Temporary Erosion and Sediment Control

1. Provide methods to control surface water to prevent damage to the Project, the Site, or adjoining properties.
2. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
    a. Hold the areas of bare soil exposed at one time to a minimum; maintain a roughened surface on all disturbed areas to minimize erosion potential.
    b. Provide temporary control measures such as berms, dikes, and drains.
3. Control fill, grading, and ditching to direct surface drainage away from excavations, pits, tunnels, and other construction areas; and to direct drainage to proper runoff.
4. Provide, operate, and maintain hydraulic (pumping) equipment of adequate capacity to control surface and groundwater.
5. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the Site or to adjoining areas.
6. Contractor to provide all permits as required.
7. Prepare and submit an erosion control plan within 10 days of Notice to Proceed.
8. Provide water barriers as required to protect site from soil erosion.

B. Temporary Pest Control

1. Provide pest control as necessary to prevent infestation of construction or storage areas.
    a. Employ methods and use materials which will not adversely affect conditions at the Site or adjoining properties.
    b. Should the use of pesticides be considered necessary, submit an informational copy of the proposed program to Owner with a copy to Engineer. Clearly indicate:
        1) The area or areas to be treated.
        2) The pesticides to be used, with a copy of the manufacturer's printed instructions.
        3) The pollution preventive measures to be employed.
2. The use of any pesticides shall be in accordance with the manufacturer's printed instructions and regulatory agencies.

C. Temporary Environmental Control

1. Debris Control and Clean-Up:
    a. Keep the premises free at all times from accumulations of debris, waste materials, and rubbish caused by construction operations and employees. Responsibilities shall include:
        1) Adequate trash receptacles about the Site, emptied promptly when filled.

2) Periodic cleanup to avoid hazards or interference with operations at the Site and to maintain the Site in a reasonably neat condition.

3) The keeping of construction materials such as forms and scaffolding neatly stacked.

4) Immediate cleanup to protect the Work by removing splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from walls, floors, and metal surfaces before surfaces are marred.

b. Prohibit overloading of trucks to prevent spillages on access and haul routes. Provide periodic inspection of traffic areas to enforce requirements.

c. Final cleanup is specified in DIVISION 1.

2. Pollution Control:

a. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of hazardous or toxic substances from construction operations.

b. Provide equipment and personnel, perform emergency measures required to contain any spillages, and remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-site in approved locations, and replace with suitable compacted fill and topsoil.

c. Take special measures to prevent harmful substances from entering public waters, sanitary, or storm sewers.

D. Site Watering for Dust Control

1. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and to prevent airborne dust from dispersing into the atmosphere.

1.8 PROJECT IDENTIFICATION

A. Temporary Project Signage

1. Identification Signs:

a. Construct to design, size, and material indicated.

b. Construct structure and framing of wood or metal, structurally adequate to resist design requirements of locality.

c. Construct sign surface of minimum one-inch thickness exterior grade plywood with medium density overlay. Panels shall be of size to minimize joints. Overall size shall be 4' x 8'.

d. Rough hardware shall be galvanized or aluminum.

e. Coating: Paint as specified in DIVISION 9 of colors selected by Owner and Engineer.

f. Information Content:

1) Project title, logo, and name of Owner as shown on Contract Documents.

2) Name, title, and logo of Engineer.

3) Name of prime Contractor.

4) Scheduled Contract completion date.

g. Contractor Identification:

1) If not part of Project identification sign, provide and install Contractor's standard sign.

h. Engineer Identification:

1) Engineer will furnish, install, and maintain his own signs.

i. Installation:

1) Project and Contractor Identification Sign(s):

a) Install in appropriate location so as not to obstruct traffic, pedestrians, or construction operations and as directed by Owner.

b) Erect on framing or foundation, and rigidly brace.

c) Maintain sign in good repair, in a clean and neat condition.

d) Remove upon completion of Project.

2. Informational Signs:

a. Construction:

1) This includes signs for traffic, construction workers, and general public in regards to directions, warnings, hazards, locations of areas, facilities, equipment, and others of a similar nature.

2) Provide signs of design, size, color, and lettering as required by regulatory agencies. Signs shall be painted metal, wood, plastic, or fiberglass and of materials suitable for the conditions in which they are placed, such as weathering and fading.

3) Construct structure and framing of wood or metal, such that they are structurally adequate to resist design requirements of area of Project.

b. Installation:

1) Install at appropriate locations and in sufficient quantities to assure visibility. Relocate as required by progress of Work.

2) Maintain signs in good repair, in a neat, clean, readable condition.

3) Remove all signs, framing, supports, and foundations upon completion of Project.

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 COMMON PRODUCT REQUIREMENTS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise specified or indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
2. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Continued Availability: Where, because of the nature of its application, Owner is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard products for which the manufacturer has published assurances that the products and its parts are likely to be available to Owner at a later date.
4. Conform to applicable Specifications, codes, standards, and regulatory agencies.
5. Comply with size, make, type, and quality specified, or as specifically approved in writing by Engineer.
6. Manufactured and Fabricated Products:
    a. Design, fabricate, and assemble in accordance with the best engineering and shop practices.
    b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
    c. Equipment and Materials shall be suitable for service conditions intended.
    d. Equipment capacities, sizes, and dimensions indicated or specified shall be adhered to unless variations are specifically approved in writing by Engineer.
    e. Provide labels and nameplates where required by regulatory agencies or to state identification and essential operating data.
7. Do not use products for any purpose other than that for which designed or specified.
8. To the fullest extent possible, provide products of the same kind from a single source.

1.2 PRODUCT OPTIONS

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete Project requirements in a timely manner, consult with Engineer to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Nameplates: Along with required labels and operating data, manufacturer or producer's nameplates, imprints, or trademarks may be placed on surfaces exposed to view.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Shipment Preparation:

1. Contractor shall require manufacturers and Suppliers to prepare products for shipment in a manner to facilitate unloading and handling, and to protect against damage, deterioration, or unnecessary exposure to the elements in transit and storage. Provisions for protection shall include the following:

a. Crates or other suitable packaging materials.

b. Covers and other means to prevent corrosion, moisture damage, mechanical injury, and accumulation of dirt.

c. Suitable rust-preventive compound on exposed machined surfaces and unpainted iron and steel.

B. Marking: Each product item shall be tagged or marked as identified in the delivery schedule or on Submittals. Complete packing lists and bills of material shall be included with each shipment. Each piece of every item need not be marked separately, provided that all pieces of each item are packed or bundled together and the packages or bundles are properly tagged or marked.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the Site and to prevent overcrowding of construction spaces. Allow ample time to avoid delay of the Work.

2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to the Site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected. Inspect shipment to assure:

a. Product complies with requirements of Contract Documents and reviewed Submittals.

b. Quantities are correct.

c. Containers and packages are intact and labels are legible.

d. Products are properly protected and undamaged.

5. Store products at the Site in a manner that will facilitate inspection and measurement of quantity or counting of units. Mark deliveries of component parts of Equipment to identify

the Equipment, to permit easy accumulation of parts, and to facilitate inspection and measurement of quantity or counting of units.

6. Store heavy Materials away from the Project structure in a manner that will not endanger the supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, and with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

8. Protect exposed machined surfaces and unpainted iron and steel as necessary with suitable rust preventive compounds.

9. Protect bearings and similar items with grease packing or oil lubrication.

10. Handle and store steel plate, sheet metal, and similar items in a manner to prevent deformation.

11. For storage of pipe and other products on easements and rights-of-way in residential and commercial areas, do not exceed the minimum required by scheduled laying operations, and conform to all requirements of public authorities. Store or place pipe along roads, set back from shoulder or curb, and at an angle tending to deflect vehicles if struck. Place or block pipe to preclude its accidental movement.

B. Handling:

1. Provide equipment and personnel necessary, to unload and handle products, by methods to prevent damage or soiling to products, or packaging.

2. Handle by methods to prevent bending or overstressing. Where lifting points are designated, lift components only at those points.

3. Provide additional protection to surrounding surfaces as necessary to prevent damage.

C. Maintenance of Storage:

1. Inspect stored products on a scheduled basis.

2. Verify that storage facilities comply with manufacturer's product storage requirements, including environmental conditions continually maintained.

3. Verify that surfaces of products exposed to elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.

D. Installation of Products:

1. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place except as required for proper movement and performance, and accurately located and aligned with other Work.

a. Obtain and distribute copies of manufacturer's printed instructions and recommendations if not a part of Submittals, containers, or packaging to parties involved in the installation, including a copy to Engineer and Resident Project Representative.

b. Maintain one complete set of instructions at the Site during installation and until completion.

c. Handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformance with specified requirements. Should job conditions

or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.

2. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

E. Protection After Installation:

1. Provide substantial coverings as necessary to protect installed products from damage from subsequent construction operations. Remove coverings when no longer needed or as specified.

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 EXECUTION AND PREPARATION

A. Construction Surveying:

1. Contractor shall verify layout information shown in the Contract Documents, in relation to the property survey and existing benchmarks, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
    a. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.
    b. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.
2. Establish and maintain a minimum of 2 permanent benchmarks on the site, referenced to data established by survey control points.
    a. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
3. The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction.
    a. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping.
4. The Contractor shall include in his Bid retaining and paying all associated costs for the following:
    a. Registered land surveyor for project layout;
    b. Registered land surveyor to complete as-built survey at completion of the project.
5. Work from established lines and levels. Establish benchmarks and markers to set lines and levels for the construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.
    a. Advise entities engaged in construction activities of marked lines and levels provided for their use.
    b. As construction proceeds, check every major element for line, level, and plumb.
6. Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations.
7. Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels, and control lines and levels required for mechanical and electrical work.
8. Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate

with local authorities having jurisdiction.

9. At the completion of work, complete an as-built site survey covering the same site area, extent of detail, and scale as included in the Contract Documents; also including all changes and improvements resulting from work under this contract. Provide final Project Record Document in accordance with Section 01 70 00.

B. Field Engineering:

1. Contractor shall provide field engineering, such as structural design of formwork, scaffolding, special earthwork, hydraulic groundwater control design, storm water pollution prevention plans or other civil engineering work, are only broadly covered due to the specialized requirements of portions of the Work, and some requirements are be specified in other appropriate Sections.

C. Protection of Adjacent Construction

1. Refer to Section 01 10 00.

1.2 EXECUTION

A. Application, Erection, Installation, Bracing and Anchoring, Existing Products:

1. Refer to applicable Sections of the Contract Documents.

B. Cutting and Patching:

1. General:

a. Cutting and patching includes cutting into existing construction to provide for the installation of Work, and the repair required to restore materials to their original or better condition.

1) Cutting and patching is performed for coordination of the Work, to uncover Work for access or inspection, to obtain samples for testing, to permit alterations to be performed, or for other similar purposes.

2) Cutting and patching performed during the manufacture of products or during the initial fabrication, erection, or installation process is not considered to be cutting and patching under this definition. Drilling of holes to install fasteners and similar operations is also not considered to be cutting and patching

2. Submittals:

a. Cutting and Patching Proposal: Submit a proposal to the appropriate agency describing procedures well in advance of the time cutting and patching will be performed if Owner requires approval of these procedures before proceeding. Request approval to proceed. Include the following information, as applicable, in the proposal:

1) Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.

2) Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the appearance and other significant visual elements.

3) List products to be used and firms or entities that will perform Work.

4) Indicate dates when cutting and patching will be performed.

5) List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6) Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.

7) Approval by Engineer to proceed with cutting and patching does not waive Engineer's right to later require complete removal and replacement of unsatisfactory Work.

3. Quality Assurance:

a. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.

b. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.

c. Visual Requirements: Cut and patch asphalt areas along a straight edge along the limits of excavation. All saw cut shall be 90º to one another. Where the limits of excavation is within two feet (2-ft) of an existing saw cut, edge of asphalt, or transition to concrete, extend the cut and patch to this existing edge. For concrete pavement, cut and patch entire concrete section to the next expansion or control joint.

4. Warranty:

a. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

5. Materials:

a. General: Except as otherwise indicated, specified, or as directed by Engineer, use materials for cutting and patching that are identical to existing materials. If identical materials are not available or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

6. Execution

a. Inspection:

1) Before cutting, examine the surfaces to be cut and patched and the conditions under which the Work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the Work.

b. Preparation:

1) Temporary Support: Provide adequate temporary support of Work to be cut to prevent failure.

2) Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of

the Project that may be exposed during cutting and patching operations. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3) Precautions: Take precautions not to cut existing pipe, conduit, or other utilities, until provisions have been made to bypass them if needed.

c. Performance:

1) General:

a) Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete Work without delay.

i. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

d. Cutting:

1) Cut existing construction using methods that are least likely to damage elements to be retained, or adjoining construction. Where possible, review proposed procedures with the original installer.

2) In general, when cutting use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and asphalt using a cutting machine such as a carborundum saw or diamond core drill. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

3) Comply with requirements of applicable Sections where cutting and patching requires excavating and backfilling.

4) The equipment used for excavation must be equipped with pads for stabilizers so as not to damage the street pavement. Front-end loader buckets should have a plank or buffer between the bucket and the street. If adjoining pavement, curb and gutter, or sidewalk is damaged during construction, the damaged improvements shall be removed by cutting back an additional distance to remove the damaged asphalt pavement or to the next joint for concrete structures.

5) Bypass utility services such as pipe and conduit before cutting, where such utility services are shown or required to be removed, relocated, or abandoned. After bypass and cutting, cap, valve, or plug and seal tight remaining portion of pipe to prevent entrance of moisture or other foreign matter.

6) The Contractor shall cut the pavement for a clean straight edge 8”-12” outside the trench limits to allow clean removal and a good surface for proper patching.

7) All damaged edges of pavement or soft shoulders shall be saw cut and removed and the base compacted.

e. Patching:

1) Immediately prior to patching, the Contractor shall remove the top 5-inches of Class 6 ABC on the trench and recondition the backfill as necessary to meet the compaction standards. Compaction tests shall be taken and submitted to the Engineer.

2) Paved surfaces shall be restored to their original line and grade and finished to match adjacent undisturbed surfaces.

3) Sawcuts that extend beyond the patch shall be sealed.

4) The Contractor shall be responsible for the maintenance of the patch for a period of two (2) year or until it is removed and replaced by the Owner.

5) Asphalt and concrete patching shall comply with the requirements of applicable Sections.

1.3 CLEANING AND WASTE MANAGEMENT

A. Cleaning Agents:

1. Use only cleaning agents and methods recommended by Manufacturer of surface material to be cleaned.

2. Use cleaning materials only on surfaces recommended by cleaning material Manufacturer; Do not use cleaning materials damaging to surfaces.

3. Do not use cleaning materials creating hazards to health or property.

B. Progress Cleaning:

1. Thoroughly clean areas and spaces where Work is performed. Remove dirt, dust, grease, paint splatter, mortar, oils, sealants, and items of similar nature. Thoroughly clean piping, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

2. Street and Off-Site Cleanup:

a. Vehicles used to haul materials off-site shall be constructed or loaded so as to prevent any leaking of materials from the vehicle. Contractor shall be responsible for keeping sidewalks, lawns, parking areas and streets clear of all construction materials, debris, gravel, rock and dirt attributed to the Contractor or his Subcontractors. Clean-up shall be on a daily and/or “upon request” basis as determined by the Engineer.

b. Contractor shall plan operations to minimize the need for cleaning street areas adjacent to the construction site, access roads, and haul routes utilized for Work under this Contract. The use of water to perform cleaning work shall be held to a minimum. Contractor shall provide self-propelled pickup sweepers for pavement cleaning and for debris removal. As a minimum:

1) Clean streets in accordance with local street use requirements.

2) Clean streets used for hauling excavated material from the work site to the nearest arterial or for a minimum distance of three blocks at the end of each shift of hauling excavated materials.

3) Clean streets of debris from installation of systems or other construction activities.

4) Prohibit overloading of trucks to prevent spillages on access road and haul streets.

5) Water wash staging areas once per week or more frequently as needed to control dust.

6) Provide wheel wash facilities to remove dirt, clay, stones, or other deposits from the tires or between wheels before trucks and/or other equipment be allowed to travel over paved streets.

a) Water used for washing vehicles and equipment shall not be allowed to enter storm drains unless sediment, petroleum products, fresh concrete products, or other deleterious materials are separated prior to drainage.

7) Transportation of excavated material by vehicles driven or moved on public streets or highways shall conform to the requirements of the local jurisdictions.

C. Site Maintenance:

1. Execute periodic cleaning. Keep work, site, and adjacent properties free from accumulation of construction waste materials, rubbish, and windblown debris.

a. Protect new materials from damage by construction debris.

b. Dispose daily all flammable, hazardous, and toxic waste materials. Storage of these materials will not be permitted on the interior of the building.

1) Disposal and storage shall be in accordance with federal, state and local fire codes and regulations.

D. Construction Waste Management and Disposal:

1. Provide on-site containers for collection of waste materials, debris, and rubbish.

a. Periodically remove from site.

b. Dispose of legally at disposal areas away from site.

2. Store volatile wastes in covered metal containers and remove from premises daily. Prevent accumulation of wastes which create hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.

3. Debris Control:

a. Maintain all areas free of extraneous debris.

b. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking areas, and along access roads and haul routes.

1) Provide containers for deposit of debris as specified.

2) Prohibit overloading of trucks to prevent spillages on access and haul routes.

a) Provide periodic inspection of traffic areas to enforce requirements.

c. Schedule periodic collection and disposal of debris as specified. Provide additional collection and disposal of debris whenever the periodic schedule is inadequate to prevent accumulation.

d. Keep storm sewers free of debris or extraneous materials.

E. Final Cleaning:

1. Provide final cleaning operations when indicated. Employ experienced workers or

professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected in a normal commercial building cleaning and maintenance program, complying with manufacturer's instructions.

2. Cleaning to include all exposed surfaces and materials within the limits of construction, whether installed by the Contractor, installed by the Owner, or existing prior to the beginning of this project.
    a. The extent of cleaning existing facilities (remodel and/or addition projects) shall apply only to those areas of new work, or existing areas impacted by the construction activities, even if simply due to workmen passing through the space.
3. Complete the following cleaning operations before requesting review for certification of Substantial Completion for the entire Project or a portion of the Project. Cleaning shall include adjacent existing surfaces, such as, but not limited to, walls, floors, ceilings and glazing, that have been affected by the construction activity.
    a. Clean the Project Site, yard and grounds, in areas disturbed or impacted by construction activities, including landscape development areas, of rubbish, waste material, litter, and foreign substances.
    b. Sweep paved areas broom clean, and wash.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove all rubber tire marks and other discoloration from all new concrete paving, and all existing concrete paving impacted by construction activities.
    e. Remove petrochemical spills, stains, and other foreign deposits.
    f. Remove tools, construction equipment, machinery, and surplus material from the site.
    g. Remove snow and ice to provide safe access to the building.
    h. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    i. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    j. Broom and mop clean concrete floors and floors finished with V.C.T., sheet vinyl, and similar surfaces.
    k. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo, if required.
    l. Clean transparent materials, including mirrors and glass (both sides) in doors and windows. Remove glazing compounds and other substances that are noticeable vision obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    m. Remove labels that are not permanent labels.
    n. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
        1) Do not paint over “UL” and similar labels, including mechanical and electrical nameplates.

o. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

p. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. Clean food-service equipment to a sanitary condition, ready and acceptable for its intended use.

s. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs and defective and noisy starters in fluorescent and mercury vapor fixtures.

t. Leave the Project clean and ready for occupancy.

4. Rid the project of rodents, insects and other pests that may have entered as a result of the work.

5. Removal of Protection: Remove temporary protection and facilities installed for protection and administration of the work during construction. Restore landscaping and other repair as necessary or required.

6. Compliances: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner. Do not use Owner's containers for trash generated by cleaning or construction.

   a. Where extra materials of value remaining after completion or associated work have become Owner's property, arrange for disposition of these materials as directed.

   b. Extra materials of value remaining after completion of associated Work become Owner's property. Dispose of these materials as directed by Owner.

7. Repairs:

   a. Repair damaged protective coated surfaces.

   b. Repair roads, walks, fences, and other items damaged or deteriorated because of construction operations.

   c. Restore all ground areas affected by construction operations.

1.4 STARTING AND ADJUSTING

A. Checkout Procedures:

   1. Refer to Section 01 79 00.

B. Startup Procedures:

   1. Refer to Section 01 79 00.

1.5 PROTECTING INSTALLED CONSTRUCTION

A. Refer to Section 01 60 00.

1.6 CLOSEOUT PROCEDURES

A. Comply with requirements stated in conditions of the Contract and in specifications for administrative procedures in closing out the Work.

B. Operation and Maintenance Instructions: Arrange for each installer of Equipment that requires regular maintenance to meet with Owner's personnel at Project Site to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Instruction books and operating manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards, hazardous chemicals data sheets.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

C. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

D. Manufacturer’s Field Services:

1. Refer to respective specification sections.

E. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

F. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.7 SUBSTANTIAL COMPLETION

A. Preliminary Closeout Reviews:

1. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
    a. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100% completion for the portion of the Work claimed as Substantially Complete.
        1) Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Price.
        2) If 100% completion cannot be shown, include a list of incomplete items, the value of incomplete work, and reasons the Work is not complete.
    b. Advise Owner of pending insurance changeover requirements.
    c. Submit specific warranties, workmanship Bonds, maintenance agreements, final certifications, and similar documents.
    d. Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities.
    e. Submit record drawings, instruction books and operating manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
    f. Deliver tools, spare parts, extra stock, and similar items.
    g. Make final changeover of locks and transmit key to Owner. Advise Owner's personnel of changeover in security provisions.
    h. Complete start-up testing of systems and instruction of Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the Site, along with construction tools, and similar elements.
    i. Complete final cleanup requirements, including touch-up painting.
    j. Touch up and otherwise repair and restore marred, exposed finishes.
2. Inspection Procedures: On receipt of a request for inspection, Engineer will either proceed with inspection or advise Contractor of unfilled requirements. Engineer will prepare the Certificate of Substantial Completion following inspection or advise Contractor of construction that must be completed or corrected before the certificate will be issued.
    a. Engineer will repeat inspection when requested and assured by Contractor that the Work is Substantially Complete.
    b. Results of the completed inspection will form the basis of requirements for final acceptance.

1.8 FINAL ACCEPTANCE

A. Final Closeout Review:
1. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
    a. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.

b. Submit an updated final statement, accounting for final additional changes to the Contract Price.

c. Submit Record Documents including record drawings, record specifications, record product data, etc.

d. Submit a certified copy of Engineer's final inspection list of items to be completed or corrected, endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by Engineer.

e. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the Date of Substantial Completion or when Owner takes possession of and assumed responsibility corresponding elements of Work.

f. Submit consent of Surety to final payment.

g. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

h. Submit a final liquidated damages settlement statement.

i. Submit executed Notice of Final Acceptance.

2. Re-inspection Procedure: Engineer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to Engineer.

a. Upon completion of re-inspection, Engineer will prepare a certificate of final acceptance. If the Work is incomplete, Engineer will advise Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

b. If necessary, the re-inspection procedure will be repeated.

1.9 CLOSEOUT SUBMITTALS

A. Completion and Correction List:

1. Provide submittals to Engineer that are required by governing or other authorities.

2. Submit a certificate signed by the land surveyor or professional engineer certifying the location and elevation of improvements.

3. Submit a record of Work performed and record survey data as required within this Section.

4. Refer to Sections 01 33 00 and respective specification sections.

B. Warranties, Guarantees, Bonds, and Permits:

1. General Warranty and Warranty of Title:

a. Contractor shall supply a 2-year general warranty for all Work in accordance with the Contract Documents.

b. Refer to the General Conditions.

2. Obtain and assemble executed certificates, warranties, bonds, receipts for extra stock, permits signed by any authorities having jurisdiction, and any required service and maintenance contracts from the respective manufacturers, suppliers, and Subcontractors. These may be tabbed in the front of the General Operation and Maintenance Manual provided they do not over-fill the binder(s).

3. Verify that documents are in proper form, contain full information, and are notarized.
4. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.
5. Co-execute submittals when required.
6. Submittal of warranties, bonds, extra stock and permit manual to match submittal requirements of the Contract Documents.
7. Provide Table of Contents neatly typed, in complete and orderly sequence. Include complete information for each of the following:
    a. Product or work item.
    b. Firm, with name of principal, address, and telephone number.
    c. Scope.
    d. Date of beginning of warranty or service and maintenance contract.
    e. Duration of warranty or service maintenance contract.
    f. Proper procedure in case of failure.
    g. Instances which might affect validity of warranty or bond.
    h. Contractor, name or responsible principal, address, and telephone number.
8. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
9. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
10. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.
11. Furnish two (2) executed copies, except furnish three (3) additional confirmed copies required for inclusion into Operation & Maintenance manuals.

C. Project Record Documents:

1. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
    a. Record information concurrently with construction progress.
    b. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Mark each document "PROJECT RECORD" in neat, large, printed letters.
    c. Mark new information that is important to Owner but was not shown on Contract Drawings or Shop Drawings.
    d. Note related Change Order numbers where applicable.

e. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

f. Include the following:

1) Depths of various elements of foundation in relation to finish first floor datum.

2) Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

3) Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of construction.

4) Where Submittals are used for mark up, record a cross reference at corresponding location on Drawings.

5) Field changes of dimension and detail.

6) Changes made by Change Order or other Modifications.

7) Details not on original Contract Drawings.

2. Record Specifications: Maintain 1 complete copy of the Contract Documents including Addenda. Include with the Contract Documents one copy of other written construction documents, such as Change Orders and Modifications issued in printed form during construction.

a. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

b. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.

c. Note related record drawing information and product data.

d. Upon completion of the Work, submit record Specifications to Engineer for Owner's records.

e. Include the following:

1) Manufacturer, trade name, catalog number, and Supplier of each product and item of Equipment actually installed, particularly optional and substitute items.

2) Changes made by Addendum, Change Order, or other Modifications.

3) Related Submittals.

3. Record Product Data: Maintain one copy of each product data Submittal. Note related Change Orders and markup of record drawings and Specifications.

a. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Site and from the manufacturer's installation instructions and recommendations.

b. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.

c. Upon completion of markup, submit a complete set of record product data to Engineer for Owner's records.

4. Record Samples Submitted: Immediately prior to Substantial Completion, Contractor shall

meet with Engineer and Owner's personnel at the Project Site to determine which Samples are to be transmitted to Owner for record purposes. Comply with Owner's instructions regarding packaging, identification, and delivery to Owner.

5. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and Submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to Engineer for Owner's records.

6. Instruction Books and Operating Manuals: Organize operation and maintenance data into suitable sets of manageable size as specified in Section 01 33 00.

D. Spare Parts:

1. Products Required:

a. Provide to Owner the quantities of products, spare parts, maintenance tools, and maintenance materials specified in individual Sections, in addition to that required for completion of Work.

b. Products shall be identical to those installed in the Work. Include quantities required from Supplier or manufacturer of original purchase to avoid variations in manufacture.

2. Storage, Maintenance:

a. Coordinate with Owner. Deliver and unload spare products to Owner at Project Site and obtain receipt prior to final payment.

b. For portions of Project accepted and occupied by Owner prior to Substantial Completion, deliver the applicable spare products to owner at time of acceptance. Obtain receipt.

c. Maintain spare products in original containers with labels intact and legible, until delivery to Owner.

d. Store the items in a clean, dry, heated, storage shed, or bonded warehouse.

e. Protect all items from damage during storage. Store in sturdy wooden boxes or crates with lid.

1.10 DEMONSTRATION AND TRAINING

A. Refer to respective specification sections.

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 01 79 00
STARTING, DEMONSTRATION AND TESTING OF SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. General:

1. Start-up, pre-demonstration and demonstration of facility, systems or equipment.
2. Personnel training.
3. Related systems start-up and demonstration period requirements.
4. Contractor shall pay all costs associated with system or facility start-up.

1.2 DEFINITIONS

A. Project System: Specific system, consisting of an independent arrangement of equipment, structures, components, piping, wiring, materials or incidentals that performs an identifiable function which is both operational and safe.

B. Pre-Demonstration Period: Period of time, prior to and separate from the Demonstration Period of unspecified duration after initial construction and installation which Contractor, with assistance from manufacturer's authorized representative, completes all work necessary, to make the system ready for the Demonstration Period.

1. Perform the following activities in sequence:
    a. Initial equipment start-up.
    b. Instrument check and final calibration.
    c. Equipment performance and functional testing in accordance with Division 1 and related technical sections.
    d. Correction of all discrepancies or functions prior to Demonstration Period.
    e. Personnel training.

C. Demonstration Period: Period of time, of specified duration, following Pre-Demonstration Period, during which Contractor, with assistance from manufacturer's authorized representative, completes all work necessary to complete the Demonstration Period and commission the systems.

D. Related System: Equipment or subsystem whose function is necessary for the start-up, testing and operation of the Project System as a whole.

E. Project Milestones: Reference Division 1.

F. Substantial Completion: Reference General Conditions, Supplementary Conditions, and Division 1.

1.3 SUBMITTAL

A. General:

1. Submit in chronological order listed below prior to completion of Pre-Demonstration Period:
    a. Master operation and maintenance training schedule:
        1) Submit 60 days (minimum) prior to first training session for Owner's personnel.

2) Schedule to include:
    a) Target date and time for Owner witnessing initial start-up of each system.
    b) Target date and time for Operation and Maintenance training for each system, both field and classroom.
    c) Target date for initiation of Demonstration Period.
3) Submit for review and approval by Owner.
4) Include holidays observed by Owner.
5) Attend a schedule planning and coordination meeting 45 calendar days prior to first anticipated training session:
    a) Provide a status report and schedule-to-complete for requirements prerequisite to manufacturer's training.
    b) Identify initial target dates for individual manufacturer's training sessions.
6) Owner reserves the right to insist on a minimum 7 days' notice of rescheduled training session not conducted on master schedule target date for any reason.
7) Resubmit schedule until approved.

2. Preliminary O&M Manual Submittal with all revisions incorporated:
    a. Submit 30 days (minimum) prior to start-up of equipment or system.
    b. In accordance with Section 01 33 00 submit detailed testing procedures for shop tests, field performance tests, and final acceptance tests as specified in the various equipment sections. Submittals shall at a minimum include the following:
        1) Test procedures.
        2) Copies of test reports.
        3) Copies of Supplier's field service technician's reports.
3. Substantial Completion Submittal:
    a. File Contractor's Notice of Substantial Completion, Request for Inspection and documentation under provisions of Section 01 70 00.
    b. Approved Operation and Maintenance manuals received by Engineer and Owner minimum 14 days prior to scheduled training.
    c. Written request for Engineer and/or Owner to witness each system pre-demonstration start-up. Request to be received by the Engineer a minimum of two weeks before scheduled start-up. Longer lead time may be required to coordinate with Owner's personnel.
    d. Equipment installation and pre-demonstration start-up certifications.
    e. Letter from Contractor verifying successful completion of all pre-demonstration start-up activities including receipt of all specified items from manufacturers or suppliers as final item prior to initiation of Demonstration Period.
    f. Letter from Contractor verifying successful completion of Demonstration Period start-up activities, systems, and equipment start-up.

1.4 SEQUENCING AND SCHEDULING

A. Contractor shall submit a sequencing and scheduling plan in accordance with Section 01 33 00 for the starting, demonstration and testing of the project related systems.

1.5 SYSTEM STARTUP AND ADJUSTING

A. Checkout Procedures:

1. Satisfactorily complete and confirm all pipe, wire and instrumentation tests as specified in the individual specification sections prior to starting equipment.
2. Coordinate schedule for start-up of various equipment and systems.
3. Notify the Owner and Engineer 14 days prior to start-up of each item.
4. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions that may cause damage.
5. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
6. Verify wiring and support components for equipment are complete and tested.
7. Execute start-up under supervision of responsible manufacturer's authorized representative in accordance with manufacturers' instructions.
8. When specified in individual specification Sections, require manufacturer to authorize and provide factory trained representative with field experience with the specific piece of equipment to be present at site to inspect, check and approve equipment and system installation prior to start-up, and to supervise placing equipment and system in operation.
9. Submit a written report in accordance with Section 01 33 00 that equipment or system has been properly installed and is functioning correctly.

B. Startup Procedures

1. Start-up divided into two periods:
    a. Pre-Demonstration Period including performance of the following activities in sequence:
        1) Completion of Work to prepare facility, systems and equipment for Demonstration Period.
        2) Submission, resubmission as may be required and filing of all required submittals including but not limited to:
            a) Preliminary O&M Manuals.
            b) Equipment check lists.
            c) Loop checks.
            d) Calibration records.
        3) Training of personnel.
        4) Start-up of equipment.
    b. Demonstration Period including:
        1) Demonstration of functional integrity of facility or system.
        2) Review of approved preliminary O&M Manuals with Owner.

3) Training of personnel.

4) Filing of Contractor's Notice of Substantial Completion and Request for Inspection.

2. Operation and Maintenance Manuals for equipment and system scheduled for start-up and training.

a. Prepare and submit manuals prior to delivery of equipment and systems as specified.

b. Confirm preliminary O&M manuals with all required revisions and updates are available and in Owners possession prior to commencing training activities.

c. Start-up and demonstration period operations are not considered complete, nor will start-up and demonstration period payments be made, until the manufacturer's authorized representative completely and thoroughly reviews the approved preliminary O&M manual with Owner during the equipment training session.

d. Requirements for individual components may vary with construction staging, time, performance testing stipulations, construction schedule, etc. Individual equipment start-up and performance testing requirements may exceed the Related System Demonstration Period requirement.

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION

3.1 MANUFACTURER'S FIELD SERVICES

A. Services Required:

1. Services with Equipment and Materials Furnished Under this Contract:

a. Furnish the services of qualified field personnel from the Suppliers or manufacturers of Equipment furnished and installed under this Contract, as required to perform all manufacturer's Field Services called for in the Specifications. Field personnel shall be certified by the Supplier or manufacturer of the specific product or system as having the necessary knowledge and experience to perform the required functions.

b. Where such service is specified, Contractor shall not perform any Work related to the installation or operation of Equipment furnished and installed under this Contract without direct observation and guidance of the Supplier's or manufacturer's field personnel unless Engineer concurs otherwise.

c. Contractor shall arrange for the Supplier's or manufacturer's field personnel to perform the following:

1) Observe the erection, installation, start-up and testing of Equipment.

2) Instruct and guide Contractor in proper procedures.

3) Supervise the initial start-up, operational check, and any required adjustments of Equipment.

4) Instruct Owner's designated personnel in proper operation and maintenance of all Equipment.

5) Furnish a written report to Engineer covering all Work done at least once each week and when Work on each item of Equipment or system is completed.

d. Advise Owner and Engineer of arrival at the Site of all Supplier's and manufacturer's field personnel.

B. Operation and Testing:

1. Place all Equipment in Operation:

a. Place all Equipment installed under this Contract into successful operation according to instructions of the Supplier, manufacturer, or field representative, including making all required adjustments, tests, operation checks, and the following:

1) Cleaning, sounding, blowing-out, and flushing of lubricating oil and water systems, and other pipelines.

2) Lubrication.

3) Tests of lubrication system safety interlocks and system performance.

4) Final alignment checks and measurements made under observation of Owner. Alignment checks shall include opening connections, if required, to ensure there are no abnormal stresses on Equipment from pipes, ducts, or other attachments. Alignment shall be within tolerances specified by the manufacturer, and measurements shall be recorded and furnished to Engineer and Owner.

5) Motor rotation checks before connecting couplings.

6) Inspection of sleeve bearings for adequate contact.

7) Checking of anchor-bolt tensions, trout, and shims. Tighten anchor bolts with calibrated torque wrenches using care not to over stress bolts.

b. After "run-in" and acceptance of alignment, affix major Equipment in place using standard tapered dowels with jack-out nuts at head end to facilitate removal.

c. Record all above operations on forms furnished by Engineer.

d. Furnish all necessary attendants and personnel as part of the work to accomplish the above operations until such time as individual items, systems, Equipment or sections of the plant are acceptable for operation by Owner.

e. Provide attendants on a continuous basis as required to complete events without interruption once they have been started.

f. Contractor shall provide fuel, electricity, water, and lubricants for placing Equipment in operation. Owner's operating personnel will assist.

2. Performance Tests:

a. Equipment Furnished Under this Contract:

1) Owner may conduct acceptance tests after installation to determine if the Equipment installed as part of the Word perform in accordance with Contract Documents. Substantial Completion will be based on acceptable results of such tests.

2) No tests will be conducted on Equipment for which Supplier's or manufacturer's Field Service is specified unless Supplier's or manufacturer's field representative is present and declares in writing that the Equipment is ready for such test.

3) Contractor will be notified by Owner so that Contractor can have a representative or manufacturer's representative present during any tests of Equipment for which Supplier's or manufacturer's Field Service is not specified.

b. The tests will be made as set forth in the Contract Documents unless the interested parties mutually agree upon some other manner of testing.

3.2 TESTING, ADJUSTING, AND BALANCING

A. Perform testing, adjusting and balancing in accordance with the requirements of the individual equipment Sections.

B. Reports will be submitted by an independent firm to the Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

C. SCADA / Controls Testing:

1. General requirements:

a. Test and inspect equipment and partially completed or fully completed portions of the work to prove compliance with Contract requirements.

b. Unless otherwise noted, pay all costs of testing, including temporary facilities and connections.

c. Test the following:

1) Equipment with one or more moving parts or devices requiring an electrical, pneumatic, or hydraulic connection.

2) Testing and balance for heating, ventilation, and air conditioning Systems as specified in the Contract Documents 15.

3) Electrical devices and Systems as specified in accordance with the Contract Documents.

4) Instrumentation devices and Systems as specified in the Contract Documents.

d. Receive Project Representative Approval for the application of all tests only after Project Representative Inspection of equipment for conformance with the Specifications.

e. Tests and inspections, unless otherwise specified or accepted, shall be in accordance with the recognized standards of the industry.

f. Provide the Engineer unrestricted access to attend and witness Component Testing.

g. Allow the Engineer unrestricted access to undertake System and Operational Testing and to support Commissioning.

2. Procedures:

a. Design testing procedures to duplicate, as nearly as possible, conditions of operation to insure that the equipment is not damaged. Once the testing procedures have been reviewed and approved by the Project Representative, organize by System into test packages and include the proper checkout, alignment, adjustment, and calibration signoff forms for each item of equipment and System.

b. Jointly use forms with the Project Representative to ensure that documentation for each electrical, mechanical, and instrumentation equipment item has been properly

recorded for installation and testing. Failure to follow the Project Representative approved procedure will result in non-acceptance of the equipment.

c. Fulfillment of the test and inspection requirements are by either of the following:

1) Tests and inspections carried out in Project Representative's presence, or

2) Certificates or reports of tests and inspections carried out by Project Representative approved persons or organizations.

d. Maintain the test packages, which contain tests and sign-off forms including, but not limited to, piping, equipment, electrical, and instrumentation. Submit test packages to the Owner for inspection upon request.

3. Phases:

a. Pre-operational Test Phase:

1) Test items at the place of manufacture during or on completion of manufacture. Tests are comprised of hydraulic pressure tests, electric and instrumentation subsystem tests, performance and operating tests and inspections.

2) Perform in accordance with the relevant standards of the industry if not specified in the Contract Documents. Tests other than those specified are in accordance with General Conditions.

3) When items are delivered to the site, remove all coverings, containers, or crates in order to permit the Project Representative to conduct the inspection to determine if the items are of the specified quality and workmanship, and are visually in good order and condition at the time of delivery. Should the Project Representative find, in its opinion, indication of damage or deficient quality of workmanship, provide the necessary documentation or conduct such tests to demonstrate compliance.

4) Leakage tests and other piping tests as specified in the Contract Documents.

b. Component Test Phase:

1) Vendor and Installation Contractor shall perform component testing as described in this Section.

2) Test equipment to the specified requirements before it is placed into operation.

3) Incorporate requirements of the Specifications into the installed tests and inspection procedures and proceed in a logical, step-wise sequence to ensure that the installed equipment has been properly assembled, serviced, aligned, adjusted, connected and calibrated prior to operation.

4) Perform all changes, adjustments, or replacements required to make the equipment operate.

5) Piping system pressure testing and cleaning as specified in the Contract Documents.

6) Electrical system testing as specified in the Contract Documents.

7) Instrumentation system testing as specified in the Contract Documents.

8) Preparing and completing a checklist to verify PLC discrete and analog outputs are connected to field devices.

9) Preparing and completing a checklist to verify discrete and analog inputs from field devices update PLC memory registers.

10) Testing, checking and correcting deficiencies of:

a) Power, control and monitoring circuits for continuity prior to connection to power source.

b) Voltage of all circuits.

c) Phase sequence.

d) Cleanliness of connecting piping systems.

e) Alignment of connected machinery.

f) Vacuum and pressure of all closed systems.

g) Lubrication.

h) Valve orientation and position status for manual operating mode.

i) Tankage integrity using clean water.

j) Instrumentation and control signal generation, transmission, reception and response.

k) Tagging and identification systems.

l) Proper connections, alignment, calibration and adjustment.

m) Calibrate all safety equipment.

n) Manually rotate or move moving parts to assure freedom of movement.

o) Bump electric motors to verify power and direction of rotation.

p) Demonstrate that limit switches have been calibrated.

11) Perform other tests, checks, and activities required to make component ready for System Test Phase.

c. System Test Phase:

1) Project Representative will provide System Testing schedule.

2) Provide all utilities, testing media, waste disposal, potable water, fuel, power, and chemicals required to complete System Testing.

3) Repair all defects discovered on Contractor installed Equipment during testing.

4) Be available to provide immediate assistance 24 hours per day, seven days per week, in case of failure of a portion of the System being tested.

d. Operational Test Phase:

1) Project Representative will provide Operational Test Schedule. A period of 30 days is required for the Operation Test Phase.

2) Provide all utilities, testing media, waste disposal, potable water, fuel, power, and chemicals required to complete Operation Testing.

3) Repair all defects on Contractor installed Equipment discovered during the Operation Testing.

4) Be available to provide immediate assistance 24 hours per day, seven days per week, in case of failure of a portion of the Facility.

5) See Section 01 70 00.

3.3 PRE-DEMONSTRATION PERIOD

A. As required to meet the project requirements, perform Pre-Demonstration as defined below:

1. Equipment Start-up:

a. Requirements for individual items of equipment are included in the Contract Documents.

b. Prepare equipment to operate properly and safely and be ready to demonstrate functional integrity during Demonstration Period.

c. Perform equipment start-up to extent possible without introducing product flow.

d. Test tanks, pumps, filters, and similar equipment requiring a fluid, using clean water supplied at Contractor's expense.

e. Dispose of water used for equipment start-up.

f. Prior to equipment startup:

1) Conduct leak and pressure testing of all tanks and piping. Remove or flush debris, and clean systems.

2) Check and confirm that all instrument and control loops are operational.

3) Complete all electrical system checks.

4) Make all submissions and resubmissions of manufacturer field reports, check lists, loop checks, calibration records and equipment installation certifications.

5) Make all submissions and resubmissions of preliminary O&M manuals.

g. Procedures include, but are not necessarily limited to the following:

1) Test, check and correct deficiencies of:

a) Power, control, and monitoring circuits for continuity prior to connection to power source.

b) Voltage of all circuits.

c) Phase sequence.

d) Cleanliness of connecting piping systems.

e) Alignment of connected machinery.

f) Vacuum and pressure of all closed systems.

g) Lubrication.

h) Valve orientation and position status for manual operating mode.

i) Tankage for integrity using clean water Pumping equipment using clean water.

j) Equipment operates within ranges specified and within manufacturers' acceptable limits.

k) Instrumentation and control signal generation, transmission, reception, and response under provisions of Section 01 33 00.

l) Tagging and identification systems.

m) All equipment: Proper connections, alignment, calibration and adjustment.

2) Calibrate all safety equipment.

3) Manually rotate movable parts to assure freedom of movement.

4) "Bump" start electric motors to verify proper rotation.

5) Perform other tests, checks, calibration and activities required to make equipment ready for Demonstration Period.

6) Provide all labor, supervision, calibrated instruments, calibrated measuring devices, utilities, chemicals, maintenance, equipment, vehicles or any other item necessary to start-up and operate all equipment and systems.

7) Perform other tests, checks, and activities required to make equipment ready for Demonstration Period.

8) Documentation:

a) Prepare log showing each equipment item subject to this paragraph and listing what is to be accomplished during equipment start-up.

i. Make all submissions and resubmissions required of preliminary log to Engineer prior to scheduling and performing start-up activities.

b) Provide place for Contractor to record date and person accomplishing required work. Submit completed document before requesting inspection for Substantial Completion certification.

h. Clean Water Testing:

1) Individual pieces of equipment.

a) Perform testing for all individual pieces of equipment.

b) Provide minimum 1 hour testing duration demonstrating successful continuous operation of each piece of equipment as instructed by and coordinated with Engineer.

c) Cycle equipment through its full specified range of operation a minimum of five times during testing duration.

d) Cycle equipment through its full capable range of operation a minimum of five times during testing duration.

2) Equipment Systems:

a) Testing shall be performed for all systems of equipment as defined below. Testing shall include the supporting systems, electrical, controls and instrumentation for the equipment defined below even they are not specifically identified.

b) System testing to commence only following successful clean water testing of individual pieces of equipment.

c) Provide minimum 1 hour testing duration demonstrating successful continuous operation of each system as determined by and coordinated with Engineer.

d) Cycle equipment through its full specified range of operation a minimum of five times during testing duration.

e) Cycle equipment through its full capable range of operation a minimum of five times during testing duration.

f) Operate and cycle all pieces of equipment comprising system at same time during the test, or as instructed by and coordinated with the Engineer.

g) Increase and decrease equipment speeds at the same time and rate, or as instructed by and coordinated with Engineer.

i. Obtain certifications, without restrictions or qualifications, and deliver to Engineer:

1) Manufacturer's equipment installation check letters.

2) Instrumentation supplier's instrumentation installation certificate.

3.4 DEMONSTRATION PERIOD

A. Demonstrate operation and maintenance of Products to Owner's personnel and consultants within 14 days prior to date of Substantial Completion unless specified otherwise by requirements of construction sequencing per Section 01 10 00.

B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.

D. Demonstrate the functional integrity of the mechanical, electrical, and control interfaces of the respective equipment and components comprising the facility or system as evidence of Substantial Completion.

E. During the Demonstration Period, if the aggregate amount of time used for repair, alteration, or unscheduled adjustments to any equipment or systems renders the affected equipment or system inoperative exceeding specification requirements or 10% of the Demonstration Period, the demonstration of functional integrity will be deemed to have failed. In the event of failure, a new Demonstration Period will recommence after correction of the cause of failure. The new Demonstration Period shall have the same requirements and duration as the Demonstration Period previously conducted.

F. Conduct the demonstration of functional integrity under full operational conditions.

G. Owner will provide operational personnel to provide process decisions affecting plant performance. Owner's, Engineer's and Owner consultants' assistance will be available only for process decisions. Contractor will perform all other functions including but not limited to equipment operation and maintenance until successful completion of the Demonstration Period.

H. Owner reserves the right to simulate operational variables, equipment failures, routine maintenance scenarios, etc., to verify the functional integrity of automatic and manual backup systems and alternate operating modes.

I. Duration of Demonstration Period: Minimum of two (2) consecutive days:

1. Time of beginning and ending of any Demonstration Period will be agreed upon by Contractor, Owner, and Engineer in advance of initiating Demonstration Period.

2. Length of Demonstration Period other than specified will be agreed upon by Contractor,

Owner and Engineer in advance of initiating Demonstration Period.

J. Provide knowledgeable personnel to answer Owner's questions throughout the Demonstration Period.

K. Provide final field instruction on select systems and respond to any system problems or failures which may occur.

L. Provide all labor, supervision, utilities, chemicals, maintenance, equipment, vehicles or any other item necessary to operate and demonstrate all systems being demonstrated.

M. One (1) successful demonstration period as defined above is required for each system defined herein, in accordance with Section 01 10 00 and individual technical sections.

N. Demonstration periods and other start-up requirements for individual system components may or may not be concurrent with Related Systems Demonstration Period.

O. Duration:

1. Provide 2 consecutive days for Related Systems Demonstration Period and Project System Demonstration Period.
2. Time requirements for Manufacturer's authorized field representative to be onsite are in addition to the durations listed in respective equipment specification sections of the Contract Documents.
3. Demonstration period may be shortened at the discretion of the Engineer and Owner if Related System and equipment is demonstrated to be fully functional and operational in automatic mode to the satisfaction of the Owner.
4. Shortening of the Related Systems Demonstration Period does not reduce, nor relieve the Contractor of demonstrating, start-up and testing requirements of individual pieces of equipment.

P. Failure of Demonstration:

1. If the aggregate amount of time to repair, alter or adjust individual equipment or systems result in equipment or systems being inoperable for 60 percent or greater of the Related Systems Demonstration Period, the demonstration of functional integrity will be deemed to have failed.
2. In the event of failure, the Related Systems Demonstration Period will recommence after correction of the cause(s) of failure.
3. Upon recommencing the Related Systems Demonstration Period, requirements and duration of start-up shall be the same as the initial attempt to demonstrate functionality.
4. Coordination and completion of a subsequent Related Systems Demonstration Period due to equipment failure or absence of required key personnel shall be conducted at no additional expense to the Owner.
5. Successful completion of Related Systems Demonstration Period is required per Section 01 10 00 for continuation of construction schedule. No additional contract time will be granted for time lost due to failure of Related Systems Demonstration Period.

3.5 PERSONNEL TRAINING

A. Reference individual equipment specification sections.

B. Conduct all personnel training after completion of equipment start-up for the equipment for which training is being conducted:

1. Personnel training on individual equipment or systems will not be considered completed unless:

a. All pre-training deliverables are received and approved before commencement of training on the individual equipment or system.

b. No system malfunctions occur during training.

c. All provisions of field and classroom training specifications are met.

2. Training not in compliance with the above will be performed again in its entirety by the manufacturer at no additional cost to Owner.

C. Field and Classroom Training Requirements:

1. Digitally record each training session using video media in accordance with the Contract Documents and submit per the requirements of the Contract Documents and classroom training requirements:

a. Hold classroom training on-site.

b. Notify each manufacturer specified for on-site training that Owner reserves the right to video record any or all training sessions. Organize each training session in a format compatible with video recording.

c. Training instructor: Factory trained and familiar with giving both classroom and "hands-on" instructions.

d. Training instructors: Be at classes on time. Session beginning and ending times to be coordinated with the Owner and indicated on the master schedule. Normal time lengths for class periods can vary; schedule and take brief rest breaks.

e. Organize and separate training sessions by maintenance and operation topics and identify on schedule.

f. Plan for minimum class attendance of 10 people at each session and provide sufficient classroom materials, samples, and handouts for those in attendance.

g. Instructors to have a typed agenda and well prepared instructional material. The use of visual aids, e.g., films, pictures, and slides is recommended for use during the classroom training programs. Deliver agendas to the Engineer a minimum of 7 days prior to the classroom training. Provide equipment required for presentation of films, slides, and other visual aids.

h. Cover information required in Operation and Maintenance manuals submitted according to Section 01 33 00 and following areas as applicable to project systems:

1) Operation of equipment.

2) Lubrication of equipment.

3) Maintenance and repair of equipment.

4) Troubleshooting of equipment.

5) Preventive maintenance procedures.

6) Adjustments to equipment.

7) Inventory of spare parts.

8) Optimizing equipment performance.

9) Capabilities.

10) Operational safety.

11) Emergency situation response.

12) Takedown procedures (disassembly and assembly).

i. Address above paragraphs a), b), h), i), j) and k) in the operation sessions.

j. Address above paragraphs c), d), e), f), g), and l) in the maintenance sessions.

k. Maintain a log of classroom training provided including: Instructors, topics, dates, time, and attendance.

l. Complete filing of all required submittals:

1) Shop Drawings.

2) Operation and Maintenance Manuals.

3) Training material.

3.6 CONTRACTOR'S SUBSTANTIAL COMPLETION NOTICE AND REQUEST FOR INSPECTION OF PROJECT OR PRS:

A. File the notice when the following have been completed:

1. Construction work (brought to state of Substantial Completion).

2. Equipment Start-up.

3. Personnel Training.

4. Submittal of required documents.

B. Engineer will review required submittals for completeness within 5 calendar days of Contractor's notice. If complete, Engineer will complete inspection of the Work, within 10 calendar days of Contractor's notice.

C. Engineer will inform Contractor in writing of the status of the Work reviewed, within 14 calendar days of Contractor's notice.

1. Work determined not meeting state of Substantial Completion:

a. Contractor: Correct deficiencies noted or submit plan of action for correction within 5 days of Engineer's determination.

b. Engineer: Reinspect work within 5 days of Contractor's notice of correction of deficiencies.

c. Reinspection costs incurred by Engineer will be billed to Owner who will deduct them from final payment due Contractor.

2. Work determined to be in state of tentative Substantial Completion: Engineer to prepare tentative "Engineer's Certificate of Substantial Completion."

3. Engineer's Certificate of Substantial Completion:

a. Certificate tentatively issued subject to successful Demonstration of functional integrity.

b. Issued for Project as a whole or for one or more PRS.

c. Issued subject to completion or correction of items cited in the certificate (punch list).

d. Issued with responsibilities of Owner and Contractor cited.

e. Executed by Engineer.

f. Accepted by Owner.

g. Accepted by Contractor.

D. Upon successful completion of Demonstration Period, Engineer will endorse certificate attesting to the successful demonstration, and citing the hour and date of ending the successful Demonstration Period of functional integrity as the effective date of Substantial Completion.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

F. Amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.7 COMMISSIONING

A. After completion of the Operational Test Phase and certification by the Project Representative that System and Operational tests meet performance requirements, the Owner will begin operating the Facility during the Commissioning period.

B. Prior to start of Commissioning, remove temporary piping that may have been in use during the operational tests.

C. Provide required labor to support Owner in order that the Facility attains its fully operational mode.

D. The Owner's operations and maintenance personnel will be responsible for operation of the Facility or portion thereof. The Facility shall be fully operational, capable of accepting design flows, and performing functions as designed.

E. The Owner is responsible for normal operational and routine maintenance cost including, but not limited to, electricity, lubricants and screenings disposal fees.

F. Contractor shall be responsible for all costs for necessary repairs or replacements required to keep the Facility operational.

G. Contractor shall be available to provide immediate assistance 24 hours per day, seven days per week, in case of failure of a portion of the System being operated.

H. The Commissioning period is 30 continuous days for all Related Systems for the Facility.

END OF SECTION

Attachment E

Forms for Affirmation of Compliance

Proposal Acknowledgement
Debarment Statement

EXHIBIT 1

PROPOSAL ACKNOWLEDGEMENT

The Respondent hereby acknowledges receipt of addenda numbers _____ through _____.

Falsifying this information is cause to deem your proposal nonresponsive and therefore ineligible for consideration. In addition, falsification of this information is cause to cancel a contract awarded based on one or both of the above preferences.

By signing below, you agree to all terms & conditions in this RFP, except where expressly described in your cover letter.

_____
Original Signature by Authorized Officer/Agent

Type or printed name of person signing	Company Name
Title	Phone Number
Vendor Mailing Address	Fax Number
City, State, Zip	Proposal Valid Until (at least for 90 days)
E-Mail Address	Website Address

Project Manager:

Name (Printed)	Phone Number
Vendor Mailing Address	Fax Number
City, State, Zip	Email Address

RFP #FL20-02-037

Ashcroft Draw Lift Station

Debarment/Suspension Certification Statement

The proposer certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by any Federal, State, County, Municipal or any other department or agency thereof. The proposer certifies that it will provide immediate written notice to the City if at any time the proposer learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstance.

DUNS # (Optional) _____

Name of Organization_____

Address_____

Authorized Signature_____

Title_____

Date_____

Attachment F

Phase 1 Fee and Rate Proposal Form

APPENDIX C TO THE RFP
Nitrification Phase 2
Price Proposal Spreadsheet

Spreadsheet Instructions:

Enter values only into the cells highlighted yellow. To arrive at the Proposer's calculated estimate of cost, enter the following values into the table:

1. Proposed Preconstruction Services Fee will automatically populate from the "Fee and Rate Worksheet" cells D13-D20
2. Estimated 90% GMP Contingency as a percentage to be used for the project into cell D23
3. Estimated General Conditions Fee on a $3M construction fee for GMP into cell D24
4. Proposed Overhead Cost percentage to be used for the project into cell D25
5. Estimated insurance and bond fees as a percentage of total construction cost into cell D26
6. Proposed Profit percentage to be used for the project into cell D27
7. Once cells D13 through 26 are populated, the spreadsheet will calculate the estimated total project cost and return the value to cell D27. This amount is a calculated estimate of total project cost and will be used for Price Proposal Evaluation

Note: Items C and F shall be in accoradance with the definitions provided in the RFP.

Item	Description	Unit	Amount
A	Total Pre-Construction Services Fee		
A1	*Administration of Pre-Construction Phase Services*	Lump Sum	$0
A2	*Construction Management Plan*	Lump Sum	$0
A3	*Project Design Meetings*	Lump Sum	$0
A4	*Scope, Schedule, and Budget Tracking*	Lump Sum	$0
A5	*Review of Design Documents*	Lump Sum	$0
A6	*Procurement Plan*	Lump Sum	$0
A7	*Confirmation of Existing Infrastructure*	Lump Sum	$0
A8	*Preparation of GMP*	Lump Sum	$0
	Total Construction Services Fee		
B	Estimate CMAR Contingency	%-age	
C	General Conditions Cost	Lump Sum	
D	Overhead Cost	%-age	
E	Profit	%-age	
F	Insurance and Bond Cost	%-age	
G	Calculated Estimate of Total Project Cost (For Price Evaluation Purposes)		$2,625,000

**The lump sum unit cost does not constitue the agreement type for preconstruciton services.*

ESTIMATED TOTAL PROJECT COST SUMMARY

COST CATEGORY		AMOUNT
PRECONSTRUCTION SERVICES:		
SUBTOTAL PRECONSTRUCTION SERVICES COST (Labor, materials, subcontracts, etc.):		$0
CONSTRUCTION SERVICES:		
DIRECT CONSTRUCTION COSTS: (Labor, materials, permanent equipment, subcontracts, etc.)		$2,500,000
Estimated CMAR Contingency (assuming GMP development at 90% design milestone)		$0
SUBTOTAL DIRECT CONSTRUCTION COST:		$2,500,000
INDIRECT CONSTRUCTION COSTS:		
General Conditions Cost (Job Indirect and Job Staff)		$0
SUBTOTAL DIRECT CONSTRUCTION + INDIRECT CONSTRUCTION:		$2,500,000
Overhead Cost (Project and Home Office)		$0
PROFIT (As a percentage of Subtotal Above)		$0
SUBTOTAL DIRECT CONSTRUCTION + INDIRECT CONSTRUCTION + OVERHEAD + PROFIT		$2,500,000
Insurance and Bond Cost		$0
SUBTOTAL DIRECT CONSTRUCTION + INDIRECT CONSTRUCTION + OVERHEAD + PROFIT + INSURANCE + BONDS		$2,500,000
Owner's Contingency/Allowances		$125,000
CALCULATED ESTIMATE OF TOTAL PROJECT COST		$2,625,000

Spreadsheet Instructions:

To arrive at the Proposer's calculated estimate of cost for Preconstruction services to be included in the Price Proposal Summary, enter the following values into the table:

1. Proposed Preconstruction Labor Force in cells B10-B47
2. Associated burden rate for the labor classification in the previous column in cells C10-C47
3. Complete the estimated hours for each element of the preconstruction services in cells D10 through K47
4. Once complete the cells are populated the final estimated cost for each element of the preconstruction services will be returned in cells D48-K48

		Phase 1 Preconstruction Hours							
Cost Element:		**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**
Labor Classification	**Burdened Rate ($/hr)**	*Administration of Pre-Construction Phase Services*	*Construction Management Plan*	*Project Design Meetings*	*Scope, Schedule, and Budget Tracking*	*Review of Design Documents*	*Procurement Plan*	*Confirmation of Existing Infrastructure*	*Preparation of GMP*
Project Executive	$ -								
(Additional Team Member)	$ -								
Project Manager	$ -								
Project Manager	$ -								
(Additional Team Member)	$ -								
Construction Manager	$ -								
Construction Manager	$ -								
(Additional Team Member)	$ -								
Project Superintendent	$ -								
Project Superintendent	$ -								
(Additional Team Member)	$ -								
Project Administrator	$ -								
(Additional Team Member)	$ -								
Project Field Engineer	$ -								
Project Field Engineer	$ -								
(Additional Team Member)	$ -								
Project Estimator Lead	$ -								
(Additional Team Member)	$ -								
(Additional Team Member)	$ -								
(Additional Team Member)	$ -								
(Additional Team Member)	$ -								
Project Schedule Lead	$ -								
(Additional Team Member)	$ -								
(Additional Team Member)	$ -								
(Additional Team Member)	$ -								
(Additional Team Member)	$ -								
Procurement Manager	$ -								
Quality Manager	$ -								
Project Accountant	$ -								
Buyer/Procurement Lead	$ -								
Safety Manager	$ -								
Commissioning/Startup Manager	$ -								
Start-up Engineer	$ -								
Other (identify)	$ -								
Other (identify)	$ -								
Other (identify)	$ -								
Other (identify)	$ -								
		$0	$0	$0	$0	$0	$0	$0	$0
Phase I Preconstruction Fee Total		$0							

Attachment G

Statement of Qualifications Checklist

Attachment G

Qualifications Checklist

Proposer shall submit the Statement of Qualifications checklist to verify that the proposer meets all project minimum requirements as specified by the Owner. The list is established as the minimum requirements to prequalify for the project and the proposer must represent that all minimum requirements have been met to prequalify for the project. The minimum requirements will not be verified until the RFP has been submitted. If it is found during the RFP process that the proposer does not in fact meet all of the minimum requirements the proposer will be removed from the qualified contractor list. Should the Proposer want to verify that the requirements have been met include necessary documents so that the Owner can make a determination. Email applicable documents to justin.scholz@greeleygov.com no later than **3/13/2020 by 5:00 pm.**

Minimum Qualification Requirements

- ☐ The Proposer's has completed two (2) projects utilizing alternative delivery methods (e.g., CMAR/Design Build/CMGC) with construction values equal or greater than $2,000,000 dollars in contract amount in the last five years.
- ☐ The Proposer has constructed at least two water or wastewater pump station projects of similar size and scope in the last ten years with at least $1,000,000 dollars in contract amount.
- ☐ The Proposer must hold an office within 100 mile radius of the project site in which the Project Manager and Field Superintendent will reside for the duration of the project. The City prefers local participation from all team members during both phases of project
- ☐ Project Managers and the Field Superintendent proposed for the project must each demonstrate 10 years of applicable experience.
- ☐ The Proposer has the bonding capacity to add a minimum of $3,000,000 bond value to existing bond commitments.
- ☐ The Proposer must not be subject to a material adverse condition, such as pending litigation, insufficient liquidity, weak operating net income or cash flow, or excessive leverage, that gives rise to reasonable doubt concerning its ability to continue to operate as an ongoing concern.
- ☐ The Proposer must have not been debarred within the past 10 years, or currently under consideration for debarment, on public contracts by Federal, State, County, Municipal or any other department or agency.

By signing below I am certifying that the following requirements have been met. I understand that during the review of the RFP that if any of the following requirements have not been met that I will be removed from the qualified contractors list.

_____

Original Signature by Authorized Officer/Agent

_____ _____

Type or printed name of person signing Company Name