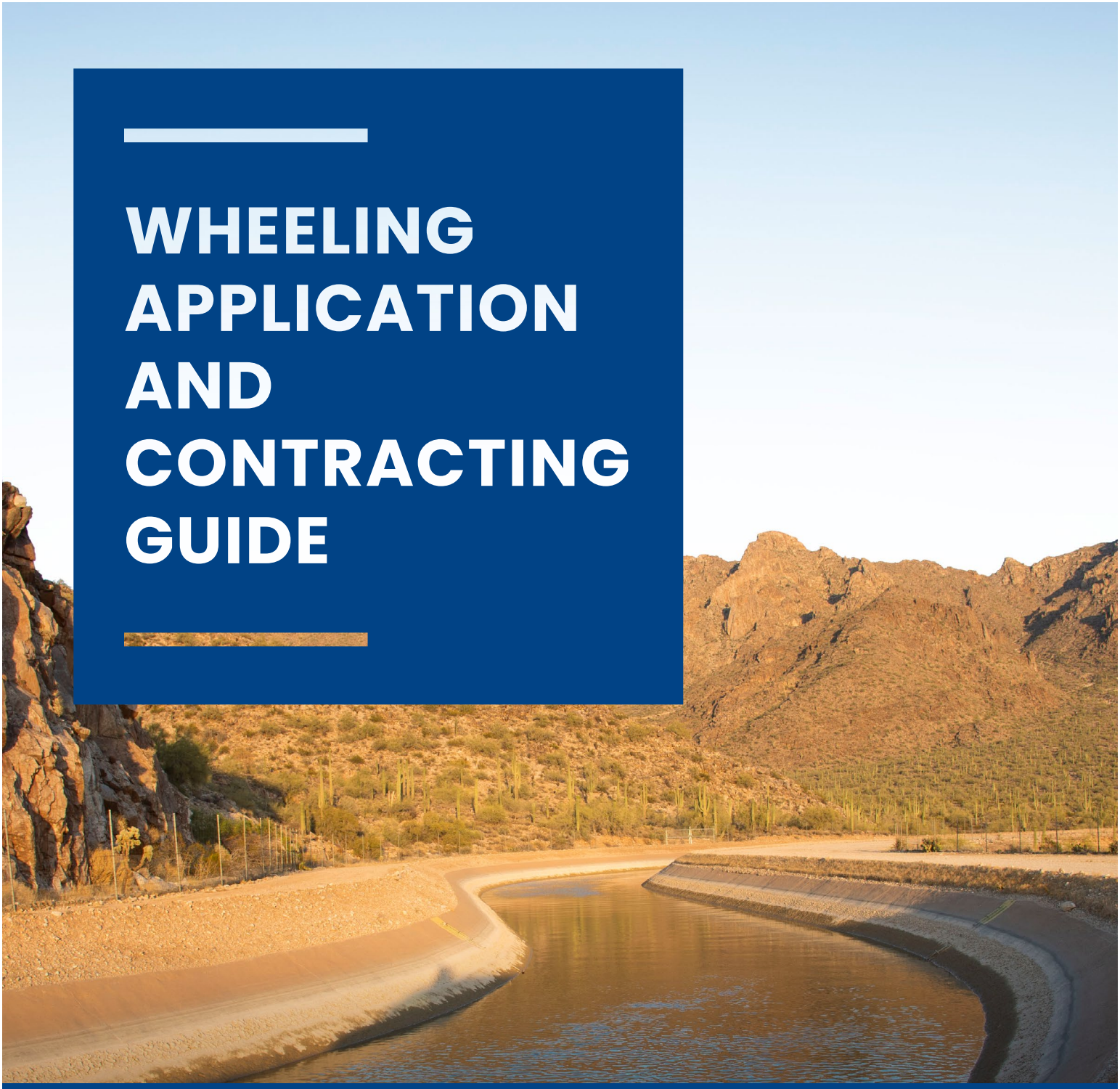
WHEELING APPLICATION AND CONTRACTING GUIDE



Release Date:
JULY 1, 2021

CAP
CENTRAL ARIZONA PROJECT

**YOUR WATER.
YOUR FUTURE.**

www.CentralArizonaProject.com

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WHEELING TURN-IN APPLICATION AND CONTRACTING GUIDE

1.0 Purpose

1.1 Purpose

The purpose of this document is to provide a general description of the requirements and procedures involved for those seeking to enter into water wheeling contracts with Central Arizona Project (CAP).

Those seeking to use CAP lands for any other purpose can find information for that process by visiting the CAP website.

In February 2017, CAP and the United States Bureau of Reclamation (Reclamation) approved the CAP System Use Agreement (SUA), which includes a Standard Form Wheeling Agreement and other provisions related to the transportation of Non-Project Water through the CAP System. This document provides guidance on these CAP wheeling contracts, which are contracts among CAP, Reclamation, and a separate party for the transportation of Non-Project Water in the CAP system. Parties interested in obtaining wheeling contracts are the Applicants that will need to work with CAP and Reclamation toward that outcome.

CAP understands the complexities that exist to successfully navigate this new process. We are committed to being a helpful and dedicated partner for entities that enter into a System Use Agreement (SUA) as a means for wheeling water within the CAP system. To that end, this guidance document has been created so that Applicants and other interested parties will know what to expect and what is required to complete a wheeling contract.

To initiate the process with CAP or if any questions come up, please direct your communication to the CAP Lands and Survey Supervisor, who can be reached through CAP's main number and email: 623-869-2333, info@cap-az.com.

This document is intended to provide assistance to both those seeking wheeling contracts and those reviewing such proposals in the course of administrating the CAP System and related contracts. This Guidance Document does not create any legal right, entitlement, or cause of action. Proposals for introduction and delivery of Non-Project Water into the CAP System will be reviewed individually. Although this document can be used as a general guideline, CAP reserves the right to modify its contents at any time and waive specific provisions, if applicable.

1.2 CAP standard form wheeling contract

Wheeling is the use of the CAP system to transport and deliver Non-Project Water. Project Water is Colorado River water allocated to Arizona and delivered pursuant to water delivery subcontracts, along with certain Agua Fria inflows captured in Lake Pleasant. Therefore, Non-Project Water includes any other water, and can include additional Colorado River water or imported groundwater. Wheeling is authorized in the 1988 Master Repayment Contract (1988 Contract) between CAP and Reclamation. The 1988 Contract includes specific provisions related to wheeling Non-Project water, including the joint development of a standard form of wheeling contract.

In early 2017, the SUA was approved by Reclamation and the CAP Board of Directors. It authorizes CAP to transport Non-Project Water through the CAP system under a CAP Wheeling Contract between CAP and other parties, subject to the approval of Reclamation. CAP will be able to offer contracts for the long-term reliable delivery of Non-Project Water subject to CAP scheduling priorities. All contracts must be approved by Reclamation.

1. Exhibit B (“Standard Form of CAWCD Wheeling Contract”) - Page 23
2. Exhibit C (“Terms and Conditions for Reclamation Wheeling Contracts”) - Page 39

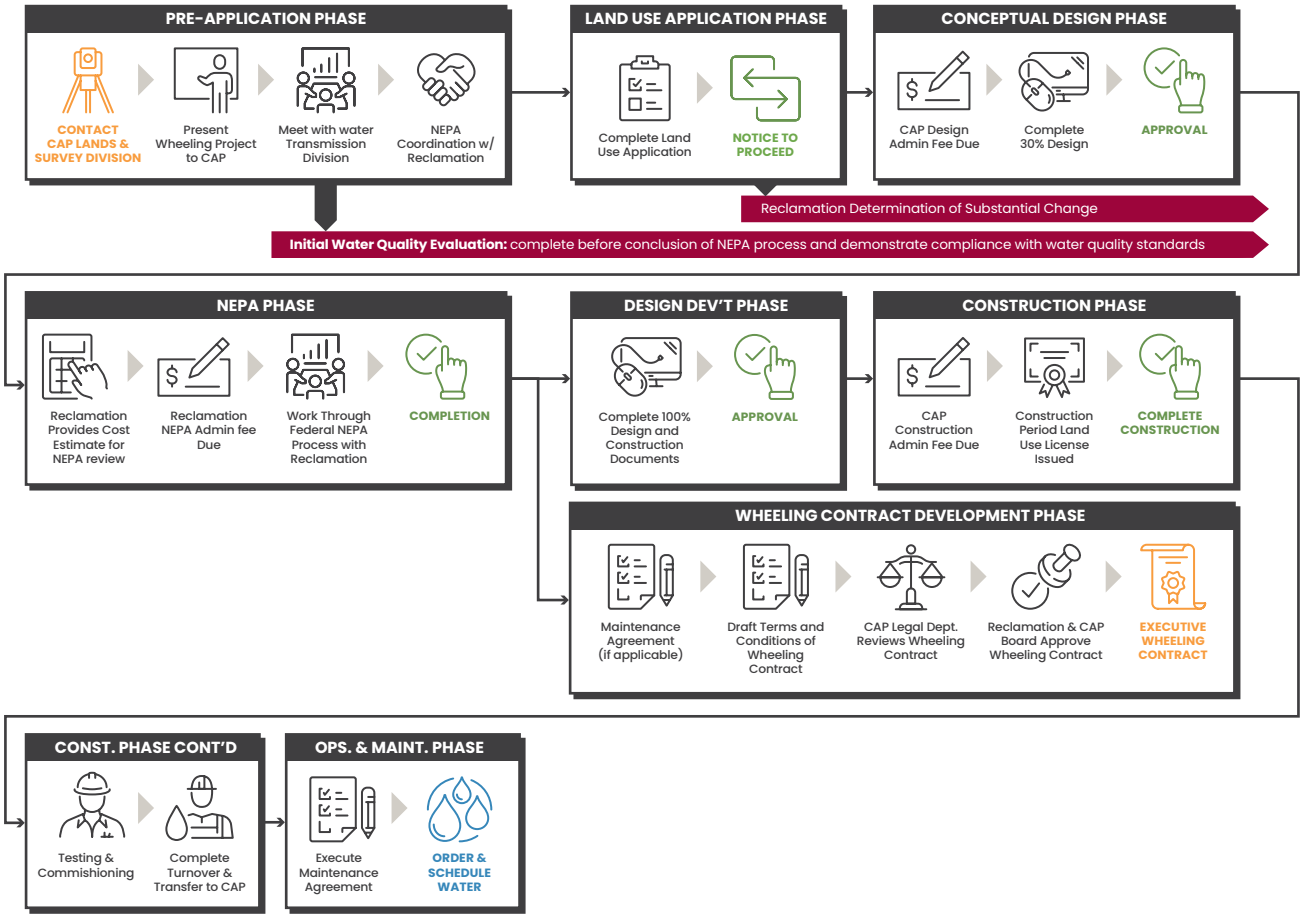
Applicants may use this guidance document to understand the requirements and plan for the level of effort needed to secure approvals to construct turn-in infrastructure necessary to wheel Non-Project Water.

2.0 Procedural Items

2.1 Wheeling contract process guide

The following flow chart and step descriptions are intended to provide wheeling contract Applicants with typical steps required to create a turn-in facility and wheeling contact with CAP.

SYSTEM USE AGREEMENT – WHEELING CONTRACT PROCESS GUIDE FOR APPLICANTS



2.2 Process step descriptions

Entities and groups that are seeking a wheeling contract with CAP are encouraged to be familiar with the following steps, as outlined below. These steps represent a typical process that is recommended to be followed. Any deviations that an Applicant may elect to pursue require close coordination with CAP. CAP desires to be a helpful partner through all of these steps and can offer additional assistance at any point within this process.

PRE-APPLICATION PHASE

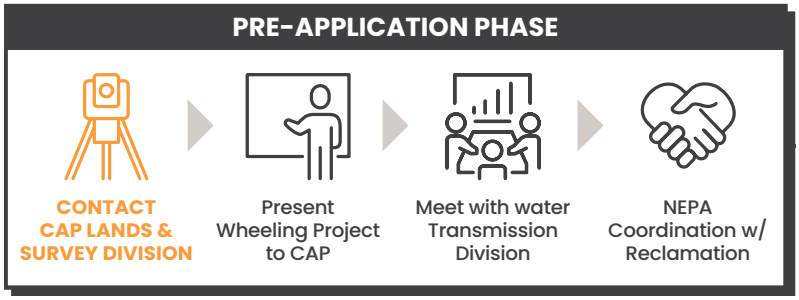
Contact CAP Lands & Survey Division

Parties who desire to enter into a wheeling contract with CAP will need to contact the Lands and Survey Division.

Present Wheeling Project Concept to CAP

The Applicant should, at a minimum, be prepared to present and discuss the following items with CAP representatives during pre-application meetings:

- Identified water supply and water customer(s)
- Land ownership
- Ability to comply with water quality requirements
- Financial capability



An initial coordination meeting will be scheduled in order for CAP to evaluate if all of the right project components are being considered. This initial meeting with CAP early in the process enables the exchange of information and the evaluation of feasibility. The meeting will be facilitated by the Lands and Survey Division and will be attended by representatives from the CAP Departments of Water Transmission, Water Resource Planning, Engineering, and Maintenance. The Applicant will identify water supply and water customers. This meeting will typically include a discussion regarding compliance with water quality standards.

CAP will assist the Applicant in determining project feasibility. The Applicant may need to meet multiple times with CAP to consider and gather information required to establish feasibility. CAP will help applicants understand the project approval process and will discuss generally the contractual, legal and financial requirements of a wheeling project, but Applicants are advised to consult with their own legal or financial advisors regarding any questions or matters specific to their own interests.

Pre-application phase meetings should also include discussion with CAP's Water Transmission Division. This effort will focus on a detailed discussion and review regarding water quality requirements along with water quality and flow measurement and reporting requirements. At this point, the Applicant should expect to begin the initial water quality evaluation and demonstrate the ability to meet the minimum introduction standards for water quality. The water quality evaluation will typically overlap and become part of the Federal NEPA approval process. The initial water quality evaluation must be completed before or in conjunction with the NEPA process in order to avoid delays to the Applicant's project schedule.

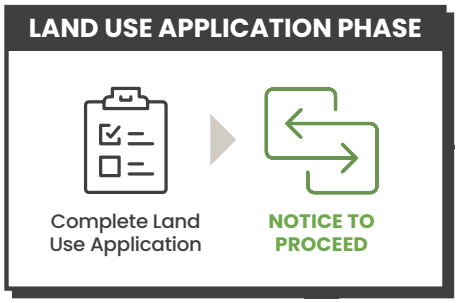
After reviewing the requirements and process, the decision to move forward, or not, will be at the discretion of the Applicant. Further evaluation of the project beyond this point will incur expenses that the Applicant will bear. If the Applicant determines to proceed at this step, a Lands Case number will be established and CAP will work to organize a Project Team to support the Applicant.

National Environmental Protection Act (NEPA) Coordination with USBR

The Applicant is strongly encouraged to begin coordination with Reclamation during the Pre-Application Phase with regard to NEPA approval requirements and considerations. CAP can help arrange for the Applicant to get in contact with Reclamation's Phoenix Area Office.

LAND USE APPLICATION PHASE

At this step, the Applicant completes the CAP Land Use and Consent Document Application forms. The information required for this step is found on the CAP website by navigating to Departments, then Lands.

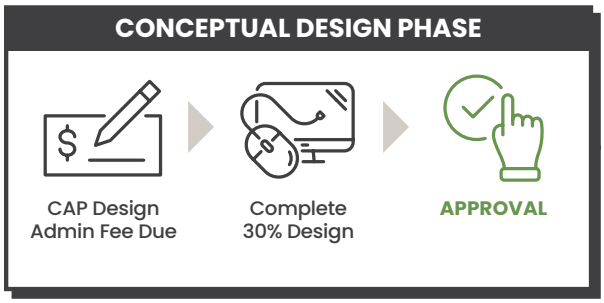


The Applicant must provide all required information on the forms and address any comments or questions. If needed, CAP Lands and Survey Division may assist the Applicant through the process as required to sufficiently complete the Land Use Application documents. Once the Applicant has completed the Land Use Application, and the CAP Lands Division determines the application is sufficient and complete, a Notice to Proceed will be provided to the Applicant.

CONCEPTUAL DESIGN PHASE

Determination of Substantial Change

After CAP has determined the initial feasibility for a proposed wheeling project with the Applicant, CAP will contact Reclamation and seek a determination whether the project qualifies as a substantial change to the CAP system.



Complete 30% Design

Reclamation requires that Applicants develop the project up to the 30% design complete stage to facilitate the NEPA environmental impacts evaluation process. The design must comply with CAP Engineering Standards.

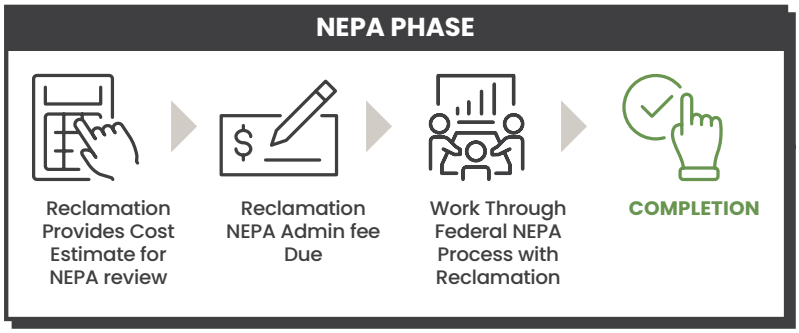
Conceptual Design Phase Approval

The Applicant works through this step and gains approval from CAP as the 30% design is completed in compliance with the CAP requirements and technical standards. CAP staff members will review the design deliverables as submitted by the Applicant and will provide comments and feedback should revisions be required.

NEPA PHASE

Work Through Federal NEPA Process with USBR

After payment is received by CAP, the Applicant proceeds through the Federal NEPA review process according to USBR guidelines and directives. Depending on the complexity of the project, the process can take from four to eighteen months. Reclamation will determine the level of NEPA analysis required (Categorical Exclusion, Environmental Assessment or Environmental Impact Statement). The scope of the NEPA process must include both the introduction and final delivery points for the water that is to be wheeled. Additional information about this federally administered process can be found at Reclamation's NEPA Handbook.



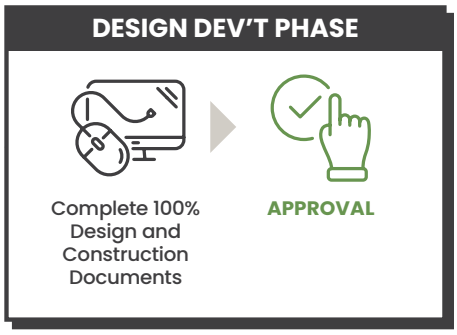
NEPA Completion

This step is a significant milestone for the Applicant pertaining to the wheeling contract process with CAP. With a completed NEPA decision document selecting the Applicant's preferred alternative, the project can continue to progress through the next design stages. If the Applicant is unable to complete the NEPA process with Reclamation, the Applicant cannot move forward to complete the steps in the following sections.

DESIGN DEVELOPMENT PHASE

Complete 100% Design and Construction Documents

The Applicant may elect to proceed with this step prior to receiving Federal NEPA clearance. The Applicant should recognize any risk involved in a decision to proceed without the NEPA process completion as there may be additional costs involved if there are redesign requests based on the NEPA analysis. At this stage, design documents are developed in accordance with CAP Turn-in Engineering Standards. The design may go through multiple submittal-review iterations with CAP's technical staff providing comments to the Applicant's design team. Civil, mechanical, electrical, and controls drawings and construction specifications are required and will be reviewed. Drawings and specifications must be developed for construction purposes by an engineer licensed in the State of Arizona.

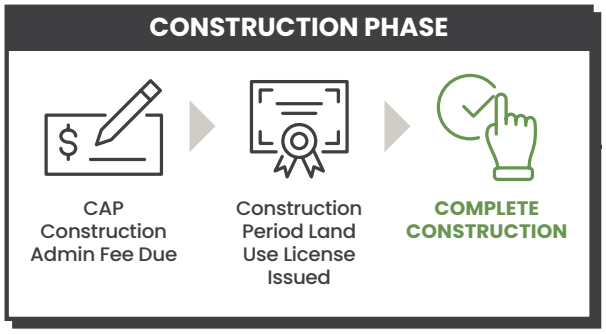


Design Approval

Once the construction drawings and specifications have reached the 100% mark and all CAP comments and concerns have been addressed, the design will be approved and accepted by CAP.

CONSTRUCTION PHASE

CAP may proceed with the Applicant's proposed project after Reclamation completes environmental compliance and provides CAP with written consent, in accordance with Section 13 of the System Use Agreement.

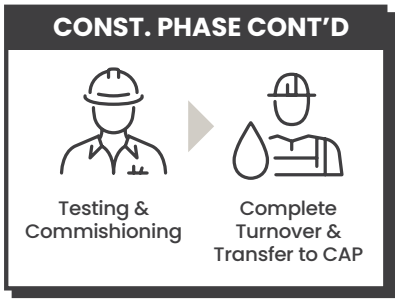


Construction Period Land Use License Issued

This license authorizes the Applicant to access the CAP for construction purposes and mobilize construction crews to build the turn-in facility in accordance with the design and CAP safety requirements.

Complete Construction

Construction can now progress along with regular progress meetings and inspection services by CAP until substantial completion has been achieved. All on-site, construction phase activities and work tasks are to be carried out safely and in compliance with Reclamation Safety and Health Standards, "Central Arizona Project Safety Resource Manual" and current OSHA safety standards. If there is a conflict within any of these safety standards, the Applicant shall comply with the most stringent standards while working within the License Area. A copy of the Central Arizona Project Safety Resource Manual and a link to the Reclamation Safety and Health Standards can be found at www.cap-az.com located under "Contracting – Safety." CAP punch list walk-throughs must be completed, workmanship/scope



deficiencies must be fully addressed, and as-built drawings fully developed and submitted in order for the Applicant to receive a wheeling contract.

Testing and Commissioning

The turn-in facilities must be successfully tested and commissioned. Testing and commissioning follows the requirements of the construction specifications and drawings and in accordance with the defined success criteria. Commissioning documentation and checklists are typically utilized in the field to record satisfactory performance of pre-defined success criteria.

Complete Turn-Over and Transfer to CAP

Turn-over and transfer of the newly constructed works to CAP occurs at this stage and requires CAP's acceptance of operation and maintenance information, as-builts, and warranties. The Applicant needs to complete turn-over and transfer to be permitted to fulfill desired water scheduling and deliveries.

WHEELING CONTRACT DEVELOPMENT PHASE

The Applicant can choose to progress through the steps of this phase concurrently with Design and Construction Phases.

Maintenance Agreement

The Applicant is required to enter into a Maintenance Agreement with CAP for the life of the new turn-in facility as it pertains to features or systems on CAP property. The Maintenance Agreement delineates the responsibility to maintain the physical assets associated with the turn-in and existing infrastructure within CAP property boundaries. The Maintenance Agreement must be signed by the Applicant and CAP.

Draft Terms and Conditions of Wheeling Contract

The Applicant and/or its legal counsel must contact the CAP Legal Department in order to begin discussing the terms of the Wheeling Contract. CAP has a Standard Form Wheeling Contract and Terms that forms the basis of the wheeling legal agreement.

The Water Control Department will also be involved with the Applicant at this stage in coordinating with the Legal Department regarding certain terms of the contract. This is the ideal time for Water Control to define O&M requirements of the contract including, billing, scheduling, and real time operational information.

The Applicant may elect to begin this step once NEPA is completed and proceed on a parallel path with the design phase.

CAP Legal Department Review Wheeling Contract

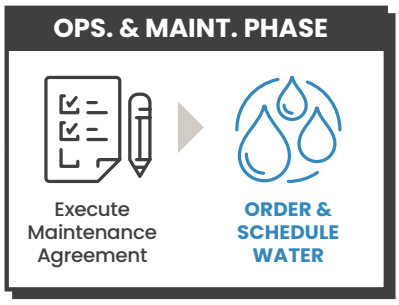
The CAP Legal Department will lead this process in close coordination with the Applicant, the CAP Water Control Department, and Reclamation to ensure that the Wheeling Contract conforms to the requirements of the System Use Agreement.

Reclamation and CAP Board Approve and Execute Wheeling Contract

Once the drafting of the Wheeling Contract is complete, it will be presented to the CAP Board of Directors for their review and approval. This can only occur at a regularly scheduled monthly meeting held on the first Thursday of each month (no meeting in July). Once approved by the CAP Board, and signed by CAP and the Applicant, the wheeling contract will then move to Reclamation for final approval in accordance with the Section 6 of the System Use Agreement and Article 8.18 of the Contract.

Upon satisfactory completion of all other items in the Construction Phase, the Applicant can now commence the Operations and Maintenance phase of the contract, including water scheduling through CAP Water Control.

OPERATIONS AND MAINTENANCE PHASE



Execute Maintenance Agreement

The Maintenance Agreement between Applicant and CAP must be completed and accepted by Reclamation.

Order and Schedule Water

Water may now be ordered, scheduled, wheeled, and paid for per the terms of the Wheeling Contract. In addition, ongoing maintenance and environmental compliance and monitoring become a regular, ongoing responsibility of the Applicant.

2.3 Fees and Payment

As entities go through the wheeling contract process, as described in the flow chart in Section 1.2, there are specific points identified in the process flow where administrative fees will be assessed. Based on information provided by the applicant, CAP will develop a reasonable fee estimate to cover the anticipated cost to administer that specific phase of the project. The fee is generally a one-time assessment for that phase, however, additional fees may be assessed if there is a significant change in the scope of project. The phases of the process where administrative fees apply are as follows:

Design Phase

At this point, the Applicant is responsible for a one-time fee to CAP to cover internal administrative costs to support and review the design. The fee is estimated and assessed in accordance with the standard CAP fee process. CAP will send the Applicant an invoice. Once this invoice is paid, CAP will review technical design document deliverables and provide comments on items that need to be addressed in the design to meet CAP requirements.

Reclamation NEPA Review Phase

Reclamation sets cost that the Applicant is responsible to pay upfront prior to Reclamation supporting and facilitating the NEPA review process. The Applicant will receive an invoice from CAP equivalent to the amount estimated for Reclamation involvement. CAP, in turn, transfers these funds to Reclamation through existing financial mechanisms established between the two organizations.

Construction Phase

At this stage, CAP will develop an estimated cost to support the construction phase of the turn-in facility and will invoice the Applicant for this fee. Once payment is made to CAP, staff members from CAP will engage with the Applicant's construction team and support them through the building process to ensure that CAP's facilities are not adversely impacted by the construction activities. These fees will also cover any CAP time spent on the testing and commissioning end of the construction phase.

Note: *These fees only cover the design, environmental review and construction phases of the Turn-in Facility. Additional fees will be assessed as part of the long term operation and maintenance of the facility. Those fees will be covered in more detail within the Wheeling Contract.*

Long term Land Use fees may also apply for the use of CAP property. Refer to Section 4.2 for more detail on these potential fees.

3.0 Water Quality Requirements

3.1 SUA water quality guidance

The CAP System delivers Colorado River water for a variety of uses by tribes, cities, private water companies, irrigation districts and others in Maricopa, Pinal and Pima counties. CAP has been monitoring water quality within the CAP System since 1996 and the historical data demonstrates a high degree of consistency through time. The Project Water delivered by the CAP System is of relatively high quality, however treatment is needed for direct potable use, and many municipalities operate advanced surface water treatment plants to provide it as drinking water to their customers.

The CAP system was designed to divert and deliver Project Water. However, the ability to wheel Non-Project Water supplies has been contemplated for decades, and is consistent with federal directives to maximize project benefits. The first request for transportation of Non-Project Water came to CAP in 1983, and the 1988 Master Repayment Contract explicitly contemplates wheeling Non-Project Water, notably in Articles 8.17 and 8.18. Article 8.18 includes specific reference to a jointly developed Standard Form of Wheeling Contract. Consideration of the impact that wheeling of such Non-Project water will have on the quality of the project water is required when considering the approval of such a contract.

CAP and Reclamation developed the draft document titled, Water Quality Guidance: For the Introduction of Non-Project Water into the Central Arizona Project. (As of the date of this publication, CAP and USBR are still working to achieve a final Water Quality Guidance document. The discussion in this section may be adjusted based on final Water Quality Guidance.) This document includes extensive numeric standards as well as implementation details for parties proposing to use the CAP system to transport non-Colorado River water supplies. The document helps fulfill Article 12.1 of the CAP System Use Agreement between Reclamation and CAP, which requires the establishment of "uniform water quality standards."

3.2 Intital water quality analysis

The Initial Analysis is intended to allow CAP and Reclamation to have sufficient information to make a determination of the likely effect of introducing a proposed Non-Project Water source into the CAP System. This step occurs prior to the introduction of the Non-Project Water supply and includes use of the CAP System-wide Water Quality Model to evaluate conformance with Delivery Standards. Section 3. Initial Analysis of the Water Quality Guidance Document describes specific requirements that each Applicant must follow. These include:

1. The Applicant is responsible for costs and expenses including, but are not limited to, the environmental clearances, permitting, facilities used to introduce and transport water into the CAP System, and the associated water quality testing and monitoring described in this document.
2. Must demonstrate how and if Non-Project Supply will meet the Introduction Standards identified in Appendix A of the document.
3. Sampling, testing and verification of water quality samples of the Non-Project Source.
4. Modeling of the Non-Project Supply under various operational scenarios.

Upon verification and acceptance of initial water quality test results and modeling of Introduction Standards from the Applicant, the data will be incorporated into the CAP System-wide Water Quality Model to evaluate how the Applicant's Non-Project Water will affect the total CAP Water supply, including compliance with Delivery Standards.

4.0 Land Use Requirements

Requests for any form of land use, either from the public or private sector requires that an application be submitted before CAP can grant a license permitting access and/or use of CAP property. CAP is a federal Reclamation project, managed by CAP on behalf of Reclamation and as such, all land use authorizations must be in compliance with CAP's operating agreement with the United States and all applicable federal laws, regulations and directives.

This section will help walk the Applicant through the process of initiating and ultimately obtaining the required authorization needed to construct, operate and maintain a turn-in along the CAP.

4.1 Lands use application

Once a proposed Turn-in project has been reviewed and approved by CAP, the Applicant must submit a Construction Period Land Use Application. The forms can be found on CAP's website.

Along with the Application, the Applicant will also need to submit a preliminary design plan, legal description that delineates the area of CAP property that will be impacted by the project, and proof of insurance.

PROJECT PLANS

Submit one electronic copy of the design plans depicting CAP-impacted property. CAP boundaries must be identified on the design plans.

NOTE: *The width of the license area/rights-of-way for facilities is limited to the minimum width necessary for construction and maintenance operations and for user safety. A minimum width of 10-feet or the width of construction plus 10-feet (whichever is greater) is generally required. Besides the area occupied by the facility, the right-of-way contains areas necessary for operation and maintenance. In some cases such areas may exist on both sides of the facility, in other cases perhaps only on one side of the facility. Historic and customary operation and maintenance will be considered along with best management practices in establishing the final rights-of way width needed for each individual project.*

PROPERTY IDENTIFICATION / LEGAL DESCRIPTION

The legal description must be provided in the western grid system of township/range/section, and metes and bounds format. Identify the CAP boundaries on the design plans.

PROOF OF INSURANCE

CAP requires proof of liability insurance before the execution of a License or access to CAP property. Applicants must provide a Certificate of Insurance from an "A" rated or better company that names both the United States and the Central Arizona Water Conservation District as additional insureds, ***or equivalent proof of self-insurance***. Minimum deductibles are noted below:

Workers Compensation and Employers Liability as required by Arizona Law

General Liability ..... $1,000,000 Per Occurrence
(with Bodily Injury, Property Damage)

Business Automobile Liability Insurance ..... $1,000,000 Per Occurrence

Umbrella $1,000,000

These insurance limits are effective as of the publication date of this guidance. They may be subject to change over time or as conditions require.

4.2 ADMINISTRATIVE AND LAND USE FEES

CAP assesses administrative fees to cover CAP's time related to both design review and construction oversite while on CAP property. Once the application is reviewed and the scope of work is evaluated, a fee estimate will be provided for both the design and construction components of the project. The design fee must be submitted before design review will begin. If payment is not received within 90 days after the invoice is provided, CAP may close the file. It is expected that processing fees will cover all anticipated charges to administer the project, however for highly complex projects or changes in project scope, additional fees may be assessed. If additional fees are assessed, the Applicant will be notified in writing.

The construction fee must be submitted before a Construction Period Land Use License will be issued for the facility. It is expected that the fees will cover all anticipated charges required to administer the construction and commissioning portion of the project, however for high complex projects or changes in project scope during construction, additional fees may be assessed. If additional fees are assessed, the Applicant will be notified in writing.

If the Applicant has any facilities on CAP property that are owned and operated by the Applicant, their contractors or assigns, a Land Use License will need to be obtained by the Applicant. As part of the Land Use License, long term land use fees may also be assessed for the use of CAP property by the Applicants facilities. The fees will reflect fair

market value using methods approved by the Reclamation and will be re-determined every 5-years.

Once the NEPA process has been finalized and approved by Reclamation then CAP will formally approve the 100% design plans and the construction phase can be initiated. If there are changes from the original scope, a new fee estimate will be developed to cover the administrative time required for CAP personnel to provide oversite for that portion of the project located on CAP property. Fees must be paid before a Land Use License will be issued for the facility. CAP personnel may include but are not limited to: CAP Inspector, Project Engineer, Electrical Engineer, Cathodic Protection Technician, Project Manager, and Instrumentation and Controls Engineer.

Upon completion of turnover of the Project, the applicant will receive a separate invoice from CAP for the recurring Land Use Fees.

Checks should be made payable to Central Arizona Water Conservation District.

4.3 Design review

Once a complete application package has been submitted and accepted, the first review period takes approximately four to five weeks. Comments will then be provided back to the Applicant. Each subsequent review takes approximately two weeks. The complexity of the project and how well comments are addressed in between submittals, plays an important role in how quickly a project takes to get through the process.

Once 30% design plans have been approved then the NEPA process with the Bureau of Reclamation requires 30% design. Refer to Section 4 for the steps and fees associated with this process.

Design beyond the 30% stage may continue simultaneously while the NEPA review process is underway, however, there is a potential risk that the design may change as a direct result of the NEPA review process. If the design is modified, additional cost may be incurred for new design review.

4.4 Facility construction

Prior to any construction activity on CAP property, CAP will have a pre-construction meeting with the Applicant, its contractor and all associated sub-contractors. Safety and security while on CAP property is a priority! Violations of any safety or security requirements or any other stipulation found within the Land Use License may result in stopped work or termination of the License.

For any facilities associated with the project located on CAP property that will ultimately be turned over to Reclamation to own and for CAP to operate, a draft Maintenance and Transfer Agreement will be initiated during the construction phase. As-builts for all utilities and facilities located on CAP property will need to be kept current during construction. Weekly submittals of the latest version of the as-built drawings will be required. Survey information related to buried utilities on CAP property will be required.

4.5 Commissioning and turnover

When all punch list items for facilities on CAP property are completed to the satisfaction of CAP, the final Maintenance and Transfer Agreement will be signed. Final As-builts will need to be submitted, reviewed and approved by CAP before the Applicant can order and schedule water through CAP's Water Operations Department.

Title to any modifications of the CAP System resulting from the Project shall remain with the United States.

5.0 Environmental Clearance Procedure

5.1 Environmental clearance procedure

Reclamation representatives from the Phoenix Area Office will assist the Applicant in navigating through the NEPA environmental clearance process.

After review of the 30% design, Reclamation is responsible for initiating environmental compliance for the proposal. Environmental compliance consists of evaluating the entire project, including source water, effects on water quality in the CAP, turn-in construction, land rights, wheeling contract, turn-out construction, water use and any effects resulting from delivery, and appurtenant facilities. The Applicant's project must comply with the National Environmental Policy Act of 1969 (NEPA)(42 U.S.C. 4321 et seq.), the National Historic Preservation Act of 1966 (NHPA)(54 U.S.C. 300101 et seq.), the Endangered Species Act of 1973 (ESA)(16 U.S.C. 1531), and any other relevant environmental laws and regulations. The Applicant shall be responsible for all costs associated with environmental compliance review for the proposal.

Reclamation will be responsible for ensuring NEPA compliance and is responsible for the scope, accuracy, and content of the NEPA document and if applicable, a decision document. Reclamation will determine the level of NEPA analysis required (Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement) based on federal statutes, the Council on Environmental Quality Regulations, Department of the Interior regulations, and Reclamation's regulations and guidance.

If a Categorical Exclusion is the appropriate level of analysis, Reclamation will prepare the document. If an Environmental Analysis or Environmental Impact Statement is necessary, either Reclamation or the Applicant will be responsible for the preparation of the document.

If the Applicant decides to contract the preparation of the NEPA analysis, Reclamation will provide a statement of work that the Applicant may use to issue a request for proposals for an environmental contractor. Reclamation will work with the Applicant's contractor and provide technical direction. If Reclamation issues the contract for the environmental contractor, Reclamation will manage the contract and preparation of all environmental work.

The Applicant shall provide a detailed proposed action and assist, as appropriate, in the development and evaluation of alternatives, attend meetings, and provide input as may be requested by Reclamation or CAP. Additional costs and delay may occur if the Applicant proposes changes to the project after the initiation of the environmental review.

The process described in Section 2 highlights the main steps in the process. The exact steps, effort and time required will be dependent on the Applicant's proposal. Additional information on the NEPA process can be found here.

6.0 Engineering requirements for turn-ins

6.1 Engineering requirements for turn-ins

This section provides technical requirements, standard specifications, and standard drawings for the design, construction and integration of Turn-In infrastructure to the CAP system.

Engineering Requirements for Turn-Ins

Central Arizona Water Conservation District

23636 North 7th Street

Phoenix, AZ 85024

March 2021

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Overview

This document is a summary of the technical requirements for the design, construction and integration of Turn-In infrastructure to the Central Arizona Project (CAP) system. Through the System Use Agreement between CAWCD and USBR, Arizona water users and land owners may apply for a CAWCD Wheeling Contract to input Non-Project Water into the CAWCD canal system for conveyance to other users at a Point of Delivery downstream along the canal. After thorough evaluation and approval of the project as outlined in this document, CAWCD will enter an agreement to move a predetermined amount of water through our infrastructure for a predetermined rate per acre-foot.

A. Core Functions of a Turn In System

- Safely input non-project water into the CAP system
- Provide functional control to CAP Operations for emergency shut down
- Flow recording and reporting capabilities per CAP requirements
- Preservation and protection of the existing CAP system
- Provide easily accessible and maintainable components on CAP property

Technical Requirements

The applicant shall provide design information which complies with CAWCD requirements across the following subsections. These technical requirements should summarize the majority of the infrastructure and related infrastructure that will be needed to successfully construct a new piece of infrastructure. Any deviation from these requirements must be approved by CAP engineers during the design phase. For smaller inflow installations, CAP will consider waiving some required equipment and features outlined in Section A on a per site basis based on analysis of the input flow rates and pool hydraulics. A hydraulic analysis in relation to canal flow and energy dissipation may be required from the applicant's design team. The required new infrastructure may be modified if CAP Engineering, in coordination with CAP Operations, deems that a new proposed turn in introduces a low risk to the system. Consideration for changes may be given to power and power generation systems, communication and measurement systems, and control building size as long as the operational needs of CAP Operations are met. CAP will provide related standard specifications for general construction during the design phase.

In accordance with BOR requirements, the initial review will take place at the 30% design stage in parallel with the BOR and NEPA review period.

A. Site Plan & Profile Design

I. Site Plan - CAP will require the following items to be included on the site plan unless deemed unnecessary on a case by case basis:

   i. Motor Actuated Valve located in vault
   ii. Flowmeter (Mag-meter) shall be located in vault
   iii. Sampling Port/Water Quality Testing Station located in at grade vault – See Sheet ID-763851-02 in Appendix 1
   iv. Reconstruct O&M road and maintain existing roadway width by raising the O&M road or re-routing behind the pipe, if necessary

v. Control Building – See Sheet TRN-C-C22265 in Appendix 1
vi. Generator/Propane tank enclosure for backup power
vii. New/Existing Utilities (power and communications)
viii. Relocate security fence if new right-of-way is required
ix. Provide cathodic protection for steel or ductile iron pipe – Per CAP requirements
x. Avoid existing CAP utilities (Utility drawings will be provided)

For site plan sample layouts see Sheet TRN-C-C22263 in Appendix 1

II. Profile Design – CAP will require that the water is pumped through a pipe and will enter the canal from above the canal liner, falling directly into the flowing canal water. For large inputs (120 CFS or greater), a below waterline input design may be considered.

i. Invert of pipe shall be 24" or more above existing canal liner
ii. Pipe overhang into the canal must be adequately supported
iii. When the canal is in fill condition, trenching will not be allowed within 15 feet of the canal lining. It is required that the invert of the pipe to be brought above the existing liner elevation. The location of the pipe shall not interfere with the O&M road and may require widening the O&M road and installing pipe protections, such as bollards.
iv. O&M road changes shall meet CAP design requirements

For sample profile design see Sheet TRN-C-C22264 in Appendix 1

III. Equipment Requirements – Per System Use Agreement Section 7.5 – All Wheeled Water shall be measured with equipment that complies with CAWCD and United States standards and shall be operated and maintained by CAWCD.

i. Pipe – All buried pipe on CAWCD property and easement shall be cement mortar lined and coated steel pipe designed per AWWA Standard C205 and Manual M11 or ductile iron pipe designed per AWWA Standards C150 and C151.
ii. Flow Meter – flow meters provided shall be mag-meters – See Instrumentation and Controls Section D.V
iii. Motor Actuated Shut-Off Valve
iv. Generator – See Electric and Power Requirements in Section C.III
v. HVAC System for Control Building – Daikin Mini-Split A/C unit
vi. Flow meter and actuated valve vaults – A link type seal shall be used to seal around pipes penetrating vault concrete walls
vii. Concrete Pre-fabricated Building
viii. Coffer Dam (If required for construction)

Additional information on equipment requirements may be found in the following sections or in the supplied specifications list.

B. Hydraulic Design

Hydraulic design shall be constrained by pipe velocity as shown in Table A. CAP has chosen to limit the maximum pipe diameter but will allow parallel installations for larger volume input situations. See approximated expected flow and velocity information in Table B.

Requirements		
Maximum Pipe Diam.*	30 inches	*Multiple pipes may be utilized**
Maximum Pipe Velocity (ft/s)	8 ft/s	
Minimum Pipe Velocity (ft/s)	2 ft/s	Required for accurate flow measurement

Table A. Design Requirements

**Installations with 12" pipe or smaller may be considered for alternative equipment solutions depending on operational modeling of the input pool.*
***For inputs above 120 CFS, a below water line Turn-In may be evaluated.*

Velocity (ft/s) vs Flow (cfs) Pipe Diameter (Inches)					
Velocity (ft/s)	8"	12"	16"	24"	30"
2	0.70	1.57	2.79	6.28	9.82
3	1.05	2.36	4.19	9.42	14.73
4	1.40	3.14	5.59	12.57	19.63
5	1.75	3.93	6.98	15.71	24.54
6	2.09	4.71	8.38	18.85	29.45
7	2.44	5.50	9.77	21.99	34.36
8	2.79	6.28	11.17	25.13	39.27

Table B. Velocity vs Flow Approximation

C. Electrical & Power Requirements

CAP will require electrical power to be provided to the new Turn-In site. The incoming electrical service shall be designated and coordinated by the applicant and the electrical utility providing power, and shall be included in the design plans. The electrical and power requirements, and associated equipment which shall be incorporated, are listed below.

I. Incoming Power:

   i. 240Vac, 100A 1P-3W, #2 Bare Copper UFER Ground in Building Footing.

II. CAP Control Building (ELECTRICAL ROOM): Protects electrical equipment from the elements.

   i. Fused Disconnect Switch, 100A/2P.
   ii. Automatic Transfer Switch OTEC125, Electronic Control, 240Vac, 125A, 1P-3W, 10kAIC.

iii. Panelboard (DJA), 240Vac, 1P-3W, 100A main breaker.
iv. Surge Protective Device, NEMA-1, with internal 30A disconnect, standard, 100kA capacity.
v. Standby Generator, 20kW, 60Hz, 120/240Vac, 1P-3W, 1800rpm engine, propane genset type. Located in generator room. Generator shall be Cummins C20-N6.
vi. Integrated Power Supply System (IPSS), input=240Vac, output= -48Vdc, +24Vdc only. 2 redundant rectifiers, no inverter.(4)-TEL12-125 type batteries13A for 440 minutes..
vii. Battery Charger, 10Amp, 120/240vac, 12/24v, 60Hz.
viii. Air Conditioning Unit, mini-split Daikin 2.0 Ton Split Unit.
ix. Cathodic Protection unit.

D. Instrumentation and Control

CAP requires the ability to monitor and control the Turn-in remotely from CAP Headquarters. Consequently, the Turn-in shall comply with CAP standard equipment, configurations, and design methods, including backup power to maintain operation. The Instrumentation and Controls design shall be designed and coordinated with the CAP Control Systems Engineer by the applicant and included in the design plans.

The Instrumentation and Controls components below are listed for reference. Refer to the CAP Controls Hardware Specification and individual specification sections for specific and up to date listing of standard components.

I. Programmable Logic Controller

i. Allen-Bradley CompactLogix

II. Control Panels

i. Hoffman or approved equivalent.
ii. NEMA 12 or NEMA 4X as applicable.

III. Valve Motor Operator

i. AUMA or approved equivalent.
ii. Voltage spec
iii. Maximum time to open spec

IV. Door Switches

i. Magnetic, normally open.

V. Flowmeter

i. Endress+Hauser PromagW500 Electromagnetic Flowmeter
ii. 0.2% accuracy.
iii. Dual Ethernet ports
    1. Configuration Port

2. Ethernet/IP Port

VI. Terminal Blocks

i. Phoenix Contact 2811446

VII. Signal Isolators

i. Phoenix Contact TTC-6P-1X2-M-24DC

VIII. HMI

i. IDEC HG5G-VFXT22MF-B, 15.4” Touchscreen

IX. Room Temperature

i. Temperature Transmitter, Dwyer Instruments RHP3W44LCD or approved equivalent.

X. A/C Voltage Transducer

i. 120VAC Input, 4-20mA output
ii. NK Technologies VTR1-420-24L-DIN or approved equivalent.

XI. Control Cable

E. Communications

CAP needs to remotely monitor and control the Turn-in remotely. The design and construction scope shall include the communication infrastructure and electronics that enable this.

I. Fiber

There is existing fiber that runs along the canal. Twelve fiber strands loop through existing structures as they occur along the canal. Additionally, there are fiber vaults every 2500 feet that give access to the fiber trunk as well as conduits to the nearest structure. The location of the Turn-In relative to existing fiber access points will determine whether fiber originates as a spur from an existing structure or as loop spliced into the fiber at the existing fiber vault.

Provide fiber to the the Turn-In as either a spur or loop from the existing fiber.

i. Trench per CAP Standard Detail STD-C-C21618, as required
ii. Provide fiber patch panels and fiber domes as required.
iii. Terminate and test all fiber.

II. Ethernet Network

i. Provide an Ethernet switch or router as determined by the fiber topology. Specific model numbers will be provided by CAP IT at the time of construction in accordance with CAP IT Standards.
ii. The Ethernet switch shall be ordered by the contractor well in advance of scheduled installation. Allow up to two months for custom configured Ethernet components.
iii. The Ethernet switch shall be supplied to CAP for configuration in advance of installation on site.

III. Courtesy Signal – In the event the Wheeling Entity requires courtesy signals for flow and volume from CAP, only secure forms of communications that meet CAP IT security standards shall be used.
i. Direct wire 4-20mA, and discrete pulse signals.
ii. Serial Mobus radio.

F. Testing and Commissioning

The applicant designer and construction company must submit a thorough testing and commissioning plan for review during the design process. This plan will be executed during the construction process and completed prior to the startup and operational turnover of the functioning infrastructure.

General guidance for this process are as follows:

I. Civil Construction Testing

i. Contractor to comply with required testing per CAP Standard Specifications and applicable local government standards. A complete list of tests shall be provided for review prior to approval for construction.

II. Mechanical Testing and Commissioning

i. Manufacturer's Field Service representative to perform site acceptance testing on the equipment listed in the Equipment Bill of Materials.

III. Electrical Testing and Commissioning

i. All work shall be performed in accordance with CAP's currently adopted version of the National Electrical Code (NFPA-70), and NFPA-70E.
ii. Central Arizona Project is the only Authority Having Jurisdiction (AHJ), and requires a minimum of a 2 week notice in writing prior to any and all inspections, including final inspection by CAP.
iii. Manufacturer's Field Service representative to perform site acceptance testing on the equipment listed in the Equipment Bill of materials. Manufacturer's Field Service representative shall use test methods, follow procedures, and evaluate test values in accordance with the applicable sections of the NETA Acceptance Testing Standard guidelines, the manufacturer's recommendations, NFPA 70, NFPA 70E, and each applicable specification section.

IV. Control Systems Programming, Commissioning, and Testing

i. Factory Acceptance Testing (FAT) will be required for all control panels and approval granted by CAP before allowed on site. Site Acceptance Testing (SAT) will be performed for all panels and the entire system. Acceptance for the site will not be granted until the SAT has been successfully completed. Programming of the Programmable Logic Controller (PLC) and Human Machine Interface (HMI) will be done by CAP. The SAT will be completed by the contractor by monitoring signals within the PLC programming software. It is expected that the contractor's team will include personnel that have the appropriate software and are capable of monitoring/forcing signals within the PLC. Testing of major equipment such as the Flowmeter, Motor Operated Valve, Flowmeter, Transfer Switch, and Generator that integrate into the Control System require manufacturer's representatives to be present to both configure the equipment and verify operation with the PLC. Refer to individual specification sections for detailed requirements.

G. Project Close Out Information

I. As-Built and Close Out Requirements

i. As-built plans shall be provided (22"x34" plans) at the completion and acceptance of the project as well as scanned copies of the marked up PDF as-builts. Plans shall include all design and field changes completed by the contractor
ii. Electronic files shall be provided in AutoCAD format for CAP use
iii. Copies of testing and commissioning documentation shall be provided
iv. Operation and Maintenance Manual for the Turn-In equipment shall be provided
v. Warranty information on the equipment shall be transferred and supplied

List of Standard Specifications

The following CAP Standard Specifications will be supplied for use during design and construction of the Turn-In (additional specifications may be needed):

Civil Specifications

CS 03-0010 – Placement of Shotcrete
CS 31-0010 – Site Clearing
CS 31-0020 – Erosion Control
CS 31-2020 – Fill Construction
CS 31-2030 – Excavation
CS 31-2040 – Trenching
CS 31-5030 – Construction of Concrete Features
CS 31-5040 – Installation of Chain Link Fence and Gates
CS 33-0020 – Precast Concrete Vaults
CS XX-XXXX – Concrete Pre-Fabricated Building
CS XX-XXXX – Mortar Lined/Mortar Coated Steel Pipe
CS XX-XXXX – Ductile Iron Pipe

Mechanical Specifications

CS 33-1210 – AWWA Bare Stem Butterfly Valves
CS 33-1241 – Quarter Turn Hydraulic Actuators for AWWA Butterfly Valves
CS XX-XXXX – AWWA Gate Valves are these spec'd at 480V, if so I need xfmr 240:480v.
CS XX-XXXX – Mini-Split AC Unit

Electrical Specifications

CS 07-8413 – Penetration Fire Stopping
CS 22-1126 – Facility Liquid-Petroleum Gas Piping
CS 23-2416 – Internal-Combustion Engine Exhaust Piping
CS 26-0500 – Common Work Results for Electrical
CS 26-0519 – Low-Voltage Electrical Power Conductors and Cables
CS 26-0523 – Instrumentation Control and Communication Cabling
CS 26-0526 – Grounding and Bonding for Electrical Systems
CS 26-0529 – Hangers and Supports for Electrical Systems
CS 26-0533 – Raceway and Boxes for Electrical Systems
CS 26-0552 – Identification for Electrical Systems
CS 26-2416 – Panel Boards
CS 26-2726 – Wiring Devices
CS 26-2813 – Fuses
CS 26-2913 – Enclosed Controllers
CS 26-2923 – Variable Frequency Motor Controllers
CS 26-3213 – Engine Generator
CS 26-3600 – Transfer Switches
CS 26-XXX -- IPSS

Instrumentation and Controls Specifications

CS XX-XXXX – CAP Controls Hardware
CS XX-XXXX – Flow Measurement: Magnetic Flowmeters
CS XX-XXXX – Valve Actuator
CS XX-XXXX – Programmable Logic Controller
CS XX-XXXX – Panel, Enclosures, and Panel Components
CS XX-XXXX – Testing, Calibration, and Commissioning
CS XX-XXXX – Fiber and Related Components
CS XX-XXXX – Network Equipment
CS XX-XXXX – Low Voltage Control Wiring
CS XX-XXXX – Common Work Results For Process Control and Instrumentation Systems

Appendix 1: Standard Drawings

Standard Drawings are not publicly available in this version, but are available by request to the CAP Engineering Services Department.

A. **TRN-C-C22263 - Turn In Site Plan**
B. **TRN-C-C22264 - Profile Design**
C. **TRN-C-C22267 - Sections and Details**
D. **TRN-C-C22269 - CMU Wall Typical Details**
E. **TRN-C-C22410 - Vaults and Pipeline Profile**
F. **TRN-C-C22457 - Grounding and Bonding**
G. **STD-C-C06755-771094 - CAP Security Fence**
H. **STD-C-C06756-771094 - Fencing Grounding Installation**
I. **STD-C-C14966-771094 - Civil Standard Symbols**
J. **STD-C-C21618-771094 - Trench Details**
K. **STD-M-C06994-771094 - Piping Symbols**
L. **STD-M-C18045-771094 - Fire Protection and Alarm Symbols**
M. **TRN-E-C22265 - Electrical Floor Plan**
N. **TRN-E-C22270 - Electrical P and ID Standard Detail**
O. **TRN-E-C22271 - Single Line Diagram**
P. **STD-E-C07527-771094 - Single Line and Schematic Diagrams Functions and Designations**
Q. **STD-E-C07528-771094 - Single Line and Schematic Diagrams Symbols**
R. **STD-E-C19717-771094 - Instrumentation Legend and Symbols**