



Navajo Nation
Through Its Department of Water Resources Water Management Branch
October 22, 2021

TO: All Interested Bidders

FROM: Brown and Caldwell

SUBJECT: ADDENDUM #1 NOTICE

Let this memorandum serve as a notice of additional information regarding the **“Contract No. 2: Bodaway-Gap Well House No. 3 Construction, Storage Tank No. 2, Altitude Valve, and Pipelines Navajo Nation Bid Number 21-09-2581LE”**.

Below are questions collected from firms interested in this invitation for bid with responses as follows:

1. In reference to the drawings for the “Western Navajo Pipeline Phase 1 Bodaway-Gap Well, Tank, and Pipeline Project, October 2021, Bid Issue”, the altitude vault page C-120 notes for “Revisions to HIS STD DWG W-28”, notes 4-7, and 10, 11 refer to a drawing that is not included in this plan set. The notes reference **NTUA Standard 4”x2” PRV Detail** which is not included in the NTUA drawings section.

Answer: The notes on sheet C-120 do refer to the NTUA Standard 4”x2” PRV detail. The two drawings WS-4b and WS-4b, which are the NTUA Standard 4”x2” PRV detail, were mistakenly left out of the plan set. The Index sheet has been updated and these two drawings are included as an attachment with this addendum.

2. In researching for Altitude Valve in Technical Specifications, Page 15050-15 refers to Spec Section 15147. Section 15147 cannot be located, please review.

Answer: This specification was mistakenly left out of the specifications. The updated Table of Contents, Division 15 Cover Sheet and this specification is now included as attachments with this addendum.

SECTION 00017

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Navajo Nation

WESTERN NAVAJO PIPELINE PHASE 1

BODAWAY-GAP WELL, TANK AND PIPELINE

CONTRACT NO. 2: WELL HOUSE, STORAGE TANK, ALTITUDE VALVE, AND
PIPELINES

**Reference
Number Title**

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DIVISION 1 - GENERAL REQUIREMENTS

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03600	Grout

DIVISION 4 – MASONRY

NOT USED

DIVISION 5 – METALS

05501	Anchors to Concrete and Masonry
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DIVISION 6 – WOOD AND PLASTICS

NOT USED

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NOT USED

DIVISION 8 – DOORS AND WINDOWS

NOT USED

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NOT USED

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NOT USED

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****END OF TABLE OF CONTENTS****

DRAWINGS SETS (BOUND SEPARATELY)

DRAWINGS FOR BODAWAY-GAP WELL, TANK AND PIPELINE PROJECT

****END OF SECTION****

Navajo Nation
WESTERN NAVAJO PIPELINE PHASE 1

BC PROJECT NO.: 150360

BODAWAY-GAP WELL, STORAGE TANK AND PIPELINE

DIVISION 15

MECHANICAL

15050	Piping Systems
15062	Ductile Iron Pipe
15064	Plastic Pipe
15065	HDPE Pipe
15085	Piping Connections
15102	Resilient-Seated Gate Valves
15118	Spring Loaded Swing Check Valves
15125	Steel Pipe Casing
15147	Solenoid Valves
15150	Air Release and Vacuum Valves for Clean Water Service
15184	Manual Valve and Gate Operators and Operator Appurtenances

SECTION 15147
SOLENOID VALVES

PART 1--GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section specifies 2- and 3-way solenoid valves, direct or pilot operated type, for control of process fluids. Valves for air cylinder pilot duty are specified in Section 15185.

B. TYPE:

Valves with piping connections less than 1-1/2 inches in diameter shall be direct-acting type.

Valves with piping connections 1-1/2 inches in diameter and greater shall be pilot operated globe body type.

C. DESIGN REQUIREMENTS:

Unless otherwise specified, solenoid valves shall be designed to seal or unseal the pressurized (supply) port upon the action specified in the paragraph 1.03, Solenoid Valve Schedule.

Valves shall be listed by Underwriters Laboratories Inc. in accordance with UL 429 and UL 1002. Solenoid valves for gas service shall be approved by Factory Mutual Engineering Corporation. The minimum acceptable operating pressure differential for pilot operated valves shall be 5 psi.

1.02 REFERENCES

This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version

associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.

Reference	Title
ASTM A48	Gray Iron Castings
UL 429	Electrically Operated Valves
UL 1002	Electrically Operated Valves for Use in Hazardous Locations, Class I, Groups A, B, C, and D, and Class II, Groups E, F, and G

1.03 SOLENOID VALVE SCHEDULE

Service ^a	Solenoid valve number	Line size, inches	Valve size, inches	Operating pressure maximum, psig	Operating temp., maximum, degrees F	NEMA Enclosure Type	Unpowered position: Normally Open (NO) or Normally Closed (NC)	Voltage
Potable water	#1	10	6	250	180	4X	NC (energized to open)	120V AC

^a See Section 15050 for description of service fluids.

PART 2--PRODUCTS

2.01 MANUFACTURERS

The Owner and Construction Manager believe the following candidate manufacturers are capable of producing equipment and/or products that will satisfy the requirements of this Section. This statement, however, shall not be construed as an endorsement of a particular manufacturer's products, nor shall it be construed that named manufacturers' standard equipment or products will comply with the requirements of this Section.

A. DIRECT ACTING TYPE:

Candidate manufacturers include:

1. Automatic Switch Company (ASCO)
2. Honeywell-Skinner
3. or equal

B. PILOT TYPE:

Candidate manufacturers include:

Solenoid Valves
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1. Cla-Val Co.
2. Golden Anderson
3. or equal

2.02 MATERIALS

A. DIRECT ACTING TYPE:

Materials of construction shall be as follows:

Component	Material
Body	Brass or stainless steel, Type 304
Seal	Teflon or Buna-N
Disc	Teflon or Buna-N

B. PILOT TYPE:

Materials of construction shall be as follows, unless otherwise specified:

Component	Material
Main valve body	Cast iron, ASTM A48
Pilot control body	Brass

2.03 EQUIPMENT

A. GENERAL:

Solenoid valves shall be rated for continuous duty at 24 volts DC or 120 volts AC as indicated. Valves shall be threaded for sizes 2-inch and smaller and flanged for sizes 2-1/2 inch and larger.

B. DIRECT ACTING TYPE AND PILOT TYPE:

Solenoid valves shall be suitable for the area location and usages as indicated in the schedule with fully encapsulated Class H coils. Enclosure type:

1. NEMA 1 general purpose, molded epoxy construction
2. NEMA 4X watertight / dust tight / corrosion resistant
3. NEMA 6P submersible
4. NEMA 7 explosion proof

Unspecified solenoid valves enclosures shall be NEMA 4X.

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2.04 PRODUCT DATA

Manufacturer's product data shall be provided in accordance with Section 01300.

2.05 SOLENOID VALVE #1 – COMBINATION PRESSURE REDUCING, PRESSURE SUSTAINING, AND SOLENOID CONTROL VALVE

A. FUNCTION:

The combination pressure reducing, pressure sustaining, and solenoid control valve shall automatically perform three independent functions:

1. Maintain a constant downstream pressure
2. Sustain upstream pressure
3. Utilize a solenoid override to shut the valve drip-tight

The valve shall maintain a constant downstream pressure regardless of changing flow rate and/or inlet pressure when the solenoid is actuated. The three-way solenoid pilot alternately applies pressure to or exhausts pressure from the diaphragm chamber of the high capacity auxiliary valve which in turn enables/disables the valve to sustain and/or reduce pressure. When the upstream pressure becomes equal to the spring setting of the pressure sustaining control, the valve throttles to maintain a constant inlet pressure. The solenoid control valve is a self-contained unit consisting of a diaphragm-operated packless main valve, a diaphragm-operated high capacity auxiliary valve, and a packless three-way solenoid pilot valve.

B. MAIN VALVE:

The valve shall be hydraulically operated, single diaphragm-actuated, globe pattern. The valve shall consist of three major components: the body with seat installed, the cover with bearings installed, and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls.

1. Body: No separate chambers shall be allowed between the main valve cover and body. Valve body and cover shall be of cast material. Ductile Iron is standard and other materials shall be available. No fabrication or welding shall be used in the manufacturing process. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert. No O-ring type discs (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place. The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. It must have straight

edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hourglass-shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.

The diaphragm assembly containing a non-magnetic 303 stainless steel stem of sufficient diameter to withstand high hydraulic pressures shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The seat shall be a solid, one-piece design and shall have a minimum of a five-degree taper on the seating surface for a positive, drip-tight shut off. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary. The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid.

The main valve seat and the stem bearing in the valve cover shall be removable. The cover bearing and seat in 6" and smaller size valves shall be threaded into the cover and body. The lower bearing of the valve stem shall be contained concentrically within the seat and shall be exposed to the flow on all sides to avoid deposits. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline. Packing glands and/or stuffing boxes shall not be permitted and components including cast material shall be cast and machined in North America.

2. Materials:

Main Valve Body and Cover: Ductile Iron ASTM A-536

Main Valve Trim: 316L Stainless Steel

End Detail: 150 lb Flange ANSI B16.42

Pressure Rating: 250 psi max. working pressure

Temperature Range: -40 to +180 Degrees F

Rubber Material: Buna N

Coating: FDA Approved Fusion Bonded Epoxy Coating

C. PILOT CONTROL SYSTEM:

1. General: The pilot control shall consist of a three-way solenoid valve controlled by an external electrical power source. The pilot system shall include strainers, shut-off cocks and manual operator. Opening and closing speed control needle valves shall be utilized so as to prevent surging of the system on start-up and shut-down. Solenoid shall have a NEMA IV enclosure.

Solenoid Valves
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Bodaway-Gap Contract 2
Bid Issue

The pressure reducing pilot control shall be a direct-acting, adjustable, spring-loaded, normally open, diaphragm valve designed to permit flow when controlled pressure is less than the spring setting. The pilot control is held open by the force of the compression on the spring above the diaphragm and it closes when the delivery pressure acting on the underside of the diaphragm exceeds the spring setting. The pilot control system shall include a fixed orifice. No variable orifices shall be permitted. The pilot system shall include an opening speed control. The pilot control shall have a second downstream sensing port which can be utilized to install a pressure gauge.

The pressure sustaining pilot control shall be a direct-acting adjustable spring-loaded control which opens when upstream pressure exceeds the spring setting on the pilot.

2. Materials:

Body: Cast Bronze ASTM B62

Trim: 303 Stainless Steel

Rubber Material: Buna N

Tubing and Fittings: Stainless Steel

Operating Fluids: Water

Pressure Rating: 300 psi

Pressure Reducing Adjustment Range: 30-300 psi

Pressure Sustaining Adjustment Range: 20-200 psi

Solenoid Voltage: 120-60 Hz AC – energized to open with manual operator

D. MANUFACTURER:

This valve shall be a Cla-Val Co. Model No. 692-07-BDCPSYKC combination pressure reducing, pressure sustaining, and solenoid control valve, or approved equal.

The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment, provided the valve is installed and used in accordance with all applicable instructions. Electrical components shall have a one-year warranty.

A direct factory representative shall be made available for start-up service, inspection and necessary adjustments.

PART 3--EXECUTION

Solenoid valves shall be installed in accordance with the manufacturer's recommendations.

****END OF SECTION****

Solenoid Valves

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Bodaway-Gap Contract 2
Bid Issue

Path: C:\BPC\DWG\1020278 FILENAME: G-001.DWG PLOT DATE: 10/1/2021 1:17 PM CAD USER: TYLER PRIDEMORE

GENERAL		
SHEET NO.	DWG NO.	DWG TITLE
1	G-000	COVER SHEET
2	G-001	DRAWING INDEX
3	G-002	STANDARD SYMBOLS
4	G-003	STANDARD ABBREVIATIONS
5	G-004	VICINITY MAP
SURVEY		
SHEET NO.	DWG NO.	DWG TITLE
6	V-001	RESULTS OF SURVEY
7	V-002	RESULTS OF SURVEY
8	V-003	RESULTS OF SURVEY
CIVIL		
SHEET NO.	DWG NO.	DWG TITLE
9	C-001	GENERAL CIVIL NOTES AND SYMBOLS
10	C-002	CONTROL COORDINATES
11	C-003	MISCELLANEOUS DETAILS
12	C-004	MISCELLANEOUS DETAILS
13	C-100	BODAWAY-GAP WELL NO. 3 SITE AND GRADING PLAN
14	C-101	BODAWAY-GAP WELL NO. 3 PIPING PLAN
15	C-102	BODAWAY-GAP WELL NO. 3 SITE ELEVATION
16	C-110	BODAWAY-GAP STORAGE TANK NO. 2 SITE AND GRADING PLAN
17	C-111	BODAWAY-GAP STORAGE TANK NO. 2 PIPING PLAN
18	C-112	BODAWAY-GAP STORAGE TANK NO. 2 DRAIN LINE PLAN & PROFILE
19	C-113	BODAWAY-GAP STORAGE TANK NO. 2 PIPING PLAN & ELEVATION
20	C-114	BODAWAY-GAP STORAGE TANK NO. 2 PLAN & ELEVATION
21	C-120	BOADWAY GAP ALTITUDE AND FLOW CONTROL VALVE SITE PLAN & DETAILS
22	C-200	KEY MAP
23	C-201	STA 10+00 - STA 19+00 PLAN & PROFILE
24	C-202	STA 19+00 - STA 28+00 PLAN & PROFILE
25	C-203	STA 28+00 - STA 37+00 PLAN & PROFILE
26	C-204	STA 37+00 - STA 46+00 PLAN & PROFILE
27	C-205	STA 46+00 - STA 55+00 PLAN & PROFILE
28	C-206	STA 55+00 - STA 64+00 PLAN & PROFILE
29	C-207	STA 64+00 - STA 73+00 PLAN & PROFILE
30	C-208	STA 73+00 - STA 82+00 PLAN & PROFILE
31	C-209	STA 82+00 - STA 91+00 PLAN & PROFILE
32	C-210	STA 91+00 - STA 100+00 PLAN & PROFILE
33	C-211	STA 100+00 - STA 109+00 PLAN & PROFILE
34	C-212	STA 109+00 - STA 118+00 PLAN & PROFILE
35	C-213	STA 118+00 - STA 127+00 PLAN & PROFILE
36	C-214	STA 127+00 - STA 136+00 PLAN & PROFILE
37	C-215	STA 136+00 - STA 145+00 PLAN & PROFILE
38	C-216	STA 145+00 - STA 154+00 PLAN & PROFILE
39	C-217	STA 154+00 - STA 163+00 PLAN & PROFILE
40	C-218	STA 163+00 - STA 172+00 PLAN & PROFILE
41	C-219	STA 172+00 - STA 181+00 PLAN & PROFILE
42	C-220	STA 181+00 - STA 190+00 PLAN & PROFILE
43	C-221	STA 190+00 - STA 199+00 PLAN & PROFILE
44	C-222	STA 199+00 - STA 208+00 PLAN & PROFILE
45	C-223	STA 208+00 - STA 217+00 PLAN & PROFILE
46	C-224	STA 217+00 - STA 226+00 PLAN & PROFILE
47	C-225	STA 226+00 - STA 235+00 PLAN & PROFILE
48	C-226	STA 235+00 - STA 244+00 PLAN & PROFILE
49	C-227	STA 244+00 - STA 253+00 PLAN & PROFILE
50	C-228	STA 300+00 - STA 309+00 PLAN AND PROFILE

51	C-229	STA 309+00 - STA 318+00 PLAN AND PROFILE
52	C-230	STA 318+00 - STA 327+00 PLAN AND PROFILE
53	C-231	STA 327+00 - STA 336+00 PLAN AND PROFILE
54	C-232	STA 336+00 - STA 345+00 PLAN AND PROFILE
55	C-233	STA 345+00 - STA 354+00 PLAN AND PROFILE
56	C-234	STA 345+00 - STA 363+00 PLAN AND PROFILE
57	C-235	STA 363+00 - STA 372+00 PLAN AND PROFILE
58	C-236	STA 372+00 - STA 381+00 PLAN AND PROFILE
59	C-237	STA 381+00 - STA 390+00 PLAN AND PROFILE

STRUCTURAL

SHEET NO.	DWG NO.	DWG TITLE
60	S-001	GENERAL STRUCTURAL NOTES
61	S-002	SPECIAL INSPECTIONS
62	S-110	STORAGE TANK NO. 2 FOUNDATION PLAN & SECTION

ELECTRICAL

SHEET NO.	DWG NO.	DWG TITLE
63	E-001	SYMBOLS, ABBREVIATIONS, AND NOTES
64	E-002	CONTROL AND ONE-LINE DIAGRAM LEGENDS AND SYMBOLS
65	E-003	STANDARD DETAILS 1
66	E-004	STANDARD DETAILS 2
67	E-005	STANDARD DETAILS 3
68	E-100	BODAWAY-GAP WELL NO. 3 ELECTRICAL SITE PLAN
69	E-101	BODAWAY-GAP WELL NO. 3 PUMP HOUSE PLAN
70	E-102	BODAWAY-GAP WELL NO. 3 ONE-LINE DIAGRAM
71	E-110	BODAWAY-GAP STORAGE TANK NO. 2 SITE PLAN
72	E-120	EXISTING BODAWAY-GAP STORAGE TANK SITE PLAN
73	E-130	BODAWAY-GAP ELECTRICAL SUBSTATION SITE PLAN
74	E-140	PRESTON MESA SITE PLAN

INSTRUMENTATION

SHEET NO.	DWG NO.	DWG TITLE
75	I-001	BODAWAY-GAP COMMUNICATIONS BLOCK DIAGRAM

PROCESS

SHEET NO.	DWG NO.	DWG TITLE
76	P-100	HYDRAULIC GRADE LINE DIAGRAM

NTUA STANDARD DETAILS FOR WATER

DWG NO.	DWG TITLE
WS-10	AIR RELEASE VALVE DETAIL
WS-11	2" FLUSH VALVE DETAIL
WS-13	MARKER POST DETAIL
WS-14	WATER MAIN VALVE INSTALLATION
WS-17a	TYPICAL ROAD CROSSING FOR NTUA WATERLINES
WS-18	INSTALLATION OF SKIDS INSIDE CASING
WS-19	GRAVITY/THRUST BLOCK DETAILS
WS-19a	GRAVITY/THRUST BLOCK CHART

WS-4b & WS-4c 4" X 2" PRV DETAIL

IHS STANDARD DETAILS

DWG NO.	DWG TITLE
W-14	4" PUMPHOUSE PIPING LIST NO. 901550
W-15	GAS CHLORINATION LIST NO. 902000
W-20	WATER STORAGE TANK (MODIFIED BY BC) (1 THRU 4)
W-23	PREFAB PUMP HOUSE EXTERIOR FACILITIES LAYOUT
W-28	ALTITUDE VALVE
W-29	TWO-ROOM PRECAST PUMPHOUSE
W-32	TANK VAULT ELECTRONIC TRANSMITTER PIPING SYSTEM
W-34	FENCE DETAIL FOR STORAGE TANK AND PUMPHOUSE
W-39	SILT FENCE
W-40	STRAW BALES

NTUA TECHNICAL PROVISIONS

DWG NO.	DWG TITLE
1 OF 6	DC TANK PANEL COVER SHEET
2 OF 6	DC TANK CONTROL PANEL DISCRETE IO
3 OF 6	DC TANK CONTROL PANEL ANALOG IO
4 OF 6	DC TANK CONTROL PANEL POWER DISTRIBUTION
5 OF 6	DC TANK CONTROL PANEL BDCKPLANE
6 OF 6	DC TANK CONTROL PANEL CABLE PINOUT
1 OF 6	AC TANK PANEL COVER SHEET
2 OF 6	AC TANK CONTROL PANEL DISCRETE IO
3 OF 6	AC TANK CONTROL PANEL ANALOG IO
4 OF 6	AC TANK CONTROL PANEL POWER DISTRIBUTION
5 OF 6	AC TANK CONTROL PANEL BACKPLANE
6 OF 6	AC TANK CONTROL PANEL CABLE PINOUT
1 OF 6	PLC CONTROL PANEL COVER SHEET
2 OF 6	PLC CONTROL PANEL DISCRETE I/O (SIMPLEX WELL WITH SOFT STARTER)
3 OF 6	PLC CONTROL PANEL ANALOG I/O (SIMPLEX WELL WITH SOFT STARTER)
4 OF 6	PLC CONTROL PANEL POWER DISTRIBUTION
5 OF 6	PLC CONTROL PANEL BACKPLANE
5A OF 6	PLC CONTROL PANEL WITH SWING OUT PANEL BACKPLANE
6 OF 6	PLC CONTROL PANEL CABLE PINOUT
1 OF 3	3 PHASE - SOFT START PUMP PANEL COVER SHEET
2 OF 3	3 PHASE - SOFT START PUMP PANEL LOGIC WIRING
3 OF 3	3 PHASE - SOFT START PUMP PANEL 7.5 TO 50 HP APPLICATIONS BACKPLANE
1 OF 2	PUMP HOUSE LAYOUT
2 OF 2	PUMP HOUSE LAYOUT



SALT LAKE CITY, UTAH



BODAWAY-GAP WELL, TANK, AND PIPELINE

REVISIONS		
REV	DATE	DESCRIPTION

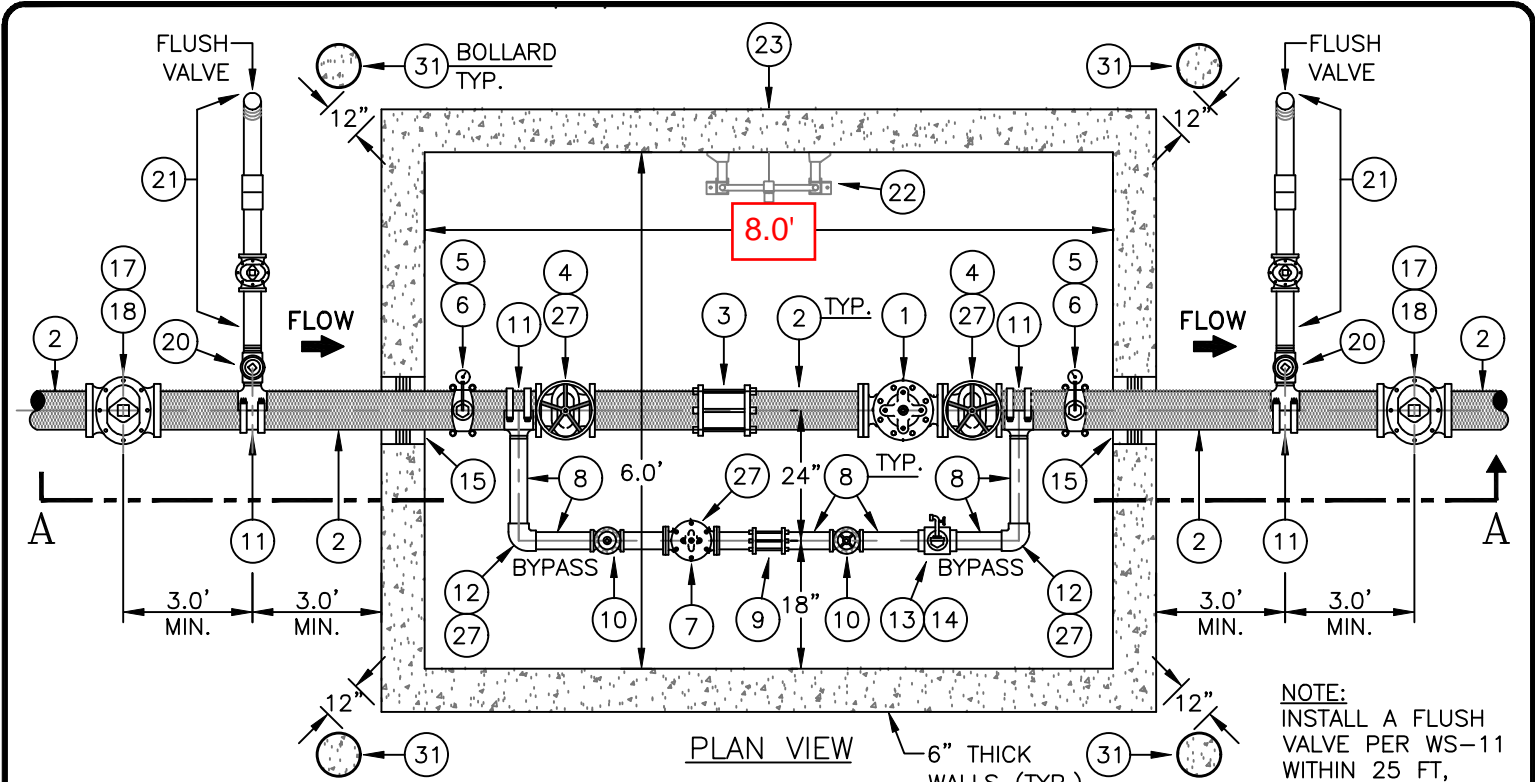
LINE IS 2 INCHES AT FULL SIZE

DESIGNED: J. YAZZIE
 DRAWN: T. PRIDEMORE
 CHECKED: J. YAZZIE
 CHECKED: E. DESOUZA
 APPROVED: S. BRENCCHLEY

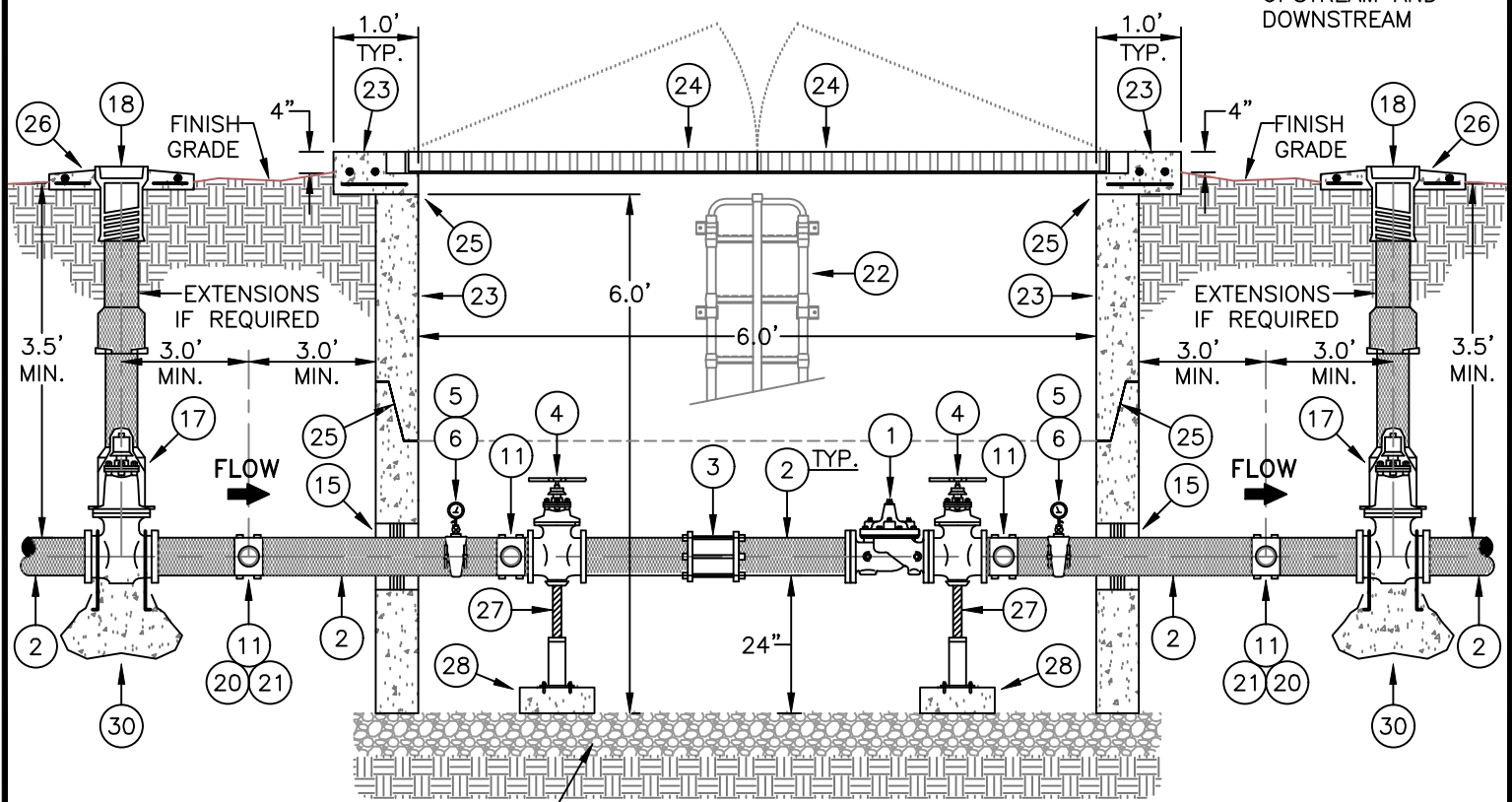
FILENAME: G-001.DWG
 BC PROJECT NUMBER: 150360
 CLIENT PROJECT NUMBER: C010232

GENERAL DRAWING INDEX

DRAWING NUMBER
G-001
SHEET NUMBER
2 OF 76



NOTE:
INSTALL A FLUSH VALVE PER WS-11
WITHIN 25 FT,
UPSTREAM AND
DOWNSTREAM



CRUSHED 1/2" CLEAN GRAVEL
FILL OVER NATIVE SOIL
(95% MIN. COMPACT.)
EXTEND GRAVEL 18" MIN. BEYOND
CONC. VAULT BASE WALLS.

SECTION A-A

DESIGNED BY:	NTUA-HQ
SURVEYED BY:	-
DRAFTED BY:	NTUA-HQ
APPROVED BY:	NTUA-HQ
DATE:	01/2019
PROJECT NO.:	-
SCALE:	NTS
ACAD FILENAME:	2019 NTUA Std. Dwg. for Water.dwg
DETAIL NO.:	WS-4b

NAVAJO TRIBAL UTILITY AUTHORITY
ENGINEERING & CONSTRUCTION OPERATIONS DIVISION

4" x 2" P.R.V.

NTUA HEADQUARTERS FT. DEFIANCE, AZ

REVISIONS			
No.	Date	Brief	By
01	09/15	2015 Addition	A.S.
02	01/19	2019 Update	A.S.
03			
04			
05			
06			



4" x 2" P.R.V.

#

MATERIAL LIST

ITEM	QTY	DESCRIPTION
1	1	4" CLA-VAL, PRESSURE REDUCING VALVE, THREADED ENDS, STAINLESS STEEL (S.S.) TRIM & PILOT TUBING, 90 SERIES W/ OPTIONS A, B, C, D, V & M
2	A.R.	4" DUCTILE IRON (D.I.) PIPE, CLASS 350, PLAIN END, CUT AS NEEDED
3	1	4" DRESSER COUPLING (6" LONG FOR D.I. PIPE)
4	2	4" GATE VALVE, F.I.P.T., N.R.S., R.H.T., BRASS HAND WHEEL
5	2	2" DOUBLE STRAP W/ 2" x 3/4" BUSHING AND 3/4" x 1/4" BUSHING FOR PRESSURE GAGE
6	2	PRESSURE GAUGE W/ 1/4" BRASS SHUTOFF VALVE
7	1	2" CLA-VAL, PRESSURE REDUCING VALVE, THREADED ENDS, STAINLESS STEEL (S.S.) TRIM & PILOT TUBING, 90 SERIES W/ OPTIONS A, B, C, D, V & M
8	A.R.	2" S.S. PIPE, THREADED, CUT AS NEEDED
9	1	2" DRESSER COUPLING (6" LONG FOR S.S. PIPE)
10	2	2" GATE VALVE, F.I.P.T., N.R.S., R.H.T., BRASS HAND WHEEL
11	4	4" x 2" TAP SADDLE
12	2	2" 90° S.S. ELBOW, F.I.P.T.
13	1	2" S.S. HOSE BIB
14	1	2" S.S. TEE W/ 2" x 3/4" BUSHING AND 3/4" x 1/4" BUSHING FOR HOSE BIB
15	2	VAULT BORE DONUT, 6" O.D. / 4" I.D.
16	2	4" D.I. 'E-Z' FLANGED ADAPTER
17	2	4" GATE VALVE, M.J., RESILIENT SEAT, FLANGED, N.R.S., R.H.T., W/ 2" OPERATING NUT
18	4	VALVE BOX, 2-PIECE SCREW TYPE, 5-1/4" SHAFT W/ CAST IRON DROP LID
19	-	4" C-900 PVC PIPE
20	2	2" CORPORATION STOP, MIPT x FIPT
21	2	INSTALL 2" FLUSH VALVE PER NTUA STD. DTL. WS-11 (AFTER THE CORP. STOP)
22	1	'LANE' POLYPROPYLENE VAULT LADDER W/ PULL-UP HANDRAIL (5 RUNG)
23	1	8' x 6' x 6' (INT. DIM.) PRECAST CONCRETE VAULT (4,000 PSI MIN.), 6" THICK WALLS W/ 6" THICK REINFORCED CONCRETE TOP (NON-TRAFFIC RATED) AND 6" REINFORCED CONCRETE BASE
24	1	ACCESS COVER, 6' x 6' (INT. DIM) SQ., INSULATED, DOUBLE DOOR COVER AND SAFETY GRATE, ALUMINUM CHANNEL FRAME W/ T-HANDLE SLAM LOCK AND COVERED PADLOCK CLIP
25	A.R.	VAULT JOINTS TO BE SEALED WITH BITUMASTIC GASKET
26	4	24" x 24" x 4" CONCRETE COLLAR W/ #4 REBAR, E.W., INDICATE PIPE SIZE & FLOW DIRECTION
27	5	ADJUSTABLE METAL PIPE SUPPORT (UNDER 4" VALVES AND AT 2" 90° ELBOWS & 2" P.R.V.)
28	5	12" x 12" x 4" CONC. BLOCK
29	-	NOT USED
30	A.R.	CONCRETE ANCHOR BLOCK PER NTUA STD. DTL. WS-19 & WS-19a
31	4	6" DIA. BOLLARDS AT 12" MIN. FROM VAULT CORNERS PER MAG. STD. 140, TYPE 1

GENERAL NOTES:

1. PROVIDE ADEQUATE CLEARANCE BETWEEN FLANGE BOLTS AND VAULT WALLS FOR MAINTENANCE.
2. GATE VALVES TO BE SUPPORTED ON 95% STANDARD PROCTOR.
3. ALL PIPES AND FITTINGS 4" OR LESS TO BE STAINLESS STEEL.
4. HEX HEAD BOLTS/NUTS TO BE STAINLESS STEEL, TYPE 304.
5. A.R. = AS REQUIRED.
6. INSTALL GATE VALVE AND FLUSH VALVE WITHIN 25 FT OF PRV VAULT.

DESIGNED BY:	NTUA-HQ
SURVEYED BY:	-
DRAFTED BY:	NTUA-HQ
APPROVED BY:	NTUA-HQ
DATE:	01/2019
PROJECT NO.:	-
SCALE:	NTS
ACAD FILENAME:	2019 NTUA Std. Dets. for Water.dwg
DETAIL NO.:	WS-4c

NAVAJO TRIBAL UTILITY AUTHORITY
ENGINEERING & CONSTRUCTION OPERATIONS DIVISION

MATERIAL LIST:
4" x 2" P.R.V.

NTUA HEADQUARTERS **FT.DEFIANCE, AZ**

REVISIONS			
No.	Date	Brief	By
01	09/15	2015 Addition	A.S.
02	01/19	2019 Update	A.S.
03			
04			
05			
06			

