
MEMORANDUM

TO: RANDY HILL, PUBLIC WORKS DIRECTOR
FROM: JON LUTZ, CITY ENGINEER
SUBJECT: AIR RELEASE VALVE REPLACEMENT – PHASE 2
AWARD AND APPROVE CONTRACT
DATE: JANUARY 31, 2014

INTRODUCTION:

This project is phase 2 of 4 which includes removal and replacement of deteriorated manhole structures and air release valve components on the south end sanitary sewer force mains. Excessive amounts of gas generated in the lines have discharged at the treatment plant causing dangerous and undesirable conditions most often during summer months. Phase 1 was completed in the fall of 2013 by Cornerstone Excavating focusing on the 16" force main from Stewart Road to the treatment plant. Phase 2 replaces equipment on the 24" force main from Dick Drake Way to the treatment plant. The air release valves on the 24" line will have greater capacity and are scheduled to be completed by May 30, 2014 thus solving the problem before summer. Phase 3 schedule is not urgent and phase 4 may not be necessary.

BACKGROUND:

The engineer's estimate was \$80,900. Bids were received on January 30th, 2014 as follows:

1. Hagerty Earthworks	\$83,900.00
2. Eller Excavating	\$95,204.00
3. Sulzberger Excavating	\$96,300.00
4. Cornerstone Excavating	\$109,950.00

Hagerty Earthworks submitted a very lean bid as material costs for the larger air release valve were higher than anticipated yet the cost was close to the estimate. Hagerty has recently performed successful work for the City on the Harbor Force Main and the Logan Culvert Extensions.

RECOMMENDATION/RATIONALE:

The city engineer recommends awarding the Air Release Valve Replacement Phase 2 Project to Hagerty Earthworks at the February 6, 2014 City Council meeting for \$83,900.00 and authorize the administrator and mayor to enter into contract.

BACKUP INFORMATION:

1. Bid tabulation
2. Construction Plans

RESOLUTION NO. _____

**AWARD AND APPROVE CONTRACT FOR
AIR RELEASE VALVE REPLACEMENT PROJECT – PHASE 2**

WHEREAS, competitive bids were received for the Air Release Valve Project – Phase 2 as detailed in the project plans and specifications prepared by the City Engineer.

WHEREAS, the following bid is determined to be the lowest responsible bid for the Air Release Valve Replacement Project – Phase 2.

<u>NAME & ADDRESS CONTRACTOR</u>	<u>AMOUNT OF BID</u>
Hagerty Earthworks Muscatine, IA 52761	\$83,900.00

NOW, THEREFORE, BE IT RESOLVED, that the bid be awarded to Hagerty Earthworks in the amount of \$83,900.00 and that the Mayor and City Administrator are authorized to enter into a contract in this amount for the Air Release Valve Replacement Project – Phase 2.

PASSED, APPROVED, AND ADOPTED THIS 6th DAY OF FEBRUARY, 2014.

DeWayne Hopkins, Mayor

ATTEST:

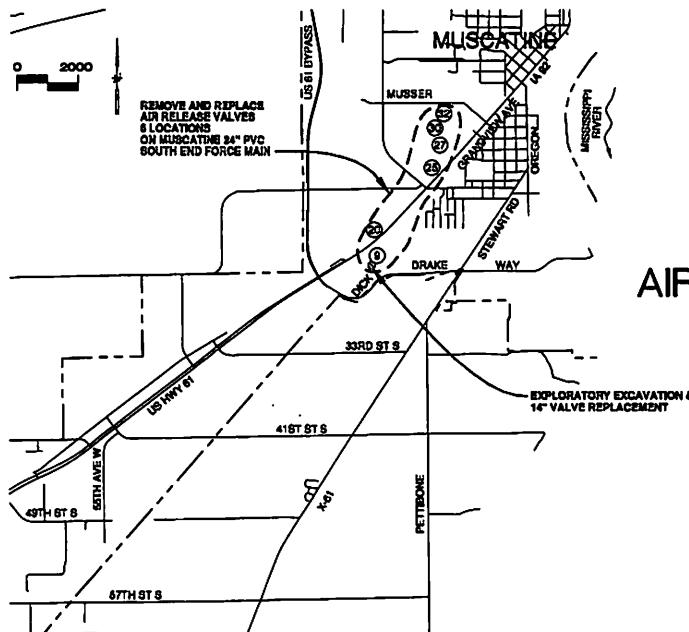
Gregg Mandsager, City Administrator

Bid Tabulation

January 31, 2014

City of Muscatine
Public Works**Air Release Valve Replacement - Phase 2**

				Engineer		Hagerty Earthworks		Eller Excav.		Sulzberger Excav.		Cornerstone	
#	ITEM	QUANTITY	UNITS	COST/UNIT	COST	COST/UNIT	COST	COST/UNIT	COST	COST/UNIT	COST	COST/UNIT	COST
1	Mobilization	1	LS	\$4,500.00	\$4,500.00	\$1,000.00	\$1,000.00	\$2,400.00	\$2,400.00	\$3,500.00	\$3,500.00	\$5,000.00	\$5,000.00
2	Location 9	1	LS	\$12,150.00	\$12,150.00	\$13,700.00	\$13,700.00	\$14,990.00	\$14,990.00	\$15,000.00	\$15,000.00	\$16,450.00	\$16,450.00
3	Location 20	1	LS	\$12,150.00	\$12,150.00	\$13,700.00	\$13,700.00	\$14,990.00	\$14,990.00	\$15,000.00	\$15,000.00	\$16,450.00	\$16,450.00
4	Location 25	1	LS	\$12,150.00	\$12,150.00	\$13,700.00	\$13,700.00	\$14,990.00	\$14,990.00	\$15,000.00	\$15,000.00	\$16,450.00	\$16,450.00
5	location 27	1	LS	\$12,150.00	\$12,150.00	\$13,700.00	\$13,700.00	\$14,990.00	\$14,990.00	\$15,000.00	\$15,000.00	\$16,450.00	\$16,450.00
6	Location 30	1	LS	\$8,150.00	\$8,150.00	\$8,500.00	\$8,500.00	\$10,453.00	\$10,453.00	\$9,500.00	\$9,500.00	\$12,950.00	\$12,950.00
7	Location 32	1	LS	\$12,150.00	\$12,150.00	\$13,700.00	\$13,700.00	\$14,990.00	\$14,990.00	\$15,000.00	\$15,000.00	\$16,450.00	\$16,450.00
8	Exploratory Excavation	1	EA	\$1,500.00	\$1,500.00	\$2,000.00	\$2,000.00	\$990.00	\$990.00	\$1,500.00	\$1,500.00	\$1,000.00	\$1,000.00
9	14" Plug valve	1	EA	\$6,000.00	\$6,000.00	\$3,900.00	\$3,900.00	\$6,411.00	\$6,411.00	\$6,800.00	\$6,800.00	\$8,750.00	\$8,750.00
				Subtotal	\$80,900.00	Subtotal	\$83,900.00	Subtotal	\$95,204.00	Subtotal	\$96,300.00	Subtotal	\$109,950.00



LOCATION MAP

UTILITY NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL UNDERGROUND UTILITIES.

IOWA 1-CALL# 1-800-292-8989



CITY OF MUSCATINE
MUSCATINE COUNTY
IOWA



**CITY OF MUSCATINE, IOWA
AIR RELEASE VALVE REPLACEMENT
PHASE 2
2014**

Referenced specifications for this project shall be Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, latest series. Exceptions to the referenced specifications are: "Instructions to Bidders", "Special Conditions", and "Estimate Reference Information" listed in the contract document which shall take precedence over the referenced specifications.

INDEX OF SHEETS	
NO.	DESCRIPTION
A1	COVER
A2	QUANTITIES & ESTIMATE REFERENCE INFORMATION
G1-G3	GENERAL PLAN, TABLES AND DETAILS
C5, C7, C8	SITE PLANS

UTILITY CONTACTS

MUSCATINE POWER & WATER
3205 CEDAR STREET
MUSCATINE, IOWA 52761
WATER - KRIS HATFIELD (563)262-3360
ELECTRIC - ANDY KURRIGER (563)262-3391
COMMUNICATIONS - TOM LEWIS (563)262-3208

ALLIANT ENERGY
215 CEDAR STREET
MUSCATINE, IOWA 52761
GAS - ANN KRIESS (563)268-3322

CENTURYLINK
420 STACMORE STREET
MUSCATINE, IOWA 52761
TELEPHONE - MATTHEW KEARNEY (319)399-7600

IOWA COMMUNICATIONS NETWORK (ICN)
400 E 14TH ST.
DES MOINES, IA 50319
FIBER - KENT FRESE (515)725-4725 OFC
(515)229-2046 CELL

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Jonathan H. Lutz
Date _____ Reg. No. 13184
My license renewal date is December 31, 2014
Pages or sheets covered by this seal: ALL



Estimated Project Quantities - Phase 2			
Item #	Item	Unit	Quantity
1	MOBILIZATION	LS	1
2	LOCATION 9	LS	1
3	LOCATION 20	LS	1
4	LOCATION 25	LS	1
5	LOCATION 27	LS	1
6	LOCATION 30	LS	1
7	LOCATION 32	LS	1
8	EXPLORATORY EXCAVATION	EACH	1
9	14" PLUG VALVE	EACH	1

Estimate Reference Information - Phase 2		
Item #	Item	Description
1	MOBILIZATION	Refer to requirements of section 2533 Mobilization in the Standard Specifications.
2	LOCATION 9	On 24" PVC force main, remove existing structure, air release valve, Isolation valve, and vent and install new structure, new 4" Isolation valve, new 4" air release valve and appurtenances as detailed.
3	LOCATION 20	On 24" PVC force main, remove existing structure, air release valve, Isolation valve, and vent and install new structure, new 4" Isolation valve, new 4" air release valve and appurtenances as detailed.
4	LOCATION 25	On 24" PVC force main, remove existing structure, air release valve, Isolation valve, and vent and install new structure, new 4" Isolation valve, new 4" air release valve and appurtenances as detailed.
5	LOCATION 27	On 24" PVC force main, remove existing structure, air release valve, Isolation valve, and vent and install new structure, new 4" Isolation valve, new 4" air release valve and appurtenances as detailed.
6	LOCATION 30 *	On 24" PVC force main, remove existing air release valve, Isolation valve, and vent and install new 4" Isolation valve, new 4" air release valve and appurtenances as detailed. Existing manhole shall remain.
7	LOCATION 32	On 24" PVC force main, remove existing structure, air release valve, Isolation valve, and vent and install new structure, new 4" Isolation valve, new 4" air release valve and appurtenances as detailed.
8	EXPLORATORY EXCAVATION	Excavate to expose valve sufficient for City to perform maintenance required to exercise valve. Backfill around valve after City work. Location is shown on sheet A1.
9	14" PLUG VALVE	If City cannot exercise valve, contractor shall remove existing 14" plug valve and replace with new 14" plug valve. Existing valve shall become City property and be loaded on site to City vehicle.

* Location 30 is valve replacement only. The manhole and sign along with valve 29 was completed with phase 1 work.

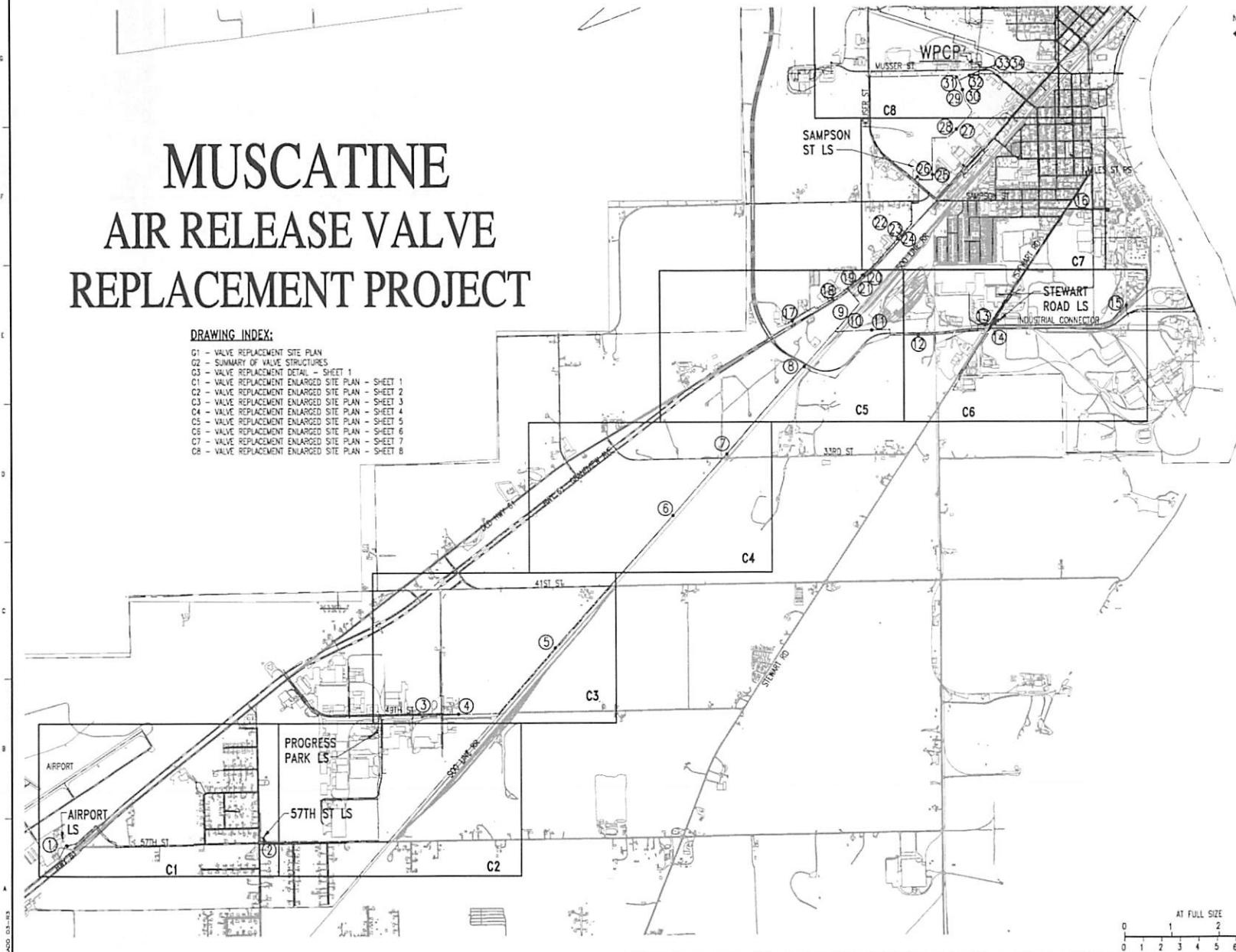
GENERAL NOTES

1. Refer to sheets G1, C5, C6, C7, & C8 for locations.
2. Details and specifications for the new structures and valves are included on sheet G3.
3. Work shall be performed before crops are planted for locations in cultivated fields.
4. This project is phase 2 of 4 phases of work. Additional numbered locations shown on plans but not included on the bid form are not included in this project (phases 1,3 & 4) but are completed or will be completed in future phases.
5. Table 1 on sheet G2 shows existing air release valve and structure information. Some of the numbered valve locations shown for future work could not be found and may not have been installed with the initial force main construction.
6. On above estimate reference notes, new structure includes barrel sections, flat top, access hatch and other associated manhole work and amenities. The City will furnish but contractor shall install post and sign. Castings, manholes and other items to be removed shall be loaded onto City vehicles on site and become the property of the City.
7. The force main contains sewage and may be under pressure. The contractor is not required to work with pressurized pipes or remove the sewage. The City will isolate and/or drain the pipes/valves remove excess sewage, and provide workable conditions at each structure. The contractor will be required to work closely with City personnel to determine when acceptable working conditions are available and be flexible on a schedule for when work can be performed at each structure and for each valve.
8. Contractor shall level and blend the surface to appropriate shape following installation. City shall seed and mulch as necessary.
9. Contractor shall comply with OSHA confined space regulations.

MUSCATINE AIR RELEASE VALVE REPLACEMENT PROJECT

DRAWING INDEX:

G1 - VALVE REPLACEMENT SITE PLAN
G2 - SUMMARY OF VALVE STRUCTURES
G3 - VALVE REPLACEMENT DETAIL - SHEET 1
C1 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1
C2 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1
C3 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1
C4 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1
C5 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1
C6 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1
C7 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1
C8 - VALVE REPLACEMENT ENLARGED SITE PLAN - SHEET 1

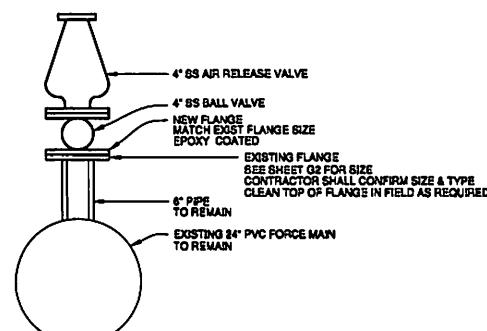
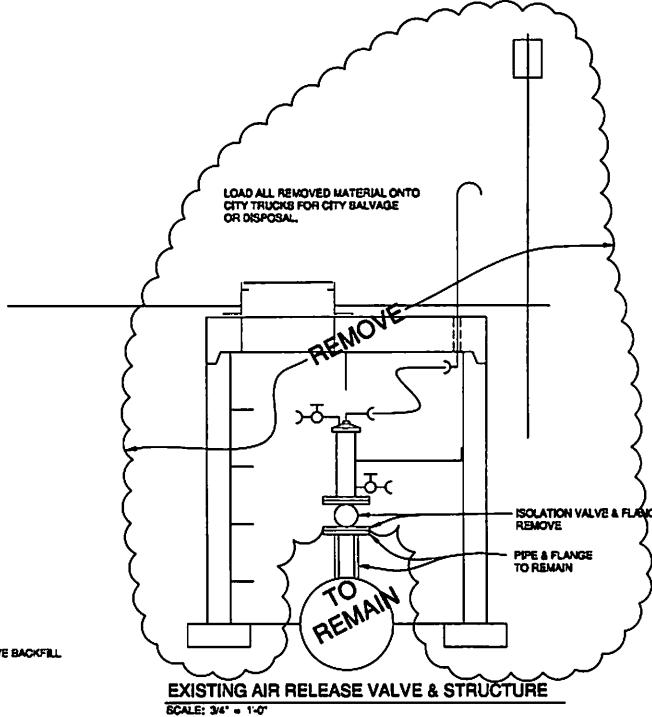
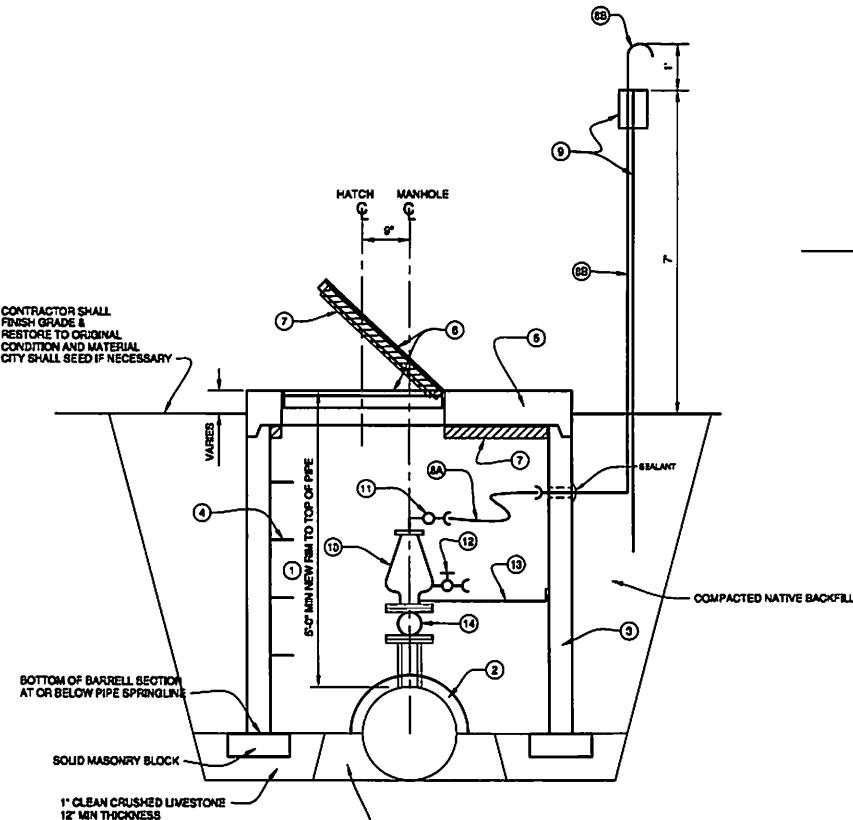


NOTES

NO.	REVISIONS	OWN	APVO	APVO	DATE
 Stanley Consultants INC. 225 West Avenue, Muscatine, Iowa 52761-3784 www.alineconconsultants.com					
CITY OF MUSCATINE SANITARY SEWER AIR RELEASE VALVES MUSCATINE, IOWA					
VALVE REPLACEMENT SITE PLAN					
DESIGNED: <u>M. KNOTT</u> DRAWN: <u>GW REEVES</u> CHECKED: _____ APPROVED: _____ APPROVED: _____ DATE: _____			SCALE: 1:1000 NO. 17860 G1		
			REV. 0		

TABLE 1 SUMMARY OF AIR RELEASE VALVES & STRUCTURES

Valve (AV No.)	Valve No.	Structure No.	Foreman	Pipe Size	Status	General Location	Original Contract	Isolation Valve Size	Exist. Flange	AR Valve Size	Existing Casting Elevation	New Rim Elevation	Top of Pipe Elevation	Depth to Pipe	Headroom	Project Phase	Comment
1	7410	1953	Airport	4"	on	Airport LS	1	2"	6" MJ	2"	547.74		541.74	6.00	4.62	4	Future
2	7416	1965	57th Street	8"	on	57th Street LS	1	2"	6" MJ	2"	545.77		540.94	4.83	3.45	4	Future
3	7423	2025	Progress Park	18"	off	Progress Park LS	1	2"	6" MJ	2"	543.14		537.47	5.67	4.29	3	Future
4	7418	2069	Progress Park	18"	on	49TH St east of 59th Ave.	1	2"	6" MJ	2"	544.40		539.57	4.83	3.45	3	Future
5	7414	2070	Progress Park	18"	on	RR	1	2"	6" MJ	2"	547.08		541.91	5.17	3.79	3	Future
6	7413	2072	Progress Park	20"	on	RR	1	2"	6" MJ	2"	543.66		539.33	4.33	2.95	3	Future
7	7415	2071	Progress Park	24"	off	RR & 33rd St.	1	4"	6" MJ	4"	547.76		542.59	5.17	3.45	3	Future
8	7417	2073	Progress Park	24"	on	RR & Industrial Conn.	1	4"	6" MJ	4"	542.74		537.33	5.41	4.03	3	Future
9	7419	2472	Progress Park	24"	on	RR	1A	4"	6" MJ	4"	541.29	541.29	535.62	5.67	4.29	2	Remove manhole, isolation valve, air release valve and vent and install new manhole, valves and appurtenances as detailed.
10	7420	2473	Stewart Rd.	14"	on	RR	1A	2"	6" MJ	2"	541.31		535.43	5.88	4.50	1	Completed
11	7433	2469	Stewart Rd.	14"	on	Industrial Conn.	1B	2"	6" MJ	2"	537.80		532.01	5.79	4.41	1	Completed
12	459	411	Stewart Rd.	14"	not found	Industrial Conn.	1B	2"									
13	7409	2467	Stewart Rd.	14"	on	Industrial Conn & Stewart Rd.	1B	2"	6" MJ	2"	545.49		540.41	5.08	3.70	1	Completed
14	7411	2464	Stewart Rd.	14"	removed	Stewart Rd. LS	1B	2"			545.93		541.10	4.83	3.45		
15	7440	5224	Industrial Conn.	4"	on	Industrial Conn.	1B	2"	6" MJ	2"	545.38		537.13	8.25	6.87	4	Future
16	7426	2449	Stewart Rd.	6"	on	Stewart Rd. & Sampson St.	1B	2"	6" MJ	2"	546.86		540.11	6.75	5.37	4	Future
17	7408	2402	Grandview Ave.	2"	on	Grandview Ave.	1A	2"	6" MJ	2"	543.63		538.13	5.50	4.12	4	Future
18	7430	2401	Grandview Ave.	3"	on	Grandview Ave.	1A	2"	6" MJ	2"	542.72		537.05	5.67	4.29	4	Future
19	4763	2399	Grandview Ave.	4"	on	Grandview Ave.	1A	2"	6" MJ	2"	539.20		534.82	4.38	3.00	4	Future
20	7403	2399	Progress Park	24"	on	Grandview Ave.	1A	4"	6" MJ	4"	539.20	539.87	534.87	5.00	2.95	2	Remove manhole, isolation valve, air release valve and vent and install new manhole, valves and appurtenances as detailed.
21	7404	2400	Stewart Rd.	14"	on	Grandview Ave.	1A	2"	6" MJ	2"	539.46		534.96	4.50	3.12	1	Completed
22	420	457	Grandview Ave.	6"	not found	Grandview Ave.	1A	2"									
23	457	429	Progress Park	24"	not found	Grandview Ave.	1A	4"									
24	458	421	Stewart Rd.	14"	not found	Grandview Ave.	1A	2"									
25	7432	2408	Progress Park	24"	on	Sampson Rd. LS	1A	4"	6" MJ	4"	546.25	546.25	540.67	5.58	4.20	2	Remove manhole, isolation valve, air release valve and vent and install new manhole, valves and appurtenances as detailed.
26	7431	2409	Stewart Rd.	16"	on	Sampson Rd. LS	1A	2"	6" MJ	2"	545.91		540.84	5.07	3.69	1	Completed
27	7424	4950	Progress Park	24"	on	Field West of Grandview Ave.	1A	4"	6" MJ	4"	542.64	543.06	538.06	5.00	3.20	2	Remove manhole, isolation valve, air release valve and vent and install new manhole, valves and appurtenances as detailed.
28	7425	4951	Stewart Rd.	16"	on	Field West of Grandview Ave.	1A	2"	6" MJ	2"	542.34		537.97	4.37	2.99	1	Completed
29	4964	4949	Stewart Rd.	16"	on	Field South of Musser St.	1A	2"	6" MJ	2"	539.08		533.87	5.21	3.83	1	Completed
30	7426	4949	Progress Park	24"	on	Field South of Musser St.	1A	4"	6" MJ	4"	539.08		533.68	5.40	4.02	2	Remove existing isolation valve, air release valve and vent and install new valves and appurtenances as detailed.
31	7427	4948	Houser St.	4"	on	Field South of Musser St.	1A	2"		2"	538.73		533.57	5.16	3.78		
32	7422	4957	Progress Park	24"	on	Field South of Musser St.	1A	4"	6" MJ	4"	539.15	539.15	532.15	7.00	5.62	2	Remove manhole, isolation valve, air release valve and vent and install new manhole, valves and appurtenances as detailed.
33	4965	4958	Houser St.	4"	on	Field South of Musser St.	1A	2"		2"	539.05		531.55	7.50	6.12		
34	7421	4959	Stewart Rd.	16"	on	Field South of Musser St.	1A	2"	6" MJ	2"	539.05		532.09	6.96	5.58	1	Completed



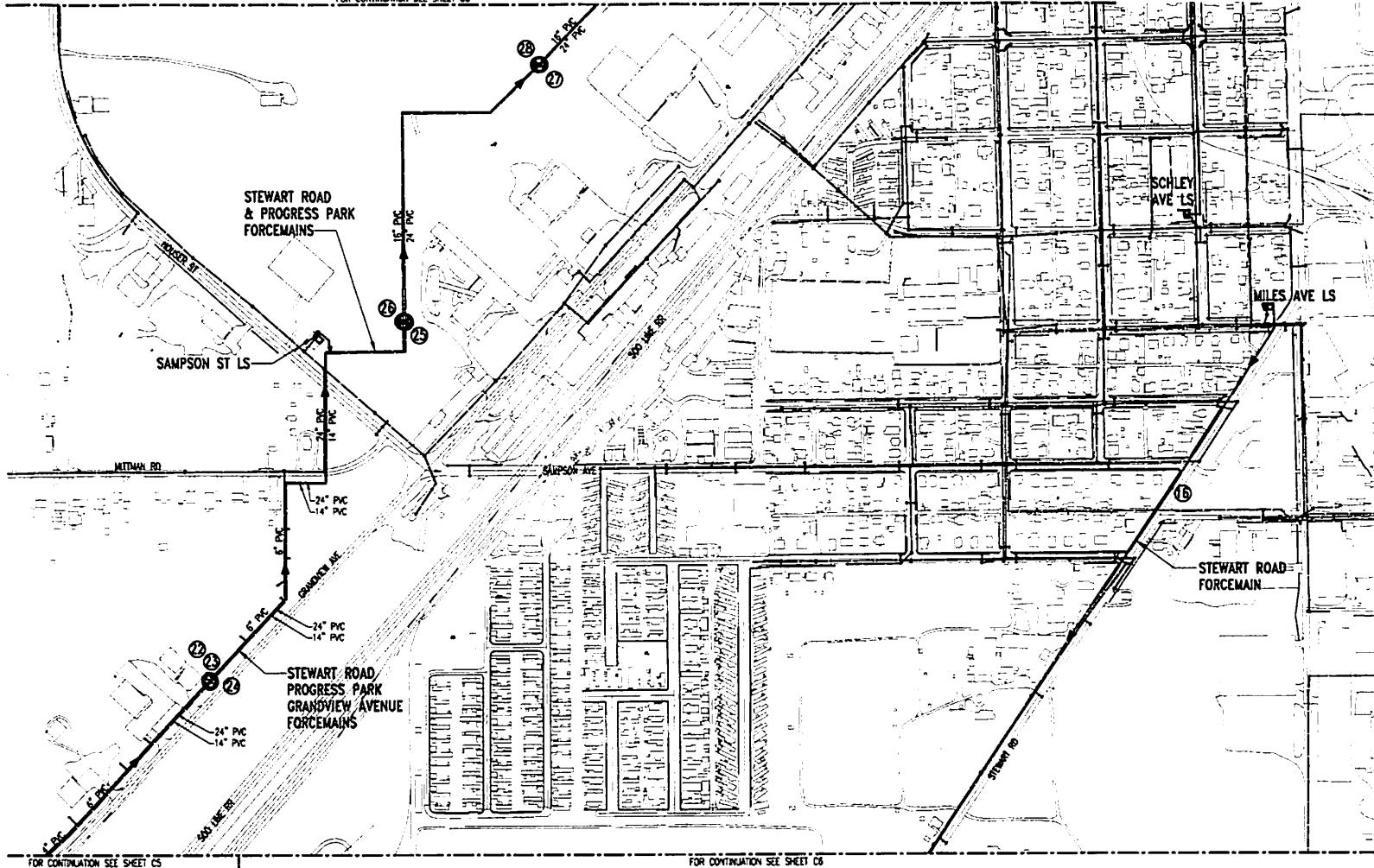
ISOLATION VALVE DETAIL

NO SCALE

NOTES

1. PROVIDE MINIMUM 6'-0" NEW RD4 TO TOP OF PIPE. SEE TABLE 1, SHEET Q2.
2. PROVIDE KNOCKOUTS IN MANHOLE WALLS FOR ALL PIPES.
3. 72" RCP: ASTM C78 CLASS II, WALL B, OR ASTM C478.
4. POLYPROPYLENE ENCAPSULATED 3/8" STEEL ROD: 5" EMBEDMENT & PROJECTION, 10" WIDTH.
5. 72" ID PRECAST REINFORCED CONCRETE TOP WITH CAST IN PLACE HATCH.
6. 4"-0" SQUARE, ALUMINUM, HINGED ACCESS HATCH; BILCO K-6 OR EQUAL.
7. 2"-0" STYROFOAM INSULATION ATTACHED/CLUTCHED TO MANHOLE TOP AND LID.
8. VENT TUBING
- 8A 1-1/2" FLEXIBLE HOSE WITH CAM & GROOVE QUICK CONNECT COUPLING.
- 8B 1-1/2" S-MEDELL 60 PVC COUPLING INSIDE MH, SEAL AT MH WALL, CLAMP TO SIGN POST & INVERT END.
9. SIGN POST & INVERT END.
10. SIGN AND POST FURNISHED BY CITY AND INSTALLED BY CONTRACTOR.
11. AUTOMATIC AIR RELEASE VALVE WITH SS BODY, SS FLOAT, SS FLOAT STEM, BOLTS AND NUTS, WASHER AND SPRING; ALL OTHER PARTS TO BE CORROSION RESISTANT NYLON OR PLASTIC. A.R.L. USA INC. MODEL D020 (4" FLANGED).
12. VACUUM GUARD, AND COUPLING.
13. STAINLESS STEEL NIPPLE AND BALL VALVE.
14. 1-1/2" ANGLE WITH CLAMP AND WALL ANCHORS. ALL STAINLESS STEEL.
15. 4" STAINLESS STEEL BALL VALVE. SEE ISOLATION VALVE DETAIL.
16. INSTALLATION CONDITIONS:
- A. VALVE & MANHOLE REPLACEMENT
- REMOVE AIR RELEASE VALVE, VENT, CASTING, SIGN AND ALL INTERIOR AND EXTERIOR APPURTENANCES.
- REMOVE MANHOLE TOP AND BARREL SECTIONS.
- COORDINATE WITH CITY TO CONTROL MAIN PRESSURE AND FLOW.
- REMOVE ISOLATION VALVE AND CLEAN FLANGE SURFACE.
- INSTALL AND CLOSE NEW ISOLATION VALVE.
- INSTALL NEW 6" STAINLESS STEEL BARREL SECTIONS.
- INSTALL AIR RELEASE VALVE, VENT PIPING AND BRACING.
- INSTALL MANHOLE TOP, SIGN AND EXTERIOR VENT PIPING.
- RESTORE FINISH GRADE.
- B. VALVE ONLY REPLACEMENT (LOCATION 30)
- REMOVE AIR RELEASE VALVE & VENT.
- COORDINATE WITH CITY TO CONTROL MAIN PRESSURE AND FLOW.
- REMOVE ISOLATION VALVE AND CLEAN FLANGE SURFACE.
- INSTALL AND CLOSE NEW ISOLATION VALVE.
- INSTALL AIR RELEASE VALVE, VENT PIPING AND BRACING.
- INSTALL EXTERIOR VENT PIPING.
- RESTORE FINISH GRADE.

FOR CONTINUATION SEE SHEET C8



FOR CONTINUATION SEE SHEET C5

FOR CONTINUATION SEE SHEET C6

NOTES

NO.	REVISIONS	DRAWN	APVD	APVD	DATE



Stanley Consultants Inc.

220 1st Avenue, Muscatine, Iowa 52641-3794

www.stanleyconsultants.com

CITY OF MUSCATINE
SANITARY SEWER AIR RELEASE VALVES

MUSCATINE, IOWA

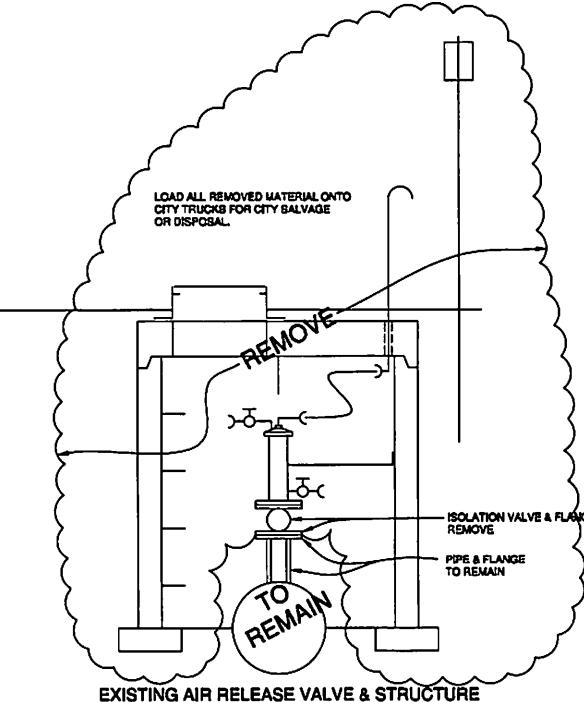
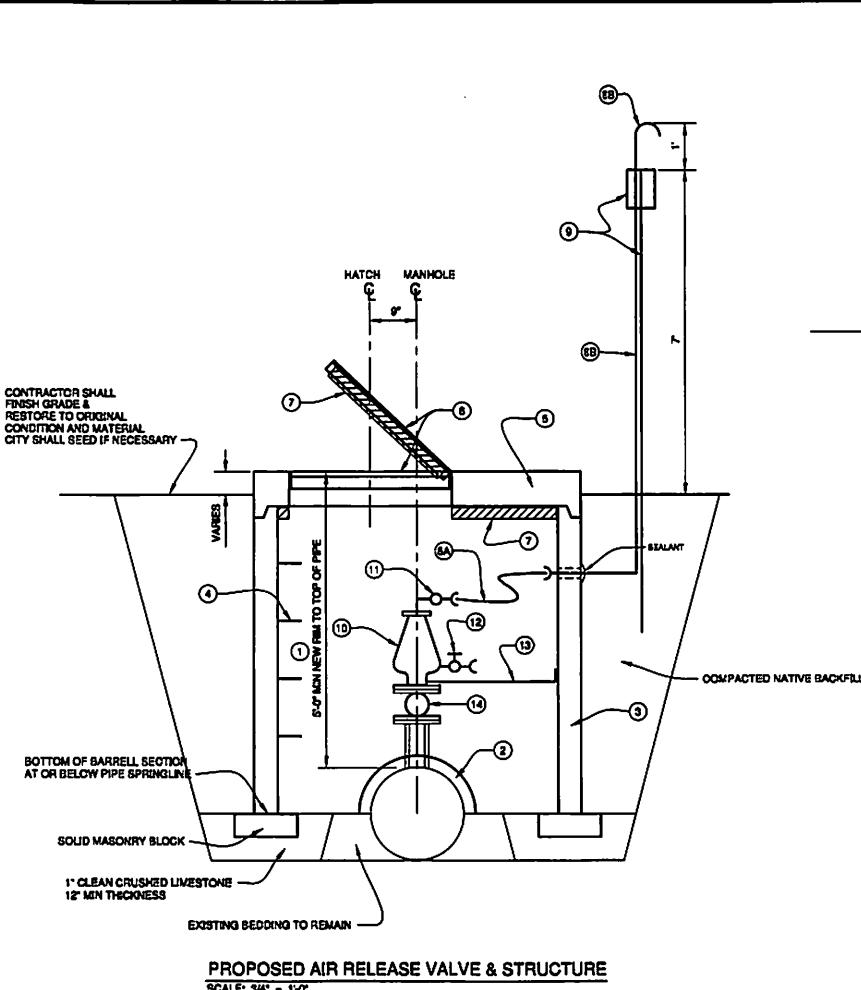
**VALVE REPLACEMENT
ENLARGED SITE PLAN
SHEET 7**

DESIGNED BY	RE-ROUTE	SCALE 1:200
DRAWN	APVD	NO. 17802
CHECKED	APVD	REV. 0
APPROVED	APVD	
DATE	APVD	

AT FULL SIZE
0 1 2 3 4 5 6 7 8 cm

10 © STANLEY CONSULTANTS

11



ISOLATION VALVE DETAIL

NOTES

1. PROVIDE MINIMUM 8'-0" NEW RIM TO TOP OF PIPE. SEE TABLE 1, SHEET G2.
2. PROVIDE KNOCKOUTS IN MANHOLE WALLS FOR ALL PIPES.
3. 72" RCP ASTM C78 CLASS B, WALL B, OR ASTM C478.
4. POLYPROPYLENE ENCAPSULATED $\frac{1}{2}$ STEEL ROD: 5" EMBEDMENT & PROJECTION, 10" WIDTH.
5. 72" ID PRECAST REINFORCED CONCRETE TOP WITH C48T IN PLACE HATCH.
6. 42" SQUARE, ALUMINUM, HINGED ACCESS HATCH; BILCO K-6 OR EQUAL.
7. 2" STYROFOAM INSULATION ATTACHED/GLUED TO MANHOLE TOP AND LID.
8. VENT TUBING.
9. 3" FLEXIBLE HOSE WITH CAM & GROOVE QUICK CONNECT COUPLING.
10. 3" SHEDULE 80 PVC. COUPLING INSIDE MH, SEAL AT MH WALL, CLAMP TO SIGN POST & INVERT END.
11. SIGN AND POST FURNISHED BY CITY AND INSTALLED BY CONTRACTOR.
12. AUTOMATIC AIR RELEASE VALVE WITH SS BODY, SS FLOAT, SS FLOAT STEM, BOLTS AND NUTS, WASHER AND SPRING; ALL OTHER PARTS TO BE CORROSION RESISTANT NYLON OR PLASTIC. A.R.L USA INC. MODEL D223 (IF FLANGED).
13. VACUUM GUARD, AND COUPLING.
14. STAINLESS STEEL NIPPLE AND BALL VALVE.
15. 1-1/2" ANGLE WITH CLAMP AND WALL ANCHORS. ALL STAINLESS STEEL.
16. 4" STAINLESS STEEL BALL VALVE. SEE ISOLATION VALVE DETAIL.
17. INSTALLATION CONDITIONS:

A. VALVE & MANHOLE REPLACEMENT

- REMOVE AIR RELEASE VALVE, VENT, CASTING, SIGN AND ALL INTERIOR AND EXTERIOR APPURTENANCES.
- REMOVE MANHOLE TOP AND BARREL SECTIONS.
- COORDINATE WITH CITY TO CONTROL MAIN PRESSURE AND FLOW.
- REMOVE ISOLATION VALVE AND CLEAN FLANGE SURFACE.
- INSTALL AND CLOSE NEW ISOLATION VALVE.
- INSTALL NEW STONE AND MANHOLE BARREL SECTIONS.
- INSTALL AIR RELEASE VALVE, VENT PIPING AND BRACING.
- INSTALL MANHOLE TOP, SIGN AND EXTERIOR VENT PIPING.
- RESTORE FINISH GRADE.

B. VALVE ONLY REPLACEMENT (LOCATION 32)

REMOVE AIR RELEASE VALVE & VENT.
COORDINATE WITH CITY TO CONTROL MAIN PRESSURE AND FLOW.
REMOVE ISOLATION VALVE AND CLEAN FLANGE SURFACE.
INSTALL AND CLOSE NEW ISOLATION VALVE.
INSTALL AIR RELEASE VALVE, VENT PIPING AND BRACING.
INSTALL EXTERIOR VENT PIPING.
DETERMINE FINISH CRACKS.

