Marine Diving Solutions.
Juniata Reservoir Outlet Valve Replacement Project as-builts September through November 2021

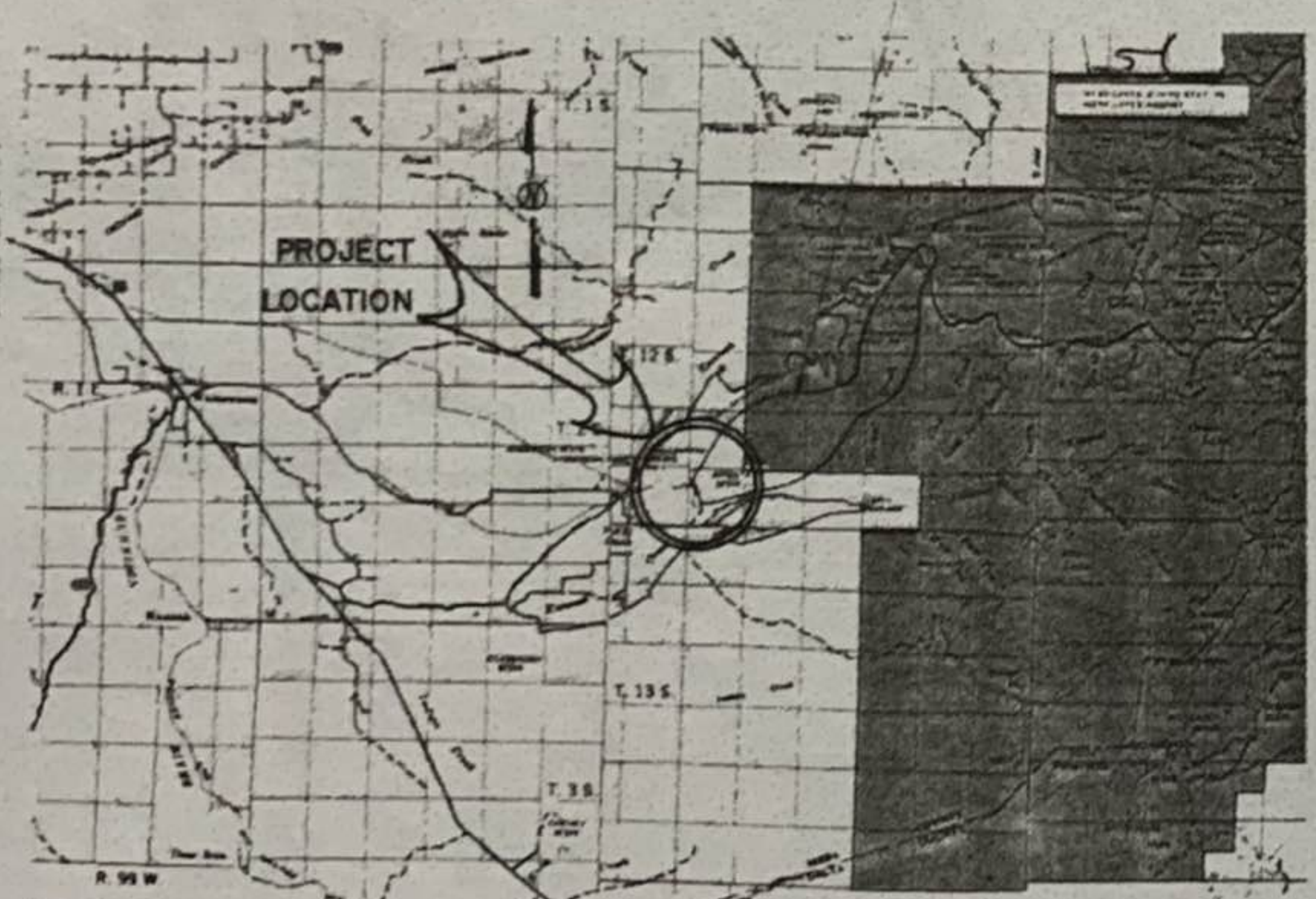
WATER DIVISION No. 4
WATER DISTRICT No. 42
MESA COUNTY
STATE OF COLORADO

OWNED BY CITY OF GRAND JUNCTION

PLANS FOR PROPOSED SECOND ENLARGEMENT

JUNIATA RESERVOIR DAM

DRAINAGE AREA TRIBUTARY TO JUNIATA RESERVOIR AREA = 2.11 SQ MILES
PROPOSED CAPACITY AT SPILLWAY LEVEL [illegible] AC FT



SOUTHEAST SECTOR OF MESA COUNTY, COLORADO

SCALES

Topography	1" = 100'
Cross-Sections	1" = 50'
Details	As Shown

Approved ________ Date May 17, 1978
CITY ENGINEER – UTILITIES

INDEX OF SHEETS

I hereby certify that these plans for the construction of the second enlargement of the Juniata Reservoir Dam, were prepared under my direct supervision for the owners thereof.

DAVID M. LEONARD REGISTERED 15170

David M. Leonard
Registered Engineer

I, James E. Wysocki, City Manager for the City of Grand Junction, Colorado, whose post office address is Grand Junction, Colorado, do hereby accept and approve these plans for the construction of the second enlargement of the Juniata Reservoir Dam.

James E. Wysocki
Owner

Approved on the 1st day of September, 1978.

C.J. Kuiper
State Engineer

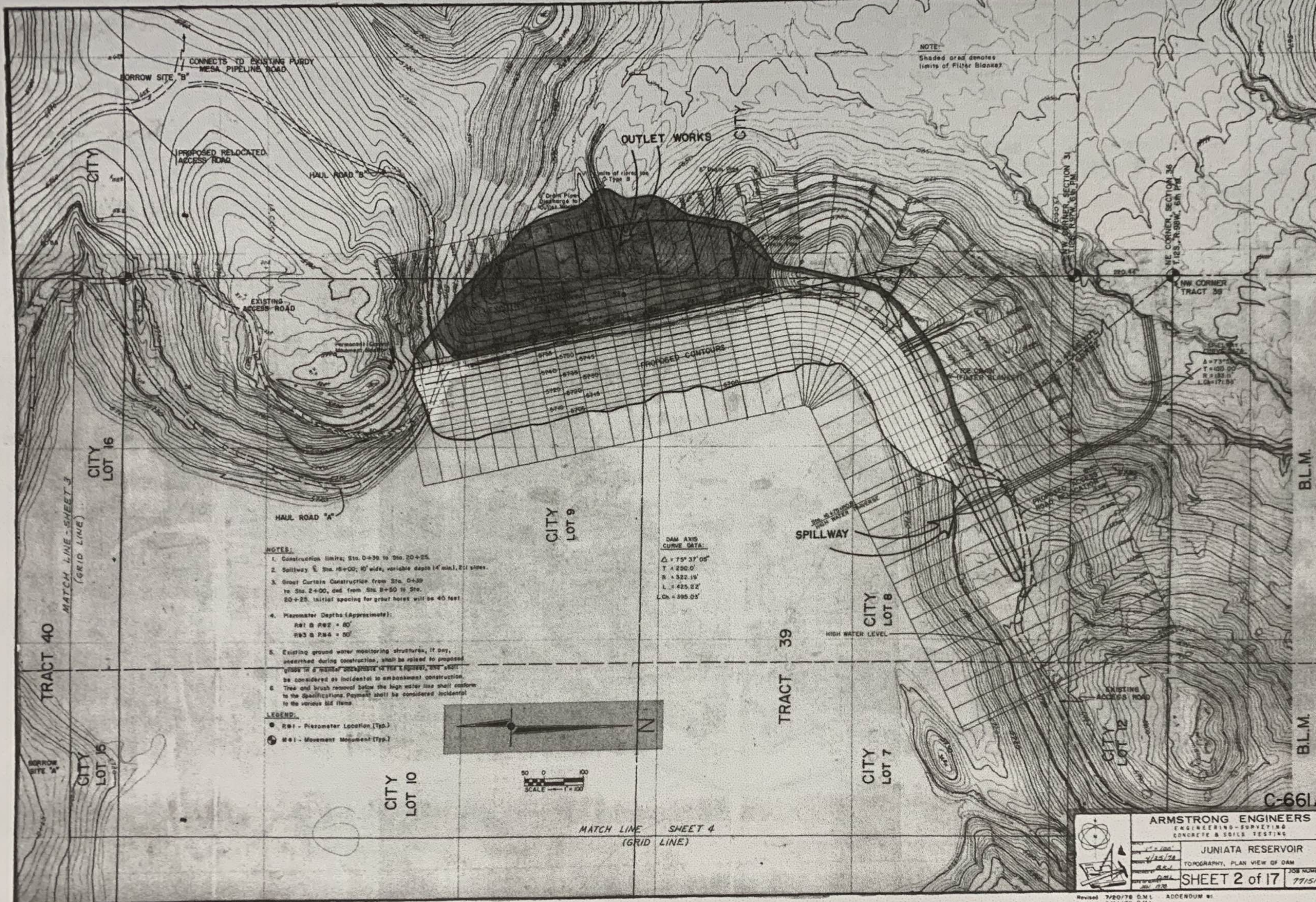
By: ________
Deputy

PLANS PREPARED BY:
ARMSTRONG ENGINEERS & ASSOCIATES, INC.
GRAND JUNCTION, COLORADO

STATE OF COLORADO
DIVISION OF WATER RESOURCES
Plans Reviewed by ________ 8/25 1978
Design Review Unit
Approval Recommended by J. Mark Danders 8/28 1978
Supervisor — Dam Safety Branch

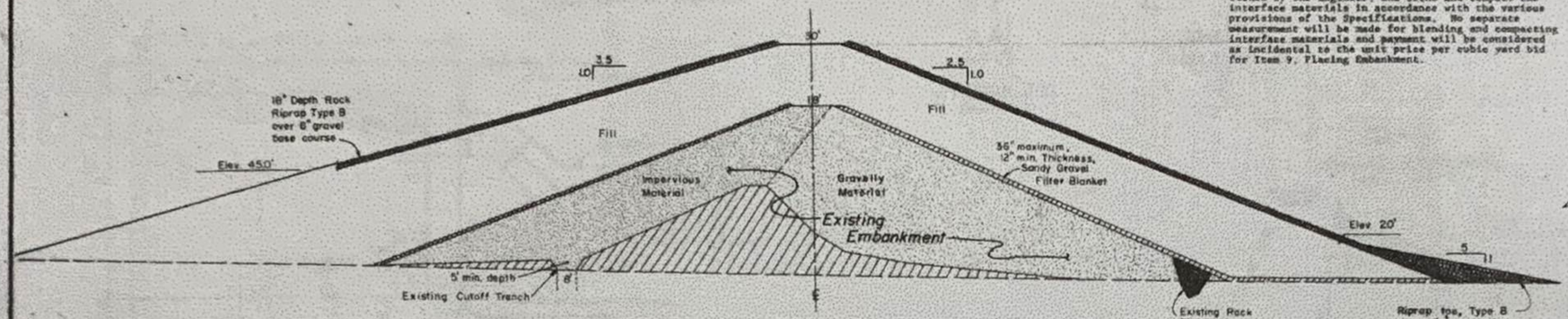
Revised by ADDENDUM #1

C-661A

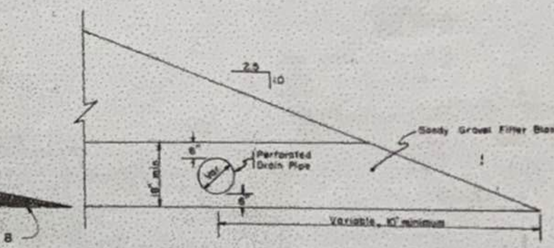


CONNECTS TO EXISTING PURDY MESA PIPELINE ROAD
BORROW SITE "B"
PROPOSED RELOCATED ACCESS ROAD
HAUL ROAD "B"
CITY
OUTLET WORKS
NOTE:
Shaded area denotes limits of Filter Blanket
NW CORNER SECTION 31
NE CORNER, SECTION 36 T.12S., R.98W., 6th P.M.
NW CORNER TRACT 39
EXISTING ACCESS ROAD
PROPOSED CONTOURS
CITY LOT 16
HAUL ROAD "A"
CITY LOT 9
DAM AXIS CURVE DATA:
Δ = 75° 37' 05"
T = 250.0'
R = 322.19'
L = 425.22'
L.Ch. = 395.03'
SPILLWAY
HIGH WATER LEVEL
CITY LOT 8
TRACT 39
TRACT 40
MATCH LINE - SHEET 3 (GRID LINE)
B.L.M.
CITY LOT 12
CITY LOT 7
CITY LOT 10
CITY LOT 15
BORROW SITE "A"
N
SCALE 1" = 100'
MATCH LINE SHEET 4 (GRID LINE)
NOTES:
1. Construction limits; Sta. 0+39 to Sta. 20+25.
2. Spillway ℄ Sta. 16+00; 10' wide, variable depth (4' min.), 2:1 sides.
3. Grout Curtain Construction from Sta. 0+39 to Sta. 2+00, and from Sta. 8+50 to Sta. 20+25. Initial spacing for grout holes will be 40 feet
4. Piezometer Depths (Approximate):
P#1 & P#2 = 80'
P#3 & P#4 = 50'
5. Existing ground water monitoring structures, if any, unearthed during construction, shall be raised to proposed grade in a manner acceptable to the Engineer, and shall be considered as incidental to embankment construction.
6. Tree and brush removal below the high water line shall conform to the Specifications. Payment shall be considered incidental to the various bid items.
LEGEND:
P#1 - Piezometer Location (Typ.)
M#1 - Movement Monument (Typ.)
C-661A
ARMSTRONG ENGINEERS
ENGINEERING - SURVEYING
CONCRETE & SOILS TESTING
JUNIATA RESERVOIR
TOPOGRAPHY, PLAN VIEW OF DAM
SHEET 2 of 17
JOB NUMBER 771511
Revised 7/20/78 D.M.L.
Revised 8/24/78 D.M.L.
ADDENDUM #1

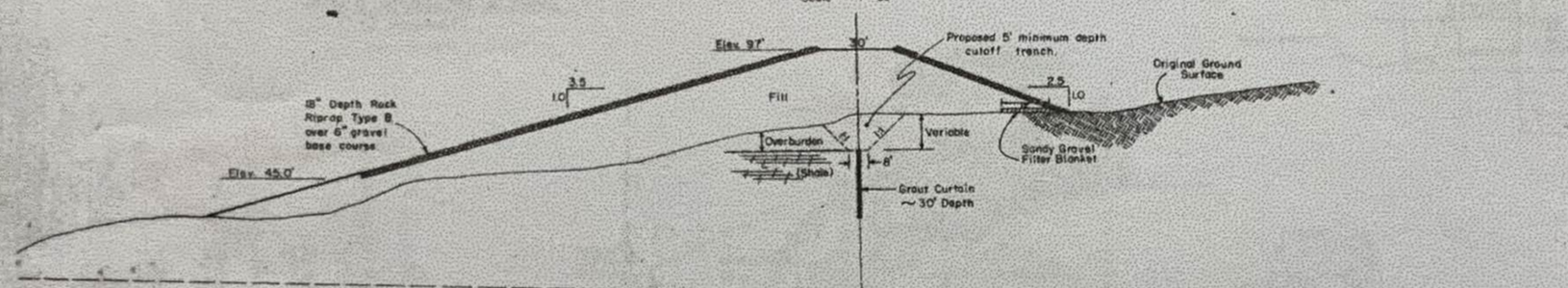
Note:
Blending of proposed embankment construction into existing embankment shall be accomplished by use of fill dozer on upstream face and on downstream face in areas not receiving filter blanket. As each lift is placed, the fill dozer shall excavate into the existing embankment, to the limits established by the Engineer, and blend and compact the interface materials in accordance with the various provisions of the Specifications. No separate measurement will be made for blending and compacting interface materials and payment will be considered as incidental to the unit price per cubic yard bid for Item 9, Placing Embankment.



MAXIMUM SECTION
Scale — 1" = 30'

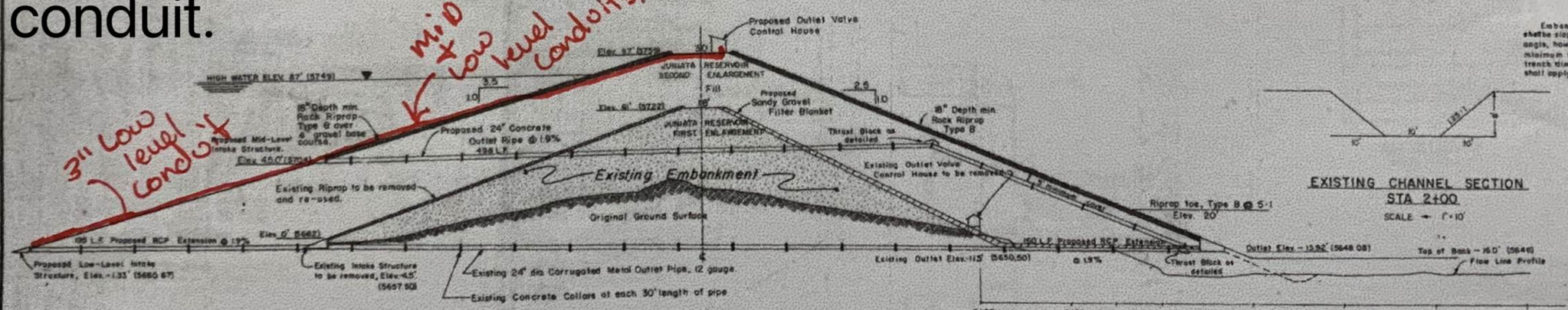


TYPICAL DRAIN PIPE INSTALLATION
NO SCALE
SEE SHEET 2 FOR LOCATION DETAILS



3" Schedule 40 galvanized steel pipe was used for the new conduit.

TYPICAL GROUT & CUTOFF TRENCH SECTION - Sta. 1+00
Scale — 1" = 30'

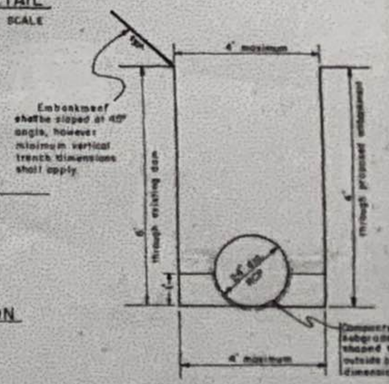


STATION 6+00
SECTION AT OUTLET ℄
Scale — 1" = 30'

NOTE
1. Valve details on Sheet 7
2. Operating Mechanism details on Sheet 8
3. Stilling Basin details Sheet 9
4. Existing Corrugated Metal Pipe to be excavated to first joint, thoroughly cleaned, banded, and extended to the limits noted, with RCP as detailed in the Specifications. See sheet 9 for connection detail.
5. Joints for reinforced concrete pipe shall conform to ASTM Specification 361 latest revision, for R-4 Bell and Spigot Joint.

EXISTING CHANNEL SECTION
STA 2+00
SCALE — 1" = 10'

TYPICAL EMBANKMENT SURFACING DETAIL
NO SCALE



TYPICAL R.C.P. INSTALLATION DETAIL
SCALE — 1" = 8'

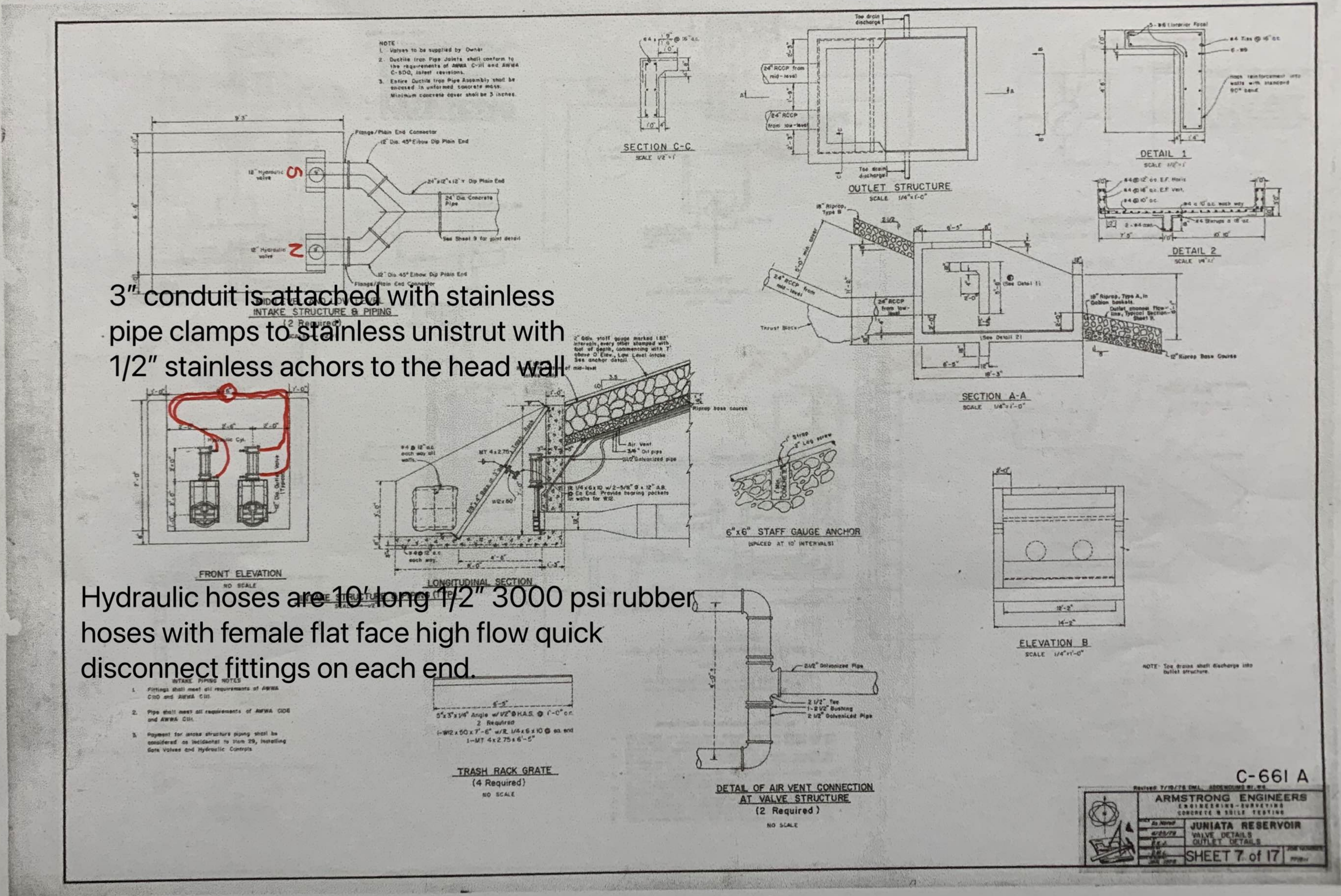
C-661 A

Revised 7/3/78 D.W.L. ADDENDUM #1

ARMSTRONG ENGINEERS
ENGINEERING - SURVEYING
CONCRETE & SOILS TESTING

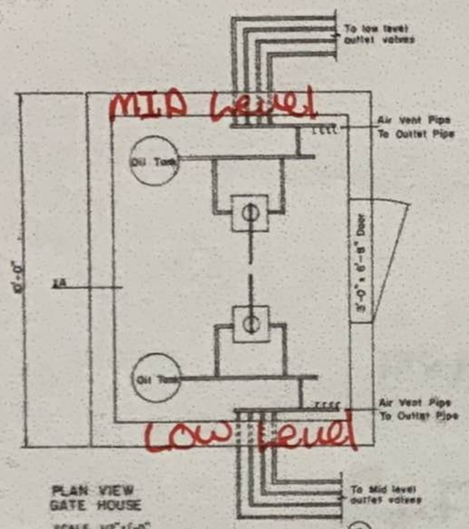
1" = 30'	JUNIATA RESERVOIR
8/11/76	TYPICAL SECTIONS
A.K.J.	
D.W.L.	SHEET 5 of 17

New 12″ VSI Waterworks gate valves with VSI Waterworks hydraulic actuators.
Installed 10-22-21


NOTE
1. Valves to be supplied by Owner
2. Ductile Iron Pipe Joints shall conform to the requirements of AWWA C-111 and AWWA C-600, latest revisions.
3. Entire Ductile Iron Pipe Assembly shall be encased in unformed concrete mass. Minimum concrete cover shall be 3 inches.
SECTION C-C
OUTLET STRUCTURE
DETAIL 1
DETAIL 2
INTAKE STRUCTURE & PIPING
SECTION A-A
6″x6″ STAFF GAUGE ANCHOR
FRONT ELEVATION
LONGITUDINAL SECTION
ELEVATION B
TRASH RACK GRATE
(4 Required)
NO SCALE
DETAIL OF AIR VENT CONNECTION AT VALVE STRUCTURE
(2 Required)
NO SCALE
C-661 A
ARMSTRONG ENGINEERS
JUNIATA RESERVOIR
VALVE DETAILS
OUTLET DETAILS
SHEET 7 of 17

3″ conduit is attached with stainless pipe clamps to stainless unistrut with 1/2″ stainless achors to the head wall

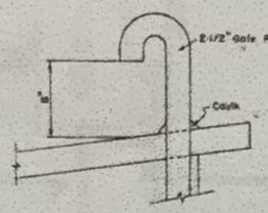
Hydraulic hoses are 10′ long 1/2″ 3000 psi rubber hoses with female flat face high flow quick disconnect fittings on each end.



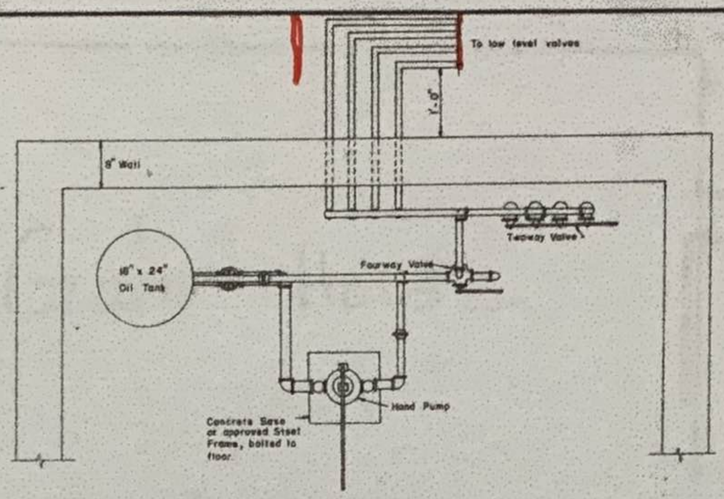
PLAN VIEW
GATE HOUSE
SCALE 1/2"=1'-0"

NOTES, GATE HOUSE

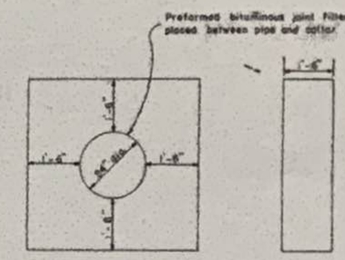
1. DOOR SHALL BE INDUSTRIAL QUALITY METAL COMPOSITION, 3'0" BY 6'8" AND SHALL HAVE INDUSTRIAL QUALITY LOCKABLE HANDLE ON EXTERIOR. WEATHER STRIPPING SHALL BE PROVIDED.
2. CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 318-71 OR ACI 301-72, 28 DAY COMPRESSIVE STRENGTH SHALL BE 3000 PSI MIN.
3. AIR VENT OPENING AT ROOF SHALL BE SCREENED AS DIRECTED BY THE ENGINEER TO PREVENT ENTRY OF BIRDS OR RODENTS
4. VALVE CONTROLS TO BE SUPPLIED BY OWNER



AIR VENT DETAIL AT ROOF
(TYPICAL)
SCALE 1-1/2"=1'-0"



PLAN VIEW
LOW LEVEL OUTLET VALVE CONTROLS
SCALE 1"=1'-0"

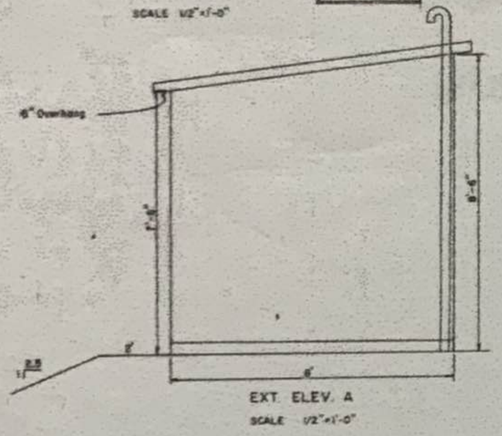


CUTOFF COLLER INSTALLATION

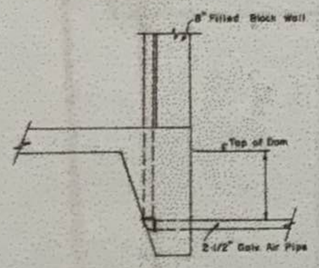
Excavate to neat lines, install pipe in prepared trench, install joint filler, form cutoff collar in trench, pour concrete to 1'-6" over pipe, remove forms, and backfill to specifications.

CONCRETE CUTOFF COLLAR (TYPICAL)
(TO BE PLACED AT 30' MAXIMUM SPACING)

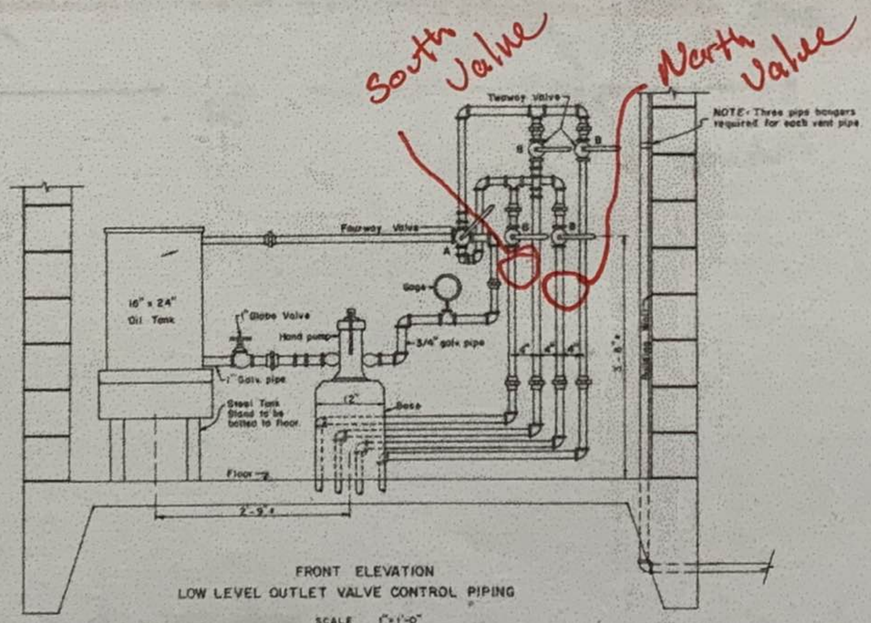
SCALE 1"=2'



EXT. ELEV. A
SCALE 1/2"=1'-0"

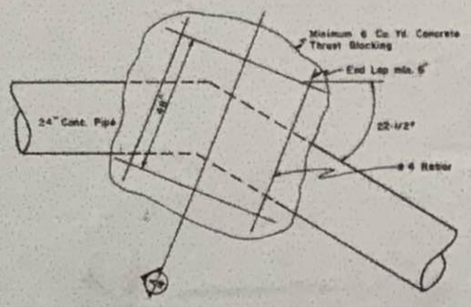


AIR VENT DETAIL AT GATE HOUSE
(TYPICAL)
SCALE 1"=1'-0"

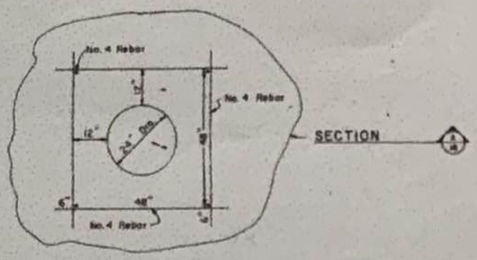


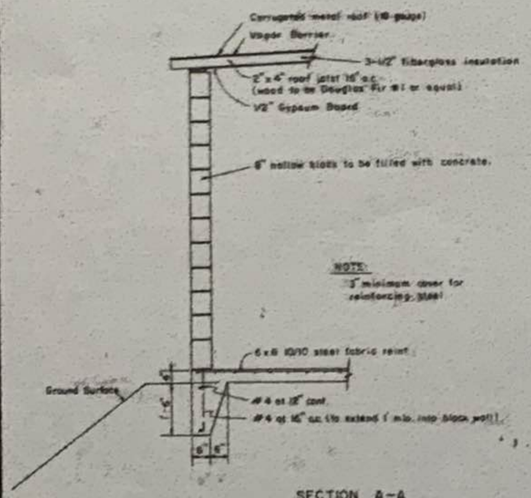
FRONT ELEVATION
LOW LEVEL OUTLET VALVE CONTROL PIPING
SCALE 1"=1'-0"

(Mid-Level Outlet Valves and Control Piping are mirror-image of low-level arrangement.)



THRUST BLOCK (Typical)
SCALE 1/2"=1'-0"
(Bottom block is mirror image of top)





SECTION A-A
SCALE 1/2"=1'-0"

INSTRUCTIONS FOR OPERATING GATE VALVES

1. All valves are to be kept closed when gate valves are not to be moved. Fourway Valve (A) and Twoway Valves (B) are closed when handles are horizontal.
2. To raise a gate valve move handle of fourway valve(A) to extreme upper position. To close gate valve move handle to extreme lower position.
3. Open both twoway valves (B) of gate valve to be moved. valve is open when handle is parallel to pipe.
4. Operate hand pump until desired position of gate valve is obtained then close all valves.
5. The oil tank should be kept between 2/3 and 3/4 full of oil.
6. Valves should be exercised periodically to insure operability.
7. Air vent must be unobstructed when operating valves.
8. Valves must be operated in fully opened or fully closed positions, only

NOTE:
Thrust Blocking shall be installed after conduit has been constructed and backfilled to springline in accordance with the detailed specifications. Thrust Blocking at bottom bend shall be poured upon compacted fill simultaneously with conduit construction.
All reinforcing steel to be covered by 3" min. thickness P.C.C.
All concrete shall be constructed in accordance with A.C.I. 318-71 and A.C.I. 301-72.
Min. strength at 28 days shall be 3000 psi.

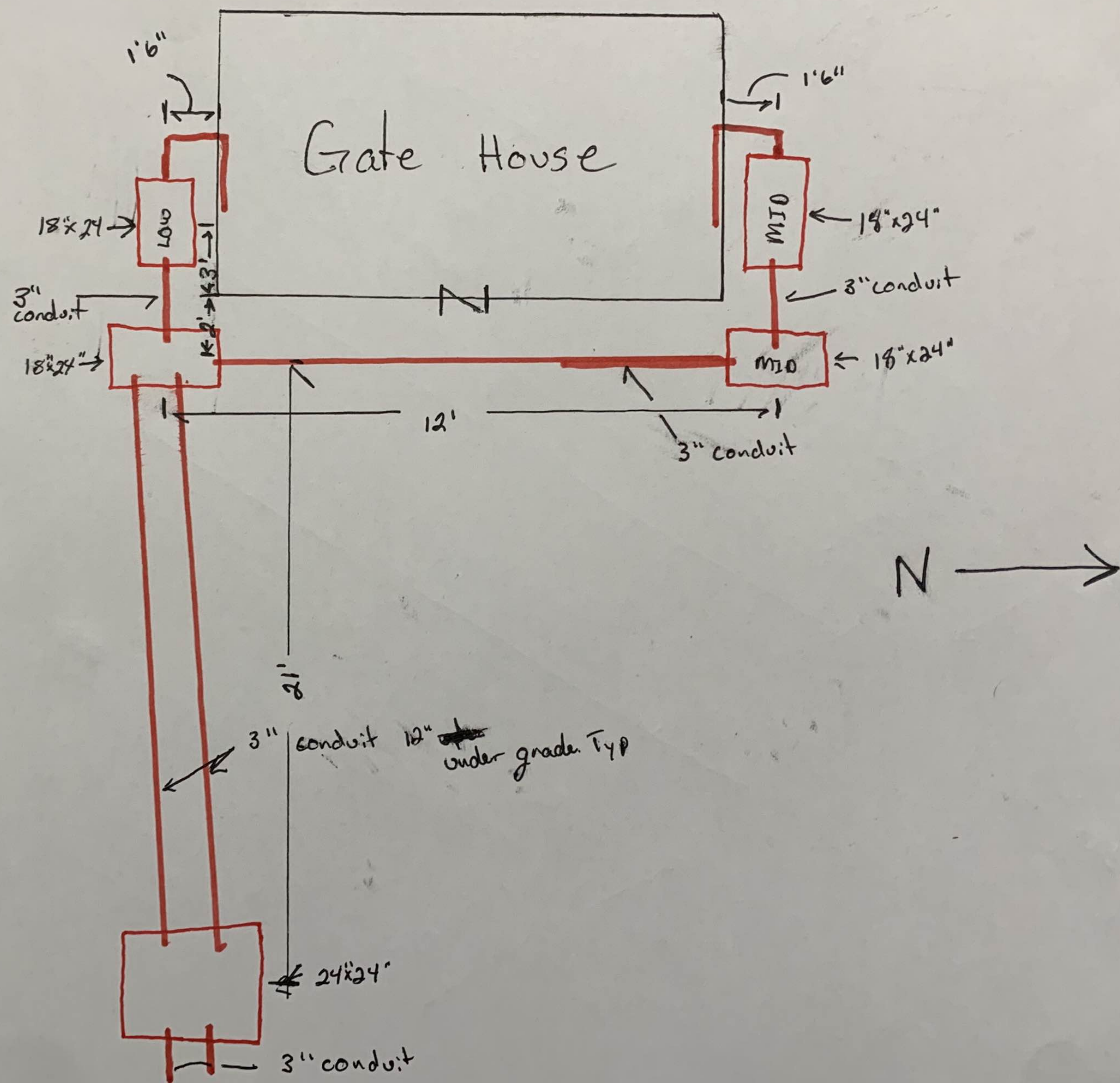
C-661 A

Revised 7/3/78 D.M.L. ADDENDUM #1

ARMSTRONG ENGINEERS
ENGINEERING-SURVEYING
CONCRETE & SOILS TESTING

DESIGNED	4/19/78
DRAWN	K.L.F.
CHECKED	D.M.L.
APPROVED	H.R.

JUNIATA RESERVOIR
OPERATING MECHANISM DETAILS
SHEET 8 of 17
JOB NUMBER 77181


Gate House
1'6"
1'6"
18"x24"
LOU
MIO
18"x24"
3" conduit
3" conduit
18"x24"
2'
3'
MIO
18"x24"
12'
3" conduit
N
21'
3" conduit 12" under grade Typ
24"x24"
3" conduit