CITY AND BOROUGH OF SITKA
Department of Electric
CONTRACT CHANGE ORDER

Date: 9-Nov-15
CBS Project: 90594

Blue Lake Hyroelectric Expansion
McMillen Jacobs Associates

Change Order No: 3

The Following changes to the Contract Documents are issued:

Description	*Change In Contract Price*
3.1 Additional scope to the contracted Scope of Work. See attached McMillen proposal for design engineering services dated October 23, 2015 for detailed backup.	
Task 1: Project Design Coordination/Management	9,416.00
Task 2: New Piping & Valve System Design (Contract Docs Prep)	27,325.00
Task 3: Engineering Support Services During Construction	11,016.00
The work to be completed on a time and materials basis for a not to exceed amount of $47,757.00	
Reason for Change To modify the existing 36" isolation butterfly valve actuators and deliver a maximum 7 cfs to the NSRAA facility.	
3.2 Additional scope to the contracted Scope of Work. The work to be completed on a time and materials basis for a not to exceed amount of $371,282.00	371,282.00
Reason for Change To provide additional support for on-site field construction, additional work items and design of reduction measurements.	
3.3 Increase substantial completion from May 31, 2015 to June 1, 2016	
Total Change In Contract Price:	*$ 419,039.00*

Original Contract Price:	*$*	*4,328,394.00*
Prior Approved Change Orders:	*$*	*1,785,967.00*
Revised Contract Price:	*$*	*6,114,361.00*
Current Change Order Price:	**$**	**419,039.00**
New Contract Price:	**$**	**6,533,400.00**

Time provided for completion in the contract is:
[ ] unchanged, [X] increased, [ ] decreased by 365 calendar days.

This document will become an amendment to the contract and all provisions of the contract will apply hereto.

Accepted By: Mark McMullen — 11-16-15
Contractor — Date

Recommended By: _____
Architect/Engineer/Project Manager — Date

Approved By: _____
Director of Utilites — Date

Approved By: _____
Administrator — Date

Reviewed By

Grant Specialist:		Date:
Finance Director:		Date:

October 23, 2015

Mr. Bryan Bertacchi
City and Borough of Sitka
Electric Department
131 Jarvis Street
Sitka, Alaska 99835

Subject: **City and Borough of Sitka, AK**
Blue Lake Project

Proposal for Design Engineering Services for
Modifications to Existing 36" Isolation Butterfly Valve Actuators - and Delivery of new Maximum 7 cfs flow to NSRAA Facility

Dear Mr. Bertacchi:

McMillen Jacobs Associates is pleased to submit to the Owner (City and Borough of Sitka - CBS) the following proposal for preparation of final construction documents (drawings and specifications) for the proposed new water delivery pipe modifications to the existing 36-inch raw water supply line originating off of the penstock leaving the lower portal / tunnel outlet. The new design flow rate shall be for ability to provide for a total maximum flow of 57 cfs thru the 36-inch existing piping, for downstream distribution as follows:

- 50 cfs maximum to flow thru the existing upper 36" butterfly valve and thru the new 24-inch steel piping that feeds the filter forebay.

- Lower diversion flow rates between ~3.5 and 7 cfs for backup supply to the NSRAA fisheries facility can be obtained by operating the existing 6" steel diversion pipe that has the 6" diameter 316 SS throttling ball valve already installed (see Figure 1 below). 7 cfs maximum flow corresponds to a 35 ft/sec thru the ball valve, which is a typical maximum recommended velocity for such valves.

Use of the existing 6" PMFU bypass pipe to provide the flows indicated above will require design of some modifications including:

- Design a new orifice plate and piping modification downstream of the existing ball valve to install the orifice plate.

- Design new pipe supports for the existing 6" steel pipe to prevent excessive vibration during operation.

More discussion on these piping modification options are provided below.

Discussion on new 24" Steel Pipeline with Sleeve Valve and existing 36" Butterfly Valves. The new 24" steel pipeline and sleeve valve is designed to operate as a non-throttling full flow system – in that neither of the existing 36" diameter BFV valves (the 1992 valve installed at the penstock and the 1959 valve located up at the upper 36" tee) are designed for throttling service. Both valves are intended to operate in either a full open or full closed position under the new piping design for delivery of 45 to 50 cfs to the filter forebay tank (depending upon actual water surface elevation in Blue Lake). Pressure reduction in the piping system is accomplished primarily by the new sleeve valve installed at the top of the forebay deck.

Condition of the lower 36" valve at the penstock is considered good in that it has been operated quite frequently up until mid-2014, without issues. The existing electric actuator at this root valve however is non-operational and desired to be replaced by CBS staff. The staff has seen a fair amount of mal-functioning and weather damage done to other Auma valve actuators in their facilities. Thus CBS would like the design team to investigate other high-end actuator manufacturer's including Limitorque. Power supply to the new valve actuators will be 208 VAC / 3-phase power originating from the nearby Water Treatment Building (verified by CBS staff). Use of factory installed heaters in the new electric actuators will be critical to combat humidity and condensation inside the housings.

Figure 1 – Existing 6" Supply Line to Filter Forebay tapped off 36" PMFU Penstock Pipe. (Manual isolation gate valve followed by AWWA C507 Class 150 (to be verified by CBS?) stainless steel, full-port ball valve.)

New Delivery of up to 7 cfs to Filter Forebay as Emergency Backup Supply for NSRAA. The existing 6-inch ball valve as shown in Figure 1 is likely intended for throttling service on this pipeline to the Filter Forebay tank. Assuming the valve is an AWWA C507 ball valve, such valves are typically designed such that their internal port velocity should not exceed 35 fps, partly to help avoid risks of cavitation. Staying within this AWWA guideline, this maximum velocity would result in a flow rate of ~6.9 cfs. It is anticipated that use of this 6 inch line will require a new thrust block design at the existing 90-degree elbow as well as the design of a new fixed in-line orifice plate installed downstream of the ball valve to provide pressure reduction for the system. Higher backpressure conditions on the ball valve will help prevent cavitation on this valve.

The design team will also work with CBS staff to consider the install of a new 8" diameter magnetic flow meter in the existing 6" line, if CBS would like to be able to accurately control the throttling of the existing ball valve between 3 and 7 cfs.

Replacement of Existing 36" 1959 Butterfly Valve at Tee. The existing 36" butterfly valve located just above the 36" tee was installed in 1959 and has a small 6-inch diameter manual handwheel with an electric actuator that is reported by CBS not to work (likely due to over-torque during closure). This valve serves as a redundant backup to the lower 36" butterfly isolation valve located down at the main penstock pipeline. The staff reports that the valve is difficult to close by hand and can take 15 minutes with the undersized handwheel. The newer 1992 36" butterfly valve removed from the PMFU powerhouse appears to be the same AWWA valve with same laying length and same bolt hole pattern. Given its newer age and better condition, CBS has requested that McMillen design in for this valve to replace the existing 1959 valve and that a new handwheel and/or square nut drive be designed for its existing gear box – such that manual closure of this valve may be much easier for CBS staff.

Inspection of Existing 36" Buried Steel Pipeline. The existing buried steel pipeline is of 7/16" shell thickness, which is far more than adequate to resist the 150 psig anticipated maximum static pressures that the pipeline would experience when Blue Lake is at crest elevation of 425 ft. A new steel pipe installed in this type of application would likely have a wall thickness between 4/16" and 5/16", assuming a typical steel yield stress of 36 ksi. Thus the existing pipe would appear to have at least 1/8" of sacrificial steel thickness in its wall.

Nonetheless, given the age of the pipe, we do recommend that CBS at least consider trying to make some precursory investigations of the state of this pipe, and specifically its interior liner or surface oxide corrosion condition, and the condition of the exterior coating. The exterior coating might best be inspected by perhaps digging up and exposing at least two different small sections of the pipe exterior for a visual inspection. The interior liner might be inspected by accessing the top of the 36" pipe just below the existing 36" tee.

Design Assumptions. Our preliminary assessment of the existing piping and valve systems will be based upon the above discussions on the existing piping and valve systems and the following information provided by CBS (1991 design drawings) and assumptions:

- The existing 36” butterfly valve (located at the 8-ft diameter penstock) and the (at the 36” tee) was installed in 1992 and has an AWWA C504 Class 150B valve rating. The upper Filter plant bypass valve (located at existing 36” above grade Tee) was installed in 1959 and may have some internal seating issues. Valve approximate centerline elevations are as follows:
    - Lower 1992 butterfly valve at Elev. 79 ft +/-
    - Upper 1959 butterfly valve at Elev. 134 ft +/-

- Existing electric actuators on both butterfly valves are non-functional – and CBS wishes for Engineer to redesign and replace electric actuator on lower 1992 valve only. CBS has requested that the upper 1959 valve may be replaced by existing 36” butterfly isolation valve that was just removed from the PMFU building. An improved manual hand wheel actuator and/or square operating nut will be provided on this relocated valve.

- Engineer is to design in an emergency low pressure switch assembly (field adjustable) down near the lower 1992 butterfly valve – to provide emergency closure of the 1992 valve in case of major downstream pipeline break or leak. New PSL switch will report back to existing PLC in Water Treatment Plant building.

- With the new elevated dams crest water surface elevation of 425 ft, the hydrostatic pressures to be experienced by these two valves are approximately:
    - Lower valve at El 79-ft has hydrostatic pressure of 151 psig
    - Upper valve at El 134-ft has hydrostatic pressure of 127 psig

- The above 36” butterfly valves were designed for isolation service only (i.e. full open or full closed operation), under the full unbalanced heads of Blue Lake dam at that time (Dam Crest elev of 345 ft). The valves were not originally designed for any type of throttling service.

- Power supply to the new electric actuator to be installed at the lower penstock 36” butterfly valve will be coordinated by CBS, including running of new conduit and conductors to new actuator locations. It is assumed that power supply to actuator(s) will be 208 VAC / 3-phase power.

- The physical condition of the current 36-inch nominal steel pipe (wall thickness of 7/16 inch) that supplies water to the PMFU and Filter Forebay complex, along with its interior liner and exterior coating are in acceptable condition for the new intermittent flow service to be provided to the Filter Forebay complex. This design effort does not attempt to verify or inspect the current physical condition of the existing 36-inch buried steel pipe, as such will be conducted by CBS staff.

DESIGN CRITERIA AND PROJECT APPROACH

We have confirmed that the design criteria for this new pipe delivery system will be as follows:

- Blue Lake Dam maximum reservoir operation elevation = 425 feet
- Blue Lake Dam minimum reservoir operation elevation = 360 feet
- Centerline elevation of the existing 36-inch butterfly valves are as identified above.

- Modifications to the existing 6" pipe bypass line around the PMFU powerhouse to deliver a flow rate between 3.5 and 7 ft^3/sec (cfs) to the filter forebay tank. The existing new 24" pipeline can deliver up to 50 cfs to the filter forebay tank.

- As determined by a transient surge analysis conducted by other consultants to CBS, we will assume a momentary surge pressure HGL elevation of 503-ft at the old PMFU turbine centerline. With a turbine centerline elevation of 132 ft msl, this equates to a momentary surge pressure due to downstream turbine unit trip or other penstock / hydropower system disruption of ~161 psig at the horizontal 36" penstock pipe. Surge pressures at the lower 1992 butterfly valve will be higher by ~ 55-ft or 24 psig. The 36-inch valve systems will be checked for stress under surge conditions with a safe allowable stresses not to exceed those surge values as allowed under AWWA C504 requirements.

- McMillen will confirm that the existing butterfly valves can operate under the new maximum momentary surge pressures as indicated herein. Given the class 150B rating of each of the two 36-inch butterfly valves of concern, these valves are designed to comfortably (with adequate safety) operate under normal, non-transient conditions, at the new higher dam maximum reservoir elevations listed above.

- New electric actuator will be sized and geared for a minimum of 60 second opening times and 120 second closing time, unless otherwise required / stated by CBS and/or actuator manufacturers. McMillen will investigate size and type of existing gear boxes, and ability to install new handwheels on such gear boxes of larger diameter (12" to 16") if possible

- New electric actuators will be sized for torque requirements as needed under maximum seating and unseating head requirements on the valve, assuming worst case hydrostatic conditions (HGL at the dam of 425-ft). All new actuators will be specified with internal 120 VAC space heaters, and will be rated as Nema 4X actuators for outdoor service.

- New electric actuators will be provided with Local-Off-Remote (LOR) hand switch in which any auto functions are only enabled with this switch in the "R" position. This means auto control will come from CBS's PLC at WTP building and such remote control can either be an automated function (programmed for closure upon activation of pressure switch low) or open and closed by Operator sitting at the remote Operator Interface work station.

ENGINEERING SERVICES SCOPE OF WORK

In preparation for this proposal, Matt Moughamian, PE (McMillen) has discussed the project needs in depth with CBS Staff and Andrew Pharis (on-site RPR for the Blue Lake Project). We have reviewed a number of photographs of the existing piping and valve system related to the PMFU and Filter Forebay facilities. Based on this work and these discussions, we propose the engineering design scope of work be divided into the following three work tasks:

- Task 1.0 Project Coordination & Kick-off Site Trip to Sitka
- Task 2.0 Valve Actuator Design & Prepare Record Process Flow Schematic Drawings and Piping System P&ID Drawings
- Task 3.0 Engineering Support during Construction

The deliverable products and assumptions are included in each task description below.

Task 1.0 Project Coordination

McMillen will coordinate with CBS staff to provide full design documents (Construction Drawings and Specifications) as discussed above. This task will be initiated by a one-day on-site work trip plus travel time by M. Moughamian to review all existing piping systems from the dam intake control structure, down to the afterbay of the new Powerhouse, to cover the existing piping and water delivery systems of the Blue Lake Hydropower, instream releases at the mid-penstock small turbine unit, old PMFU / Filter Forebay and NSRAA water delivery facilities. Engineer will take photos of all relevant piping systems and consult with CBS Operations staff, and use such to develop realistic, plan-view schematics (not to scale) drawings of the existing water piping delivery systems.

On this site visit – critical Operations staff from CBS will be present to discuss and convey following information to Engineer:

- Either written control descriptions or a verbal discussion describing how all critical valve systems are operated in automatic mode from the facilities PLCs. These descriptions will form the basis of creating the Record P&ID drawings as requested by CBS.

- Desired valve numbering system for all valves on process piping schematics. If no valve numbering system currently exists, the Engineer will propose a simple 3 digit numbering system for all valves, likely starting with 100 series valve numbering up at the intake at Blue Lake Dam, and proceeding downstream accordingly.

Work task also includes coordination phone calls as required with CBS project staff regarding project coordination and design issues, as well as phone calls and design discussion with the valve manufacturers. General accounting and other project management costs are also included in this task.

Task 2.0 New Valve Actuator Design and Process Flow Schematic - Record Drawing Prep.

This task includes performing all required hydraulic calculations and consultation with appropriate valve / actuator manufacturers of the existing relevant butterfly valve systems to withstand anticipated static and surge pressures from the new Blue Lake reservoir project water surface elevations. Estimated two (2) new process flow schematic drawings will be prepared in AutoCAD drawing format. Schematics will be produced, probably in a realistic plan view setting, to provide a complete representative single line flow schematic, with flow rates, pressures at normal operating conditions, and normal state of all valves that relates to water supply to the NSRAA and Powerhouse facilities as shown on the **attached hand sketch produced by CBS** staff, including:

- Filter Forebay Facilities thru new 24-inch steel piping
- NSRAA Head tank and facilities,
- 6" NSRAA Penstock supply line
- 42" Bulk-water delivery line
- NSRAA Emergency supply line and Control Valve
- Powerhouse Afterbay industrial water pumps
- Fire water line and bottle water supply line
- Others as identified by CBS staff and McMillen

Contract Bid and/or Record Drawings. This task includes preparing the following Construction and/or Record Drawings assumed required:

PROPOSED DRAWING LIST	
Dwg No.	**Title**
G-01 thru G-03	Existing Drawings as Provided Already on Original Design (NIC)
G-04 (Record Drawing)	Process Flow Schematic for Instream small Turbine, Filter Forebay and NSRAA Facilities - 1
G-05 (Record Drawing)	Process Flow Schematic for Instream small Turbine, Filter Forebay and NSRAA Facilities - 2
M-01	Modifications to Exist. 6" steel bypass line to Filter Forebay Unit Valve Actuator Design – Elevations & Details (as required)
S-01	Structural Pipe Support Modifications to Exist. 6" Steel Bypass Line
PI-01	P&ID for PH Afterbay IW Pumps and NSRAA Head tank level control system -1
PI-02	P&ID for PH Afterbay IW Pumps and NSRAA Head tank level control system -2

Design Assumptions:

- The new powerhouse facility has new design and recently produced Record Drawings which are adequate, and no new piping schematics or P&IDs are needed at the new Powerhouse facility.
- Existing survey files and piping record drawing information is adequate and no additional field survey work will be required.
- No additional geotechnical investigations will be required.
- One (1) site visit of 1-day on-site time plus travel time will be required by lead Engineer to produce baseline field notes for preparation of Process Flow Schematic and P&ID drawings.
- No new design modifications are required of any existing electrical or I&C drawings or equipment.
- New PLC I/O terminations and programming for automation of new 36" butterfly electric actuator will be provided by CBS programmer or others?
- All comments and required design changes of substance shall be identified by CBS and McMillen team at the 60% review level, and such changes shall be made as part of this design process. Any substantive changes required by the Owner at the final 100% final design submittal may require additional budget compensation to this proposed contract.
- This proposal assumes McMillen will not be providing any assistance on any required permitting services for the project, if any. All project permitting requirements, including any city, county, state or federal permitting requirements shall be resolved and obtained by the Owner (CBS).
- At the end of the design phase for the new piping and valving modifications work, McMillen Jacobs construction team will provide a cost proposal to execute the required construction work, if desired by CBS.

Contract Bid Specifications. McMillen's proposal assumes the following for production of the required specifications for bidding the new project piping and valve modifications.

- **Division 00** (Bid Requirements, Contract Forms and General Conditions) – by CBS

- **Division 01** (Project General Requirements). Provide by McMillen.

- **Division 02 and Higher** (Project Technical Requirements) specifications shall all be developed and provided by McMillen. The principal specification sections developed shall include the following:

    - Section 01 33 00 – Contractor Submittals
    - Section 01 74 30 – Steel Piping Cleaning and Testing
    - Section 05 50 00 – Miscellaneous Metals (for pipe supports primarily)
    - Section 33 11 00 – Piping General
    - Section 33 11 11 – Steel Piping, Specials and Fittings

- Section 40 91 23 – Magnetic Flow Meters
- Section 43 25 00 –Valves General
- Section 43 25 01 – Valve Actuators

Design Document Deliverables: All deliverable will be made in pdf format and submitted via email. Drawings will be generated in 11" x 17" format. Design deliverable shall be as follows:

- 60% design documents (drawings and specs) for CBS review
- 100% final design documents (drawings and specs) for CBS review
- Final stamped/signed construction drawings and specifications

Task 3.0 Engineering Support during Construction

Whether the project is completed as a design-bid-build or a design-build project, our engineering staff would be pleased to provide the office engineering support services related to project construction. All RFI's and submittals from the Contractor would be reviewed by McMillen's design engineer and submitted to the CBS or McMillen construction manager / RPR for approval and implementation.

Assumptions: CMS services are budgeted based upon the following assumptions:

- A maximum of three (3) RFIs will be submitted and reviewed.
- A maximum of seven (7) submittals will be submitted and reviewed. Each submittal will require no more than one resubmittal.
- After completion of construction services, McMillen Construction Superintendent or hydraulic engineer will provide one (1), 1-day of on-site assistance for startup and dynamic testing of new 24" water supply line to Filter Forebay.

ENGINEERING DESIGN & CMS BUDGET

McMillen Jacob's proposed budget for the project coordination and engineering design services are outlined in the table below.

PROPOSED ENGINEERING & CMS BUDGET		
Task	**Work Description**	**Budget**
1.0	Project Coordination, Site Visit to Sitka & Management / Invoicing	$9,416
2.0	Preparation of Design Documents (Drawings and Specs for new BFV Actuator Design; Mech. And Structural piping mods to exist 6" line; Prepare Process Flow Schematics & P&IDs - Record Drawing Prep of current system**.)**	$27,325

3.0	Construction Management Services (Engineering Submittal & RFI reviews)	$4,560
3.1	Startup Services (Engineering / CM Manager Dynamic Testing and Valve Actuation Field Site Visit, + Operations TM preparation)	$6,456
	Total	**$47,757**

DESIGN SCHEDULE

Once a Notice-to-Proceed (NTP) is received from CBS for the project work, we propose to provide CBS with the design submittals according to the following schedule:

- Conduct on-site visit by Engineer — within 4 weeks after NTP
- Submittal of the 60% Design & new Record Documents: — 4 weeks after site visit is accomplished
- Submittal of the 100% Final Design Documents: — 3 weeks after the 60% review submittal comments are received from CBS

Long Lead Items in Construction. We anticipate that our final design will include installation of new electric 3-phase motor actuators on the existing 36-inch diameter AWWA C504 butterfly valve at the penstock. Depending on the final sizing of these valve actuators, these units may have a long lead time for delivery. Our design engineer will prepare the technical specifications for these valve actuators to near completion by the 60% design submittal, to allow for a full review of these specifications, quick final editing, and either CBS or McMillen, to start the procurement of this long lead equipment.

If you have any questions or need any additional information please don't hesitate to contact me at (208) 342-4214, x306. We look forward to continuing to serve CBS on this project.

Sincerely,

Matt Moughamian, PE
Project Manager / Lead Engineer

Mara McMillen
Chief Operating Officer

cc: Morton D. McMillen, Chief Engineer
Andrew Pharis, RPR Blue Lake Project
File

City and Borough of Sitka, AK
Engineering Design CM Services for Piping and Valve Actuator Modifications (Part II to Exist. Filter Plant Forebay)
Engineering Work Tasks Man-Hr Budget Estimate

CBS - Exist Filter Plant Forebay - Pipe / Valve Mods - Part II	Mort McMillen (QA/QC)	Moughamian (PM & Lead Mech Eng.)	Horeczy (Structural SE)	Leyton (CAD Design)	Harper (Cost Estimates)	Acct. & Admin Support	Total Hours		PROJECT EXPENSES						
Design Work Tasks	$ 185	$ 160	$ 130	$ 95	$ 80	$ 60		Total Labor	Airfare ($ trip) $ 1,100	Hotel ($/night) $ 160	Rental Car ($/day) $ -	Meals ($/man-day) $ 52	Bid Docs. Reprod. $ -	Total Expenses	TOTAL TASK COST
Task 1 - Project Design Coordination / Management	-	46	-	-	-	8	54	$ 7,840	$ 1,100	$ 320	$ -	$ 156	$ -	$ 1,576	$ 9,416.00
1.1 General Project setup, conf calls, & Design Coordination (6 weeks x 3 hrs/wk)		18				6									
1.2 Site Visit for Date Collection (1.5 days on-site for MSM + travel)		28							1	2		3			
1.2 Monthly Invoices (1 hr/month for accounting)						2									
Task 2 - New Piping & Valve System Design (Contract Docs Prep)	8	91	12	95	5	5	216	$ 27,325	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,325.00
2.1 60% Construction Doc Prep. & Record Drawing Prep. (Total 5 Schems and P&IDs)		50	10	64											
2.2 60% Design Review Conf Call & Minutes		4				2									
2.3 100% Construction Document Preparation		27	2	28											
2.4 100% Design Review Conf Call & Const Cost Estimate		4			5	2									
2.5 100% Stamped / Signed Construction Document Preparation		6		3											
2.6 QA/QC review of 60% & 100% Submittals	8	-				1									
Task 3 - Engineering Support Services During Construction	-	33	32	-	-	-	65	$ 9,440	$ 1,100	$ 320	$ -	$ 156	$ -	$ 1,576	$ 11,016.00
3.1 Perform Shop Drawing Review (assume 6 @ 2.0 hrs each attempt x 2 attempts ea)		18	6												
3.2 Respond to Requests for Info (RFIs) - (3 x 2 hr/ea)		4	2												
3.3 Site Visit for Dynamic Testing Startup Services (1.5 days on-site for GH + travel)		3	24						1	2		3			
Gener. Final TM on new Piping System Ops based on Startup Testing		8													
Total Hours	8	170	44	95	5	13	335	$ 44,605							
Total Budget	$ 1,480	$ 27,200	$ 5,720	$ 9,025	$ 400	$ 780		$ 44,605	$ 2,200	$ 640	$ -	$ 312	$ -	$ 3,152	$ 47,757

1.) Estimate ~$1,100 / round trip for airfare Boise to Sitka
2.) Estimate $160 / night for hotel in Sitka
3.) Assume temp transport car provided by CBS
4.) Assume ~$52/day per person for meals
5.) Assume ~$20/day per person for airport parking and misc expenses

Estimated Sheet Count
General = 3 Sheets
Process Mechanical & Piping Mod Work = 1 Sheet
Structural Pipe Support Sections & Details = 1 Sheet
Schematic Record Drawings of Existing Piping Systems = 2 Sheets
Schematic Record Drawings of Flow System P&IDs = 2 Sheets

Total ~ 6 Sheets + 3 General Sheets