CITY OF ANAMOSA

CITY COUNCIL AGENDA – REGULAR SESSION

MONDAY, SEPTEMBER 11, 2023 – 6:00 P.M.
ANAMOSA LIBRARY & LEARNING CENTER
600 EAST 1ST STREET, ANAMOSA, IA 52205

Zoom Meeting Link	Join by Telephone
https://us02web.zoom.us/j/8012629567	+1 312 626 6799 US
Meeting ID: 801 262 9567	Meeting ID: 8901 262 9567
Passcode: Anamosa	Passcode: 4952698

To address the City Council, please wait for the Mayor to open the floor for public comment on an agenda item. Before speaking, approach the podium and state your name and address. Each speaker is limited to five (5) minutes per agenda item and is expected to refrain from the use of profane, obscene, or slanderous language.

The above Zoom link does not allow for participation in the meeting. It is for viewing only.

1.0) Roll Call

2.0) Pledge of Allegiance

3.0) Consent Agenda (Review & Approve):

- **a)** Minutes from August 28, 2023 – Regular Session
- **b)** Current bills

4.0) Public Hearings:

4.1) Public Hearing – Approving the plans and specifications for Phase 2 of the 2nd Street Lift Station and Sewer Improvements Project and Notice to Bidders.

- ***a)*** *Mayor opens the public hearing.*
- ***b)*** *Proceedings*
- ***c)*** *Motion to close the public hearing.*
- ***d)*** *Council action –* ***Resolution 2023-55. Roll Call.***

4.2) Public Hearing – Approving a grant application for the Wastewater Flow Equalization Improvement Project through the Community Development Block Grant Program of the Iowa Economic Dvelopment Authority, selecting Snyder & Associates as the engineering firm, and committing a local match from the City of Anamosa.

- ***a)*** *Mayor opens the public hearing.*
- ***b)*** *Proceedings*
- ***c)*** *Motion to close the public hearing.*
- ***d)*** *Council action –* ***Resolution 2023-56. Roll Call.***

5.0) Council Action Items:

5.1) Facility Update – Wastewater Treatment Plant-Blower (Steve Agnitsch)

5.2) Resolution 2023-57 – Awarding the contract for the Wastewater Treatment Facility Tank Demolition Project and authorizing the City Administrator to execute the appropriate documents. **Roll Call.**

5.3) Resolution 2023-58 – Setting the date for a public hearing to review an application for a State Revolving Fund (SRF) Loan for the Wastewater Treatment Facility Improvement Project and to make available to the public the contents of an environmental information document and the City's project plan. **Roll Call.**

5.4) Resolution 2023-59 – Amending the Professional Services Agreement pertaining to the Wastewater Treatment Facility Improvement Project. **Roll Call.**

5.5) Resolution 2023-60 – Setting the date for a public hearing regarding the status of funded activities for the CDBG Downtown Revitalization Project. **Roll Call.**

5.6) Review & Approve – Stormwater Pollution Prevention Plan (SWPPP) Liability and Responsibility Agreement with Boomerang Construction, for the Old Dubuque Road Extension Project.

5.7) Review & Approve (Consent Agenda) – Pay requests, totaling $46,074.31.

- **a)** From Snyder & Associates, in the amount of $33,839.00, for the US 151 Grade Separation & Roundabout Project

- **b)** From Kluesner's, in the amount of $6,402.00, for asphalt repairs to the Lawrence Community Center parking lot.
- **c)** From HR Green, in the amount of $964.00, for GIS Services-Cemetery
- **d)** From HR Green, in the amount of $500.00, for the WTP Disinfection System CPS
- **e)** From HR Green, in the amount of $3,118.31, for the Jordan Well No. 6 Construction Project-Amendment 2
- **f)** From HR Green, in the amount of $210.00, for Sycamore St. Resurfacing & ADA Ramps
- **g)** From HR Green, in the amount of $341.00, for the 3rd St Sidewalk Extension Project
- **h)** From HR Green, in the amount of $490.00, for the Sidewalk Program
- **i)** From HR Green, in the amount of $210.00, for the Northlands Project Civil Plan Review

5.8) Discussion & Possible Action – Request to "overturn" reversal of dangerous/vicious/aggressive animal designation. (Ashley Letsch)

6.0) City Administrator's Report

7.0) Mayor and Council Reports

7.1) Mayor's report

7.2) Council reports

8.0) Public Comment for Items Not on The Agenda

9.0) Adjournment

STATEMENT OF COUNCIL PROCEEDINGS
AUGUST 28, 2023

The City Council of the City of Anamosa met in Regular Session August 28, 2023, at the Anamosa Library and Learning Center and via Zoom at 6:00 p.m. with Mayor Rod Smith presiding. The following Council Members were present: Rich Crump, Kay Smith, Jeff Stout, Teresa Tuetken, and Alan Zumbach. Absent: Brooke Gombert. Also present: Jeremiah Hoyt, City Administrator and Penny Lode, City Clerk. Iowa Code Chapter 21, as interpreted, permits public meetings to be held electronically.

Mayor Rod Smith called the meeting to order at 6:00 p.m. Roll call was taken with a quorum present.

Motion by Smith, seconded by Tuetken approving consent agenda items; Minutes of 08/14/23 Regular Council Meeting, Minutes of 08/16/23 Special Session, Current bills, Liquor Licenses, Noise/Street closure permit applications. Ayes: all. Nays: none. Motion carried.

Josh Scanlon, HR Green provided project updates to the Council.

Snyder & Associates provided updates to the Council, documents only in the Council packet.

Motion by Crump, seconded by Stout approving the sale of 2018 Pintle Hitch Trailer. Ayes: all. Nays: none. Motion carried.

Motion by Smith, seconded by Zumbach approving final draft of 28E agreement between the City and Anamosa Community School District regarding the use and maintenance of recreational facilities. Ayes: all. Nays: none. Motion carried.

Motion by Crump, seconded by Zumbach approving final completion certificate and final pay request from Boomerang Construction in amount of $69,658.58 for the Jordan Well No. 6 Project. Ayes: all. Nays: none. Motion carried.

Motion by Zumbach, seconded by Smith approving consent agenda items; Snyder & Assoc. pay requests in amount of $5,130.00, $15,618.00 & $23,427.00, Dave's Complete Construction pay request - $44,431.41, HR Green pay requests - $940.50 & $1,104.25. Ayes: all. Nays: none.

Motion by Stout, seconded by Zumbach approving waiver of City policy pertaining to Anamosa Firefighter's Fall Fundraiser Ribeye Steak Sandwich Dinner between the hours of 5:00 PM – 11:59 PM. Ayes: all. Nays: none. Motion carried.

Motion by Crump, seconded by Zumbach approving Resolution 2023-54 setting date of September 11, 2023, for public hearing to approve Phase 2 of the 2nd St Lift Station and Sewer System Improvement Project. Roll vote: Ayes: Zumbach, Crump, Smith, Tuetken, Stout. Nays: none. Absent: Gombert. Motion carried.

Motion by Crump, seconded by Tuetken approving Amendment to Chapter 63 of Code of Ordinances to designate the speed limits on Old Dubuque Rd extension. Roll vote: Tuetken,

Zumbach, Stout, Crump, Smith. Nays: none. Absent: Gombert. Motion carried. Motion by Zumbach, seconded by Smith to waive the 2nd and 3rd Readings. Roll vote: Ayes: Smith, Tuetken, Zumbach, Stout, Crump. Nays: none. Absent: Gombert. Motion carried.

Motion by Smith, seconded by Stout approving Amendment to Chapter 65 of Code of Ordinances to add a stop sign at Davidson Blvd and Old Dubuque Rd. Roll vote: Ayes: Crump, Smith, Tuetken, Zumbach, Stout. Nays: none. Absent: Gombert. Motion carried. Motion by Zumbach, seconded by Crump to waive the 2nd and 3rd Readings. Roll vote. Ayes: Crump, Smith, Tuetken, Zumbach, Stout. Nays: none. Absent: Gombert. Motion carried.

Mayor Smith opened the hearing to appeal designation and removal of a dangerous/vicious/aggressive animal. Council heard comments from public. Motion by Smith, seconded by Tuetken to remove the designation. Ayes: Smith, Tuetken, Zumbach. Nays: Stout. Abstain: Crump. Motion carried.

Motion by Crump, seconded by Tuetken to enter into closed session. Ayes: all. Nays: none. Motion carried.

Council entered into closed session at 6:57 p.m.

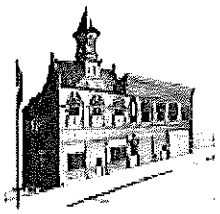
Council entered into open session at 7:54 p.m.

Meeting adjourned at 7:54 p.m.

_____
Rod Smith, Mayor

ATTEST:

_____
Penny K. Lode, City Clerk



City of Anamosa, IA

Expense Approval Report
By Fund

Post Dates 8/29/2023 - 9/11/2023

Vendor Name	Payable Number	Post Date	Description (Item)	Account Number	Amount
Fund: 001 - GENERAL FUND					
Department: 000 - 000					
THE HARTFORD	INV0001040	09/01/2023	AD&D	001-000-2208	52.20
WELLMARK BLUE CROSS BLUE	INV0001041	09/01/2023	ALLIANCE HEALTH INSURANC	001-000-2205	21,470.21
WELLMARK BLUE CROSS BLUE	INV0001042	09/01/2023	BLUE ADVANTAGE HEALTH IN	001-000-2205	2,839.14
COLLECTION SERVICES CENTE	INV0001043	09/01/2023	COLLECTION SERVICES	001-000-2204	257.55
DELTA DENTAL PLAN OF IOWA	INV0001044	09/01/2023	DELTA DENTAL INSURANCE	001-000-2205	1,291.66
CITY OF ANAMOSA	INV0001045	09/01/2023	FLEX - MEDICAL	001-000-2204	69.23
IPERS COLLECTIONS	INV0001046	09/01/2023	IPERS	001-000-2203	7,747.15
THE HARTFORD	INV0001047	09/01/2023	LIFE INSURANCE	001-000-2208	391.50
THE HARTFORD	INV0001048	09/01/2023	LTD	001-000-2208	360.08
IPERS COLLECTIONS	INV0001049	09/01/2023	IPERS	001-000-2203	2,475.01
VSP Insurance Co	INV0001050	09/01/2023	VSP INSURANCE	001-000-2205	275.65
941 TAX EFT PAYMENT	INV0001051	09/01/2023	MEDICARE TAX	001-000-2206	2,080.82
941 TAX EFT PAYMENT	INV0001052	09/01/2023	SOCIAL SECURITY TAX	001-000-2202	8,896.80
941 TAX EFT PAYMENT	INV0001053	09/01/2023	FEDERAL TAX	001-000-2200	4,531.57
TREASURER STATE OF IOWA	INV0001054	09/01/2023	STATE TAX	001-000-2201	1,995.11
				Department 000 - 000 Total:	**54,733.68**
Department: 110 - POLICE					
AT&T MOBILITY	081923	09/11/2023	CELL PHONES	001-110-6373	543.68
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	001-110-6371	846.50
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	001-110-6371	454.88
ENCOMPASS	14062	09/11/2023	COMPUTER NETWORK	001-110-6490	2,562.00
DRJ GROUP LLC	23450	09/11/2023	FIRE EXT MAINT	001-110-6504	49.00
GLOBAL EQUIPMENT COMPA	23595389	09/11/2023	POLICE DEPT FURNITURE	001-110-6553	27,058.34
TECHNICOM, INC.	31737	09/11/2023	PHONE BATTERY BACKUP	001-110-6490	420.60
ACCESS SYSTEMS LEASING	34714718	09/11/2023	COPIER LEASE	001-110-6470	133.04
				Department 110 - POLICE Total:	**32,068.04**
Department: 111 - 111					
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	001-111-6371	47.27
				Department 111 - 111 Total:	**47.27**
Department: 290 - SOLID WASTE					
T & D TREE SERVICE	427922	09/11/2023	TREE REMOVAL	001-290-6428	2,800.00
				Department 290 - SOLID WASTE Total:	**2,800.00**
Department: 450 - CEMETERY FUND					
HENRY/TROY	277529	09/11/2023	BURIAL	001-450-6491	500.00
				Department 450 - CEMETERY FUND Total:	**500.00**
Department: 610 - CITY COUNCIL					
ANAMOSA ROTARY CLUB	090523	09/11/2023	FIREWORKS DONATION	001-610-6479	3,000.00
				Department 610 - CITY COUNCIL Total:	**3,000.00**
Department: 612 - CITY ADMINISTRATOR					
AT&T MOBILITY	081923-2	09/11/2023	CELL PHONES	001-612-6373	49.85
ENCOMPASS	14062	09/11/2023	COMPUTER NETWORK	001-612-6490	2,562.00
				Department 612 - CITY ADMINISTRATOR Total:	**2,611.85**
Department: 622 - SUPPORT ADMINISTRATION					
KAREN CHRISTNER	081423	09/11/2023	CONTRACT SERVICES	001-622-6401	1,555.70
JONES COUNTY RECORDER	090123	09/11/2023	DOCUMENT FEES	001-622-6482	85.00
MCALEER	090123	09/11/2023	WATER	001-622-6530	28.00
SCHNEITER WEERS INSURANC	1072	09/11/2023	INSURANCE PREMIUMS	001-622-6160	7,676.00
ACCESS SYSTEMS LEASING	34714718	09/11/2023	COPIER LEASE	001-622-6470	133.04
				Department 622 - SUPPORT ADMINISTRATION Total:	**9,477.74**

Vendor Name	Payable Number	Post Date	Description (Item)	Account Number	Amount
Department: 650 - CITY HALL					
MENARDS	30720	09/11/2023	DOOR TRIM	001-650-6474	52.68
				Department 650 - CITY HALL Total:	**52.68**
				Fund 001 - GENERAL FUND Total:	**105,291.26**
Fund: 015 - FIRE SERVICE					
Department: 150 - FIRE DEPARTMENT					
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	015-150-6371	545.12
				Department 150 - FIRE DEPARTMENT Total:	**545.12**
				Fund 015 - FIRE SERVICE Total:	**545.12**
Fund: 041 - LIBRARY FUND					
Department: 410 - LIBRARY					
AT&T MOBILITY	081923-2	09/11/2023	CELL PHONES	041-410-6373	49.85
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	041-410-6371	1,528.46
				Department 410 - LIBRARY Total:	**1,578.31**
				Fund 041 - LIBRARY FUND Total:	**1,578.31**
Fund: 043 - PARKS & RECREATION					
Department: 430 - RECREATION					
MINNIHAN/DAVID	00411-2023	09/11/2023	MUSIC IN THE PARK	043-430-6490	200.00
SELECT SERVICE	007989	09/11/2023	RESTROOMS	043-430-6531	230.00
AT&T MOBILITY	081923-2	09/11/2023	CELL PHONES	043-430-6373	49.85
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	043-430-6371	506.11
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	043-430-6371	2,084.16
LEAF	15232188	09/11/2023	COPIER LEASE	043-430-6310	101.56
SPACE WALK OF CEDAR RAPID	743976	09/11/2023	INFLATABLES	043-430-6490	490.00
				Department 430 - RECREATION Total:	**3,661.68**
				Fund 043 - PARKS & RECREATION Total:	**3,661.68**
Fund: 044 - AQUA COURT					
Department: 440 - AQUA COURT					
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	044-440-6371	1,755.42
JONES COUNTY ENVIRONMEN	261	09/11/2023	POOL INSPECTION	044-440-6470	531.00
				Department 440 - AQUA COURT Total:	**2,286.42**
				Fund 044 - AQUA COURT Total:	**2,286.42**
Fund: 046 - LAWRENCE COMMUNITY CENTER FUND					
Department: 460 - LAWRENCE COMMMUNITY CENTER					
ATLANTIC COCA-COLA	4105633	09/11/2023	MERCHANDISE	046-460-6546	101.79
ALL CLEAR WINDOW CLEANIN	45015	09/11/2023	WINDOW CLEANING	046-460-6475	74.20
HOMETOWN PEST SOLUTION	6211	09/11/2023	PEST CONTROL	046-460-6452	55.00
				Department 460 - LAWRENCE COMMMUNITY CENTER Total:	**230.99**
				Fund 046 - LAWRENCE COMMUNITY CENTER FUND Total:	**230.99**
Fund: 110 - ROAD USE TAX					
Department: 211 - Public Services - community betterment					
AUTOMOTIVE SERVICES	0046007	09/11/2023	MOWER TIRE REPAIRS	110-211-6470	60.00
JONES COUNTY ENGINEER	071923	09/11/2023	PAINT	110-211-6543	3,124.44
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	110-211-6371	339.68
KRAY/JEFF	090123	09/11/2023	PHONE STIPEND	110-211-6373	20.00
FRAZIER/SPENCER	090123	09/11/2023	PHONE STIPEND	110-211-6373	20.00
LODE/ERIC	090123	09/11/2023	PHONE STIPEND	110-211-6373	20.00
BARRON MOTOR SUPPLY	288435	09/11/2023	BATTERY	110-211-6474	128.39
BARRON MOTOR SUPPLY	288448	09/11/2023	LUBE	110-211-6474	21.99
BARRON MOTOR SUPPLY	288449	09/11/2023	FILTER	110-211-6474	36.30
BARRON MOTOR SUPPLY	288488	09/11/2023	PARTS	110-211-6474	330.58
MID-IOWA SOLID WASTE	59296	09/11/2023	PARTS STREET SWEEPER	110-211-6474	233.57
LAWSON PRODUCTS, INC.	9310803249	09/11/2023	WEED KILLER	110-211-6475	216.00
REXCO EQUIPMENT	P65291	09/11/2023	BLADE	110-211-6470	194.15
DAKOTA SUPPLY GROUP	S103003541.001	09/11/2023	PURPLE MARKING FLAGS	110-211-6553	190.00
BODENSTEINER IMPLEMENT	W33256	09/11/2023	MOWER REPAIRS	110-211-6470	1,383.25

Vendor Name	Payable Number	Post Date	Description (Item)	Account Number	Amount
THOMPSON TRUCK & TRAILE	X101127948	09/11/2023	CLEANER	110-211-6474	26.82
				Department 211 - Public Services - community betterment Total:	**6,345.17**
				Fund 110 - ROAD USE TAX Total:	**6,345.17**
Fund: 122 - LOCAL OPTION TAX 65%					
Department: 110 - POLICE					
ULINE, INC	167550806	09/11/2023	DRY ERASE BOARD	122-110-6722	460.28
				Department 110 - POLICE Total:	**460.28**
Department: 210 - ROADS, BRIDGES, SIDEWALKS					
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	122-210-6372	6,619.82
				Department 210 - ROADS, BRIDGES, SIDEWALKS Total:	**6,619.82**
				Fund 122 - LOCAL OPTION TAX 65% Total:	**7,080.10**
Fund: 600 - WATER FUND					
Department: 810 - 810					
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	600-810-6371	13,057.68
OLIN-MORLEY TELEPHONE CO	090123	09/11/2023	INTERNET	600-810-6373	104.95
IOWA ONE CALL	253827	09/11/2023	LOCATES	600-810-6489	84.35
IGNITE COMMUNITIES	25806	09/11/2023	WATER LEAK FAWN CREEK	600-810-6553	1,148.79
BODENSTEINER IMPLEMENT	W33256	09/11/2023	MOWER REPAIRS	600-810-6556	1,383.25
				Department 810 - 810 Total:	**15,779.02**
				Fund 600 - WATER FUND Total:	**15,779.02**
Fund: 610 - WASTEWATER FUND					
Department: 815 - 815					
ALLIANT ENERGY	082923	09/11/2023	ELECTRIC	610-815-6371	15,386.99
MCDERMOTT OIL COMPANY	083123	09/11/2023	GASOLINE	610-815-6551	11,059.42
SHADA/TIM	090123	09/11/2023	PHONE STIPEND	610-815-6373	20.00
KIECK'S	23-08-0104	09/11/2023	UNIFORM	610-815-6181	83.90
IOWA ONE CALL	253827	09/11/2023	LOCATES	610-815-6489	84.35
BARRON MOTOR SUPPLY	288560	09/11/2023	6" PUMP BATTERY	610-815-6470	165.29
BARRON MOTOR SUPPLY	288578	09/11/2023	6" PUMP SERVICE	610-815-6470	25.71
MENARDS	30591	09/11/2023	POLYMER MIXER	610-815-6504	231.83
CR LC SOLID WASTE AGENCY	47872	09/11/2023	SLUDGES	610-815-6472	63.60
AEROMOD	SO43740-1	09/11/2023	DIFFUSERS	610-815-6783	1,223.76
				Department 815 - 815 Total:	**28,344.85**
				Fund 610 - WASTEWATER FUND Total:	**28,344.85**
				Grand Total:	**171,142.92**

Report Summary

Fund Summary

Fund	Expense Amount	Payment Amount
001 - GENERAL FUND	105,291.26	54,733.68
015 - FIRE SERVICE	545.12	0.00
041 - LIBRARY FUND	1,578.31	0.00
043 - PARKS & RECREATION	3,661.68	0.00
044 - AQUA COURT	2,286.42	0.00
046 - LAWRENCE COMMUNITY CENTER FUND	230.99	0.00
110 - ROAD USE TAX	6,345.17	0.00
122 - LOCAL OPTION TAX 65%	7,080.10	0.00
600 - WATER FUND	15,779.02	0.00
610 - WASTEWATER FUND	28,344.85	0.00
Grand Total:	**171,142.92**	**54,733.68**

Account Summary

Account Number	Account Name	Expense Amount	Payment Amount
001-000-2200	FIT HOLDING	4,531.57	4,531.57
001-000-2201	SIT HOLDING	1,995.11	1,995.11
001-000-2202	FICA HOLDING	8,896.80	8,896.80
001-000-2203	IPERS HOLDING	10,222.16	10,222.16
001-000-2204	PEDC HOLDING	326.78	326.78
001-000-2205	HEALTH & CANCER INS.	25,876.66	25,876.66
001-000-2206	MEDICARE HOLDING	2,080.82	2,080.82
001-000-2208	LIFE HOLDING	803.78	803.78
001-110-6371	UTILITIES, ELECTRIC	1,301.38	0.00
001-110-6373	UTILITIES, TELEPHONE	543.68	0.00
001-110-6470	EQUIPMENT MAINT CO	133.04	0.00
001-110-6490	SOFTWARE MAINT CON	2,982.60	0.00
001-110-6504	EQUIPMENT, SMALL	49.00	0.00
001-110-6553	MISCELLANEOUS EXPEN	27,058.34	0.00
001-111-6371	UTILITIES, ELECTRIC (SIR	47.27	0.00
001-290-6428	TREE TRIMMING/STUM	2,800.00	0.00
001-450-6491	GRAVE SERVICING	500.00	0.00
001-610-6479	CONTRBUTIONS TO OUT	3,000.00	0.00
001-612-6373	UTILITIES, TELEPHONE	49.85	0.00
001-612-6490	MAINT. CONTRACT SOFT	2,562.00	0.00
001-622-6160	WORKER'S COMP INSUR	7,676.00	0.00
001-622-6401	AUDITING SERVICES	1,555.70	0.00
001-622-6470	MAINT. CONTRACT OFFI	133.04	0.00
001-622-6482	RECORDING FEES	85.00	0.00
001-622-6530	SUPPLIES, OPERATIONS	28.00	0.00
001-650-6474	MAINTENANCE, BLDGS	52.68	0.00
015-150-6371	UTILITIES, ELECTRIC	545.12	0.00
041-410-6371	UTILITIES, ELECTRIC	1,528.46	0.00
041-410-6373	UTILITIES, TELEPHONE	49.85	0.00
043-430-6310	CONTRACT, MAINTENAN	101.56	0.00
043-430-6371	UTILITIES, ELECTRIC	2,590.27	0.00
043-430-6373	UTILITIES, TELEPHONE	49.85	0.00
043-430-6490	EVENT EXPENSES	690.00	0.00
043-430-6531	SUPPLIES, REC. PROGRA	230.00	0.00
044-440-6371	UTILITIES, ELECTRIC	1,755.42	0.00
044-440-6470	PROF SERV-TESTING & I	531.00	0.00
046-460-6452	CONTRCT,MAINT. BLDGS	55.00	0.00
046-460-6475	MAINTENANCE, BLDGS	74.20	0.00
046-460-6546	MERCHANDISE FOR RES	101.79	0.00
110-211-6371	UTILITIES, ELECTRIC	339.68	0.00
110-211-6373	UTILITIES, TELEPHONE	60.00	0.00
110-211-6470	MAINTENANCE, EQUIP	1,637.40	0.00
110-211-6474	MAINTENANCE, VEHICLE	777.65	0.00

Account Summary

Account Number	Account Name	Expense Amount	Payment Amount
110-211-6475	MAINTENANCE, BLDGS	216.00	0.00
110-211-6543	SUPPLIES, STREET MAIN	3,124.44	0.00
110-211-6553	MISCELLANEOUS SUPPLI	190.00	0.00
122-110-6722	OPERATIONS EQUIPMEN	460.28	0.00
122-210-6372	ELECTRIC UTILITIES, ST LI	6,619.82	0.00
600-810-6371	UTILITIES, ELECTRIC	13,057.68	0.00
600-810-6373	UTILITIES, TELEPHONE	104.95	0.00
600-810-6489	PROFESSIONAL SERVICE	84.35	0.00
600-810-6553	MISCELLANEOUS EXPEN	1,148.79	0.00
600-810-6556	MAINTENANCE, EQUIP	1,383.25	0.00
610-815-6181	ALLOWANCE, UNIFORM	83.90	0.00
610-815-6371	UTILITIES, ELECTRIC	15,386.99	0.00
610-815-6373	UTILITIES, TELEPHONE	20.00	0.00
610-815-6470	MAINTENANCE, EQUIP	191.00	0.00
610-815-6472	MAINTENANCE, SYSTEM	63.60	0.00
610-815-6489	PROFESSIONAL SERVICE	84.35	0.00
610-815-6504	EQUIPMENT, SMALL	231.83	0.00
610-815-6551	FUEL EXPENSE	11,059.42	0.00
610-815-6783	WASTEWATER TREATME	1,223.76	0.00
	Grand Total:	**171,142.92**	**54,733.68**

Project Account Summary

Project Account Key		Expense Amount	Payment Amount
None		171,142.92	54,733.68
	Grand Total:	**171,142.92**	**54,733.68**

LEGEND

FEATURES	EXISTING	PROPOSED
SPOT ELEVATION	93.0	+93.0
CONTOUR ELEVATION	93	93
FENCE (BARBED, FIELD, HOG)	-x-x-	
FENCE (CHAIN LINK)	-//-//-	
FENCE (WOOD)		
FENCE (SILT)		
TREE LINE		
TREE STUMP		
DECIDUOUS TREE \ SHRUB		
CONIFEROUS TREE \ SHRUB		
COMMUNICATION	C(x)	C
OVERHEAD COMMUNICATION	OC(x)	OC
FIBER OPTIC	FO(x)	FO
UNDERGROUND ELECTRIC	E(x)	E
OVERHEAD ELECTRIC	OE(x)	OE
GAS MAIN WITH SIZE	4" G(x)	4" G
HIGH PRESSURE GAS MAIN WITH SIZE	4" HPG(x)	4" HPG
WATER MAIN WITH SIZE	8" W(x)	8" W
SANITARY SEWER WITH SIZE	8" S(x)	8" S
DUCT BANK	DUCT(x)	
TEST HOLE LOCATION FOR SUE W/ID	1	

(*) DENOTES THE SURVEY QUALITY SERVICE LEVEL FOR UTILITIES

	EXISTING	PROPOSED
SANITARY MANHOLE	12" ST	12" ST
STORM SEWER WITH SIZE		
STORM MANHOLE		
SINGLE STORM SEWER INTAKE		
DOUBLE STORM SEWER INTAKE		
FIRE HYDRANT		
FIRE HYDRANT ON BUILDING		
WATER MAIN VALVE		
WATER SERVICE VALVE		
WELL		
UTILITY POLE		
GUY ANCHOR		
UTILITY POLE WITH LIGHT		
UTILITY POLE WITH TRANSFORMER		
STREET LIGHT		
YARD LIGHT		
ELECTRIC BOX	EB	
ELECTRIC TRANSFORMER	E	
TRAFFIC SIGN		
COMMUNICATION PEDESTAL	C	
COMMUNICATION MANHOLE	C	
COMMUNICATION HANDHOLE	C	
FIBER OPTIC MANHOLE	FO	
FIBER OPTIC HANDHOLE	FO	
GAS VALVE		
GAS MANHOLE	G	
GAS APPARATUS	G	
FENCE POST OR GUARD POST		
UNDERGROUND STORAGE TANK	UST	
ABOVE GROUND STORAGE TANK	AST	
SIGN		
SATELLITE DISH		
MAILBOX		
SOIL BORING		

UTILITY QUALITY SERVICE LEVELS

QUALITY LEVELS OF UTILITIES ARE SHOWN IN THE PARENTHESES WITH THE UTILITY TYPE AND WHEN APPLICABLE, SIZE. THE QUALITY LEVELS ARE BASED ON THE CI / ASCE 38-02 STANDARD.

QUALITY LEVEL (D) INFORMATION IS DERIVED FROM EXISTING UTILITY RECORDS OR ORAL RECOLLECTIONS.

QUALITY LEVEL (C) INFORMATION IS OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION WITH QUALITY D INFORMATION.

QUALITY LEVEL (B) INFORMATION IS OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES.

QUALITY LEVEL (A) IS HORIZONTAL AND VERTICAL POSITION OF UNDERGROUND UTILITIES OBTAINED BY ACTUAL EXPOSURE OR VERIFICATION OF PREVIOUSLY EXPOSED SUBSURFACE UTILITIES, AS WELL AS THE TYPE, SIZE, CONDITION, MATERIAL, AND OTHER CHARACTERISTICS.

UTILITY WARNING

THE UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND/OR RECORDS OBTAINED. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN COMPRISE ALL SUCH ITEMS IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN ARE IN THE EXACT LOCATION INDICATED EXCEPT WHERE NOTED AS QUALITY LEVEL A.

IOWA ONE CALL
1-800-292-8989 | 811
www.iowaonecall.com

CONSTRUCTION PLANS FOR
2ND STREET LIFT STATION AND SEWER SYSTEM IMPROVEMENTS - PHASE 2
CITY OF ANAMOSA, IOWA

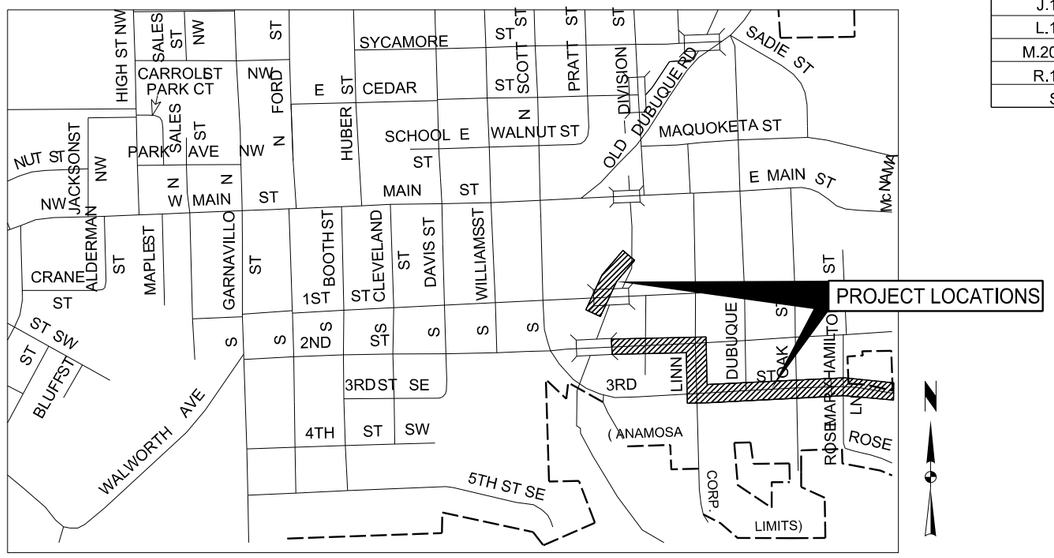
THE PROPOSED IMPROVEMENTS INCLUDED IN THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2023 VERSION OF THE STATEWIDE URBAN DESIGN AND SPECIFICATIONS (SUDAS)

CITY ADMINISTRATOR
JEREMIAH HOYT

MAYOR
ROD SMITH

UTILITY SUPERINTENDENT
STEVE AGNITSCH

CITY COUNCIL
TERESA TUETKEN
KAY SMITH
BROOKE GOMBERT
RICH CRUMP
JEFF STOUT
ALAN ZUMBACH



VICINITY MAP

NOT TO SCALE

INDEX OF SHEETS	
NO.	DESCRIPTION
A.1	TITLE SHEET
B.1-B.2	TYPICAL SECTIONS & DETAILS
C.1-C.3	ESTIMATE OF QUANTITIES
D.1	PLAN AND PROFILE- DIVISION STREET
E.1	PLAN OF IMPROVEMENTS- 2ND STREET
F.1	REMOVALS
G.1	SURVEY CONTROL & REFERENCE INFORMATION
J.1-J.2	TRAFFIC CONTROL AND STAGING
L.1-L.3	GEOMETRIC, STAKING, AND JOINTING
M.20-M.26	BURIED PIPE SHEETS - SANITARY
R.1-R.2	POLLUTION PREVENTION PLAN
S.1	SIDEWALK SHEETS

LINDSAY R. BEAMAN P19971 — LICENSED PROFESSIONAL ENGINEER — IOWA

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.

Lindsay R. Beaman, P.E. Date

License Number P19971

My License Renewal Date is December 31, 2023

Pages or sheets covered by this seal:
B.1, C, D, E, F, G, J, L, S, SHEETS

NICHOLAS A. EISENBACHER P25334 — LICENSED PROFESSIONAL ENGINEER — IOWA

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.

8/9/2023
Nicholas A. Eisenbacher, P.E. Date

License Number P25334

My License Renewal Date is December 31, 2024

Pages or sheets covered by this seal:
A, B.2, M, R SHEETS

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE
Technician:	CJN	Date:	10/25/2022

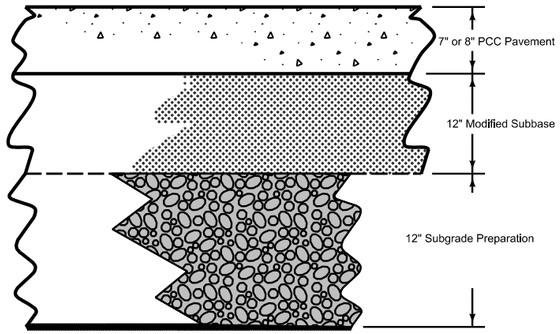
Scale: 1"= 1'
Field Bk: Pg:
Project No: 1211106
Sheet A.1

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2
TITLE SHEET
ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.
5006 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

SNYDER & ASSOCIATES

Project No: 1211106
Sheet A.1

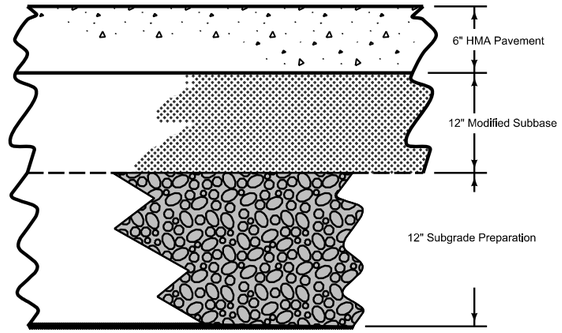


NOTE:

THIS SECTION IS TYPICAL ONLY, AND MAY BE APPROPRIATELY MODIFIED IN AREAS SPECIFICALLY DESIGNATED BY THE ENGINEER. THIS ITEM IS TO BE PLACED ONLY AS DETERMINED NECESSARY BY THE ENGINEER AND APPROVED PRIOR TO CORE OUT.

1 / B.1 TYPICAL STREET PCC PAVING SECTION

NO SCALE



NOTE:

THIS SECTION IS TYPICAL ONLY, AND MAY BE APPROPRIATELY MODIFIED IN AREAS SPECIFICALLY DESIGNATED BY THE ENGINEER. THIS ITEM IS TO BE PLACED ONLY AS DETERMINED NECESSARY BY THE ENGINEER AND APPROVED PRIOR TO CORE OUT.

1 / B.1 TYPICAL STREET HMA PAVING SECTION

NO SCALE

MARK	REVISION	DATE	BY
Engineer: DMS	Checked By: NAE	Scale: 1"= N/A	
Technician: CJN	Date: 10/25/2022	Field Bk:	Pg:

Project No: 1211106

Sheet B.1

ANAMOSA, IOWA

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

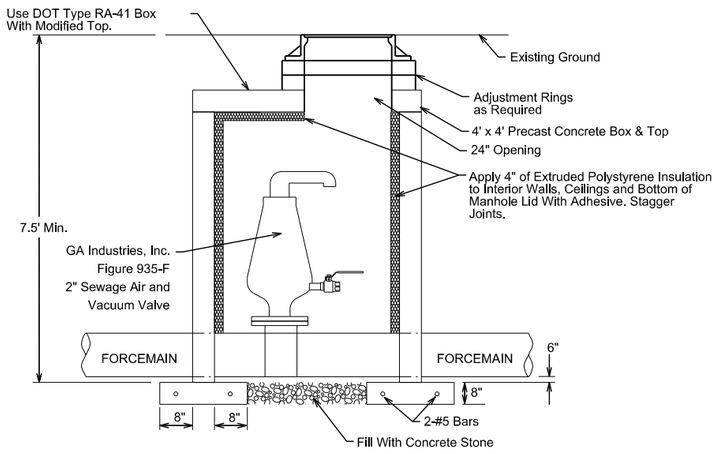
TYPICAL SECTIONS & DETAILS

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

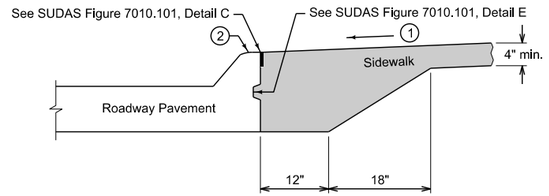
SNYDER & ASSOCIATES

Project No: 1211106

Sheet B.1

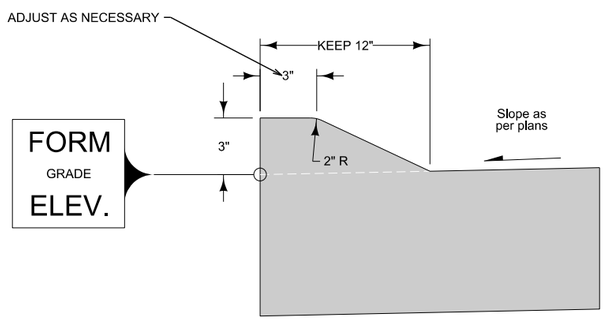


1 B.2 AIR RELEASE MANHOLE
NO SCALE



1. TARGET CROSS SLOPE OF 1.5% WITH A MAXIMUM CROSS SLOPE OF 2.0%.
2. ENSURE TOP OF CURB SLOPES TO STREET FOR DRAINAGE.

2 B.2 CLASS A SIDEWALK DETAIL
NO SCALE



3 B.2 3" SLOPED CURB
NO SCALE

MARK	REVISION	DATE	BY
Engineer: DMS	Checked By: NAE	Scale: 1"= N/A	
Technician: CJN	Date: 10/25/2022	Field Bk:	Pg:

Project No: 1211106 Sheet B.2

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2
ANAMOSA, IOWA

TYPICAL SECTIONS & DETAILS

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

SNYDER & ASSOCIATES

Project No: 1211106
Sheet B.2

GENERAL NOTES

1. Contractor to notify Owner & Engineer at least 72 hours prior to starting construction.
2. Dimensions, street locations, utilities and grading are based on available information at the time of design. Deviations may be necessary in the field. Any such changes or conflicts between the plan and field conditions are to be reported to the Engineer.
3. Confine all construction activity to within the construction limits unless otherwise authorized by the City.
4. Do not store equipment and/or materials within public right-of-way on streets and/or alleys open to traffic. Contractor shall provide areas as needed for storage of equipment and/or materials.
5. If the Contractor obtains additional easements for storage of equipment and materials, copies of agreements with the property owners shall be provided to the City.
6. Where the Contractor's equipment is operated on any portion of the pavement or structures used by traffic on or adjacent to the section under construction, the Contractor shall clean the pavement of all dirt and debris at the end of each day's operations, and at other times as directed by the Engineer.
7. The Contractor shall be responsible for all site safety including fencing and signage on site and shall comply with all state, local and federal regulations.
8. The Contractor shall comply with all state and local regulations regarding air, water, and noise pollution.
9. Where section or subsection monuments, benchmarks, right-of-way pins, property pins, or iron pipe monuments are encountered, the City shall be notified before such monuments are removed or disturbed. The Contractor shall protect and carefully preserve all monuments until the City and authorized surveyor, or agent, has witnessed or otherwise referenced their location. The Contractor will be responsible for having an authorized surveyor re-establish any monuments destroyed by his operations.
10. Remove the existing pavement areas to the nearest joint or as directed by the City.
11. Protect existing facilities, trees, and other appurtenances not to be removed from the site during construction.
12. Coordinate the construction to minimize disruptions to the adjacent properties. Repair and restore any areas disturbed by construction outside of the construction limits at the Contractor's expense.
13. During construction, use all means necessary to control dust spreading from work and staging areas. Dust control measures shall be in accordance with applicable specifications or approved by the Engineer. Dust control measures are considered incidental.
14. The Contractor shall assist the City's Observation Staff with daily record keeping including as-built records, and all necessary field locations and measurements. The Contractor will be required to attend final and intermediate inspections of the project. The Contractor shall be responsible for maintaining and providing record drawings to the Engineer.
15. The Contractor shall coordinate the construction schedule with City Staff to avoid conflicts with City events. No additional compensation will be made for coordinating schedules around events.
16. The Contractor will be responsible for constructing and maintaining all accesses to the construction limits. The accesses must be adequately sized and properly surfaced for utilization by construction vehicles and include provisions to maintain positive drainage. This work will be considered incidental to construction unless included with another bid item.
17. If any historical or archeological artifacts are identified during construction, stop immediately and notify the City who shall notify the appropriate state and federal agencies. Refer to the Geotechnical Report included in the Contract Documents for additional information.
18. Contractors shall satisfy themselves prior to submission of bids as to the soil conditions. No additional compensation will be made due to soil conditions encountered during construction.
19. Coordination with utility companies for relocation, adjustment, and/or holding of utilities, if necessary, shall be considered incidental to this project. Contractor to protect utilities and coordinate with utilities as necessary during construction if there are utility relocations that are not completed as planned. Contractor shall coordinate with franchise utilities regarding adjustment / relocation of buried longitudinal lines during construction.
20. Contractor to ensure positive drainage (no ponding) in any areas that are field modified from the plan elevations.
21. Install all proposed utilities in a manner that does not create conflicts with other existing or proposed utilities.
22. There may be abandoned utilities within the construction limits not shown on these plans. The Contractor shall confirm said utilities are abandoned. The Contractor is responsible for removing these lines as necessary for construction.
23. Contractor shall confirm assumed depths of utilities and protect them as necessary during construction.
24. In the event of interruption of utility services as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with said authority in the restoration of service. No claims for additional compensation will be allowed to the Contractor for any interference or delay caused by such work.
25. Repair all field/drain tiles encountered during construction as specified or at a minimum to allow flow using like material in new condition with City approved connections. The Contractor shall record existing type, size, location, and depth of all field/drain tiles encountered and repaired during construction. Provide data to the City for incorporation into record drawings.
26. The Contractor shall obtain approval from the Engineer for any variance from the approved plan.
27. Existing utility poles and overhead utility lines adjacent to construction are to remain in place. Protection of existing utility poles and overhead utility lines shall be the responsibility of the Contractor and be considered incidental to construction.
28. Contractor shall verify sanitary, storm and water main sizes and inverts prior to construction and prior to ordering manholes and/or pipe. No additional payment shall be made to the Contractor for material that is ordered and does not match pipe sizes and inverts that are to be confirmed prior to the project.

PROPERTY OWNER ACCESS NOTES

1. Consecutive access points serving the same property shall not be closed concurrently during staging operations other than during paving operations.
2. Residential and commercial driveways may be closed for a maximum of 7 days for construction of PCC driveways.
3. Notification (door hangers) shall be approved by the Engineer prior to distribution. The Contractor shall notify all property owners and residents a minimum of one week (but not more than two weeks) prior to commencing construction. Work will not begin unless notification has been provided in accordance with these contract documents. Door hangers shall include the following information:
   - Contractor's name and emergency contact numbers
   - Description of Contractor's activities
   - Date of construction activities in the area
   - Estimated duration of construction activities in the area
   - Description/location of available residential parking
   - Information stating how and where garbage collection will be made (note: Contractor shall not require/request residents to set out garbage at locations which may cause undue hardships)

PEDESTRIAN ACCESS NOTES

1. Maintain pedestrian access as much as possible throughout the project limits during construction.
2. Pedestrian routes outside of the work zone shall be kept clear of debris or obstruction.
3. The cost for the sidewalk accommodations is incidental to the cost of temporary traffic control.
4. Pedestrians shall be detoured around work zones in accordance with the applicable MUTCD and SUDAS standard details.
5. Pedestrian detour routes shall be at least as accessible as the existing pedestrian route. Do not detour pedestrians to a route that has access limitations.
6. During pedestrian ramp construction, pedestrian paths shall be closed using signage complying with the current edition of PROWAG and the MUTCD. Pedestrian path closures, detours, and diversions are not shown in the plans.
7. Contractor shall provide a pedestrian path closure and detour routing plan for approval by the Engineer prior to any pedestrian closures.

WATER NOTES

1. Contact City's public works department seven (7) days prior to project start to schedule the following:
   - Obtain water start-work approval.
   - Water shut down (requires 48 hours minimum notice if water supply is interrupted).
   - Tap
   - Flush & fill
   - Sampling
   - Other water system related services
2. Contractor shall provide a minimum of 48 hours advance notice to water customers whose water supply is to be interrupted by a water main shut-down. Service line transfers or other scheduled service interruptions require a minimum of 24 hours' notice. Water customers shall be provided with an expected start time and duration of each service interruption.
3. Inspection of water main installation will be provided by the Owner's Representative.
4. City of Anamosa Public Works personnel shall operate all system valves or may give approval for the Contractor to operate valves.
5. The City does not guarantee that a shut-down will be complete, without leak-through or occur within a specified time frame. Contractors cost for personnel, equipment or working days while waiting on a shut-down is considered incidental.
6. Heavily chlorinated water shall not remain in the pipeline for more than 48 hours. Flush heavily chlorinated water thoroughly from the pipeline, until the replacement water throughout its length is equal in quality to permanent source of supply. Neutralize chlorinated water by treating with sodium bisulfite, sodium sulfite, sodium thiosulfate or equal approved chemical before disposal.
7. To prevent damage to pipe lining and valve components from dry powder or table chlorine, if the Contractor utilizes powder or table chlorine in the water main during construction, the main must be filled within 48 hours.
8. Submit in writing water main installation and staging plan to the Engineer and the Anamosa Public Works Director a minimum of one week prior to the water main construction.
9. Water main and staging plan to include the following:
   A. Contractor to coordinate construction with the Anamosa Public Works Director. Operation of all existing hydrants and valves to be completed by City Staff.
   B. Maintain existing water service until new water main is installed, disinfected, and tested.
   C. Conduct pressure and bacteria tests. Coordinate valve closures with the Public Works Director.
   D. Concrete paving operations cannot begin until the water main is disinfected and tested, and tracer wire system is tested.
   E. Transfer water service to new water main following approval by the City.
   F. Contact the City and property owner if a lead service is found.
10. Proceed with water main construction following review and approval by the Engineer and the Public Works Director of the submitted water main installation and staging plan.

UTILITY CONTACT INFORMATION

UTILITY OWNER	UTILITY TYPE	CONTACT NAME	CONTACT PHONE	CONTACT EMAIL
CITY OF ANAMOSA UTILITY SUPERINTENDENT	PUBLIC UTILITIES	STEVE AGNITSCH	319-558-8335	STEVE.AGNITSCH@ANAMOSA-IA.ORG
CITY OF ANAMOSA	WATER	ROBERT YOUNG	319-821-0306	ROBERT.YOUNG@ANAMOSA-IA.ORG
CITY OF ANAMOSA	STREETS	SHANE BROWN	319-462-6055	SHANE.BROWN@ANAMOSA-IA.ORG
ALLIANT ENERGY	ELECTRIC	MICHELLE OLDENBURGER	319-462-6338	MICHELLEOLDENBURGER@ALLIANTENERGY.COM
LUMEN	FIBER	ANDREW ALTPETER	319-270-7456	ANDREW.ALTPETER@LUMEN.COM
IOWA COMMUNICATIONS NETWORK	FIBER	MIKE BRODERICK	515-330-7139	MIKE.BRODERICK@ICN.STATE.IA.US
WINDSTREAM	FIBER	STEPHEN KNESS	319-538-1985	STEPHEN.KNESS@WINDSTREAM.COM
BLACK HILLS ENERGY	GAS	BRIAN MCWILLIAMS		BRIAN.MCWILLIAMS@BLACKHILLSCORP.COM
WYOMING TELEPHONE	TELEPHONE	RILEY WILLIAMS	319-480-1222	RILEYWILLIAMS@NETINS.NET

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= N/A
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106 | Sheet C.1

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

ESTIMATE OF QUANTITIES AND TABULATIONS

ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

SNYDER & ASSOCIATES

Project No: 1211106

Sheet C.1

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	Unit	Estimated Quantities
1	2010-C	Clearing and Grubbing	LS	1
2	2010-D-1	Topsoil, On-site	CY	333
3	2010-G	Subgrade Preparation	SY	1070
4	2010-I	Subbase, Modified, 12"	SY	1070
5	2010-M	Compaction Testing	LS	1
6	3010-C	Trench Foundation	TON	10
7	3010-D	Replacement of Unsuitable Backfill Material	CY	38
8	3010-F	Trench Compaction Testing	LS	1
9	4010-A-2	Sanitary Sewer Gravity Main, Trenchless, HDPE, 12"	LF	356
10	4010-C-2	Sanitary Sewer Force Main, Trenchless, 8"	LF	2810
11	4010-G	Sewage Air Release Valve and Pit	EA	1
12	4050-G	Bypass Pumping	LS	1
13	5020-C	Fire Hydrant Assembly	EA	1
14	5020-J	Fire Hydrant Assembly Removal	EA	1
15	6010-A	Sanitary Sewer Manhole, 48", Depth: 10'-15'	EA	2
16	6010-A	Sanitary Sewer Manhole, 48", Depth: 15'-20'	EA	1
17	6010-H	Remove Manhole	EA	3
18	7010-A	Pavement, PCC, 7"	SY	964
19	7030-A	Removal of Sidewalk	SY	85
20	7030-E	Sidewalk, PCC, 4"	SY	54
21	7030-E	Sidewalk, PCC, 6"	SY	31
22	7030-G	Detectable Warning	SF	64
23	7040-A	Full Depth Patches, PCC	SY	120
24	7040-A	Full Depth Patches, HMA	SY	100
25	7040-H	Pavement Removal	SY	964
26	7040-999-A	Removal of Flume	LS	1
27	8020-B	Painted Pavement Markings, Solvent/Waterborne	STA	1.80
28	8030-A	Temporary Traffic Control	LS	1
29	9010-B	Hydraulic Seeding, Seeding, Fertilizing, and Mulching	AC	0.31
30	9040-A-2	SWPPP, Management	LS	1
31	9040-D-1	Filter Sock, 12"	LF	850
32	9040-D-2	Filter Socks, Removal	LF	850
33	9040-T-1	Inlet Protection Device, Drop-in	EA	2
34	9040-T-2	Inlet Protection Device, Maintenance	EA	2
35	11,020-A	Mobilization	LS	1
36	11,050-A	Concrete Washout	LS	1

ESTIMATE REFERENCE INFORMATION

Note: All included work listed within the Standard SUDAS Specifications for each bid item shall apply. If additional work items are listed in the Estimate Reference Information, they shall be added to the work already included in the Standard SUDAS Specifications listed for that Bid Item and are not necessarily added by Special Provision.

ITEM NO.	ITEM CODE	ITEM
1	2010-C	**Clearing and Grubbing** Refer to R sheets for clearing and grubbing limits. Locations shall be marked out and approved by the City prior to beginning of clearing operations
2	2010-D-1	**Topsoil, On-site** Topsoil placement shall be a uniform 8-inches for all seeded areas
3	2010-G	**Subgrade Preparation** Notify the Engineer one week prior to when subgrade preparation is planned. Prior to completing the subgrade preparation and following pavement removal, an unclassified excavation meeting onsite with the Engineer will be held to review the subgrade condition and determine the need for subgrade preparation. If it is determined that subgrade preparation per the specifications is not necessary, no payment for this item shall be made. Refer to the B sheets for typical section information. Subgrade exposure following pavement removal should be minimalized.
4	2010-I	**Subbase, Modified, 12"** This item shall be placed under all roadway pavement, plus 2 feet on each side. Modified subbase shall be placed over top of the exposed subgrade within 24 hours of the completion of subgrade preparation or determination from the Engineer that subgrade preparation is not necessary. Failure to place the modified subbase within the specified time period shall result in justification for no additional payment related to additional subgrade treatments being necessary due to exposure to rain or other environmental elements.
5	2010-M	**Compaction Testing** The contractor shall be responsible for compaction testing. The City and Engineer shall be notified at least 24-hours prior to testing.
6	3010-C	**Trench Foundation** Measurement will be in tons for the quantity of stabilization material required to replace material removed by over-excavation in applicable trenches. Measurement will be based on the scale tickets for the material delivered and incorporated into the project. Trench foundation required to correct unauthorized over-excavation will not be measured. This work includes but is not limited to, removal and disposal of over excavated material required to stabilize trench foundation, and furnishing, hauling and placing stabilization material. The assumed quantity includes 10% of the trenched length of new pipe having foundation material 5-feet wide and 12-inches deep and a rock density of 140 PCF. Engineer is to preapprove use of this material prior to placement, or no payment will be made.
7	3010-D	**Replacement of Unsuitable Backfill Material** Estimated quantity is based on 10% of the trench length, with a nominal dimension of a 5-foot wide and 5-foot deep trench. Replacement of unsuitable backfill material shall not be paid for as a substitute for proper dewatering. Contractor shall obtain Engineer approval and agree upon a quantity prior to installation of replacement of unsuitable backfill material. Failure to obtain approval shall result in nc payment for this item. All excavated material associated with item 4010-A-2 shall be replaced with suitable backfill and in not included in the quantity of for 3010-D.
8	3010-F	**Trench Compaction Testing** Use for all storm sewer, sanitary sewer, and water main trenched installations.
9	4010-A-2	**Sanitary Sewer Gravity Main, Trenchless, HDPE, 12"** Refer to M sheets for locations and details. Material shall be Fusible HDPE. Trenchless sanitary sewer shall be installed by pipe bursting. Boring/receiving pit limits shall be marked and reviewed with the Engineer prior to commencement of work. If additional boring/receiving pits are needed, it shall be reviewed with the Engineer prior to the work beginning. The pipe bursting Contractor shall be certified by the manufacturer of the pipe bursting system for installation and fusing. Electrofusing methods for sewer service connections may be made at the Contractors option. Contractor to determine method of pipe bursting. If the contractor chooses to install additional pipe via trenchless methods, payment shall be made at the trenched unit prices.
10	4010-C-2	**Sanitary Sewer Force Main, Trenchless, 8"** Refer to M sheets for locations and details. Material shall be PVC C900 or Fusible HDPE at the Contractor's option. Boring/receiving pit limits shall be marked and reviewed with the Engineer prior to commencement of work. If additional boring/receiving pits are needed, it shall be reviewed with the Engineer prior to the work beginning. Contractor shall run two tracer wires along the Sanitary Sewer Force Main and shall use stainless steel brackets to attach tracer wire to pipe. If the contractor chooses to install additional pipe via trenchless methods, payment shall be made at the trenched unit prices.
11	4010-G	**Sewage Air Release Valve and Pit** Refer to M sheets for location.

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= N/A
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106 Sheet C.2

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

ESTIMATE OF QUANTITIES AND TABULATIONS

ANAMOSA, IOWA

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Project No: 1211106

Sheet C.2

ESTIMATE REFERENCE INFORMATION

Note: All included work listed within the Standard SUDAS Specifications for each bid item shall apply. If additional work items are listed in the Estimate Reference Information, they shall be added to the work already included in the Standard SUDAS Specifications listed for that Bid Item and are not necessarily added by Special Provision.

ITEM NO.	ITEM CODE	ITEM
12	5020-C	**Fire Hydrant Assembly** Hydrant brand shall be Clow, East Jordan, or Kennedy.
13	5020-J	**Fire Hydrant Assembly Removal** -
14	6010-A	**Sanitary Sewer Manhole, 48", Depth: 10'-15'** Refer to M sheets for locations. Trench shoring and dewatering shall be incidental to this item.
15	6010-A	**Sanitary Sewer Manhole, 48", Depth: 15'-20'** Same as previous item.
16	6010-H	**Remove Manhole** Refer to F sheets for removal locations. City has first right of refusal for any castings.
17	7010-A	**Pavement, PCC, 7"** Refer to D and E sheets for additional information. Class C mix is required unless otherwise approved by the Engineer. This item shall include providing a maturity curve and associated monitoring and reporting necessary for use of pavement. Any cold weather protection should be provided per Standard SUDAS Specifications at the contractors expense. Curb and gutter is inceidental to this bid item
18	7030-A	**Removal of Sidewalk** Refer to F sheets for locations and information. If proposed removal limits are less than 2' from an existing joint the removal limits shall be extended to the joint. A full-depth saw cut is required at the removal limits and is included in this item. Any damage beyond the removal limits must be replaced, with the same thickness as the adjacent proposed pavement, by the contractor at no additional cost to the city.
19	7030-E	**Sidewalk, PCC, 4"** Refer to D, E, and S sheets for locations and information. New sidewalk and/or sidewalk ramps that are not ADA compliant shall be removed and replaced at the contractors expense. Use of pavement shall follow the minimum age for opening without testing per table 7010.01 of the Standard SUDAS Specifications.
20	7030-E	**Sidewalk, PCC, 6"** Same as previous item
21	7030-G	**Detectable Warning** Refer to the S sheets for additional information. Material shall be cast iron and powder coate painted. Contractor shall coordinate color with City.
22	7030-H-1	**Driveway, Paved, PCC, 6"** Refer to the D and E sheets for additional information. Thickened edges adjacent to street pavement, per B sheet details should be included with this item. Use of pavement shall follow the minimum age for opening without testing per table 7010.01 of the Standard SUDAS Specifiaction.
23	7030-H-2	**Driveway, Granular, Temporary** Refer to D sheets. Temporary driveways shall a minimum of 4" thick.
24	7040-A	**Full Depth Patches, PCC** This item is for the replacement of pavement required to be removed for the boring/receiving pits. Locations shall be marked in the field and reviewed with the Engineer prior to commencement.
25	7040-A	**Full Depth Patches, HMA** This item is for the replacement of pavement required to be removed for the boring/receiving pits. Locations shall be marked in the field and reviewed with the Engineer prior to commencement.
26	7040-H	**Pavement Removal** Refer to F sheets for locations and information. If proposed removal limits are less then 2' from an existing joint the removal limits shall be extended to the joint. A full depth saw cut is required at the removal limits and is included with this item. Any damage beyond the removal limits must be replaced by the Contractor at no additional cost to the City. Pavement removal limits to be approved by engineer prior to removel, otherwise payment will be based on plan quanitity
27	8020-B	**Painted Pavement Markings, Solvent/Waterborne** Pavement markings shall match the existing markings on Old Dubuque Road.
28	8030-A	**Temporary Traffic Control** Multiple set-ups of various stages of this project are incidental to the lump sum cost for this item. All traffic control shall conform to the most recent version of the Manual of Uniform Traffic Control Devices (MUTCD). Refer to J sheets for additional information.
29	9010-B	**Hydraulic Seeding, Seeding, Fertilizing, and Mulching** This item is used on all final restoration areas within the project limits. Type 1 seed (permanent lawn mixture) shall be used.
30	9040-A-2	**SWPPP, Management** -
31	9040-D-1	**Filter Sock, 12"** Refer to R Sheets for porposed filter sock locations. Additional filter socks may be needed for staged construction. Review location with Engineer for approval prior to installaiton.
32	9040-D-2	**Filter Socks, Removal** -
33	9040-T-1	**Inlet Protection Device, Drop-in** -
34	9040-T-2	**Inlet Protection Device, Maintenance** -
35	11,020-A	**Mobilization** Removal and reinstallation of streets signs is incidental to this bid item.
36	11,050-A	**Concrete Washout** Location to be reviewed with the Engineer prior to installation.

MARK	REVISION	DATE	BY

Engineer: DMS | Checked By: NAE | Scale: 1"=
Technician: CJN | Date: 10/25/2022 | Field Bk: | Pg:

Project No: 1211106 | Sheet C.3

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

ESTIMATE OF QUANTITIES AND TABULATIONS

ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.

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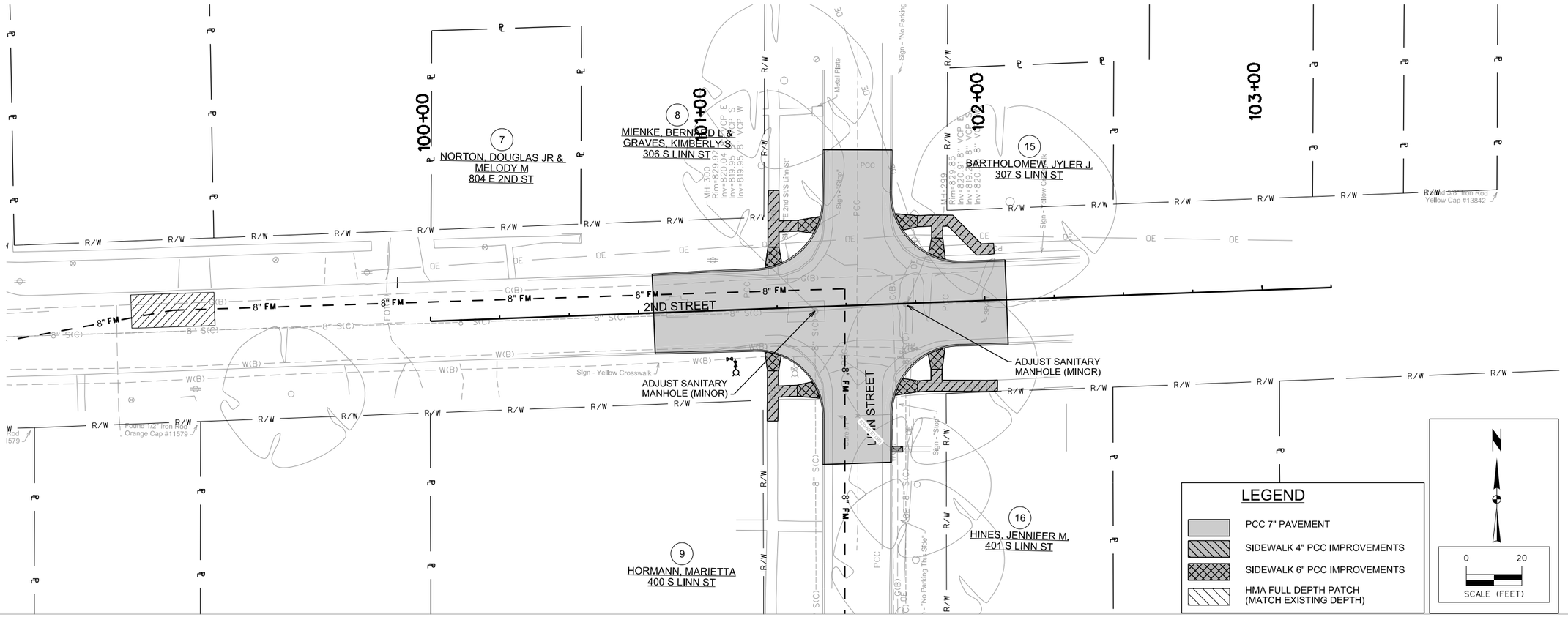
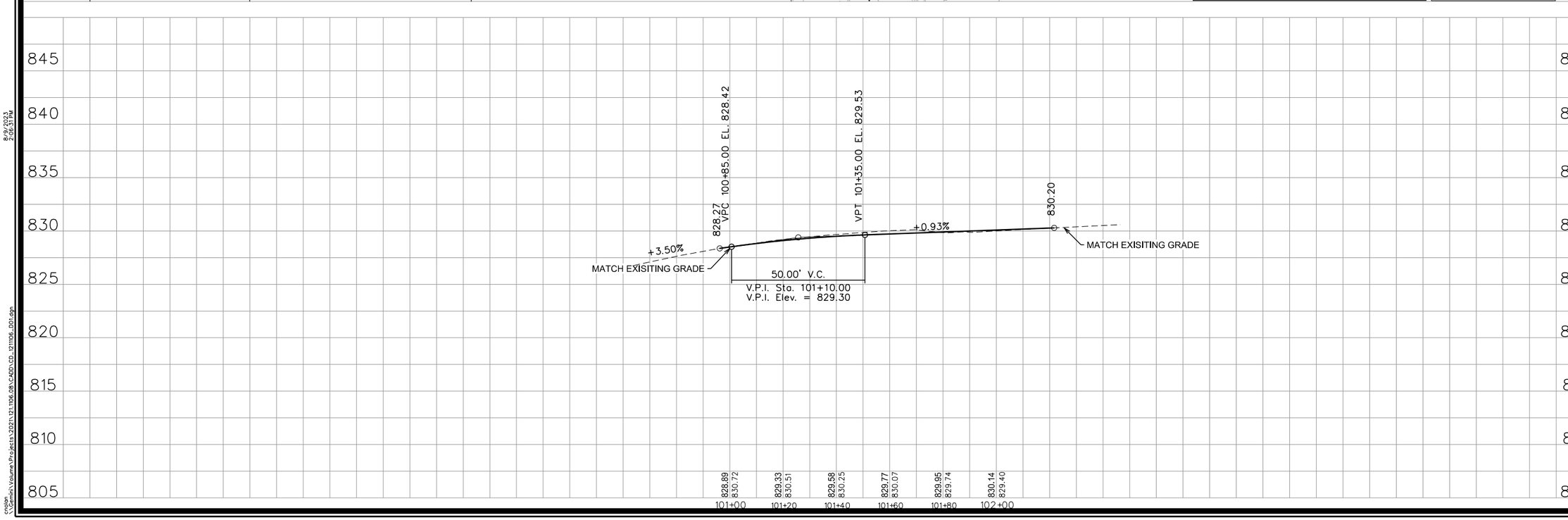
Project No: 1211106

Sheet C.3





MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= 20'
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106

Sheet D.1

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

PLAN AND PROFILE - 2ND STREET

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Project No: 1211106

Sheet D.1

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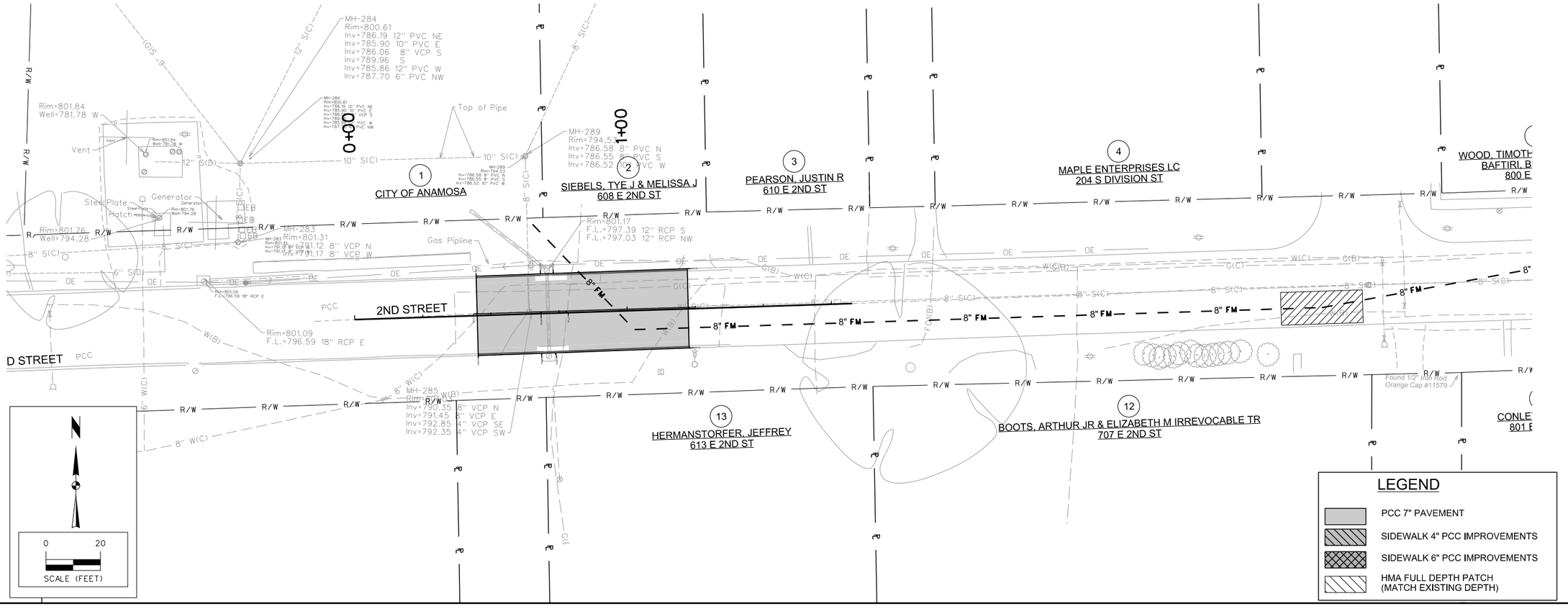

LEGEND

▒	PCC 7" PAVEMENT
▨	SIDEWALK 4" PCC IMPROVEMENTS
▦	SIDEWALK 6" PCC IMPROVEMENTS
▧	HMA FULL DEPTH PATCH (MATCH EXISTING DEPTH)

MARK	REVISION	DATE	BY

Engineer: DMS Checked By: NAE Scale: 1"= 20'
Technician: CJN Date: 10/25/2022 Field Bk: Pg:
Project No: 1211106 Sheet E.1

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

PLAN AND PROFILE - 2ND STREET

ANAMOSA, IOWA

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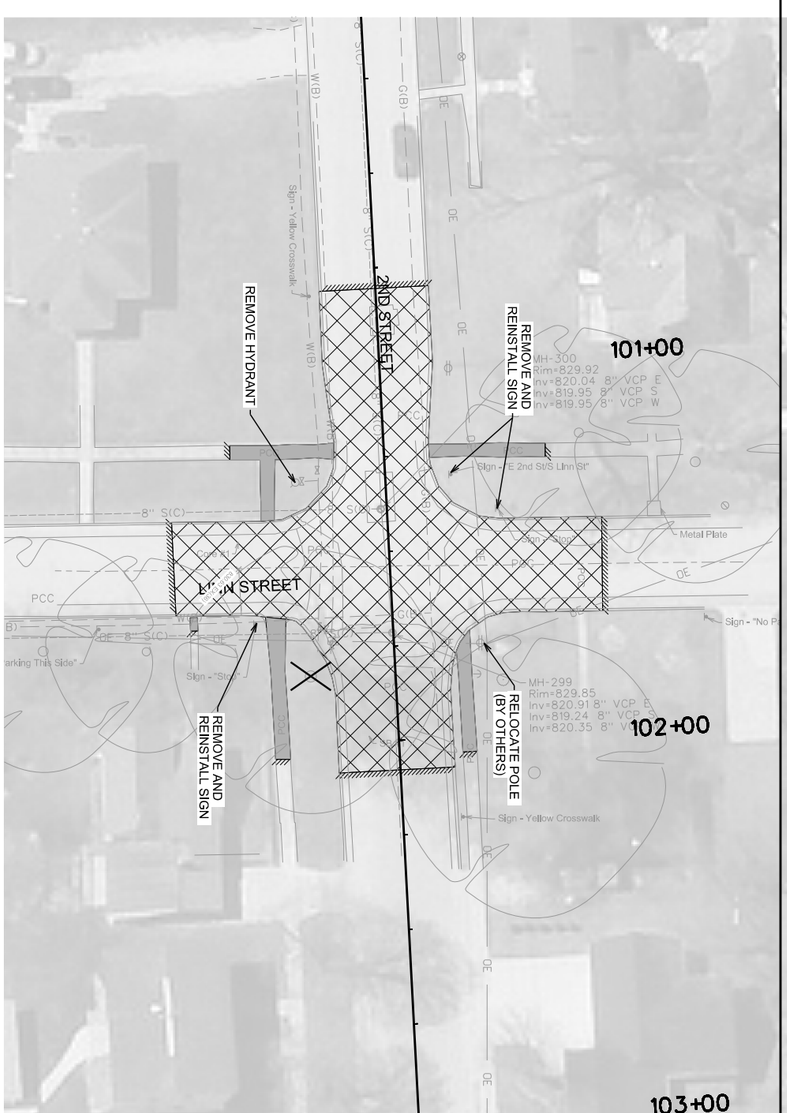
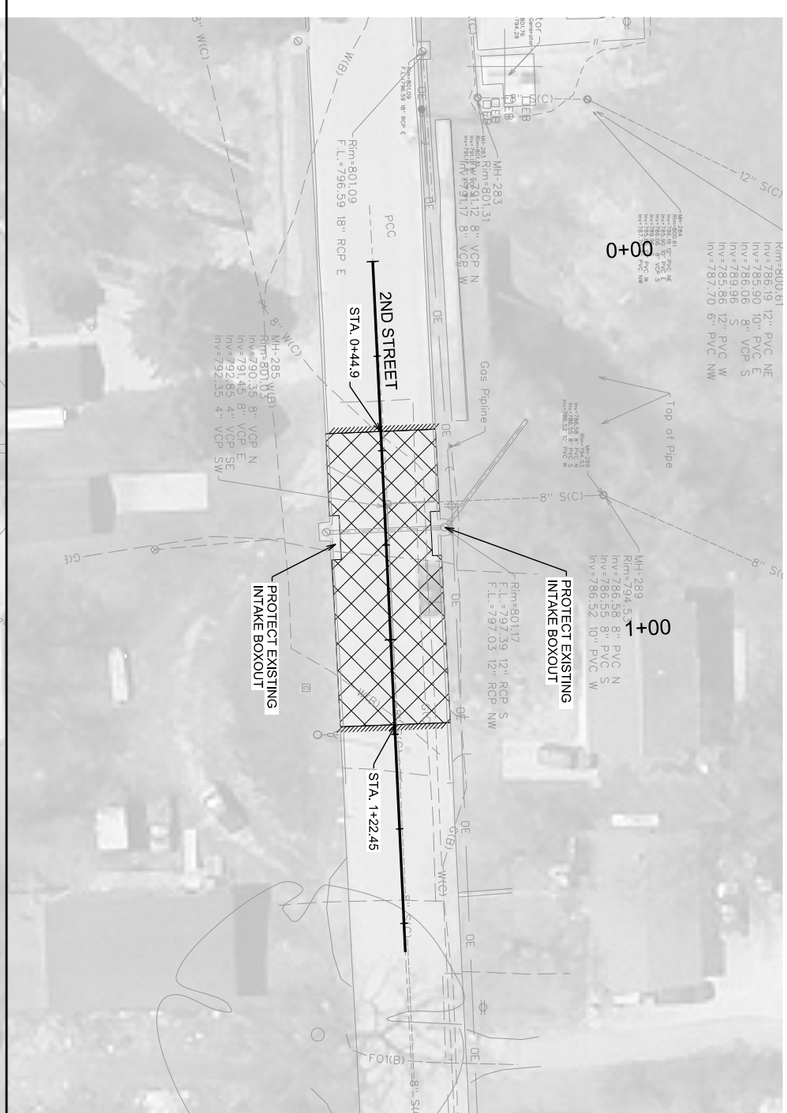
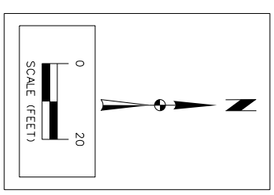
Project No: 1211106

Sheet E.1







Sheet F.1

Project No: 1211106

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2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

REMOVALS

ANAMOSA, IOWA

MARK	REVISION	DATE	BY

Engineer: DMS	Checked By: NAE	Scale: 1"= 20'	
Technician: CJN	Date: 10/25/2022	Field Bk:	Pg:
Project No: 1211106		Sheet F.1	

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PROJECT CONTROL

IOWA NORTH COORDINATE SYSTEM NAD83(2011)(EPOCH 2010)
IARTN DERIVED - US SURVEY FEET

Control Point	Northing	Easting	Elevation
CP100	3509492.23	5524401.06	812.33
1/2" Iron Rod with Red Plastic Cap			
CP21B	3509414.29	5523863.86	802.54
1/2" Iron Rod with Red Plastic Cap			
CP24A	3509473.51	5524117.63	800.75
1/2" Iron Rod with Red Plastic Cap			
CP30B	3510472.79	5524349.10	808.42
1/2" Iron Rod with Red Plastic Cap			
CP32A	3510455.06	5524693.00	817.98
1/2" Iron Rod with Red Plastic Cap			
CP33A	3510754.06	5524371.28	809.45
1/2" Iron Rod with Red Plastic Cap			
CP34A	3510775.52	5524554.32	816.35
1/2" Iron Rod with Red Plastic Cap			
CP39A	3509777.57	5524773.77	822.98
1/2" Iron Rod with Red Plastic Cap			
CP40A	3509462.10	5524736.19	830.30
1/2" Iron Rod with Red Plastic Cap			
CP42A	3509195.43	5524791.15	834.33
1/2" Iron Rod with Red Plastic Cap			

BENCHMARKS

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88 - GEOID12A) IARTN DERIVED - US SURVEY FEET

Bench Mark	Elevation	Description
BM1	801.03	Sanitary Sewer MH in E 2nd Street, East of Creek
BM2	801.17	Storm Sewer Intake, North Side E 2nd Street and East of Creek
BM3	829.92	Sanitary Sewer MH in E 2nd Street, West Side Linn Street
BM4	829.85	Sanitary Sewer MH in E 2nd Street, East Side Linn Street

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

SURVEY CONTROL AND REFERENCE INFORMATION

ANAMOSA, IOWA

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= 100'
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106 Sheet G.1

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Project No: 1211106
Sheet G.1

TRAFFIC CONTROL NOTES

1. Major stages of construction are shown in the staging and traffic control plan. Changes to the staging plan must be approved by the Engineer. The Contractor is responsible for providing detailed traffic control plans for any other stages that may be required and/or proposed. Adjustments to advanced signage and barricading as required to combine stages are subject to Engineer approval and are considered incidental.
2. Traffic control (including sign placement and spacing) shall be in accordance with the latest edition of the manual on uniform traffic control devices (MUTCD) and SUDAS section 8030 – Temporary Traffic Control.
3. Furnish and install all traffic control devices and maintain them in the correct position. Promptly clean and replace damaged traffic control devices. Patrol work areas daily (at a minimum) to ensure all traffic control devices are properly set, in serviceable condition, and legible.
4. The Contractor shall cover all conflicting existing signs as applicable.
5. Provide appropriate signage if, at any time, there is an elevation difference between traveled areas.
6. Written notice shall be provided to the City and the Engineer a minimum of 48 hours prior to roadway closures and transitions between stages.
7. Proposed changes in the traffic control plan shall be reviewed with the Engineer at least 48 hours before changes are made in the field.
8. The location for storage of equipment by the Contractor during non-working hours shall be as approved by the Engineer. Excavations, equipment, and materials within the construction zone shall be protected by barricades during non-working hours. Equipment and materials shall be staged to avoid blocking sight distance at intersections.
9. Certified flaggers as/if required to protect workers and the traveling public are included with the temporary traffic control bid item.
10. All "road closed" and "road closed to thru traffic" signs are to be mounted above the top rail of Type III barricades so as not to obscure the diagonal posts.
11. The proposed signing may be modified to meet field conditions, prevent obstructions, and accommodate construction scheduling upon approval of the Engineer.
12. The Contractor shall coordinate traffic control with other projects in proximity to the work area and detour routes.
13. All traffic control will remain the sole responsibility of the Contractor. The Contractor shall check traffic control devices daily and repair or replace damaged or misaligned devices promptly.
14. All signs, not including barricades shall be placed to provide a minimum of 2-feet clearance beyond the curb or edge of the shoulder/work area.
15. Prompt response to traffic control-related items is required.
16. The Contractor shall communicate traffic control and access changes/closures with all property owners along the project corridor at least 72 hours prior to changes. Door hangers or mailings are required for notification.
17. All required directional signage for business, detour, and truck routing are included in the temporary traffic control bid item.
18. Contractor to coordinate with businesses and property owners to provide access for vehicles and pedestrians during construction. Provide additional channelizers as needed to maintain access for businesses and property owners.

SIDEWALK AND PEDESTRIAN ACCESS NOTES

1. The Contractor shall provide appropriate signage for sidewalk closures in compliance with SUDAS standard details and the MUTCD.
2. Sidewalk removal and reconstruction shall be staged to minimize loss of pedestrian access to residential and business entrances. All work at the entrance shall be coordinated with the resident and/or business owner.
3. Sidewalk traffic control shall remain in place until sidewalks are replaced and accessible.
4. Maintain pedestrian access as much as possible throughout the project limits during construction.
5. Pedestrian routes outside of the work zone shall be kept clear of debris or obstruction.
6. The cost for the sidewalk accommodations is incidental to the cost of temporary traffic control.
7. Pedestrians shall be detoured around work zones in accordance with the applicable MUTCD and SUDAS standard details.
8. Pedestrian detour routes shall be at least as accessible as the existing pedestrian route. Do not detour pedestrians to a route that has access limitations.
9. During pedestrian ramp construction, pedestrian paths shall be closed using signage complying with the current edition of PROWAG and the MUTCD. Pedestrian path closures, detours, and diversions are not shown in the plans.

STAGING NOTES

1. If work remains on the project, the Contractor shall remain on the project.
2. The project shall be staged to minimize inconvenience to vehicular and pedestrian users.
3. The Contractor shall not start any work until after traffic control is in place and approved by the Engineer.
4. Work shall be staged to meet the items within the traffic control plan.

MARK	REVISION	DATE	BY

Engineer: DMS | Checked By: NAE | Scale: 1"= N/A
Technician: CJN | Date: 10/25/2022 | Field Bk: | Pg:

Project No: 1211106 | Sheet J.1

ANAMOSA, IOWA

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

TRAFFIC CONTROL AND STAGING

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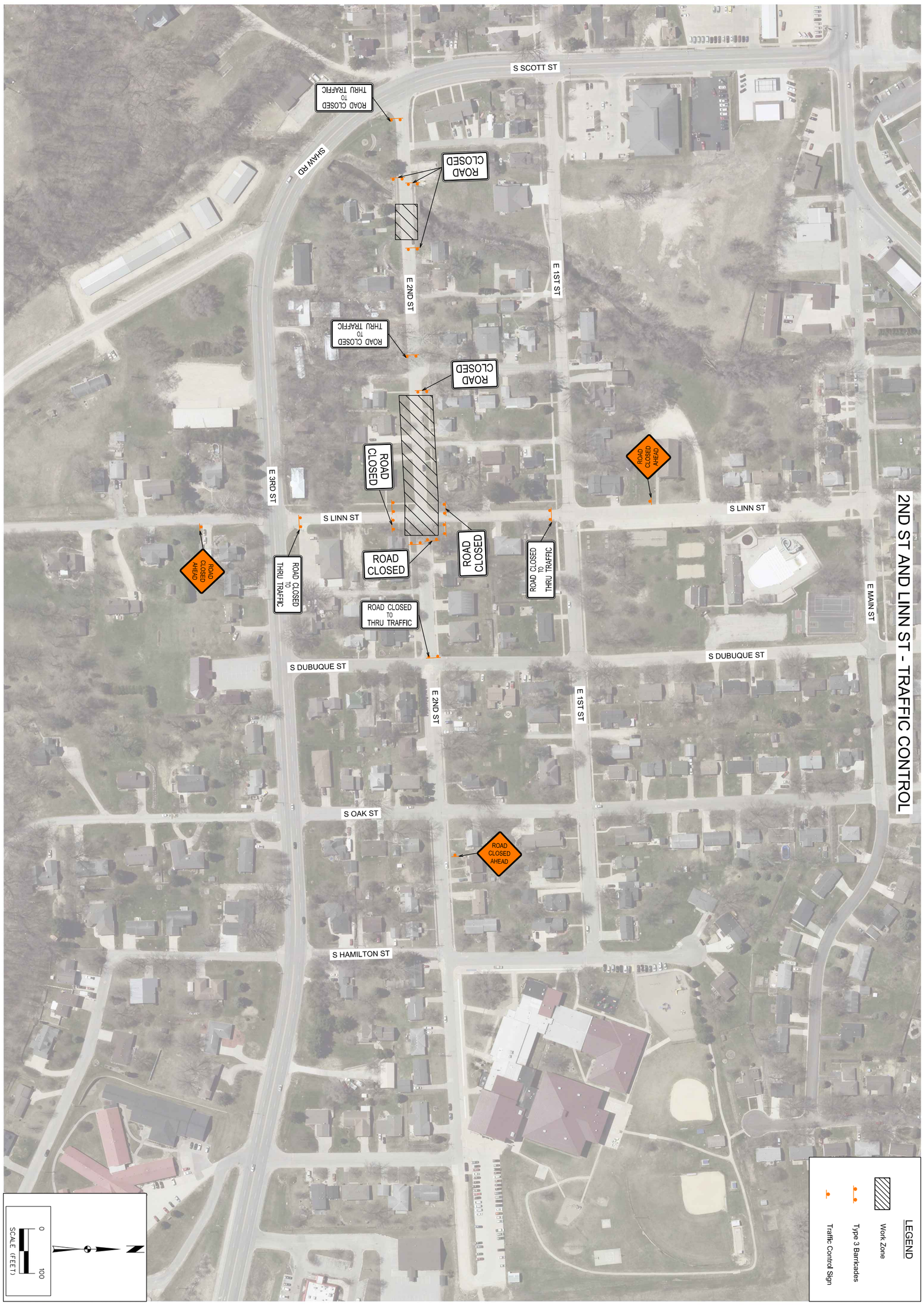
Project No: 1211106
Sheet J.1



Sheet J.2

Project No: 1211106

SNYDER & ASSOCIATES

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

TRAFFIC CONTROL AND STAGING

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MARK	REVISION	DATE	BY

Engineer: DMS	Checked By: NAE	Scale: 1"= 100'	
Technician: CJN	Date: 10/25/2022	Field Bk:	Pg:
Project No: 1211106		Sheet J.2	

NOTES:
ALL LONGITUDINAL JOINTS SHALL BE 'L-1' OR 'KT-1' UNLESS OTHERWISE NOTED

ALL TRANSVERSE JOINTS SHALL BE 'C' UNLESS OTHERWISE NOTED

MANHOLE BOXOUTS SHALL BE JOINTED IN ACCORDANCE WITH SUDAS FIGURE 7010.103

7
NORTON, DOUGLAS JR &
MELODY M
804 E 2ND ST

8
MIENKE, BERNARD L &
GRAVES, KIMBERLY S
306 S LINN ST

15
BARTHOLOMEW, JYLER J.
307 S LINN ST

2ND STREET

LINN STREET

9
HORMANN, MARIETTA
400 S LINN ST

16
HINES, JENNIFER M.
401 S LINN ST

0 10
SCALE (FEET)

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= 10'
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106

Sheet L.1

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

GEOMETRIC, STAKING, AND JOINTING

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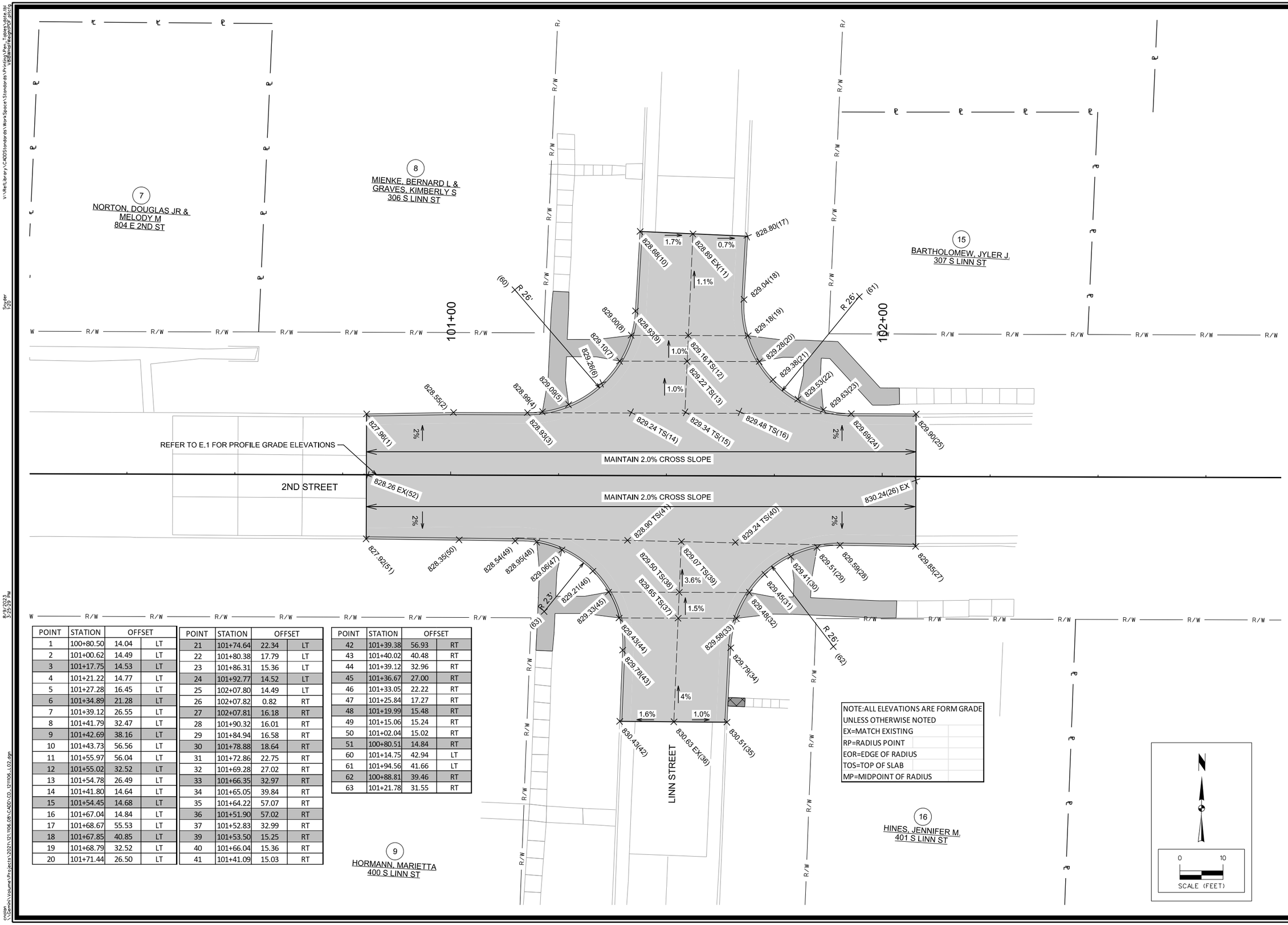
Project No: 1211106

Sheet L.1



POINT	STATION	OFFSET	
1	100+80.50	14.04	LT
2	101+00.62	14.49	LT
3	101+17.75	14.53	LT
4	101+21.22	14.77	LT
5	101+27.28	16.45	LT
6	101+34.89	21.28	LT
7	101+39.12	26.55	LT
8	101+41.79	32.47	LT
9	101+42.69	38.16	LT
10	101+43.73	56.56	LT
11	101+55.97	56.04	LT
12	101+55.02	32.52	LT
13	101+54.78	26.49	LT
14	101+41.80	14.64	LT
15	101+54.45	14.68	LT
16	101+67.04	14.84	LT
17	101+68.67	55.53	LT
18	101+67.85	40.85	LT
19	101+68.79	32.52	LT
20	101+71.44	26.50	LT

POINT	STATION	OFFSET	
21	101+74.64	22.34	LT
22	101+80.38	17.79	LT
23	101+86.31	15.36	LT
24	101+92.77	14.52	LT
25	102+07.80	14.49	LT
26	102+07.82	0.82	RT
27	102+07.81	16.18	RT
28	101+90.32	16.01	RT
29	101+84.94	16.58	RT
30	101+78.88	18.64	RT
31	101+72.86	22.75	RT
32	101+69.28	27.02	RT
33	101+66.35	32.97	RT
34	101+65.05	39.84	RT
35	101+64.22	57.07	RT
36	101+51.90	57.02	RT
37	101+52.83	32.99	RT
39	101+53.50	15.25	RT
40	101+66.04	15.36	RT
41	101+41.09	15.03	RT

POINT	STATION	OFFSET	
42	101+39.38	56.93	RT
43	101+40.02	40.48	RT
44	101+39.12	32.96	RT
45	101+36.67	27.00	RT
46	101+33.05	22.22	RT
47	101+25.84	17.27	RT
48	101+19.99	15.48	RT
49	101+15.06	15.24	RT
50	101+02.04	15.02	RT
51	100+80.51	14.84	RT
60	101+14.75	42.94	LT
61	101+94.56	41.66	LT
62	100+88.81	39.46	RT
63	101+21.78	31.55	RT

NOTE:ALL ELEVATIONS ARE FORM GRADE UNLESS OTHERWISE NOTED
EX=MATCH EXISTING
RP=RADIUS POINT
EOR=EDGE OF RADIUS
TOS=TOP OF SLAB
MP=MIDPOINT OF RADIUS

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= 10'
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106

Sheet L.2

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

GEOMETRIC, STAKING, AND JOINTING

ANAMOSA, IOWA

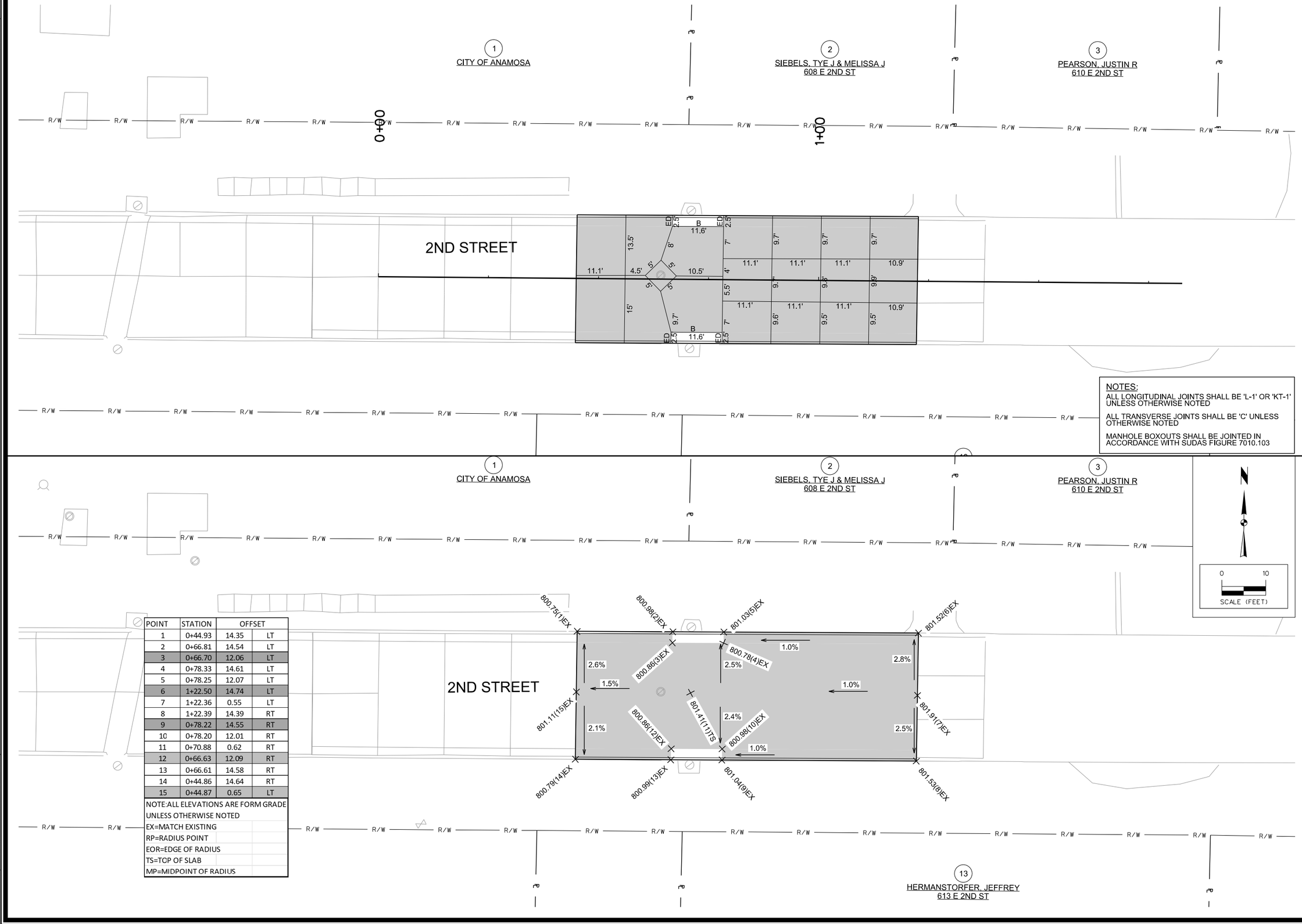
SNYDER & ASSOCIATES, INC.

5006 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

SNYDER & ASSOCIATES

Project No: 1211106

Sheet L.2



POINT	STATION	OFFSET	
1	0+44.93	14.35	LT
2	0+66.81	14.54	LT
3	0+66.70	12.06	LT
4	0+78.33	14.61	LT
5	0+78.25	12.07	LT
6	1+22.50	14.74	LT
7	1+22.36	0.55	LT
8	1+22.39	14.39	RT
9	0+78.22	14.55	RT
10	0+78.20	12.01	RT
11	0+70.88	0.62	RT
12	0+66.63	12.09	RT
13	0+66.61	14.58	RT
14	0+44.86	14.64	RT
15	0+44.87	0.65	LT

NOTE:ALL ELEVATIONS ARE FORM GRADE UNLESS OTHERWISE NOTED
EX=MATCH EXISTING
RP=RADIUS POINT
EOR=EDGE OF RADIUS
TS=TOP OF SLAB
MP=MIDPOINT OF RADIUS

NOTES:
ALL LONGITUDINAL JOINTS SHALL BE 'L-1' OR 'KT-1' UNLESS OTHERWISE NOTED

ALL TRANSVERSE JOINTS SHALL BE 'C' UNLESS OTHERWISE NOTED

MANHOLE BOXOUTS SHALL BE JOINTED IN ACCORDANCE WITH SUDAS FIGURE 7010.103

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= 10'
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106

Sheet L.3

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

GEOMETRIC, STAKING, AND JOINTING

ANAMOSA, IOWA

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5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
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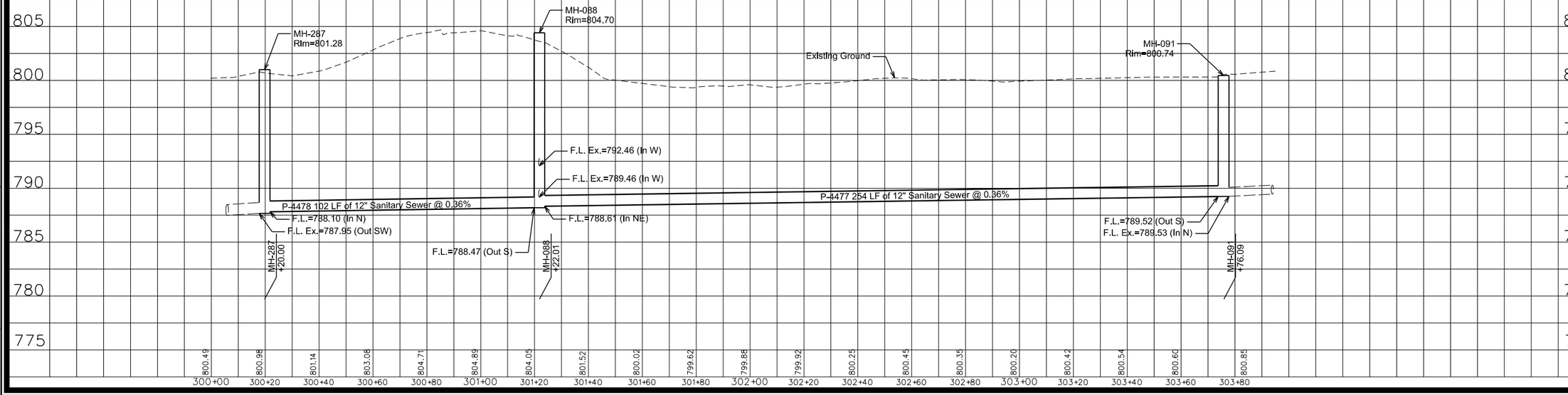
Project No: 1211106

Sheet L.3

NOTES:

1) SANITARY SEWER SHOWN ON THIS SHEET SHALL BE INSTALLED VIA TRENCHLESS PIPE BURSTING INSTALLATION METHOD.



MARK	REVISION	DATE	BY
Engineer: DMS	Checked By: NAE	Scale: 1" = 20'	
Technician: CJN	Date: 10/25/2022	Field Bk:	Pg:

Project No: 1211106 Sheet M.20

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

BURIED PIPE- SANITARY

ANAMOSA, IOWA

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Project No: 1211106

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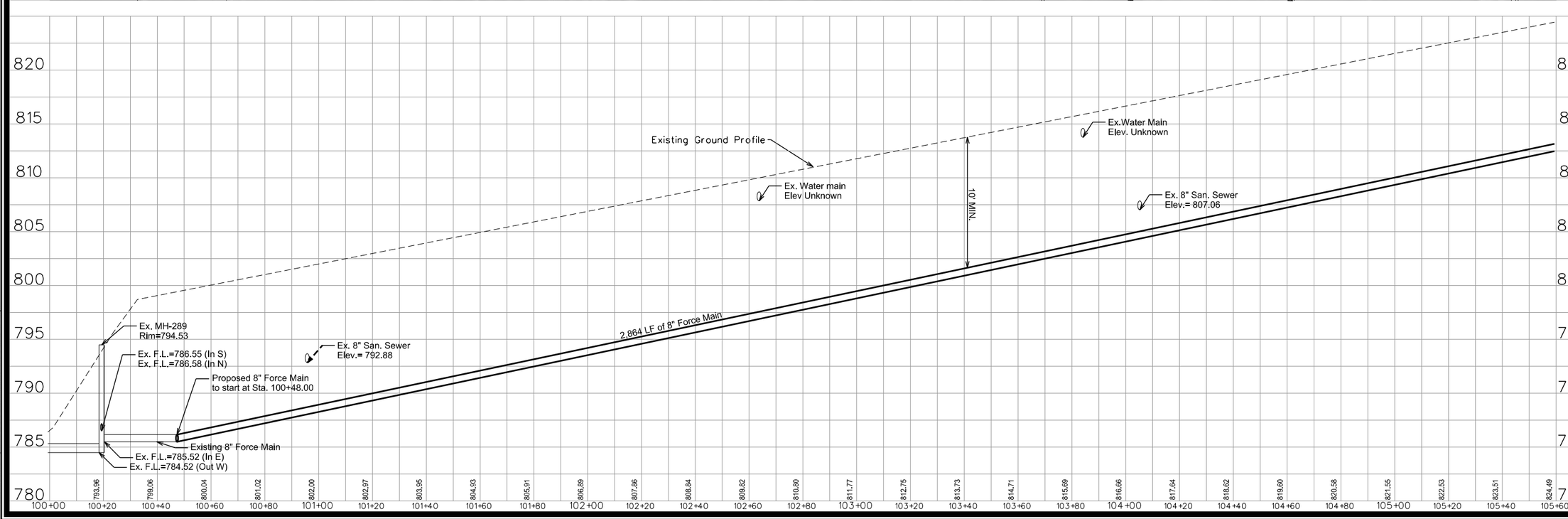

MARK	REVISION	DATE	BY

Engineer: DMS | Checked By: NAE | Scale: 1"= 20'
Technician: CJN | Date: 10/25/2022 | Field Bk: Pg:

Project No: 1211106 | Sheet M.21

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

ANAMOSA, IOWA

BURIED PIPE- SANITARY

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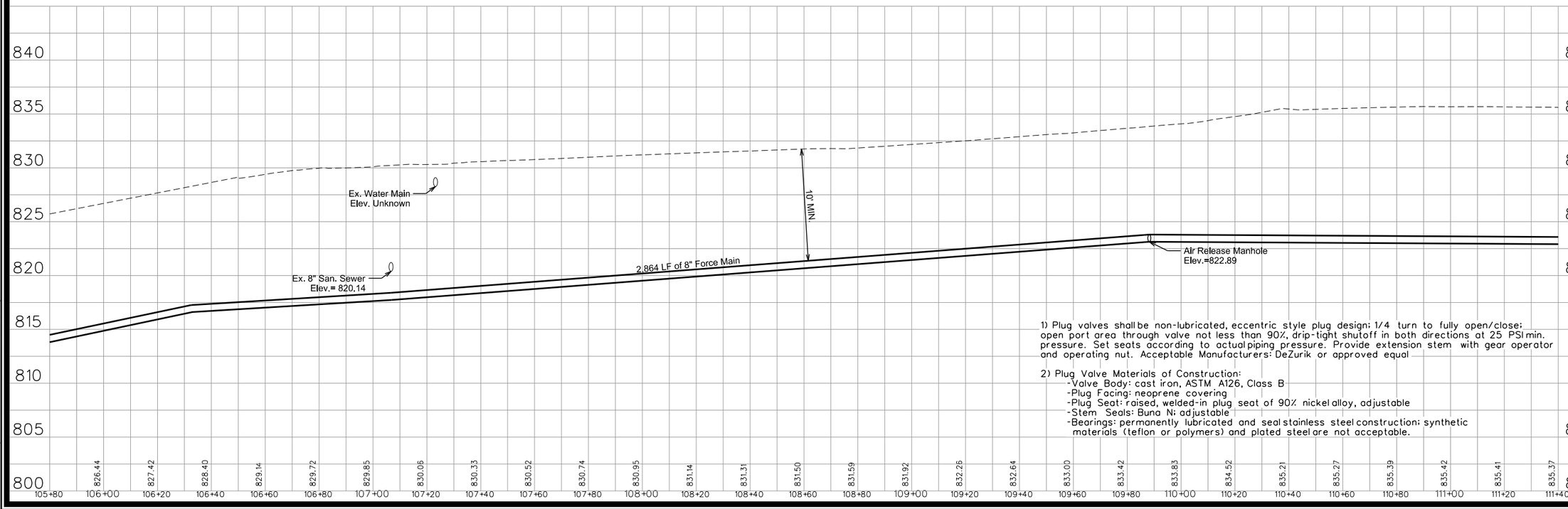
Project No: 1211106

Sheet M.21



1) Plug valves shall be non-lubricated, eccentric style plug design: 1/4 turn to fully open/close: open port area through valve not less than 90%, drip-tight shutoff in both directions at 25 PSI min. pressure. Set seats according to actual piping pressure. Provide extension stem with gear operator and operating nut. Acceptable Manufacturers: DeZurik or approved equal

2) Plug Valve Materials of Construction:
- -Valve Body: cast iron, ASTM A126, Class B
- -Plug Facing: neoprene covering
- -Plug Seat: raised, welded-in plug seat of 90% nickel alloy, adjustable
- -Stem Seals: Buna N; adjustable
- -Bearings: permanently lubricated and seal stainless steel construction: synthetic materials (teflon or polymers) and plated steel are not acceptable.

MARK	REVISION	DATE	BY

Engineer: DMS | Checked By: NAE | Scale: 1"= 20'
Technician: CJN | Date: 10/25/2022 | Field Bk: Pg:

Project No: 1211106 | Sheet M.22

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

ANAMOSA, IOWA

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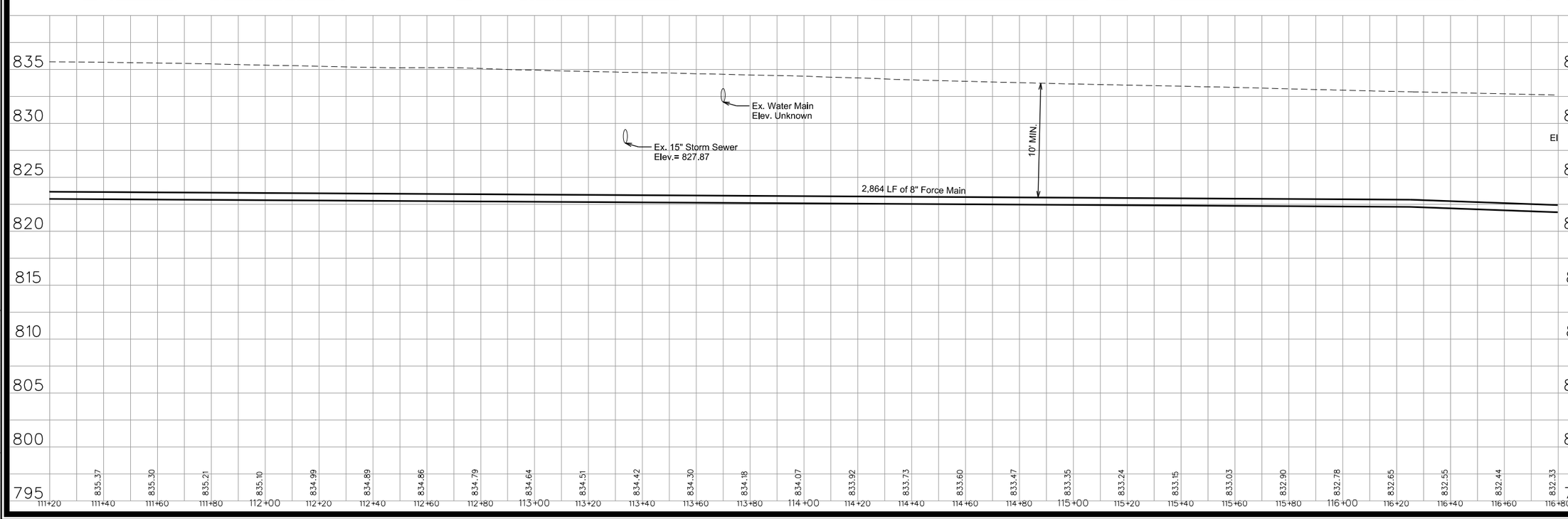
Project No: 1211106
Sheet M.22



MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE
Technician:	CJN	Date:	10/25/2022

Scale: 1"= 20'
Field Bk: Pg:
Project No: 1211106
Sheet M.23

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

BURIED PIPE- SANITARY

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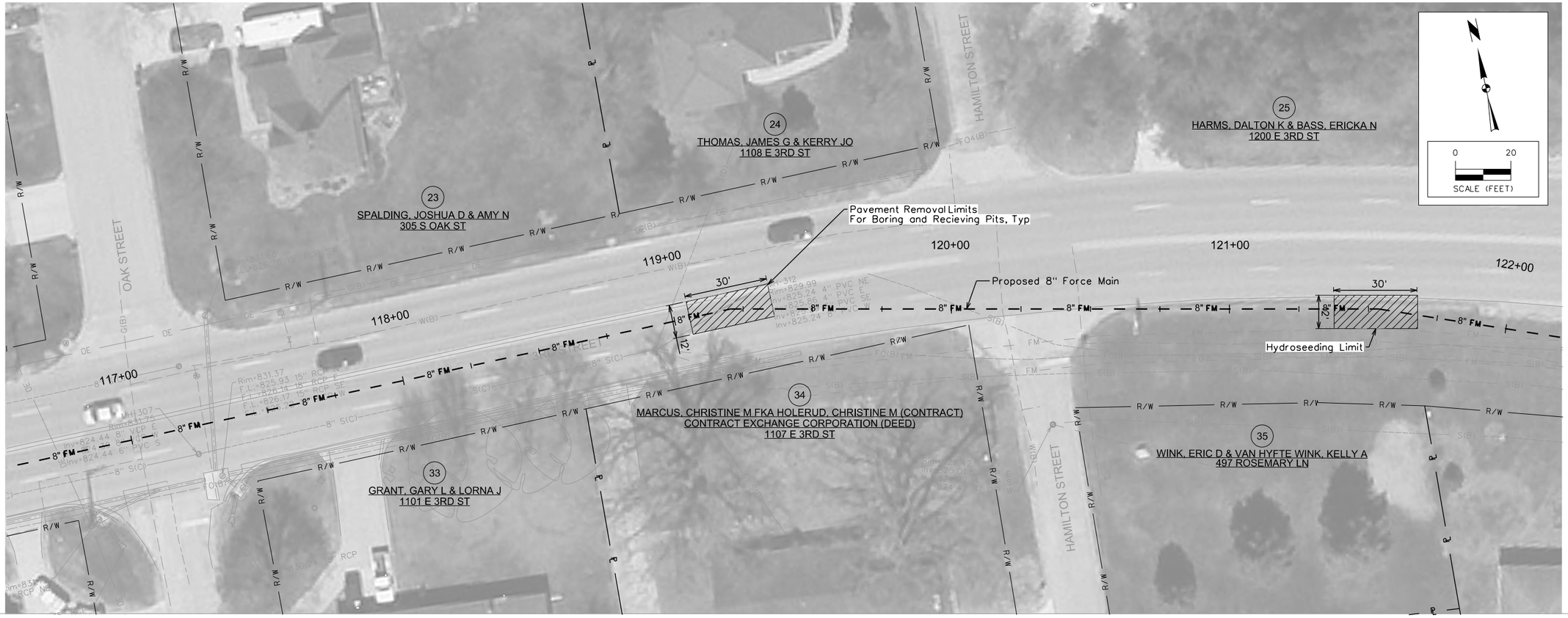
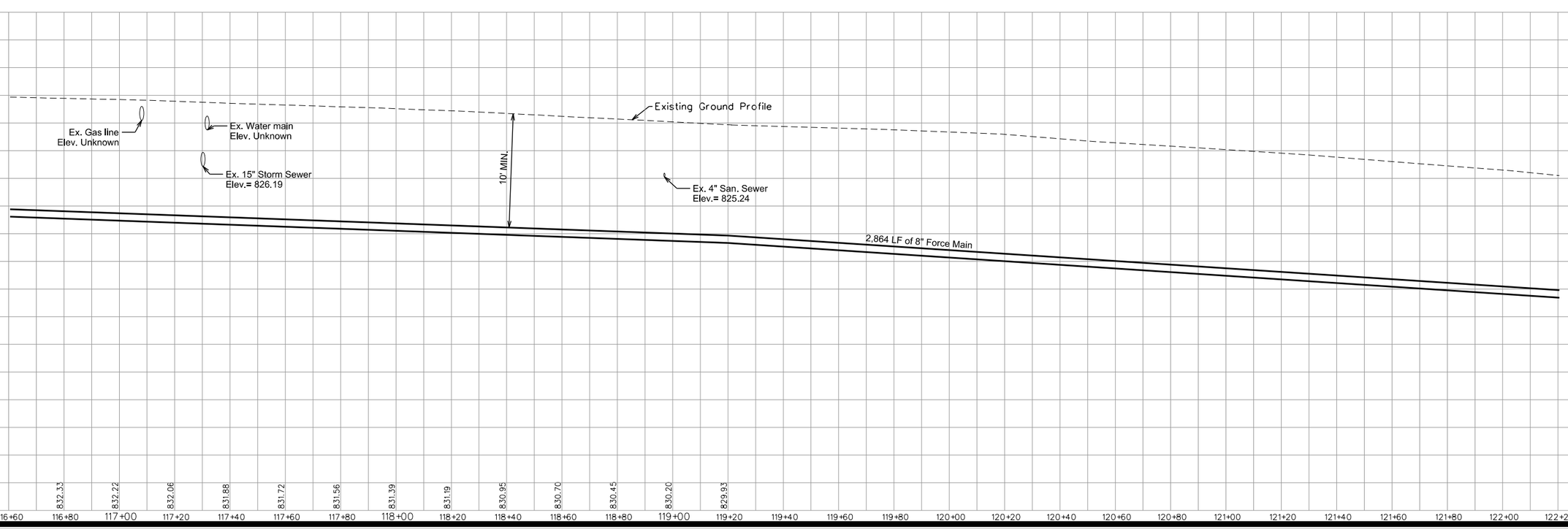
Project No: 1211106
Sheet M.23





MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE
Technician:	CJN	Date:	10/25/2022

Scale: 1"= 20'
Field Bk: Pg:

Project No: 1211106

Sheet M.24

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

BURIED PIPE- SANITARY

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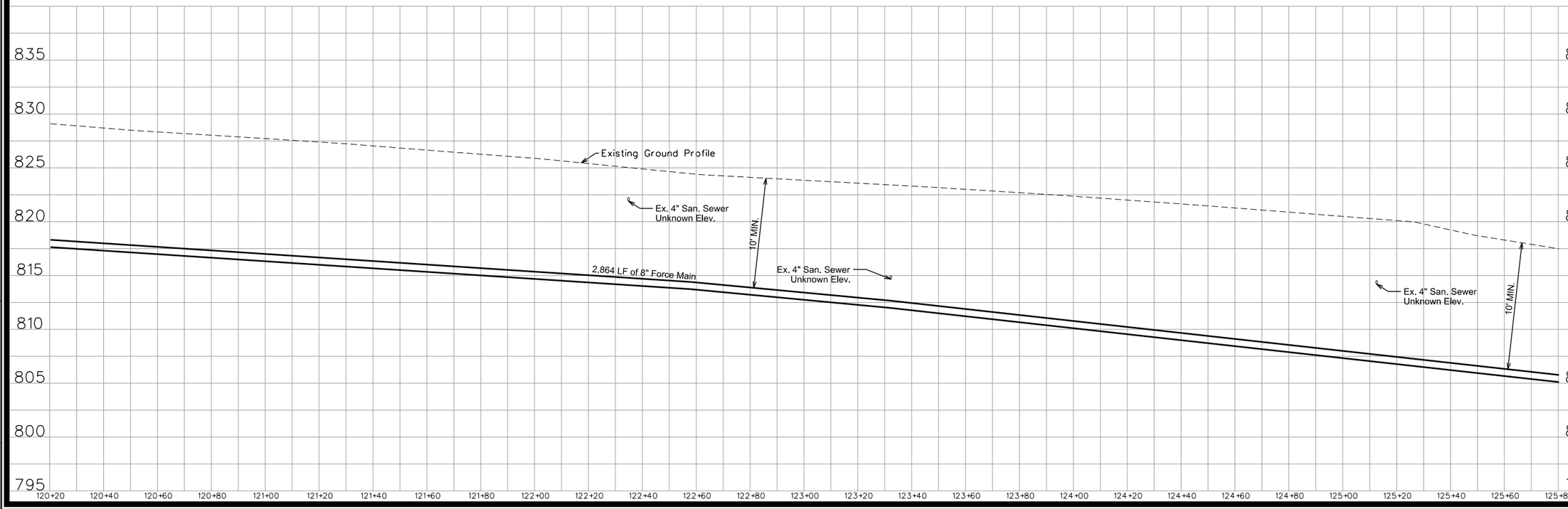
Project No: 1211106

Sheet M.24



MARK	REVISION	DATE	BY
Engineer: DMS	Checked By: NAE	Scale: 1"= 20'	
Technician: CJN	Date: 10/25/2022	Field Bk:	Pg:

Project No: 1211106

Sheet M.25

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

ANAMOSA, IOWA

BURIED PIPE- SANITARY

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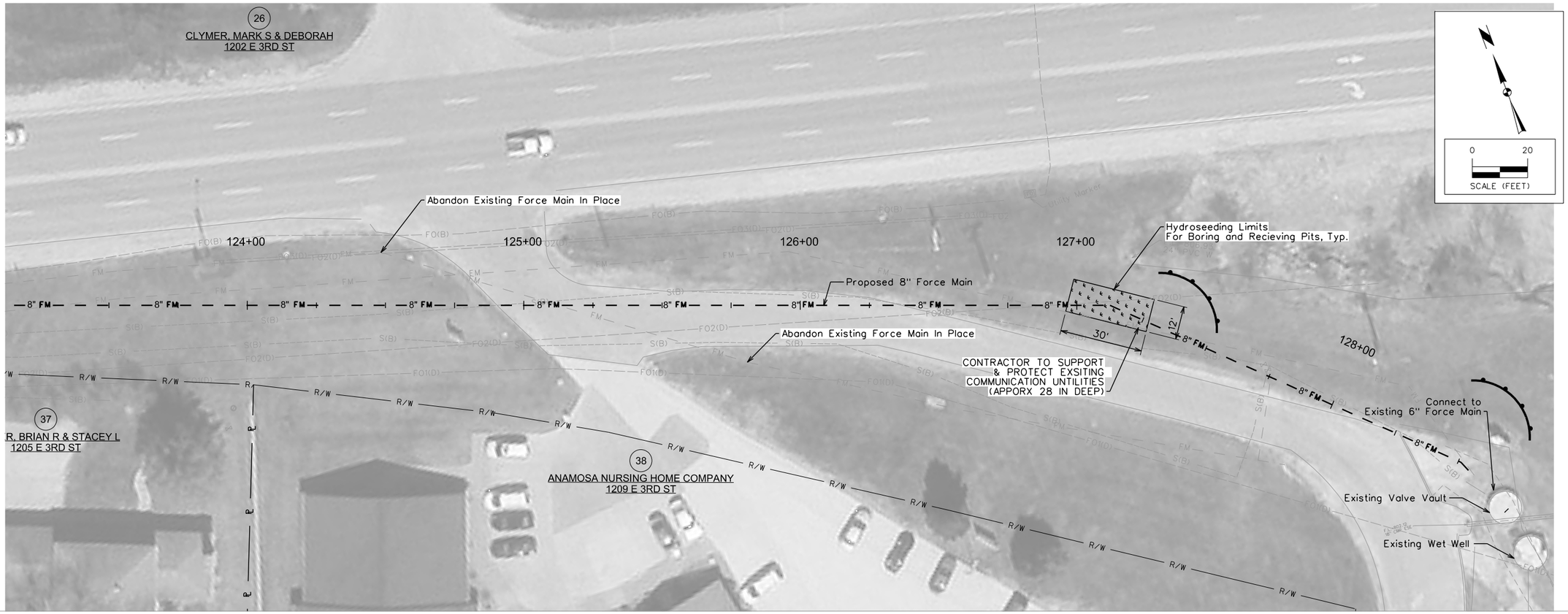
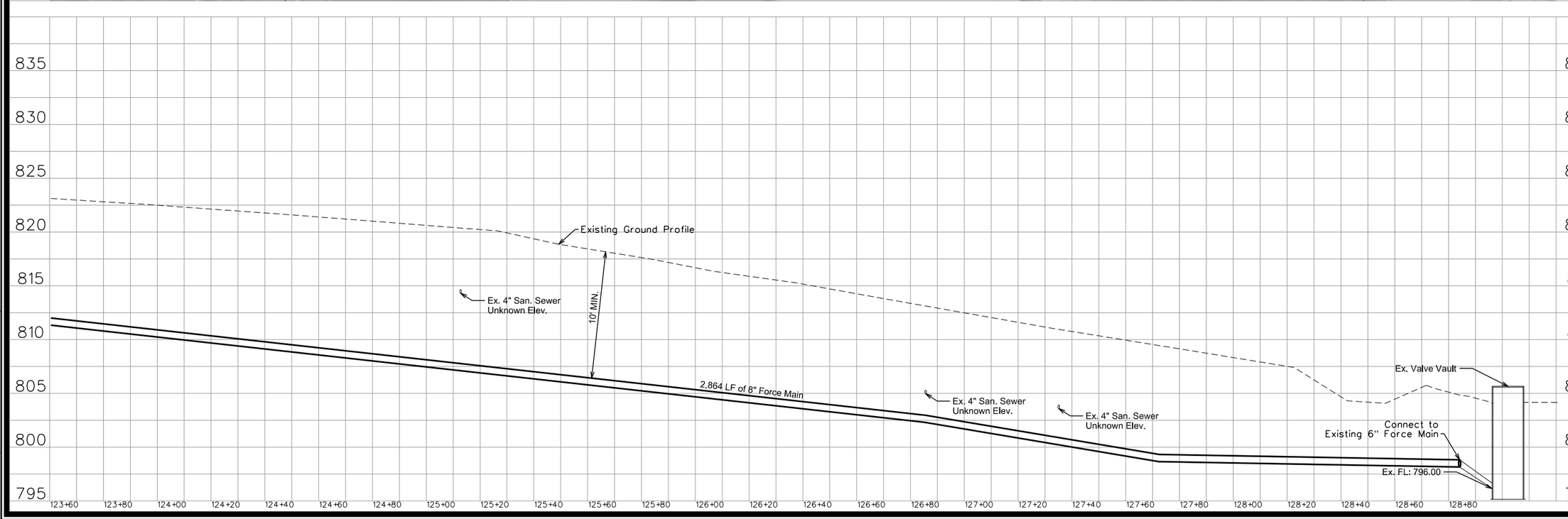
Project No: 1211106

Sheet M.25





MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"= 20'
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106

Sheet M.26

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

ANAMOSA, IOWA

BURIED PIPE- SANITARY

SNYDER & ASSOCIATES

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Project No: 1211106

Sheet M.26

POLLUTION PREVENTION PLAN / EROSION CONTROL NOTES

A. POLLUTION PREVENTION AND EROSION PROTECTION

1. CODE COMPLIANCE: THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL POTENTIAL POLLUTION AND SOIL EROSION CONTROL REQUIREMENTS OF THE IOWA CODE, THE IOWA DEPARTMENT OF NATURAL RESOURCES (IDNR) NPDES PERMIT, THE U.S. CLEAN WATER ACT AND ANY LOCAL ORDINANCES. THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO PROTECT AGAINST EROSION AND POLLUTION FROM THIS PROJECT SITE AND ALL OFF-SITE BORROW OR DEPOSIT AREAS DURING PERFORMANCE OR AS A RESULT OF PERFORMANCE.

2. DAMAGE CLAIMS: THE CONTRACTOR WILL HOLD THE OWNER AND ARCHITECT / ENGINEER HARMLESS FROM ANY AND ALL CLAIMS OF ANY TYPE WHATSOEVER RESULTING FROM DAMAGES TO ADJOINING PUBLIC OR PRIVATE PROPERTY, INCLUDING REASONABLE ATTORNEY FEES INCURRED TO OWNER. FURTHER, IF THE CONTRACTOR FAILS TO TAKE NECESSARY STEPS TO PROMPTLY REMOVE EARTH SEDIMENTATION OR DEBRIS WHICH COMES ONTO ADJOINING PUBLIC OR PRIVATE PROPERTY, THE OWNER MAY, BUT NEED NOT, REMOVE SUCH ITEMS AND DEDUCT THE COST THEREOF FROM AMOUNTS DUE TO THE CONTRACTOR.

B. STORM WATER DISCHARGE PERMIT

1. THIS PROJECT REQUIRES COVERAGE UNDER THE NPDES GENERAL PERMIT NO. 2 FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES FROM THE IDNR, AS REQUIRED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS ARE RESPONSIBLE FOR COMPLIANCE WITH AND FULFILLMENT OF ALL REQUIREMENTS OF THE NPDES GENERAL PERMIT NO. 2 AS SPECIFIED IN THE CONTRACT DOCUMENTS.

2. ALL DOCUMENTS RELATED TO THE STORM WATER DISCHARGE PERMIT, INCLUDING, BUT NOT LIMITED TO, THE NOTICE OF INTENT, PROOF OF PUBLICATIONS, DISCHARGE AUTHORIZATION LETTER, CURRENT SWPPP, SITE INSPECTION LOG, AND OTHER ITEMS, SHALL BE KEPT ON SITE AT ALL TIMES AND MUST BE PRESENTED TO ANY JURISDICTIONAL AGENCIES UPON REQUEST. FAILURE TO COMPLY WITH THE NPDES PERMIT REQUIREMENTS IS A VIOLATION OF THE CLEAN WATER ACT AND THE CODE OF IOWA.

3. A "NOTICE OF DISCONTINUATION" MUST BE FILED WITH THE IDNR UPON FINAL STABILIZATION OF THE DISTURBED SITE AND REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES. ALL PLANS, INSPECTION REPORTS, AND OTHER DOCUMENTS MUST BE RETAINED FOR A PERIOD OF THREE YEARS AFTER PROJECT COMPLETION. THE CONTRACTOR SHALL RETAIN A RECORD COPY AND PROVIDE THE ORIGINAL DOCUMENTS TO THE OWNER UPON PROJECT ACCEPTANCE AND/OR SUBMITTAL OF THE NOTICE OF DISCONTINUATION.

C. POLLUTION PREVENTION PLAN

1. THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS A SEPARATE DOCUMENT IN ADDITION TO THESE PLAN DRAWINGS. THE CONTRACTOR SHOULD REFER TO THE SWPPP FOR ADDITIONAL REQUIREMENTS AND MODIFICATIONS TO THE POLLUTION PREVENTION PLAN MADE DURING CONSTRUCTION.

2. THE SWPPP ILLUSTRATES GENERAL MEASURES AND BEST MANAGEMENT PRACTICES (BMP) FOR COMPLIANCE WITH THE PROJECT'S NPDES PERMIT COVERAGE. ALL BMP'S AND EROSION CONTROL MEASURES REQUIRED AS A RESULT OF CONSTRUCTION ACTIVITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY, NOTE AND IMPLEMENT. ADDITIONAL BMP'S FROM THOSE SHOWN ON THE PLAN MAY BE REQUIRED.

3. THE SWPPP AND SITE MAP SHOULD BE EXPEDITIOUSLY REVISED TO REFLECT CONSTRUCTION PROGRESS AND CHANGES AT THE PROJECT SITE.

4. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL REQUIREMENTS OF THE GENERAL PERMIT AND SWPPP, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING BMP'S UNLESS INFEASIBLE OR NOT APPLICABLE:

   a. UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE WHEN DISCHARGING FROM BASINS, PROVIDE AND MAINTAIN NATURAL BUFFERS AROUND SURFACE WATERS, DIRECT STORM WATER TO VEGETATED AREAS TO INCREASE SEDIMENT REMOVAL AND MAXIMIZE STORM WATER INFILTRATION, AND MINIMIZE SOIL COMPACTION.

   b. INSTALL PERIMETER AND FINAL SEDIMENT CONTROL MEASURES SUCH AS SILT BARRIERS, DITCH CHECKS, DIVERSION BERMS, OR SEDIMENTATION BASINS DOWNSTREAM OF SOIL DISTURBING ACTIVITIES PRIOR TO SITE CLEARING AND GRADING OPERATIONS.

   c. PRESERVE EXISTING VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION AND LIMIT TO A MINIMUM THE TOTAL AREA DISTURBED BY CONSTRUCTION OPERATIONS AT ANY TIME.

   d. MAINTAIN ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES IN WORKING ORDER, INCLUDING CLEANING, REPAIRING, REPLACEMENT, AND SEDIMENT REMOVAL THROUGHOUT THE PERMIT PERIOD. CLEAN OR REPLACE SILT CONTROL DEVICES WHEN THE MEASURES HAVE LOST 50% OF THEIR ORIGINAL CAPACITY.

   e. INSPECT THE PROJECT AREA AND CONTROL DEVICES (BY QUALIFIED PERSONNEL ASSIGNED BY THE CONTRACTOR) EVERY SEVEN CALENDAR DAYS. RECORD THE FINDINGS OF THESE INSPECTIONS AND ANY RESULTING ACTIONS IN THE SWPPP WITH A COPY SUBMITTED WEEKLY TO THE OWNER OR ENGINEER DURING CONSTRUCTION. REVISE THE SWPPP AND IMPLEMENT ANY RECOMMENDED MEASURES WITHIN 7 DAYS.

   f. PREVENT ACCUMULATION OF EARTH AND DEBRIS FROM CONSTRUCTION ACTIVITIES ON ADJOINING PUBLIC OR PRIVATE PROPERTIES, INCLUDING STREETS, DRIVEWAYS, SIDEWALKS, DRAINAGEWAYS, OR UNDERGROUND SEWERS. REMOVE ANY ACCUMULATION OF EARTH OR DEBRIS IMMEDIATELY AND TAKE REMEDIAL ACTIONS FOR FUTURE PREVENTION.

   g. INSTALL NECESSARY CONTROL MEASURES SUCH AS SILT BARRIERS, EROSION CONTROL MATS, MULCH, DITCH CHECKS OR RIPRAP AS SOON AS AREAS REACH THEIR FINAL GRADES AND AS CONSTRUCTION OPERATIONS PROGRESS TO ENSURE CONTINUOUS RUNOFF CONTROL. PROVIDE INLET AND OUTLET CONTROL MEASURES AS SOON AS STORM SEWERS ARE INSTALLED.

   h. RESPREAD A MINIMUM OF 8 INCHES OF TOPSOIL (INCLUDING TOPSOIL FOUND IN SOD) ON ALL DISTURBED AREAS, EXCEPT WHERE PAVEMENT, BUILDINGS OR OTHER IMPROVEMENTS ARE LOCATED.

   i. STABILIZE UNDEVELOPED, DISTURBED AREAS WITH MULCH, TEMPORARY SEED MIX, PERMANENT SEED MIX, SOD, OR PAVEMENT IMMEDIATELY AS SOON AS POSSIBLE UPON COMPLETION OR DELAY OF GRADING OPERATIONS. INITIATE STABILIZATION MEASURES IMMEDIATELY AFTER CONSTRUCTION ACTIVITY IS FINALLY COMPLETED OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WHICH WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS.

   j. COORDINATE LOCATIONS OF STAGING AREAS WITH THE OWNER AND RECORD IN THE SWPPP. UNLESS NOTED OTHERWISE, STAGING AREAS SHOULD CONTAIN THE FOLLOWING: JOB TRAILERS, FUELING / VEHICLE MAINTENANCE AREA, TEMPORARY SANITARY FACILITIES, MATERIALS STORAGE, AND CONCRETE WASHOUT FACILITY. CONTROL RUNOFF FROM STAGING AREAS WITH DIVERSION BERMS AND/OR SILT BARRIERS AND DIRECT TO A SEDIMENT BASIN OR OTHER CONTROL DEVICE WHERE POSSIBLE. CONCRETE WASHOUT MUST BE CONTAINED ONSITE.

   k. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND SITE WASTE PRIOR TO FILING OF THE "NOTICE OF DISCONTINUATION".

MARK	REVISION	DATE	BY
Engineer:	DMS	Checked By:	NAE	Scale:	1"=
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106 Sheet R.1

ANAMOSA, IOWA

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

POLLUTION PREVENTION PLAN

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
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SNYDER & ASSOCIATES

Project No: 1211106

Sheet R.1

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2

POLLUTION PREVENTION PLAN

ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.
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MARK	REVISION	DATE	BY

Engineer:	DMS	Checked By:	NAE	Scale:	1"= 20'
Technician:	CJN	Date:	10/25/2022	Field Bk:	Pg:

Project No: 1211106 Sheet R.2

Project No: 1211106
Sheet R.2

POINT	STATION	OFFSET	
1	101+22.22	14.95	LT
2	101+22.27	16.27	LT
3	101+22.75	27.63	LT
4	101+22.94	31.70	LT
5	101+23.59	42.66	LT
6	101+27.23	42.45	LT
7	101+26.92	31.49	LT
8	101+39.62	31.46	LT
9	101+41.44	31.49	LT
10	101+69.14	31.44	LT
11	101+70.89	31.49	LT
12	101+72.87	31.48	LT
13	101+81.97	31.49	LT
14	101+85.96	31.31	LT
15	101+89.64	31.16	LT
16	101+99.45	20.47	LT
17	102+01.46	20.48	LT

POINT	STATION	OFFSET	
48	101+79.34	32.02	RT
49	101+68.66	31.98	RT
50	101+66.66	32.00	RT
51	101+38.83	32.00	RT
52	101+37.20	32.05	RT
53	101+24.27	31.96	RT
54	101+24.05	36.73	RT
55	101+23.71	40.73	RT
56	101+19.91	40.56	RT
57	101+20.09	36.56	RT
58	101+20.27	31.87	RT
59	101+20.44	27.83	RT

NOTE:ALL ELEVATIONS ARE FORM GRADE
UNLESS OTHERWISE NOTED
EX=MATCH EXISTING
TS=TOP OF SLAB
FG=FORM GRADE

LEGEND

- SPECIAL SHAPING/ROADWAY PAVEMENT
- NON-COMPLIANT ADA SIDEWALK

NOTES:
1. SLOPE IS CALCULATED FROM TOP OF 1/2 LIP CURB.
2. ALL ELEVATIONS ARE TOP OF SLAB UNLESS OTHERWISE NOTED.
3. FG=FORM GRADE EX=EXISTING

MARK	REVISION	DATE	BY
Engineer: DMS	Checked By: NAE	Scale: 1"= 5'	
Technician: CJN	Date: 10/25/2022	Field Bk:	Pg:

Project No: 1211106 Sheet S.1

2ND ST. LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PH.2
SIDEWALK
ANAMOSA, IOWA

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CEDAR RAPIDS, IA 52404
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SNYDER & ASSOCIATES

Project No: 1211106
Sheet S.1

2nd STREET LIFT STATION AND SEWER SYSTEM IMPROVEMENTS – PHASE 2

ANAMOSA, IOWA

S&A PROJECT NO. 121.1106.08

August 2023

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.

8/9/2023

NICHOLAS A. EISENBACHER Date

License Number P25334

My License Renewal Date is December 31, 2024

Pages or sheets covered by this seal:

All

Prepared by SNYDER & ASSOCIATES, INC.
900 Bell Dr SW - Cedar Rapids, Iowa 52404 - (319) 362-9394

2nd Street Lift Station and Sewer System Improvements – Phase 2

City of Anamosa, Iowa

Table of Contents

The following documents are a part of this contract:

Standard Specifications:
The 2023 edition of the SUDAS Standard Specifications are adopted by reference, in their entirety, as part of these contract documents. The SUDAS Standard Specifications are available on-line at www.iowasudas.org or may be obtained by contacting the SUDAS Program at: 515-294-04674 or SUDAS Program, 2711 S. Loop Drive, Suite 4700, Ames, IA 50010.

NOTICE TO BIDDERS
JURISDICTION OF ***CITY OF ANAMOSA*** PUBLIC IMPROVEMENT PROJECT

Notice is hereby given that a public hearing will be held by the ***City of Anamosa*** on the proposed contract documents (plans, specifications, and form of contract) and estimated cost for the improvement at its meeting at ***6:00, P.M.*** on ***September 11, 2023,*** in said ***Anamosa City Hall Council Chambers*** for the ***2nd Street Lift Station and Sewer System Improvements – Phase 2.***

Sealed bids for the work comprising each improvement as stated below must be filed before ***2:00, P.M.*** according to the clock the office of ***Anamosa City Hall*** on ***October 4, 2023***, in the office of the ***Anamosa City Hall.*** Bids received after the deadline for submission of bids as stated herein shall not be considered and shall be returned to the late bidder unopened.

Sealed proposals will be opened and bids tabulated at ***2:00, P.M.*** on ***October 4, 2023***, in the ***Anamosa City Hall*** for consideration by the ***City of Anamosa*** at its meeting on ***October 9, 2023***.

Work on the improvement shall be commenced immediately upon approval of the contract by the Council, and be completed as stated below.

The contract documents may be examined at the ***Anamosa City Hall.*** Hard copies of the project documents may be obtained from Snyder & Associates, Inc. 900 Bell Dr SW, Cedar Rapids, IA 52404 at no cost. Electronic contract documents are available at no cost by clicking on the "Bids" link at www.snyder-associates.com and choosing the ***2nd Street Lift Station and Sewer System Improvements – Phase 2*** on the left. Project information, engineer's cost opinion, and planholder information is also available at no cost at this website. Downloads require the user to register for a free membership at QuestCDN.com.

By virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the State of Iowa, and to Iowa domestic labor, to the extent lawfully required under Iowa statutes.

In accordance with Iowa statutes, a resident bidder shall be allowed a preference as against a nonresident bidder from a state or foreign country if that state or foreign country gives or requires any preference to bidders from that state or foreign country, including but not limited to any preference to bidders, the imposition of any type of labor force preference, or any other form of preferential treatment to bidders or laborers from that state or foreign country. The preference allowed shall be equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident. In the instance of a resident labor force preference, a nonresident bidder shall apply the same resident labor force preference to a public improvement in this state as would be required in the construction of a public improvement by the state or foreign country in which the nonresident bidder is a resident.

General Nature of the Public Improvement

The project generally includes furnishing all labor, material, and equipment necessary for the construction and installation of 8" force main, 12" sanitary sewer, pipe bursting 12" sanitary sewer 12" water main, street replacement, site restoration, and other miscellaneous items.

Each bidder shall accompany its bid with bid security as defined in Iowa Code Section 26.8, as security that the successful bidder will enter into a contract for the work bid upon and will furnish after the award of contract a corporate surety bond, in a form acceptable to the Jurisdiction, for the faithful performance of the contract, in an amount equal to 100% of the amount of the contract. The bidder's security shall be in the amount fixed in the Instruction to Bidders and shall be in the form of a cashier's check or a certified check drawn on an FDIC insured bank in Iowa or on an FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United

States; or a bid bond on the form provided in the contract documents with corporate surety satisfactory to the Jurisdiction. The bid shall contain no condition except as provided in the specifications.

The ***City of Anamosa*** reserves the right to defer acceptance of any bid for a period of sixty (60) calendar days after receipt of bids and no bid may be withdrawn during this period.

Each successful bidder will be required to furnish a corporate surety bond in an amount equal to 100% of its contract price. Said bond shall be issued by a responsible surety approved by ***City of Anamosa*** and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless ***City of Anamosa*** from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of two years from and after acceptance of the contract. The guaranteed maintenance period for new paving shall be four years.

The ***City of Anamosa***, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Contractor shall complete the project no later than ***April 26, 2024***. Should the contractor fail to complete the work in this timeframe, liquidated damages of ***$1,000.00*** per calendar day will be assessed for work not completed within the designated contract term. Liquidated damages can be assessed against both completion dates.

The ***City of Anamosa*** does hereby reserve the right to reject any or all bids, to waive informalities, and to enter into such contract, or contracts, as it shall deem to be in the best interest of the jurisdiction.

This Notice is given by authority of the ***City of Anamosa***

_____

City of Anamosa

NOTICE OF HEARING

NOTICE OF PUBLIC HEARING ON PROPOSED PLANS, SPECIFICATIONS, FORM OF CONTRACT, AND ESTIMATE OF COST FOR THE ***2nd Street Lift Station and Sewer System Improvements – Phase 2*** FOR THE ***City of Anamosa***.

Public Notice is hereby given that at ***6:00, P.M.*** on the ***11th*** day of ***September, 2023***, the ***Anamosa City Council*** will, in the ***Anamosa City Hall Council Chambers***, hold a hearing whereat said ***Council*** will resolve to adopt plans, specifications, form of contract and estimate of cost for the construction of the ***2nd Street Lift Station and Sewer System Improvements – Phase 2*** and, at the time, date and place specified above, or at such time, date and place as then may be fixed, to act upon proposals and enter into contract for the construction of said improvements.

General Nature of the Public Improvement

The project generally includes furnishing all labor, material, and equipment necessary for the construction and installation of 8" force main, 12" sanitary sewer, pipe bursting 12" sanitary sewer 12" water main, street replacement, site restoration, and other miscellaneous items.

At said hearing, the ***City Council*** will consider the proposed plans, specifications, form of contract and estimate of cost for said project, the same now being on file in the ***Anamosa City Hall***, reference to which is made for a more detailed and complete description of the proposed improvements, and at said time and place the said Council will also receive and consider any comments/objections to said plans, specifications and form of contract or to the estimated cost of said improvements made by any interested party.

This Notice is given by authority of the ***City of Anamosa***

_____

City of Anamosa

Published in the ***Journal-Eureka***

Bid Date October 4, 2023
Time 2:00 P.M.

INSTRUCTIONS TO BIDDERS

Project Name 2nd Street Lift Station and Sewer System Improvements – Phase 2

The work comprising the above referenced project shall be constructed in accordance with the 2023 edition of the SUDAS Standard Specifications and as further modified by supplemental specifications and special provisions included in the contract documents. The terms used in the contract revision of the documents are defined in said Standard Specifications. Before submitting your bid, review the requirements of Division 1, General Provisions and Covenants, in particular the sections regarding proposal requirements, bonding, contract execution and insurance requirements. Be certain that all documents have been completed properly, as failure to complete and sign all documents and to comply with the requirements listed below can cause your bid not to be read.

I. BID SECURITY

The bid security must be in the minimum amount of ***5%*** of the total bid amount including all add alternates (do not deduct the amount of deduct alternates). Bid security shall be in the form of a cashier's check or a certified check, drawn on an FDIC insured bank in Iowa or drawn on an FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond executed by a corporation authorized to contract as a surety in Iowa or satisfactory to the Jurisdiction. The bid bond must be submitted on the enclosed Bid Bond form as no other bid bond forms are acceptable. All signatures on the bid bond must be original signatures in ink; facsimile (fax) of any signature or use of an electronic signature on the bid bond is not acceptable. Bid security other than said bid bond shall be made payable to ***City of Anamosa***. "Miscellaneous Bank Checks," and personal checks, as well as "Money Orders" and "Traveler's Checks" issued by persons, firms, or corporations licensed under Chapter 533C of the Iowa Code, are not acceptable bid security.

II. SUBMISSION OF THE PROPOSAL AND IDENTITY OF BIDDER

A. The proposal shall be sealed in an envelope, properly identified as the Proposal with the project title and the name and address of the bidder, and deposited with the Jurisdiction at or before the time and at the place provided in the Notice to Bidders. It is the sole responsibility of the bidder to see that its proposal is delivered to the Jurisdiction prior to the time for opening bids, along with the appropriate bid security sealed in a separate envelope identified as Bid Security and attached to the outside of the bid proposal envelope. Any proposal received after the scheduled time for the receiving of proposals will be returned to the bidder unopened and will not be considered. If the Jurisdiction provides envelopes for proposals and bid security, bidders shall be required to utilize such envelopes in the submission of their bids.

B. The following documents shall be completed, signed, and returned in the Proposal envelope. The bid cannot be read if any of these documents are omitted from the Proposal envelope.

1. PROPOSAL – Complete each of the following parts:

- Part B – Acknowledgment of Addenda, if any have been issued
- Part C – Bid Items, Quantities, and Prices
- Part G – Identity of Bidder (including the Bidder Status Form)

Sign the proposal. The signature on the proposal and all proposal attachments must be an original signature in ink signed by the same individual who is the Company Owner or an authorized Officer of the Company; copies or facsimile of any signature or electronic signatures will not be accepted. The Bidder Status Form is required by the Iowa Labor Commissioner, pursuant to the Iowa Administrative Code rule 875-156.2(1). The Bidder must complete and submit the Bidder Status Form, signed by an authorized representative of the Bidder, with their bid proposal. Under Iowa Administrative Code rule 875-156.2(1), failure to provide the Bidder Status Form with the bid may result in the bid being deemed non-responsive and may result in the bid being rejected. The Worksheet: Authorized to Transact Business from the Labor Commissioner is including on the following page and can be used to assist Bidders in completing the Bidder Status Form.

The following documents must be submitted as printed. No alterations, additions, or deletions are allowed. If the Bidder notes a requirement in the contract documents that the Bidder believes will require a conditioned or unsolicited alternate bid, the Bidder must immediately notify the Engineer in writing. The Engineer will issue any necessary interpretation by an addendum.

PROPOSAL

PROPOSAL: PART A – SCOPE

The City of Anamosa, hereinafter called the "Jurisdiction," has need of a qualified contractor to complete the work comprising the below referenced improvement. The undersigned Bidder hereby proposes to complete the work comprising the below referenced improvement as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the Anamosa City Hall, at the prices hereinafter provided in Part C of the Proposal, for the following described improvements:

PROJECT DESCRIPTION:

The project generally includes furnishing all labor, material, and equipment necessary for the construction and installation of 8" force main, 12" sanitary sewer, pipe bursting 12" sanitary sewer 12" water main, street replacement, site restoration, and other miscellaneous items.

PROPOSAL: PART B – ACKNOWLEDGMENT OF ADDENDA

The Bidder hereby acknowledges that all addenda become a part of the contract documents when issued, and that each such addendum has been received and utilized in the preparation of this bid. The Bidder hereby acknowledges receipt of the following addenda by inserting the number of each addendum in the blanks below:

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

and certifies that said addenda were utilized in the preparation of this bid.

PROPOSAL: PART C – BID ITEMS, QUANTITIES, AND PRICES

UNIT BID PRICE CONTRACTS: The Bidder must provide the Unit Bid Price, the Total Bid Price, any Alternate Prices, and the Total Construction Costs on the Proposal Attachment: Part C – Bid Items, Quantities, and Prices. In case of discrepancy, the Unit Bid Price governs. The quantities shown on the Proposal Attachment: Part C – Bid Items, Quantities, and Prices are approximate only, but are considered sufficiently adequate for the purpose of comparing bids. The Total Construction Cost plus any alternates selected by the Jurisdiction, shall be used only for comparison of bids. The Total Construction Cost, including any Add-Alternates, shall be used for determining the sufficiency of the bid security.

BASE BID CONTRACTS: The Bidder must provide any Bid Prices, any Alternate Prices, and the Total of the Base Bid plus any Add-Alternates on the Proposal Attachment: Part C – Bid Items, Quantities, and Prices. The Total of the Base bid plus any Alternates selected by the Jurisdiction shall be used only for comparison of bids. The Total of the Base Bid plus any Add-Alternates shall be used for determining the sufficiency of the bid security.

PROPOSAL: PART D – GENERAL

The Bidder hereby acknowledges that the Jurisdiction, in advertising for public bids for this project, reserves the right to:

1. Reject any or all bids. Award of the contract, if any, to be to the lowest responsible, responsive bidder; and
2. Reject any or all alternates in determining the items to be included in the contract. Designation of the lowest responsible, responsive bidder to be based on comparison of the total bid plus any selected alternates; and
3. Make such alterations in the contract documents or in the proposal quantities as it determines necessary in accordance with the contract documents after execution of the contract. Such alterations shall not be considered a waiver of any conditions of the contract documents, and shall not invalidate any of the provisions thereof; and

The Bidder hereby agrees to:

1. Enter into a contract, if this proposal is selected, in the form approved by the Jurisdiction, provide proof of registration with the Iowa Division of Labor in accordance with Chapter 91C of the Iowa Code, and furnish a performance, maintenance, and payment bond; and
2. Forfeit bid security, not as a penalty but as liquidated damages, upon failure to enter into such contract and/or to furnish said bond; and
3. Commence the work on this project on or before a date to be specified in a written notice to proceed by the Jurisdiction, and to fully complete the project ***2nd Street Lift Station and Sewer System Improvements – Phase 2*** ; and to pay liquidated damages for noncompliance with said completion provisions at the rate of One Thousand dollars ($1,000) for each calendar day thereafter that the work remains incomplete.

PROPOSAL: PART E – NON-COLLUSION AFFIDAVIT

The Bidder hereby certifies:

1. That this proposal is not affected by, contingent on, or dependent on any other proposal submitted for any improvement with the Jurisdiction; and

2. That no individual employed by the Bidder has employed any person to solicit or procure the work on this project, nor will any employee of the Bidder make any payment or agreement for payment of any compensation in connection with the procurement of this project; and

3. That no part of the bid price received by the Bidder was or will be paid to any person, corporation, firm, association, or other organization for soliciting the bid, other than the payment of their normal compensation to persons regularly employed by the Bidder whose services in connection with the construction of the project were in the regular course of their duties for the Bidder; and

4. That this proposal is genuine and not collusive or sham; that the Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidder or person, to submit a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought, by agreement or collusion, or communication or conference, with any person, to fix the bid price of the Bidder or of any other bidder, and that all statements in this proposal are true; and

5. That the individual(s) executing this proposal have the authority to execute this proposal on behalf of the Bidder.

PROPOSAL: PART G – IDENTITY OF BIDDER

The Bidder shall indicate whether the bid is submitted by a/an:

- ☐ Individual, Sole Proprietorship
- ☐ Partnership
- ☐ Corporation
- ☐ Limited Liability Company
- ☐ Joint-venture: all parties must join-in and execute all documents
- ☐ Other

The Bidder shall enter its Public Registration Number ___ ___ ___ ___ ___ - ___ ___ issued By the Iowa Commissioner of Labor Pursuant Section 91C.5 of the Iowa Code.

Failure to provide said Registration Number shall result in the bid being read under advisement. A contract will not be executed until the Contractor is registered.

_____
Bidder

_____
Signature

By _____
Name (Print/Type)

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone Number

Type or print the name and title of the company's owner, president, CEO, etc. if a different person than entered above

_____
Name

_____
Title

NOTE: The signature on this proposal must be an original signature in ink; copies, facsimiles, or electronic signatures will not be accepted.

PROPOSAL ATTACHMENT: PART C **Project Name _____**

PROPOSAL

PROPOSAL ATTACHMENT: PART C – BID ITEMS, QUANTITIES, AND PRICES

This is a UNIT BID PRICE CONTRACT. The bidder must provide the Bid Price(s), any Alternate Price(s), and the Total of the Base Bid plus any Add-Alternates in this Proposal Attachment: Part C – Bid Items, Quantities, and Prices the total of the base bid plus any alternates selected by the Jurisdiction shall be used only for comparison of bids. The total of the Base Bid plus any Add-Alternates shall be used for determining the sufficiency of the bid security.

ITEM NO.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL PRICE
1	2010-C	Clearing and Grubbing	LS	1		
2	2010-D-1	Topsoil, On-site	CY	333		
3	2010-G	Subgrade Preparation	SY	1070		
4	2010-I	Subbase, Modified, 12"	SY	1070		
5	2010-M	Compaction Testing	LS	1		
6	3010-C	Trench Foundation	TON	10		
7	3010-D	Replacement of Unsuitable Backfill Material	CY	38		
8	3010-F	Trench Compaction Testing	LS	1		
9	4010-A-2	Sanitary Sewer Gravity Main, Trenchless, HDPE, 12"	LF	356		
10	4010-C-2	Sanitary Sewer Force Main, Trenchless, 8"	LF	2810		
11	4010-G	Sewage Air Release Valve and Pit	EA	1		
12	4050-G	Bypass Pumping	LS	1		
13	5020-C	Fire Hydrant Assembly	EA	1		
14	5020-J	Fire Hydrant Assembly Removal	EA	1		
15	6010-A	Sanitary Sewer Manhole, 48", Depth: 10'-15'	EA	2		
16	6010-A	Sanitary Sewer Manhole, 48", Depth: 15'-20'	EA	1		
17	6010-H	Remove Manhole	EA	3		
18	7010-A	Pavement, PCC, 7"	SY	964		
19	7030-A	Removal of Sidewalk	SY	85		
20	7030-E	Sidewalk, PCC, 4"	SY	54		
21	7030-E	Sidewalk, PCC, 6"	SY	31		
22	7030-G	Detectable Warning	SF	64		
23	7040-A	Full Depth Patches, PCC	SY	120		
24	7040-A	Full Depth Patches, HMA	SY	100		
25	7040-H	Pavement Removal	SY	964		
26	7040-999-A	Removal of Flume	LS	1		
27	8020-B	Painted Pavement Markings, Solvent/Waterborne	STA	1.80		
28	8030-A	Temporary Traffic Control	LS	1		

ITEM NO.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL PRICE
29	9010-B	Hydraulic Seeding, Seeding, Fertilizing, and Mulching	AC	0.31		
30	9040-A-2	SWPPP, Management	LS	1		
31	9040-D-1	Filter Sock, 12"	LF	850		
32	9040-D-2	Filter Socks, Removal	LF	850		
33	9040-T-1	Inlet Protection Device, Drop-in	EA	2		
34	9040-T-2	Inlet Protection Device, Maintenance	EA	2		
35	11,020-A	Mobilization	LS	1		
36	11,050-A	Concrete Washout	LS	1	-	

TOTAL CONSTRUCTION COSTS:_____ Dollars
(Amount in Words)

TOTAL CONSTRUCTION COSTS:_____ Dollars
(Amount in Figures)

Worksheet: Authorization to Transact Business

This worksheet may be used to help complete Part A of the Resident Bidder Status form. If at least one of the following describes your business, you are authorized to transact business in Iowa.

☐ Yes ☐ No My business is currently registered as a contractor with the Iowa Division of Labor.

☐ Yes ☐ No My business is a sole proprietorship and I am an Iowa resident for Iowa income tax purposes.

☐ Yes ☐ No My business is a general partnership or joint venture. More than 50 percent of the general partners or joint venture parties are residents of Iowa for Iowa income tax purposes.

☐ Yes ☐ No My business is an active corporation with the Iowa Secretary of State and has paid all fees required by the Secretary of State, has filed its most recent biennial report, and has not filed articles of dissolution.

☐ Yes ☐ No My business is a corporation whose articles of incorporation are filed in a state other than Iowa, the corporation has received a certificate of authority from the Iowa Secretary of State, has filed its most recent biennial report with the Secretary of State, and has neither received a certificate of withdrawal from the Secretary of state nor had its authority revoked.

☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in this state and the statement has not been canceled.

☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in a state other than Iowa, has filed a statement of foreign qualification in Iowa and a statement of cancellation has not been filed.

☐ Yes ☐ No My business is a limited partnership or limited liability limited partnership which has filed a certificate of limited partnership in this state, and has not filed a statement of termination.

☐ Yes ☐ No My business is a limited partnership or a limited liability limited partnership whose certificate of limited partnership is filed in a state other than Iowa, the limited partnership or limited liability limited partnership has received notification from the Iowa Secretary of state that the application for certificate of authority has been approved and no notice of cancellation has been filed by the limited partnership or the limited liability limited partnership.

☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in Iowa and has not filed a statement of termination.

☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in a state other than Iowa, has received a certificate of authority to transact business in Iowa and the certificate has not been revoked or canceled.

All bidders must submit the following completed form to the governmental body requesting bids per 875 Iowa Administrative Code Chapter 156.

Bidder Status Form

To be completed by all bidders — Part A

Please answer "Yes" or "No" for each of the following:

☐ Yes ☐ No My company is authorized to transact business in Iowa.
(To help you determine if your company is authorized, please review the worksheet on the next page).

☐ Yes ☐ No My company has an office to transact business in Iowa.

☐ Yes ☐ No My company's office in Iowa is suitable for more than receiving mail, telephone calls, and e-mail.

☐ Yes ☐ No My company has been conducting business in Iowa for at least 3 years prior to the first request for bids on this project.

☐ Yes ☐ No My company is not a subsidiary of another business entity or my company is a subsidiary of another business entity that would qualify as a resident bidder in Iowa.

If you answered "Yes" for each question above, your company qualifies as a resident bidder. Please complete Parts B and D of this form.

If you answered "No" to one or more questions above, your company is a non-resident bidder. Please complete Parts C and D of this form.

To be completed by resident bidders — Part B

My company has maintained offices in Iowa during the past 3 years at the following addresses:

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

You may attach additional sheet(s) if needed.

To be completed by non-resident bidders — Part C

1. Name of home state or foreign country reported to the Iowa Secretary of State:

   _____

2. Does your company's home state or foreign country offer preferences to bidders who are residents? ☐ Yes ☐ No

3. If you answered "Yes" to question 2, identify each preference offered by your company's home state or foreign country and the appropriate legal citation.

   _____

   _____

   You may attach additional sheet(s) if needed.

To be completed by all bidders — Part D

I certify that the statements made on this document are true and complete to the best of my knowledge and I know that my failure to provide accurate and truthful information may be a reason to reject my bid.

Firm Name: _____

Signature: _____ Date: _____

BID BOND

KNOW ALL BY THESE PRESENTS:

That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto_____, as Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of _____ _____ _____dollars ($_____), or _____ percent of the amount bid in lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

The condition of the above obligation is such that whereas the Principal has submitted to the Jurisdiction a certain proposal, in a separate envelope, and hereby made a part hereof, to enter into a contract in writing, for the following described improvements;

The project generally includes furnishing all labor, material, and equipment necessary for the construction and installation of 8" force main, 12" sanitary sewer, pipe bursting 12" sanitary sewer 12" water main, street replacement, site restoration, and other miscellaneous items.

The Surety hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Jurisdiction may accept such bid or execute such Contract; and said Surety does hereby waive notice of any such extension.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Jones County, State of Iowa. If legal action is required by the Jurisdiction against the Surety or Principal to enforce the provisions of the bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Surety or Principal agrees to pay the Jurisdiction all damages, costs, and attorney fees incurred by enforcing any of the provisions of this Bond. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against Surety for any amount guaranteed hereunder whether action is brought against Principal or whether Principal is joined in any such action or actions or not.

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then
this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____ day of _____, 20_____.

SURETY:	PRINCIPAL:
_____ Surety Company	_____ Bidder
By _____ Signature Attorney-in-Fact/Officer	By _____ Signature
_____ Printed Name of Attorney-in-Fact/Officer	_____ Printed Name
_____ Company Name	_____ Title
_____ Company Address	_____ Address
_____ City, State, Zip Code	_____ City, State, Zip Code
_____ Company Telephone Number	_____ Telephone Number

NOTE: All signatures on this bid bond must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted. This bond must be sealed with the Surety's raised, embossing seal. The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal.

CONTRACT NO. _____

DATE _____

CONTRACT

THIS CONTRACT, made and entered into at _____ this _____ day of _____, _____, by and between the _____ by its _____, upon order of its _____ hereinafter called the "Jurisdiction," and _____, hereinafter called the "Contractor."

WITNESSETH:

The Contractor hereby agrees to complete the work comprising the below referenced improvement as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the Anamosa City Hall. This contract includes all contract documents. The work under this contract shall be constructed in accordance with the SUDAS Standard Specifications, 2023 Edition, and as further modified by the supplemental specifications and special provisions included in said contract documents, and the Contract Attachment - Item 1: General, which is attached hereto. The Contractor further agrees to complete the work in strict accordance with said contract documents, and to guarantee the work as required by law, for the time required in said contract documents, after its acceptance by the Jurisdiction.

This contract is awarded and executed for completion of the work specified in the contract documents for the bid prices shown on the Contract Attachment - Item 2: Bid Items, Quantities, and Prices, which were proposed by the Contractor in its proposal submitted in accordance with the Notice to Bidders and Notice of Public Hearing for the following described improvements:

The project generally includes furnishing all labor, material, and equipment necessary for the construction and installation of 8" force main, 12" sanitary sewer, pipe bursting 12" sanitary sewer 12" water main, street replacement, site restoration, and other miscellaneous items.

The Contractor agrees to perform said work for and in consideration of the Jurisdiction's payment of the bid amount of _____ dollars ($_____) which amount shall constitute the required amount of the performance, maintenance, and payment bond. The Contractor hereby agrees to commence work under this contract on or before a date to be specified in a written notice to proceed by the Jurisdiction and to fully complete the project _____; and to pay liquidated damages for noncompliance with said completion provisions at the rate of __ _____ dollars ($_____) for each calendar day thereafter that the work remains incomplete.

IN WITNESS WHEREOF, the Parties hereto have executed this instrument, in triplicate on the date first shown written.

JURISDICTION

By _____

(Seal)
ATTEST:

_____

FORM APPROVED BY:

_____
Attorney for Jurisdiction

CONTRACTOR

_____
Contractor

By _____
Signature

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone

CONTRACTOR PUBLIC REGISTRATION INFORMATION To Be Provided By:

1. All Contractors: The Contractor shall enter its Public Registration Number __ __ __ __ __ - __ __ issued by the Iowa Commissioner of Labor pursuant to Section 91C.5 of the Iowa Code.

2. Out-of-State Contractors:

   A. Pursuant to Section 91C.7 of the Iowa Code, an out-of-state contractor, before commencing a contract in excess of five thousand dollars in value in Iowa, shall file a bond with the division of labor services of the department of workforce development. It is the contractor's responsibility to comply with said Section 91C.7 before commencing this work.

   B. Prior to entering into contract, the designated low bidder, if it is a corporation organized under the laws of a state other than Iowa, shall file with the Engineer a certificate from the Secretary of the State of Iowa showing that it has complied with all the provisions of Chapter 490 of the Iowa Code, or as amended, governing foreign corporations.

NOTE: All signatures on this contract must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted.

CORPORATE ACKNOWLEDGMENT

State of_____)
) SS
_____County)

On this _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known, who, being by me duly sworn, did say that they are the _____, and _____, respectively, of the corporation executing the foregoing instrument; that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed (and sealed) on behalf of the corporation by authority of this Board of Directors; that _____ and _____acknowledged the execution of the instrument to be the voluntary act and deed of the corporation, by it and by them voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20 _____

PARTNERSHIP ACKNOWLEDGMENT

State of _____)
) SS
_____County)

On this ____ day of _____, 20 ___, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ to me personally known, who being by me duly sworn, did say that the person is one of the partners of _____, a partnership, and that the instrument was signed on behalf of the partnership by authority of the partners and the partner acknowledged the execution of the instrument to be the voluntary act and deed of the partnership by it and by the partner voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

INDIVIDUAL ACKNOWLEDGMENT

State of _____)
) SS
_____County)

On this _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known to be the identical person(s) named in and who executed the foregoing instrument, and acknowledged that (he) (she) (they) executed the instrument as (his) (her) (their) voluntary act and deed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

LIMITED LIABILITY COMPANY ACKNOWLEDGMENT

State of _____)
) SS
_____County)

On this _____ day of _____, 20____, before me a Notary Public in and for said county, personally appeared _____, to me personally known, who being by me duly sworn did say that person is _____ of said _____, that (the seal affixed to said instrument is the seal of said OR no seal has been procured by the said) _____, and that said instrument was signed and sealed on behalf of the said _____, by authority of its managers and the said _____ acknowledged the execution of said instrument to be the voluntary act and deed of said _____, by it voluntarily executed.

_____
Notary Public in and for the State of_____
My commission expires _____, 20 _____

CONTRACT ATTACHMENT: ITEM 2 - BID ITEMS AND QUANTITIES

This contract is awarded and executed for completion of the work specified in the contract documents for the bid prices tabulated below as proposed by the Contractor in its proposal submitted in accordance with notice to bidders and notice of public hearing. All quantities are subject to revision by the Jurisdiction. Quantity changes that amount to 20% or less of the amount bid shall not affect the unit bid price.

ITEM NO.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL PRICE
1	2010-C	Clearing and Grubbing	LS	1		
2	2010-D-1	Topsoil, On-site	CY	333		
3	2010-G	Subgrade Preparation	SY	1070		
4	2010-I	Subbase, Modified, 12"	SY	1070		
5	2010-M	Compaction Testing	LS	1		
6	3010-C	Trench Foundation	TON	10		
7	3010-D	Replacement of Unsuitable Backfill Material	CY	38		
8	3010-F	Trench Compaction Testing	LS	1		
9	4010-A-2	Sanitary Sewer Gravity Main, Trenchless, HDPE, 12"	LF	356		
10	4010-C-2	Sanitary Sewer Force Main, Trenchless, 8"	LF	2810		
11	4010-G	Sewage Air Release Valve and Pit	EA	1		
12	4050-G	Bypass Pumping	LS	1		
13	5020-C	Fire Hydrant Assembly	EA	1		
14	5020-J	Fire Hydrant Assembly Removal	EA	1		
15	6010-A	Sanitary Sewer Manhole, 48", Depth: 10'-15'	EA	2		
16	6010-A	Sanitary Sewer Manhole, 48", Depth: 15'-20'	EA	1		
17	6010-H	Remove Manhole	EA	3		
18	7010-A	Pavement, PCC, 7"	SY	964		
19	7030-A	Removal of Sidewalk	SY	85		
20	7030-E	Sidewalk, PCC, 4"	SY	54		
21	7030-E	Sidewalk, PCC, 6"	SY	31		
22	7030-G	Detectable Warning	SF	64		
23	7040-A	Full Depth Patches, PCC	SY	120		
24	7040-A	Full Depth Patches, HMA	SY	100		
25	7040-H	Pavement Removal	SY	964		
26	7040-999-A	Removal of Flume	LS	1		
27	8020-B	Painted Pavement Markings, Solvent/Waterborne	STA	1.80		
28	8030-A	Temporary Traffic Control	LS	1		
29	9010-B	Hydraulic Seeding, Seeding, Fertilizing, and Mulching	AC	0.31		
30	9040-A-2	SWPPP, Management	LS	1		
31	9040-D-1	Filter Sock, 12"	LF	850		

ITEM NO.	ITEM CODE	ITEM	UNIT	ESTIMATED QUANTITIES	UNIT PRICE	TOTAL PRICE
32	9040-D-2	Filter Socks, Removal	LF	850		
33	9040-T-1	Inlet Protection Device, Drop-in	EA	2		
34	9040-T-2	Inlet Protection Device, Maintenance	EA	2		
35	11,020-A	Mobilization	LS	1		
36	11,050-A	Concrete Washout	LS	1	-	

TOTAL CONSTRUCTION COSTS:_____ Dollars
(Amount in Words)

TOTAL CONSTRUCTION COSTS:_____ Dollars
(Amount in Figures)

SURETY BOND NO. _____

PERFORMANCE, PAYMENT, AND MAINTENANCE BOND

KNOW ALL BY THESE PRESENTS:

That we, _____, as Principal (hereinafter the "Contractor" or "Principal" and _____, as Surety are held and firmly bound unto _____ , as Obligee (hereinafter referred to as "the Jurisdiction"), and to all persons who may be injured by any breach of any of the conditions of this Bond in the penal sum of _____ dollars ($_____), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, legal representatives and assigns, jointly or severally, firmly by these presents.

The conditions of the above obligations are such that whereas said Contractor entered into a contract with the Jurisdiction, bearing date the _____ day of _____, _____, hereinafter the "Contract") wherein said Contractor undertakes and agrees to construct the following described improvements:

The project generally includes furnishing all labor, material, and equipment necessary for the construction and installation of 8" force main, 12" sanitary sewer, pipe bursting 12" sanitary sewer 12" water main, street replacement, site restoration, and other miscellaneous items.

and to faithfully perform all the terms and requirements of said Contract within the time therein specified, in a good and workmanlike manner, and in accordance with the Contract Documents. Provided, however, that one year after the date of acceptance as complete of the work under the above referenced Contract, the maintenance portion of this Bond shall continue in force but the penal sum for maintenance shall be reduced to the sum of _____DOLLARS ($_____), which is the cost associated with those items shown on the proposal and in the Contract that require a maintenance bond period in excess of one year.

It is expressly understood and agreed by the Contractor and Surety in this bond that the following provisions are a part of this Bond and are binding upon said Contractor and Surety, to-wit:

1. PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill, and abide by each and every covenant, condition, and part of said Contract and Contract Documents, by reference made a part hereof, for the above referenced improvements, and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor's default of failure to perform as required. The Contractor shall also be responsible for the default or failure to perform as required under the Contract and Contract Documents by all its subcontractors, suppliers, agents, or employees furnishing materials or providing labor in the performance of the Contract.

2. PAYMENT: The Contractor and the Surety on this Bond hereby agreed to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract on account of which this Bond is given, including but not limited to claims for all amounts due for labor, materials, lubricants, oil, gasoline, repairs on machinery, equipment, and tools, consumed or used by the Contractor or any subcontractor, wherein the same are not satisfied out of the portion of the contract price the Jurisdiction is required to retain until completion of the improvement, but the Contractor and Surety shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Chapter 573 of the Iowa Code, which by this reference is made a part hereof as though fully set out herein.

3. MAINTENANCE: The Contractor and the Surety on this Bond hereby agree, at their own expense:

   A. To remedy any and all defects that may develop in or result from work to be performed under the Contract within the period of __2____ year (s) from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work;

   B. To keep all work in continuous good repair; and

   C. To pay the Jurisdiction's reasonable costs of monitoring and inspection to assure that any defects are remedied, and to repay the Jurisdiction all outlay and expense incurred as a result of Contractor's and Surety's failure to remedy any defect as required by this section.

4. GENERAL: Every Surety on this Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

   A. To consent without notice to any extension of time to the Contractor in which to perform the Contract;

   B. To consent without notice to any change in the Contract or Contract Documents, which thereby increases the total contract price and the penal sum of this bond, provided that all such changes do not, in the aggregate, involve an increase of more than 20% of the total contract price, and that this bond shall then be released as to such excess increase; and

   C. To consent without notice that this Bond shall remain in full force and effect until the Contract is completed, whether completed within the specified contract period, within an extension thereof, or within a period of time after the contract period has elapsed and the liquidated damage penalty is being charged against the Contractor.

   D. That no provision of this Bond or of any other contract shall be valid that limits to less that five years after the acceptance of the work under the Contract the right to sue on this Bond.

   E. That as used herein, the phrase "all outlay and expense" is not to be limited in any way, but shall include the actual and reasonable costs and expenses incurred by the Jurisdiction including interest, benefits, and overhead where applicable. Accordingly, "all outlay and expense" would include but not be limited to all contract or employee expense, all equipment usage or rental, materials, testing, outside experts, attorneys fees (including overhead expenses of the Jurisdiction's staff attorneys), and all costs and expenses of litigation as they are incurred by the Jurisdiction. It is intended the Contractor and Surety will defend and indemnify the Jurisdiction on all claims made against the Jurisdiction on account of Contractor's failure to perform as required in the Contract and Contract Documents, that all agreements and promises set forth in the Contract and Contract Documents, in approved change orders, and in this Bond will be fulfilled, and that the Jurisdiction will be fully indemnified so that it will be put into the position it would have been in had the Contract been performed in the first instance as required.

   In the event the Jurisdiction incurs any "outlay and expense" in defending itself against any claim as to which the Contractor or Surety should have provided the defense, or in the enforcement of the promises given by the Contractor in the Contract, Contract Documents, or approved change orders, or in the enforcement of the promises given by the Contractor and Surety in this Bond, the Contractor and Surety agree that they will make the Jurisdiction whole for all such outlay and expense, provided that the Surety's obligation under this bond shall not exceed 125% of the penal sum of this bond.

In the event that any actions or proceedings are initiated regarding this Bond, the parties agree that the venue thereof shall be _Jones_ County, State of Iowa. If legal action is required by the Jurisdiction to enforce the provisions of this Bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Contractor and the Surety agree, jointly, and severally, to pay the Jurisdiction all outlay and expense incurred therefor by the Jurisdiction. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers, and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against surety for any amount guaranteed hereunder whether action is brought against the Contractor or whether Contractor is joined in any such action(s) or not.

NOW THEREFORE, the condition of this obligation is such that if said Principal shall faithfully perform all the promises of the Principal, as set forth and provided in the Contract, in the Contract Documents, and in this Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

When a work, term, or phrase is used in this Bond, it shall be interpreted or construed first as defined in this Bond, the Contract, or the Contract Documents; second, if not defined in the Bond, Contract, or Contract Documents, it shall be interpreted or construed as defined in applicable provisions of the Iowa Code; third, if not defined in the Iowa Code, it shall be interpreted or construed according to its generally accepted meaning in the construction industry; and fourth, if it has no generally accepted meaning in the construction industry, it shall be interpreted or construed according to its common or customary usage.

Failure to specify or particularize shall not exclude terms or provisions not mentioned and shall not limit liability hereunder. The Contract and Contract Documents are hereby made a part of this Bond.

Witness our hands, in triplicate, this _____ day of _____, _____.

Surety Countersigned By:

_____
Signature of Agent

_____
Printed Name of Agent

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

FORM APPROVED BY:

_____
Attorney for Jurisdiction

PRINCIPAL:

_____
Contractor

By: _____
Signature

_____
Title

SURETY:

_____
Surety Company

By: _____
Signature Attorney-in-Fact Officer

_____
Printed Name of Attorney-in-Fact Officer

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

NOTE:

1. **All signatures on this performance, payment, and maintenance bond must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted.**
2. **This bond must be sealed with the Surety's raised, embossing seal.**
3. **The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal.**
4. **The name and signature of the Surety's Attorney-in-Fact/Officer entered on this bond must be exactly as listed on the Certificate or Power of Attorney accompanying this bond.**

NOTICE TO PROCEED

PROJECT: _____

OWNER: _____ DATE: _____

TO: Contractor Name: _____

Contractor Address: _____

_____

You are hereby notified to commence work in accordance with the Contract dated _____, _____; on or before _____, and you are to complete the work as follows:

The Contractor shall complete the project no later than ***April 26, 2023***. Should the Contractor fail to fully complete the work in this timeframe, liquidated damages of One Thousand ($1,000.00) per working day will be assessed for work not completed within the designated Contract term(s). Liquidated damages can be assessed against both completion dates.

_____

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____ of

_____ on this the _____ day of _____, 20___.

By: _____

Title: _____

SUPPLEMENTAL GENERAL CONDITIONS

The **2023** edition of the Iowa Statewide Urban Design and Specifications (SUDAS) are applicable to this project. The purpose of this section is to revise, identify, add, and/or clarify conditions relating to SUDAS Division 1 – General Provisions and Covenants on this project.

1. SUBSTITUTIONS

Whenever a material, article or piece of equipment is identified on the PLANS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality, and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the WORK will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

1.01 – PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product fully meeting those standards, requirements, and description.

B. Products Specified by Naming One or More Manufacturers followed by words indicating no substitutions: No options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.02 – SUBSTITUTIONS

A. Substitutions may be considered when:

1. Product becomes unavailable through no fault of the Contractor.

2. Contractor feels substitute Product will meet or exceed specified in function and quality.

B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents. Any deviations from the specifications shall be clearly defined within the submittal.

C. A request constitutes a representation that the Contractor:

1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.

2. Will provide the same warranty for the Substitution as for the specified Product.

3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to Owner.

4. Waives claims for additional costs or time extension, which may subsequently become apparent.

5. Will reimburse Owner for charges of Engineer for evaluation of each proposed substitution.

6. Will reimburse Owner for review and redesign services by the Engineer.

D. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

E. Submittal Procedure:

1. Submit two (2) copies of request for Substitutions for consideration. Limit each request to one proposed Substitution.

2. Approval of a substitution does not guarantee the acceptance of a product after awarded. The Engineer reserves the right to reject any substitutions that does not meet the requirements of the contract documents.

3. The contractor may submit other manufacturer's equipment for consideration as an alternative to the equipment specified. To qualify alternate equipment, the contractor must submit the request to the Engineer at least 15 days prior to the bid date.

4. Drawings, specifications, and product literature with adequate detail to determine that what is proposed will meet the requirements of the plans and specifications. Submit Shop Drawings, Product data, and certified test results attesting to the proposed Product equivalence.

5. Form of Acceptance: Addendum prior to bid. Substitutions and alternate equipment not prequalified will not be accepted.

2. PROJECT CLOSEOUT

Following completion of the WORK but prior to final acceptance and payment, the CONTRACTOR shall submit the following:

A. Lien Waivers from all suppliers, subcontractors and others with lien rights against the Owner.

3. OWNER'S RIGHT TO SALVAGE

The OWNER may designate and have rights to any material herein demolished by the CONTRACTOR.

SPECIAL PROVISIONS

The 2023 edition of the Iowa Statewide Urban Design and Specifications (SUDAS), and SUDAS details, are applicable to this project. The purpose of this section is to revise, identify, add, and/or clarify conditions relating to specific bid items on this project.

Division 1 – General Provisions and Covenants

Section 1050: Control of Work

MODIFY 1.06 – Conflict Avoidance

A. Expose possible conflicts, such as utility lines and drainage structures. Verify elevations of each and verify clearances for proposed construction prior to completing submittals. Report any discrepancies to the Engineer for evaluation and potential modification. Failure of the contractor to verify elevations and locations of conflicts prior to completing submittals shall be deemed a waiver by the Contractor of all claims for additional compensation for modifications or rework necessary to complete the project.

ADD 1.16 – Value Engineering

A. The Contractor may submit written value engineering proposals to the Engineer, for changing the plans, specifications, or other contract requirements. The purpose of this provision is to encourage the Contractor to suggest alternative lower cost or more efficient construction. The changes shall not impair the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards.

B. Value Engineering Proposals shall contain the following information:

1. Existing requirements and proposed changes;
2. Contract requirements that must be changed if the value engineering proposal is adopted;
3. A detailed cost estimate of performing the work as stipulated and as proposed;
4. The time within which the Engineer must make a decision thereon;
5. The items of work affected by the proposed changes, including quantity variations

C. The provisions of this article do not require the Engineer to consider any value engineering proposal that is submitted.

D. If a value engineering proposal is similar to a change in the contract documents under consideration by the Contracting Authority for the project at the time the value engineering proposal is submitted, or if the value engineering proposal is based on or similar to standard specifications, special provisions, or plans adopted by the Contracting Authority, the Engineer will not accept the value engineering proposal.

E. The Contractor shall continue to perform the work in accordance with contract requirements until a change order incorporating the value engineering proposal has been processed. If a change order has not been processed by the date on which the Contractor's value engineering proposal specifies that a decision thereon should be made, or such other date as the Contractor may subsequently have specified in writing, the proposal shall be rejected.

F. The Contracting Authority will not be liable to the Contractor for failure to accept or act upon any value engineering proposal submitted or for any delays to the work attributable to any such value engineering proposal.

G. The Engineer shall be the sole judge of the acceptability of a value engineering proposal and of the estimated net savings in construction costs from adoption of all or any part of such value engineering proposal. In determining the estimated net savings, the right is reserved to disregard the contract bid prices if, in the judgment of the Engineer, the prices do not represent a fair measure of the value of work to be performed or to be deleted.

H. The Contracting Authority reserves the right to require the Contractor to share in the Contracting Authority's costs of investigating a value engineering proposal. Where this condition is imposed, the Contractor shall indicate acceptance in writing, and acceptance may constitute authority for the Contracting Authority to deduct up to 50% of the investigation costs from any money due to the Contractor resulting from the change.

I. If the Contractor's value engineering proposal is accepted in whole or in part, such acceptance will be by change order. The change order will incorporate the changes in the contract documents which are necessary to permit the value engineering proposal to be put into effect, and will include any conditions upon which the Contracting Authority's approval is based. The change order shall also set forth the estimated net savings in the cost of performing the work attributable to the value engineering proposal effectuated by the change order, and will further provide that the Contractor be paid 50% of the estimated net savings amount.

J. Acceptance of the value engineering proposal and performance of the work will not extend the time of completion of the contract, unless specifically provided for in the change order authorizing the proposal.

K. The amount specified to be paid to the Contractor in the change order for a value engineering proposal shall constitute full compensation to the Contractor for the proposal and performance of the work.

L. The Contracting Authority reserves the right to adopt a value engineering proposal for general use on contracts administered by the Contracting Authority when it determines that a value engineering proposal is suitable for application to other contracts. When an accepted value engineering proposal is adopted for general use, only the Contractor who first submitted this value engineering proposal will be eligible for compensation according to this article, and in that case, only on those contracts awarded to the same Contractor prior to submission of the accepted value engineering proposal and on which such value engineering proposal is also submitted and accepted. Value engineering proposals identical or similar to previously submitted value engineering proposals will be eligible for consideration and compensation under provisions of this article if those value engineering proposals were not adopted for general application to other contracts administered by the Contracting Authority. Subject to the provisions contained herein, the State or any other public agency will have the right to use all or any part of any submitted value engineering proposal without obligation or compensation of any kind to the Contractor.

M. The Contractor is encouraged to include the provisions of this article in contracts with subcontractors. All value engineering proposals by subcontractors shall be submitted by the prime contractor.

ALLENDER BUTZKE ENGINEERS INC.
GEOTECHNICAL • ENVIRONMENTAL • CONSTRUCTION Q. C.

JANUARY 28, 2022 **PN 211501**

GEOTECHNICAL EXPLORATION

ANAMOSA STREETS RECONSTRUCTION
E 2ND ST & S LINN ST,
N DIVISION ST – E MAIN ST TO OLD DUBUQUE RD
ANAMOSA, IOWA

PERFORMED FOR

SNYDER & ASSOCIATES, INC.
5005 BOWLING ST SW, SUITE A
CEDAR RAPIDS, IOWA 52404

3660 109TH STREET • URBANDALE, IOWA 50322 • PHONE 515-252-1885 • FAX 515-252-1888

ALLENDER BUTZKE ENGINEERS INC.
GEOTECHNICAL • ENVIRONMENTAL • CONSTRUCTION Q. C.

January 28, 2022

Snyder & Associates, Inc.
5005 Bowling Street SW, Suite A
Cedar Rapids, Iowa 52404

Attn: Tim Wallace, P.E.

RE: Geotechnical Exploration
Anamosa Streets Reconstruction
E 2nd St & S Linn St,
N Division St – E Main St to Old Dubuque Rd
Anamosa, Iowa
PN 211501

Dear Mr. Wallace:

As authorized by Lindsay Beaman, Business Unit Leader of Snyder & Associates, Inc., Allender Butzke Engineers Inc. (ABE) has completed the geotechnical exploration for the above referenced project. The geotechnical exploration was conducted to evaluate physical characteristics of subsurface conditions with respect to design and construction of this project. The enclosed report summarizes the project characteristics as we understand them, presents the findings of the borings and laboratory tests, discusses the observed subsurface conditions, and provides geotechnical engineering recommendations for this project.

We appreciate the opportunity to provide our geotechnical engineering services for this project. If you have any questions or need further assistance, please contact us at your convenience. We are also staffed and equipped to provide construction testing and inspection services on this project.

Respectfully submitted,
ALLENDER BUTZKE ENGINEERS INC.

Anton J. Schneider Jr., P.E.
Project Engineer

David Logemann, P.E.
Senior Principal Engineer

LICENSED PROFESSIONAL ENGINEER
ANTON J. SCHNEIDER, JR.
24434
IOWA

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.

1/28/2022

Anton J. Schneider Jr., P.E. License Number 24434 Date
My license renewal date is December 31, 2023.
Pages covered by this seal: All Pages.

1 PC and Email Above

GEOTECHNICAL EXPLORATION

ANAMOSA STREETS RECONSTRUCTION
E 2ND ST & S LINN ST,
N DIVISION ST – E MAIN ST TO OLD DUBUQUE RD
ANAMOSA, IOWA

PN 211501

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GEOTECHNICAL EXPLORATION

ANAMOSA STREETS RECONSTRUCTION
E 2ND ST & S LINN ST,
N DIVISION ST – E MAIN ST TO OLD DUBUQUE RD
ANAMOSA, IOWA

PN 211501

January 28, 2022

PROJECT INFORMATION

The City of Anamosa, with design assistance from Snyder & Associates (Snyder), is planning Phase 2 of their 2nd Street Lift Station and Sewer System Improvements project, which will require installation and/or replacement of storm sewer and force mains along E 2nd, S Linn, and N Division Streets in Anamosa, Iowa. The 8-inch force main will be installed below E 2nd Street and S Linn Street, while the new 12-inch sanitary sewer will replace the existing 8-inch sanitary behind the existing curb of S Linn Street. A new 12-inch sanitary will replace the existing 10-inch sanitary below N Division Street from E Main St to Old Dubuque Road. Therefore, Snyder is planning complete pavement reconstruction of the E 2nd Street and S Linn Street intersection, and for the entire stretch of N Division Street from the E Main Street intersection to and through the Old Dubuque Road intersection, as depicted in the following Figure Nos. 1 and 2. We assume that the new road profiles will match the existing profiles.

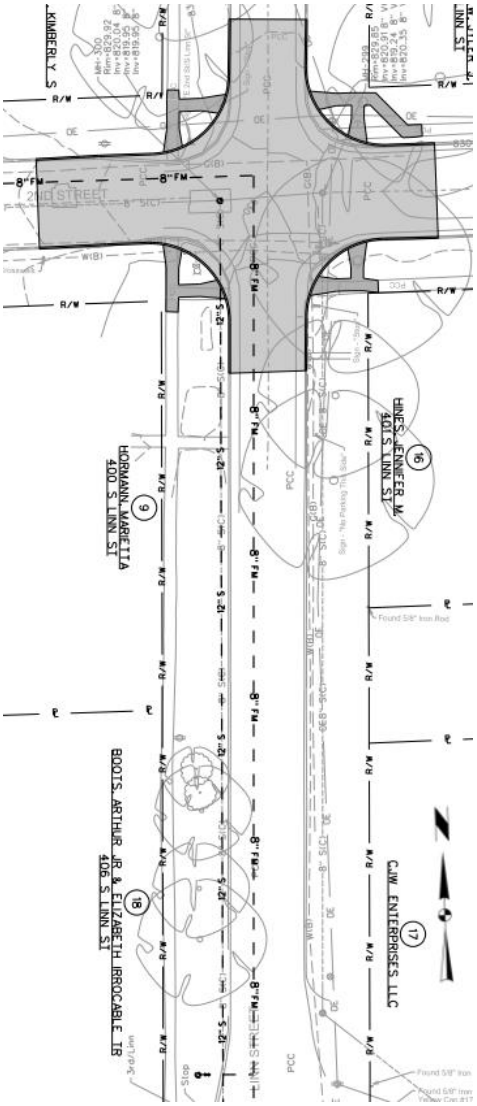


Figure No. 1 – E 2nd St & S Linn St Project Extents Sanitary Plan and Profile (Snyder)

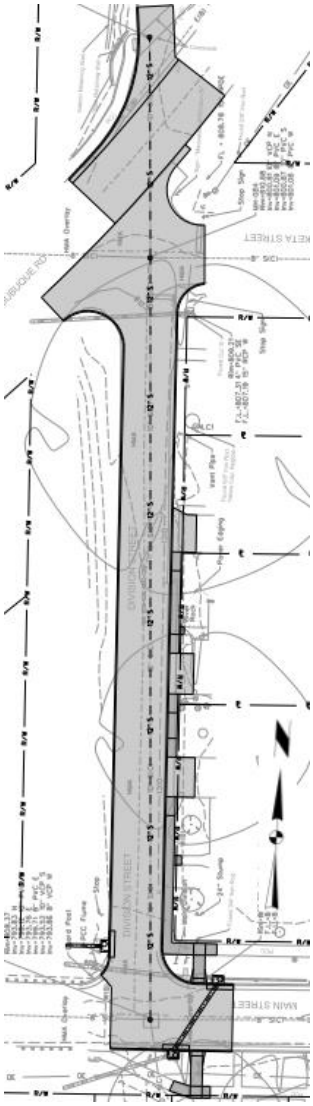


Figure No. 2 – N Division St Project Extents Sanitary Plan and Profile (Snyder)

The purpose of this exploration was to measure and observe the existing pavement type/thickness, explore the subgrade and utility-depth soils to determine geotechnical characteristics, and provide recommendations for complete pavement reconstruction with hot mix asphalt (HMA) and/or Portland cement concrete (PCC).

FIELD EXPLORATION

Three borings and three pavement cores were conducted at this site through the existing streets to depths of 15 and 3 feet, respectively, below existing grades on January 3, 2022. Pavement thicknesses were measured at each of the boring/core locations and Dynamic Cone Penetrometer (DCP) testing and soil hand probing of subgrade soils were also conducted at the 3 core locations. Approximate locations of the borings are shown on the enclosed Site Plan and were marked by Snyder prior to the field exploration. The original marked locations for Core No. 1 and Boring No. 1 were swapped in the field due to trees overhead. The surface elevations for the borings and cores, as indicated on the enclosed Boring Logs, were measured and provided by Snyder. Methods of drilling, sampling, standard laboratory testing, and classifying of subsurface materials are discussed in the Boring Log Description/Legend pages of the Appendix.

PAVEMENT AND SUBSURFACE CONDITIONS

Existing Pavement Thicknesses

The following Table A provides a summary of the pavement thickness measurements obtained at each boring location and the average California Bearing Ratio (CBR) for the subgrade at the core locations where DCP tests were performed.

TABLE A
PAVEMENT THICKNESSES AND CBR SUMMARY

Location No.	HMA (inches) [1,2]	PCC (inches) [1,2]	Crushed Rock Subbase (inches)	Average CBR[3] [below assumed frost depth]
C1	3.0	--	--	14 [11]
B1	--	7+/-	8	--
C2	--	6.25	--	19 [6]
B2	4+/-	--	5	--
C3	2.0	--	10	89 [42]
B3	3+/-	--	--	--

1. Core samples measured in lab to nearest ¼-inch.
2. Pavement thicknesses for borings measured in field to nearest ½-inch.
3. Suspect frozen subbase and subgrade for portions of DCP testing depth.

Soil Profile

Detailed descriptions of soils encountered by this exploration are provided on the Boring Logs enclosed in the Appendix. The Profile of Borings (Plate A-1) presented in the Appendix depicts the relative deposit elevations in the borings. Unless otherwise indicated, the depths of soil stratum and groundwater levels are referenced from below the top of existing ground at the individual boring locations at the time of drilling.

In Boring Nos. 1, 2, and Core No. 3, a subbase consisting of crushed rock with fines was encountered underlying the pavement, and measuring 5 to 10 inches thick. A sand subgrade with varying amounts of silt and clay (SP-SM, SC, SM, SC-SM) was encountered in each of the cores and borings, with the exception of Boring No. 2 where sandy, silty clay (CL-ML) fill with trace amounts of gravel and brick was encountered under the subbase. The upper loose and damp to moist sand in the cores/borings extended to depths of 2 to 9 feet. Core No. 1 terminated in the upper sand near a depth of 3 feet. The moist to very moist and soft to stiff sandy clay (CL) or sandy, silty clay (CL-ML) in the borings encountered underlying the upper sand extended to depths of 5.5 to 12 feet, while Core Nos. 2 and 3 terminated in sandy lean clay (CL) near depths of 3 feet. Damp to saturated and loose to medium dense sand with varying silt and clay content (SP-SM, SM, SC) was encountered underlying the clay in the three borings. These borings each terminated in the deeper sand near depths of 15 feet.

Groundwater Level Observations

The borings were monitored during and shortly after drilling operations to detect moisture seepage and groundwater accumulation. The results of our water level observations are noted on the Boring Logs enclosed in the Appendix.

During drilling operations, saturated sand was noted near a depth of 12 feet in Boring No. 3. Groundwater accumulation was observed near a depth of 13.5 feet in the same boring at the completion of drilling operations, while no groundwater was observed in the remaining borings. It should be recognized that these short-term water levels are not necessarily a true indication of the groundwater table. Long-term observations would be necessary to accurately define the groundwater variations at this site.

Fluctuation of groundwater levels can occur due to seasonal variations in the amount of rainfall, surface drainage, subsurface drainage, site topography, irrigation practices, ground cover (pavement or vegetation), and stage level of nearby Fawn Creek tributary near N Division Street.

ANALYSIS AND RECOMMENDATIONS

Site Preparation and Demolition

Preparation for utility installation and pavement reconstruction of the streets will first include demolition and complete removal of the existing pavement sections. We recommend that old utilities to be replaced be completely removed and be replaced with engineered compacted fill which meets or exceeds the *Class I Construction Application* requirement in Table A in the following *Excavation Stability and Backfill* section. Any abandoned utility lines should be completely removed or capped and grouted full. Construction debris removed from this site should be properly disposed in a construction/demolition landfill or recycling facility.

Excavation Stability and Backfill

Boring information indicates that utility excavations in the on-site soils to depths of 10 feet or less below the existing streets will encounter both granular and cohesive soils. If excavations encounter only cohesive soils with no wet sand seams or layers, it is expected that water seepage, if encountered, can be controlled by permitting it to drain into temporary construction sumps and be pumped outside the perimeter of the excavations. More extensive dewatering such as sand points and wells may be required for excavations which extend down into water bearing sand layers (12 feet or more at the time of this exploration). We recommend that prior to excavating in saturated sand, water levels be maintained 2 feet or more below the bottom of excavations in saturated sand to prevent upward seepage forces which could reduce subgrade support.

The extent of bracing or sloping of open cut excavations will be dependent upon depth of cut, groundwater conditions, soils encountered, length of time the excavation will be open, area available for excavation and local governing regulations. Predominately cohesive soils may appear to stand nearly vertical in shallow excavations for short periods of time. However, soil creep, surcharge loads, precipitation, subsurface moisture seepage, construction activity vibrations and other factors may cause these soils to cave within an unpredictable period of time. Excavations encountering sand and/or loose fill may tend to cave rapidly, especially if water is flowing through them. Unstable granular excavation walls may also cause surrounding cohesive soils to become unstable. Temporary shoring, flattening of the excavation slopes or use of trench boxes may be required to maintain a safe condition. Determining the appropriate OSHA classifications of the soil types encountered and implementing the required provisions for sloping, shoring, and bracing of excavations throughout the project during construction are the responsibility of the contractor per OSHA.

The recommended degrees of compaction guidelines for backfill, depending upon anticipated future use over the area, are provided in the following Table B. For cohesive soils, moisture contents within a range of -1 to +4 percent of the material's optimum moisture content are necessary to achieve the desired fill qualities.

TABLE B
RECOMMENDED DEGREE OF COMPACTION GUIDELINES

Construction Application	Standard Proctor (ASTM D698) Cohesive Soil	Standard Proctor (ASTM D698) Cohesionless Soil	*Relative Density (D4253 & D4254) Cohesionless Soil
Class 1	95%	98%	70%
Class 2	90%	93%	45%
Class 3	85%	88%	20%

Class 1 - Subgrade for building foundations, slabs-on-grade, pavements and other critical backfill areas.
Class 2 - Backfill adjacent to structures not supporting other structures - Minor subsidence possible.
Class 3 - Backfill in non-critical areas - Moderate subsidence possible.

*Use Relative Density technique (ASTM D4253 & D4254) where Standard Proctor technique (ASTM D698) does not result in a definable maximum dry density and optimum moisture content.

The on-site soils can be excavated utilizing conventional excavation equipment. Granular soils can generally be suitably compacted with vibratory compaction equipment whereas cohesive soils are more suitable for compaction with sheepsfoot or pneumatic type compactors. Care should be exercised in properly backfilling and compacting all trenches, especially utility trenches under or adjacent to the pavement. Loosely compacted or sand backfilled trenches can collect surface water and inadvertently direct it to the pavement subgrade and cause softening of the soil as well as increasing frost heave potential.

At the time of this geotechnical exploration, moisture contents of the on-site clay were generally near the recommended moisture content range for compaction. Depending upon precipitation levels prior to and during construction, adjustment of soil moisture content may be required in order to lower or raise the moisture to within the recommended moisture content range. Discing and aeration is generally the most economical method to lower soil moisture content, if climatic conditions allow. Chemical modification of very moist soils with quicklime or Class C fly ash can be accomplished if construction scheduling does not permit field drying. However, since these chemicals are very fine (powder) and subject to dusting, chemical stabilization methods may

not be preferred in this somewhat confined residential area. Common chemical modification methods may not be reactive when temperatures are near or below 40° Fahrenheit.

Rigid PCC Pavement Thicknesses

Pavement design information for this project was provided by Snyder. The rigid PCC pavement planned for replacing the existing portions of the streets will be constructed on 12 inches of granular subbase with subdrains. Old Dubuque Road, which is to be classified as a major collector, has been determined to be the most critical portion for the design of the replacement pavement with an average annual daily traffic (AADT) of up to 2,500 vehicles per day (vpd), truck traffic on the order of 1 percent or less (SUDAS Type B traffic assumed by ABE), and an annual growth rate of 1 percent. For the remaining streets, which would be classified as local roads, a lower AADT of 1,000 vpd was assumed with similar percent truck traffic and growth rate. Assuming 100% design lane distribution for the Old Dubuque Road and remaining streets scenarios, the total calculated equivalent single axle loads (ESALs) values are approximately 530,000 and 211,000 ESALs, respectively, for 50-year design lives, as specified by SUDAS for rigid pavement design. Pavement analyses were conducted using these ESALs values for rigid PCC pavements and the following parameters, per SUDAS (2019).

1) Reliability – 88 percent (major collector road)
   80 percent (local road)
2) Standard Deviation – 0.35 (rigid pavement)
3) Flexural Strength – 580 psi (4,000 psi concrete)
4) Load Transfer Coefficient – 2.7 (reinforced PCC, doweled joints with edge support)
   3.0 (unreinforced PCC with edge support)
5) Modulus of Subgrade Reaction – 200 pci (12-inch granular subbase)
6) Coefficient of Drainage – 1.1 (subbase with drains)
7) Initial Serviceability Index – 4.5
8) Terminal Serviceability Index – 2.25 (major collector road)
   2.0 (local road)

Based on these design parameters and the provided traffic volumes, we calculated reinforced and unreinforced pavement thicknesses for both Old Dubuque Road (major collector) and all remaining streets (local) of less than 6 inches. However, as specified in the SUDAS Design Guide, we recommend that both collectors (Old Dubuque Road) and local roads (remaining streets) be designed for a minimum 6-inch thickness. Furthermore, for Old Dubuque Road, we recommend reinforced concrete (doweled/load transfer joints) be utilized. Unreinforced concrete could be utilized for the remaining streets unless specified otherwise by local jurisdictions.

These pavement thicknesses are considered to be typical and would require periodic maintenance. This maintenance would consist of sealing cracks and replacement of isolated distressed areas. Thicker pavement sections would reduce maintenance and increase the pavement service life. Likewise, thinner sections would be expected to have a shorter service life that still may satisfy particular project needs but may require more maintenance. Other criteria which influence pavement service life include surface drainage, subsurface drainage, paving material quality, reinforcement, and joint design. Construction procedures involving placement, finishing, curing, jointing and weather protection can significantly impact pavement performance.

Flexible HMA Pavement Thickness

As previously discussed in the *Rigid PCC Pavement Thickness* section, Snyder has indicated that the new roads will be constructed on 12 inches of granular subbase with subdrains, and that Old Dubuque Road (major collector) and the remaining streets (local roads) can be designed for AADT's of 2,500 and 1,000 vpd, respectively, with 1 percent trucks (SUDAS Type B truck mix) and annual growth rates of 1 percent. Snyder has indicated that a 30-year design life would be appropriate for new flexible HMA streets. Assuming 100% design lane distribution for the Old Dubuque Road and remaining streets scenarios, the total calculated equivalent single axle loads (ESALs) values are approximately 216,000 and 86,400 ESALs, respectively. Pavement analyses were conducted using these ESALs values for the flexible HMA pavements and the following parameters, per SUDAS (2019).

9) Reliability – 88 percent (major collector road)
   80 percent (local road)
10) Standard Deviation – 0.45 (flexible pavement)
11) Modulus of Subgrade Reaction – 125 pci (granular subgrade, CBR = 5)
12) Coefficient of Drainage – 1.1 (subbase with drains)
13) Initial Serviceability Index – 4.1
14) Terminal Serviceability Index – 2.25 (major collector road)
    2.0 (local road)

Based on these design parameters and the provided traffic volumes, we calculated flexible pavement thicknesses, over 12 inches of granular subbase with subdrains, for Old Dubuque Road of 2.25 inches and less than 2 inches for all remaining streets. However, as specified in *Table 5F-1.05: Layer Coefficients* within the SUDAS Design Guide, HMA base courses must be designed for a minimum thickness of 2 inches with minimum surface thicknesses of 1.5 inches. Furthermore, the SUDAS Design Guide also indicates that overall thicknesses for flexible HMA pavements are not typically less than 6 inches, unless specified or approved by the local jurisdiction.

These pavement thicknesses are considered to be typical and would require periodic maintenance. This maintenance would consist of sealing cracks and replacement of isolated distressed areas. Thicker pavement sections would reduce maintenance and increase the pavement service life. Likewise, thinner sections would be expected to have a shorter service life that still may satisfy particular project needs but may require more maintenance. Other criteria which influence pavement service life include surface drainage, subsurface drainage, paving material quality, reinforcement, and joint design. Construction procedures involving placement, finishing, curing, jointing and weather protection can significantly impact pavement performance.

Pavement Subgrade Preparation

Uniform subgrade support is critical in pavement performance. We recommend that the prepared subgrade depth be at least 1 foot deep after fine grading or trimming and extend 2 feet beyond the edge of the pavements, if possible.

The results of the Grain Size Analysis and Atterberg Limit tests performed on a representative sample of sand obtained from Boring No. 1 and cohesive fill obtained from Boring No. 2 are presented in the following Table C and enclosed in the Appendix (Figures GS-1). The test results indicate the silty, clayey sand (SC-SM) and sandy, silty clay (CL-ML) fill with trace gravel are classified as AASTHO A-2-4 and A-2 soil types, respectively, with group indices of 0.

TABLE C
LABORATORY TEST RESULTS

Soil Type	Boring No.	Depth (ft)	Liquid Limit/ Plasticity Index	AASHTO Classification	USCS Classification
Sand	1	1.5 – 3.5	19/4	A-2-4(0)	SC-SM
Fill	2	1 – 3	25/4	A-4(0)	CL-ML

Subgrade preparation to one-foot depths for the cohesive silty clay (CL-ML) or lean clay (CL) fill soils is generally adequate if moisture conditioned and well compacted. However, low clay content soils, such as the sand (SP-SM, SC, SM, SC-SM), may not be stable under repeated heavy construction vehicle loads, which could require other stabilization measures for paving purposes only. Furthermore, these sandy soils on-site are highly frost susceptible, which could subject pavements to differential frost heave. Therefore, to reduce the potential differential frost heave and provide a stable base for paving operations, we recommend that the new pavements be supported by a 12-inch-thick granular (rock) subbase and/or stabilization of the subgrade with Portland cement or

Class C fly ash. As previously discussed in the *Excavation Stability and Backfill* section, chemical stabilization methods, which can be subject to dusting, may not be preferred in this somewhat confined residential area. If a granular subbase with drainage is planned below the pavement, this could also provide more consistent support for the new pavement.

Depending upon conditions encountered at the time of construction, it may be necessary to moisture condition existing soils to achieve the recommended moisture content range of -1 to +4 percent of optimum moisture content. Soils compacted closer to optimum moisture content will exhibit greater stability under construction traffic loading. Suitable soils compacted to a minimum of 98 percent of maximum dry density determined by ASTM D698 would provide a design support capability equivalent to a CBR value of 5 or a modulus of subgrade reaction value of 125 pounds per cubic inch. Subgrade compaction, moisture content and depth should be verified by an ABE representative.

The prepared subgrade should be proof-rolled to delineate zones of soft or loose soils present near the surface which may require additional removal or compaction. The subgrade support should be relatively uniform with no sudden changes in the degree of support to provide satisfactory pavement performance. Transition between cut-and-fill areas, varying soil types, and improper subgrade preparation such as inadequate proof-rolling, compaction, and removal of vegetation can result in non-uniform subgrade support. The subgrade should be prepared shortly before paving operations commence and be maintained in suitable condition until paved. Damages caused by construction traffic, even if it has passed a proof-roll test, or deterioration due to adverse weather are to be repaired prior to paving.

It should be noted that new pavements can still be subject to deterioration by frost action and subgrade softening by water when curb backfill is not placed or subsides and does not drain well prior to the pavement's first winter season. This, along with subsided utility trench backfill adjacent to new streets, traps water next to the curb. This extra source of water along the curb contributes to more frost heave on the outer pavement edges. The non-uniform frost heave under the entire pavement also causes cracking, as does non-uniform support during the spring freeze-thaw cycle. Therefore, it is important to not only properly compact beneath the pavement but also adjacent to the back of the curb to enhance surface drainage and improve pavement performance especially in the early life of the pavement.

Pavement Subsurface Drainage

Based on the anticipated seasonal high groundwater levels at this site, it is our opinion that subsurface pavement drainage would not be necessary to lower groundwater levels, but would be beneficial for improving effectiveness of the granular subbase and extending pavement design life.

Subsurface drainage is recommended when a granular subbase such as IDOT 4121 Granular Subbase or 4123 Modified Subbase is utilized beneath the pavement to provide an outlet for water that flows into the rock base which could otherwise cause subgrade softening and pavement deterioration over time. The permeable base should be hydraulically connected to the free draining granular backfill in the edge drains. Subsurface drainage may be accomplished with installation of drain lines similar to the Iowa Department of Transportation detail DR-303 (formerly RF-19C) or other comparable systems.

Subsurface drainage can also be accomplished with "loose jointed" storm sewers to provide intermittent drainage relief of water flowing through clean crushed rock utility line bedding and backfill materials. However, we recommend that all storm sewers, manholes, and drainage pipes that extend through sand layers have fabric wrapped joints to minimize erosion and/or infiltration into the pipes. All drainlines should be sloped to drain to a suitable outlet, such as existing storm sewers.

Frost Heave

Key elements contributing to frost heave including freezing temperatures, available water, and fine-grained frost susceptible soils are generally present at sites in Iowa. As a result, frost heave problems are generally common (and most noticeable) in pavements or sidewalks adjacent to non-frost susceptible elements such as manholes, intakes, and light poles. Frost heave can cause pavement cracks to develop parallel to and several feet from pavement edges. This generally occurs where cleared paved areas exposed to freezing temperatures heave more than adjoining paved areas insulated by piled snow, especially in low-lying areas. Sometimes it is not readily apparent why frost heave problems occur at one location and not at another seemingly similar location.

While it is appropriate to implement measures to reduce frost heave such as replacing frost susceptible soils with less frost susceptible soils, sealing cracks/joints to reduce surface water infiltration, or drainage improvements (surface and subsurface), these measures may simply move the frost heave problem to a different location where preventative measures have not been implemented. Having a smooth transition between heaved and non-heaved areas is desirable, but may be difficult and/or costly to accomplish.

GENERAL

The analyses and recommendations in this report are based in part upon the data obtained from the soil borings performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations which may occur between borings or across

the site. The nature and extent of such variations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

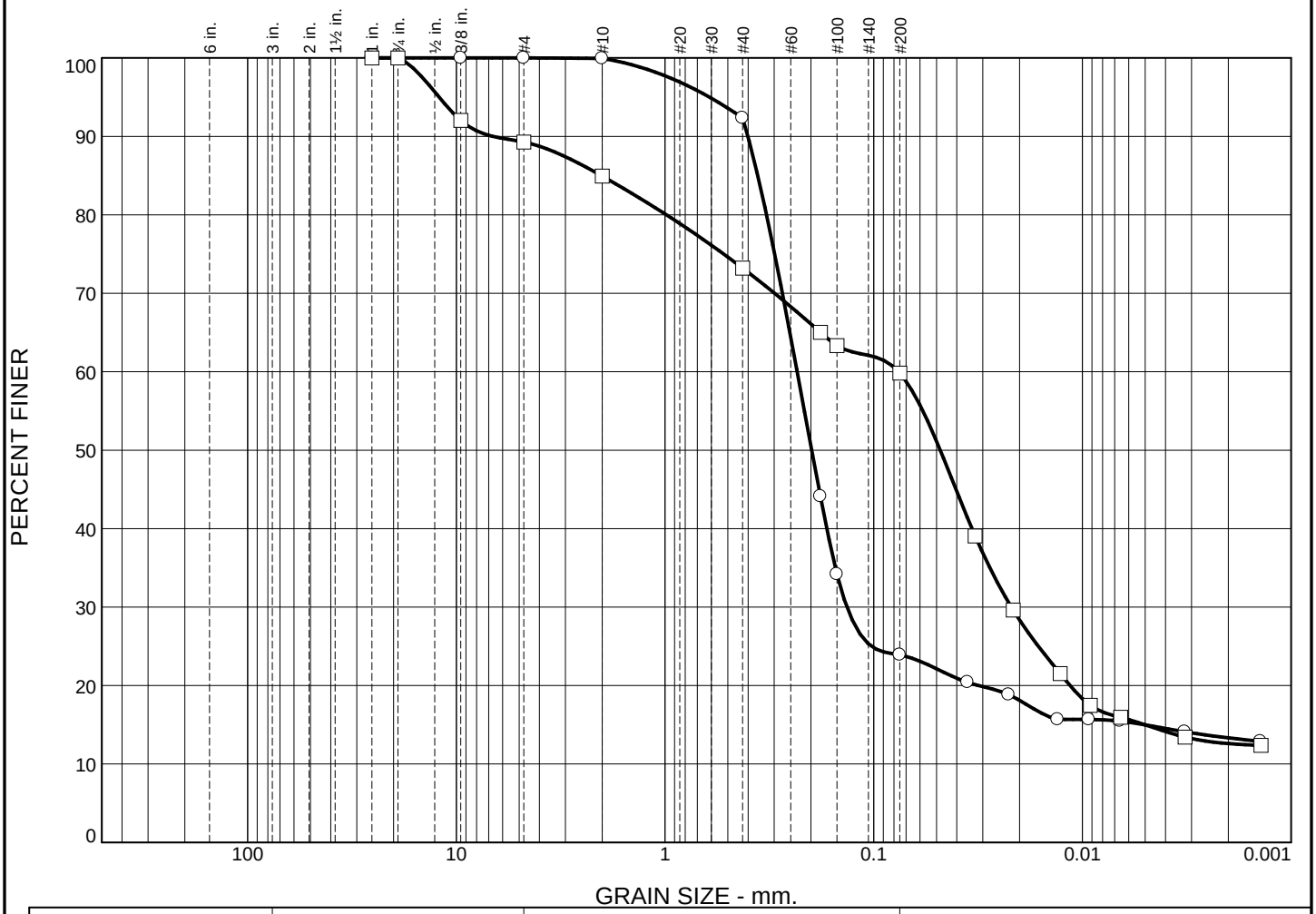
It is recommended that the geotechnical engineer be provided the opportunity to review the plans and specifications so that comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observation during earthwork and foundation construction phases to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, expressed or implied, is made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer.

The scope of our service was not intended to include any environmental assessment or exploration for the presence of hazardous or toxic materials in the soil, surface water, groundwater or air on, below or adjacent to this site.

APPENDIX

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.1	7.6	68.4	10.6	13.3
□	0.0	0.0	10.7	4.4	11.7	13.4	47.2	12.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	19	4	0.3596	0.2328	0.1982	0.1344	0.0050			
□	25	4	2.0199	0.0760	0.0480	0.0219	0.0050			

MATERIAL DESCRIPTION	USCS	AASHTO
○ Brown silty, clayey sand, moist	SC-SM	A-2-4(0)
□ Very dark gray sandy, silty clay, trace gravel, damp	CL-ML	A-4(0)

Project No. 211501 **Client:** Snyder & Associates, Inc.

Project: Anamosa Streets Reconstruction | Anamosa, IA

○ **Location:** Boring No. 1 **Depth:** 1.5' to 3.5'

□ **Location:** Boring No. 2 **Depth:** 1' to 3'

Remarks:

○ Sand

□ Fill

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Figure GS-1

BORING LOG DESCRIPTION/LEGEND

The material types encountered during the drilling operations were recorded on field logs. The profile represented on the Boring Log is based on final classification performed by a geotechnical engineer using the field logs, laboratory observation and testing. The material stratigraphy demarcation lines shown on the Boring Logs indicate changes in soil characteristics, however, actual soil changes or variations may occur as a gradual transition. Soil profile discussion, Log Boring information, water levels and recommendations presented in this report are based upon measured depths below ground levels existing at time of the field exploration, unless otherwise specified.

DRILLING AND SAMPLING

The borings were conducted with either a truck or all-terrain rotary drill rig using the drilling methods indicated on each Boring Log. Soil sampling and/or in-situ testing such as Shelby Tube (ST), split-spoon (SS), drive cone (DC), or core (C) was conducted at depth intervals which were selected in consideration of the characteristics of the proposed construction. Generally undisturbed soil samples are taken at 5 foot depth intervals or change in soil types. Disturbed soil samples from the auger, either jar size or bulk size samples, may be taken at intermediate intervals for the purpose of soil classification or laboratory testing. Borings conducted for soil classification only, will show no designation of sampling although disturbed sampling is performed. Soil samples obtained in the field were identified and sealed for transportation to the laboratory for performance of pertinent physical testing and engineering classification.

Drilling Methods

CFA - Continuous Flight Auger: 4, 6, or 8-inch diameter (ASTM D1452).
RD - Rotary Drilling: Using drilling fluid in cased or uncased boring (ASTM D2113).
HSA - Hollow Stem Auger: 6 or 8-inch diameter, continuous flight auger remains in boring with soil removed from the hollow stem through which undisturbed sampling is conducted.
HA - Hand Auger: 4-inch or less diameter.

Sample Types

ST - Shelby Tube: Thin-walled tube samples of cohesive soils (ASTM D1587).
SS - Split Spoon with 140 lb. manual hammer: Standard penetration test and split-barrel samples (ASTM D1586).
SSA - Split Spoon with 140 lb. automatic hammer: Standard penetration test and split-barrel samples (ASTM D1586).
DC - Drive Cone: Dynamic in-place testing of soil using a 2-inch diameter cone with a 60 degree point driven into the soil for continuous 1-foot intervals in the same manner as Split Spoon, no sample is obtained.
C - Core: Sampling hard soil or bedrock with a diamond core barrel in a rotary drill boring (ASTM D2113).
SPT - Standard Penetration Test: Number of blows required to drive sampler (split spoon or drive cone) into the soil with a 140-pound weight dropping a distance of 30-inches (ASTM D1586), number of blows recorded for each 6-inch interval in an 18-inch (or more) penetration depth, values shown are for each 6-inch interval (if series of number sets are shown) or a total of the last two 6-inch intervals (if only one number is shown) which is commonly referred to as "N" in blows per foot. High resistance is indicated by a high number of blows for a lesser penetration depth listed in inches.
BS - Bulk Sample: Disturbed.
CPT - Cone Penetration Test: Quasi-static in-place testing of soils using a 60 degree cone and friction sleeve which are steadily pushed into the soil and measure skin friction and end bearing (ASTM D3441).

STANDARD LABORATORY TESTING

Representative undisturbed soil samples obtained by the Shelby Tube sampler were tested for moisture content (ASTM D2216), density (dry) and unconfined compressive strength (ASTM D2166) in the laboratory. Results of these tests appear on the respective Boring Logs. Additional soil testing including particle size analysis (ASTM D422) and Atterberg Limits (ASTM D4318) may be conducted, if necessary, to define in more detail pertinent soil characteristics for classification in accordance with the Unified Soil Classification System. Specialized laboratory tests (if conducted) to determine pertinent soil characteristics are discussed in the "Laboratory Testing" section of the report.

WATER LEVEL MEASUREMENT

Water levels indicated on the Boring Logs are the levels measured in the borings at the times indicated. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels is not possible with short term observations.

BORING LOG DESCRIPTION/LEGEND

DESCRIPTIVE SOIL CLASSIFICATION

Soil description is based on the Unified Classification System as outlined in ASTM Designations D-2487 and D-2488. This classification is primarily based upon visual and apparent physical soil characteristics, comparison with other soil samples, and our experience with the soil. Additional laboratory testing may be conducted, if necessary to define in more detail pertinent soil characteristics. The Unified Soil Classification group symbol shown on the boring logs corresponds with the group names listed below. The description includes soil constituents, moisture conditions, color and any other appropriate descriptive terms.

Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name
GW	Well-Graded Gravel	SW	Well-Graded Sand	CL	Lean Clay	CH	Fat Clay
GP	Poorly-Graded Gravel	SP	Poorly-Graded Sand	ML	Silt	MH	Elastic Silt
GM	Silty Gravel	SM	Silty Sand	OL	Organic Clay Organic Silt	OH	Organic Clay Organic Silt
GC	Clayey Gravel	SC	Clayey Sand			PT	Peat

RELATIVE PROPORTIONS			GRAIN SIZE TERMINOLOGY	
Descriptive Term(s) (Of components also present in sample)	Sand and Gravel % of Dry Weight	Fines % of Dry Weight	Major Component of Sample	Size Range
Trace	<15	<5	Cobbles	12 in. to 3 in. (300mm to 75mm)
With	15-30	5-12	Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Modifier	>30	>12	Sand	#4 to #200 sieve (4.75mm to 0.074mm)
			Silt or Clay	Passing #200 sieve (.074 mm)

CONSISTENCY OF FINE-GRAINED SOILS			RELATIVE DENSITY OF COARSE-GRAINED SOILS	
Unconfined Compressive Strength, Qu, psf	Consistency	SPT, bpf	SPT, bpf	Relative Density
< 500	Very Soft	0-2	0-4	Very Loose
500-1,000	Soft	2-4	4-10	Loose
1,000-2,000	Medium Stiff	4-8	10-30	Medium Dense
2,000-4,000	Stiff	8-15	30-50	Dense
4,000-8,000	Very Stiff	15-30	50-80	Very Dense
8,000-16,000	Hard	30-100	80+	Extremely Dense
> 16,000	Very Hard	>100		

BORING LOG DESCRIPTION/LEGEND

ABBREVIATIONS

COMMONLY USED ABBREVIATIONS	
ft. or ' - feet	elev. - Elevation
in. or " - inches	% - Percent
psf - pounds per square foot	No. - Number
plf - pound per lineal foot	TB - Test Boring
pcf - pounds per cubic feet	N - blow count (SPT, bpf)
kip - 1000 pounds	USCS - Unified Soil Classification System
ksf - 1000 pounds per square foot	LL - Liquid Limit
klf - 1000 pounds per lineal foot	PL - Plastic Limit
tsf - tons per square foot	PI - Plasticity Index
bpf - blows per foot (SPT, N)	

CORE NO. C1 | Project No.: **211501**

Project: **Anamosa Streets Reconstruction**
E 2nd St & S Linn St, N Division St
Anamosa, IA

Client: **Snyder & Associates, Inc.**
5005 Bowling St SW, Suite A
Cedar Rapids, Iowa 52404

Date Drilled: **1/3/2022**
Drilling Method: **Pavement Core & DCP**
Surface Elevation: **830.0'**
Datum: **Site Survey**

Remarks:

Elevation ft.	Depth ft.	Moisture Content, %	California Bearing Ratio (Correlated from Dynamic Cone Penetrometer (ASTM D6951))	Material Description*	Graphic Log	USCS	Water Level	Depth / Elevation ft.
830	0		25 50 75	**HOT MIX ASPHALT (3")**				0.3
		17.8		Brown-gray clayey sand with gravel, moist		SC		829.7
				Suspected frost down to 0.8'				
829	1							
		13.5		**SAND**				
828	2			Silty sand after 2'		SM		
		10.3						
827	3							3.0
				End of Boring				827.0

*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.

Water Level Observation
Time: at completion _____ hrs.
Depth to water: _____ ft. _____ ft.

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Geotechnical | Environmental | Construction Q.C.

ABE_DCP

BORING LOG NO. 1

Project No.: 211501

Project: Anamosa Streets Reconstruction
E 2nd St & S Linn St, N Division St
Anamosa, IA

Client: Snyder & Associates, Inc.
5005 Bowling St SW, Suite A
Cedar Rapids, Iowa 52404

Surface Elevation: 830.4'
Datum: Site Survey

Date Drilled: 1/3/2022
Drilling Depth, ft.: 15

Drilling Method: 4" CFA
Page: 1 of 1

Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength psf	Material Description*	Graphic Log	USCS	Water Level	Depth / Elevation ft.
830	0							**PC CONCRETE (7"±)**				0.6
								CRUSHED ROCK WITH FINES (8"±)				829.8 1.3
								Brown silty, clayey sand, moist		SC SM		829.1
827.5	2.5											
		1	SSA	8	8.3							
								Brown fine sand with silt after 4.5'		SP- SM		
	5							**SAND**				
825												
	7.5											
822.5												9
		2	SSA	3	20.1			Brown-gray sandy lean clay, moist to very moist		CL		821.4
	10							**CLAY**				
820												12
	12.5							Red-brown silty sand, moist after 12'		SM		818.4
817.5								**SAND**				
		3	SSA	15	7.0							15
	15							End of Boring				815.4
815												

*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.

Water Level Observation
Time: at completion _____ hrs. _____ days
Depth to water: **Dry** ft. _____ ft. _____ ft.

ALLENDER BUTZKE ENGINEERS, INC.
Geotechnical | Environmental | Construction Q.C.

CORE NO. C2 | Project No.: **211501**

Project: **Anamosa Streets Reconstruction**
E 2nd St & S Linn St, N Division St
Anamosa, IA

Client: **Snyder & Associates, Inc.**
5005 Bowling St SW, Suite A
Cedar Rapids, Iowa 52404

Date Drilled: **1/3/2022**
Drilling Method: **Pavement Core & DCP**
Surface Elevation: **811.4'**
Datum: **Site Survey**

Remarks:

Elevation ft.	Depth ft.	Moisture Content, %	California Bearing Ratio (Correlated from Dynamic Cone Penetrometer (ASTM D6951))	Material Description*	Graphic Log	USCS	Water Level	Depth / Elevation ft.
811	0		25 50 75	**PC CONCRETE (6.25")**				0.5
		14.6		Brown-gray clayey sand with gravel, moist		SC		810.9
	1			Suspected frost down to 1'				
810				**SAND**				
	2							
809								2.5
		16.7		Very dark brown sandy lean clay, moist **CLAY**		CL		808.9
	3							3.0
				End of Boring				808.4

*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.

Water Level Observation
Time: at completion _____ hrs.
Depth to water: _____ ft. ▽ _____ ft. ▼

ALLENDER BUTZKE ENGINEERS, INC.
Geotechnical | Environmental | Construction Q.C.

ABE_DCP

BORING LOG NO. 2

Project No.: 211501

Project: Anamosa Streets Reconstruction
E 2nd St & S Linn St, N Division St
Anamosa, IA

Client: Snyder & Associates, Inc.
5005 Bowling St SW, Suite A
Cedar Rapids, Iowa 52404

Surface Elevation: 810.5'
Datum: Site Survey

Date Drilled: 1/3/2022
Drilling Depth, ft.: 15

Drilling Method: 4" CFA
Page: 1 of 1

Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength psf	Material Description*	Graphic Log	USCS	Water Level	Depth / Elevation ft.
810	0							**HOT MIX ASPHALT (4"±)**				0.3
								CRUSHED ROCK WITH FINES (5"±)				810.2
								Very dark gray sandy, silty clay, trace gravel, damp LL = 25, PI = 4 Moist with trace brick after 2' **FILL** Crushed rock layer from 3' to 4'		CL-ML		0.8 809.7
807.5	2.5											
		1	SSA	4	15.2			Dark brown very sandy lean clay, moist		CL		4 806.5
805	5							**CLAY** Brown to brown-gray after 6.5'				
802.5	7.5											
		2	SSA	8	6.1			Brown fine sand with silt, damp		SP-SM		9 801.5
800	10											
797.5	12.5							**SAND** Clayey sand, very moist after 12'		SC		
		3	SSA	5	16.3			Trace gravel, saturated after 14'				15
795	15							End of Boring				795.5

*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.

Water Level Observation
Time: at completion _____ hrs. _____ days
Depth to water: Dry ft. _____ ft. _____ ft.

ALLENDER BUTZKE ENGINEERS, INC.
Geotechnical | Environmental | Construction Q.C.

CORE NO. C3 | Project No.: **211501**

Project: **Anamosa Streets Reconstruction**
E 2nd St & S Linn St, N Division St
Anamosa, IA

Client: **Snyder & Associates, Inc.**
5005 Bowling St SW, Suite A
Cedar Rapids, Iowa 52404

Date Drilled: **1/3/2022**
Drilling Method: **Pavement Core & DCP**
Surface Elevation: **808.6'**
Datum: **Site Survey**

Remarks:

Elevation ft.	Depth ft.	Moisture Content, %	California Bearing Ratio (Correlated from Dynamic Cone Penetrometer (ASTM D6951))	Material Description*	Graphic Log	USCS	Water Level	Depth / Elevation ft.
	0		25 50 75	**HOT MIX ASPHALT (2")**				0.2
808				**CRUSHED ROCK WITH FINES (10"±)**				808.4
				Suspected frost down to 1', dense and very stiff to 3'				1.0
	1	11.8		Very dark gray clayey sand, damp to moist		SC		807.6
807				**SAND**				
		13.9						2.0
	2			Very dark gray sandy lean clay, trace gravel, moist		CL		806.6
806		20.6		**CLAY**				
	3							3.0
				End of Boring				805.6

*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.

Water Level Observation
Time: at completion _____ hrs.
Depth to water: _____ ft. ▽ _____ ft. ▼

ALLENDER BUTZKE ENGINEERS, INC.
Geotechnical | Environmental | Construction Q.C.

ABE_DCP

BORING LOG NO. 3

Project No.: 211501

Project: **Anamosa Streets Reconstruction**
E 2nd St & S Linn St, N Division St
Anamosa, IA

Client: **Snyder & Associates, Inc.**
5005 Bowling St SW, Suite A
Cedar Rapids, Iowa 52404

Surface Elevation: **808.3'**
Datum: **Site Survey**

Date Drilled: **1/3/2022**
Drilling Depth, ft.: **15**

Drilling Method: **4" CFA**
Page: **1** of **1**

Elevation ft.	Depth ft.	Sample No.	Type	SPT bpf	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength psf	Material Description*	Graphic Log	USCS	Water Level	Depth / Elevation ft.
	0							**HOT MIX ASPHALT (3"±)**				0.3
807.5								Dark brown clayey sand, damp		SC		808
								Crushed rock with fines from 1' to 2' **SAND FILL**				2
	2.5							Dark brown sandy silty clay, moist		CL-ML		806.3
805								**CLAY**				
		1	SSA	9	12.9							
	5											5.5
802.5								Dark brown silty sand, moist		SM		802.8
	7.5											
800								Brown-gray fine sand with silt after 8.5'		SP-SM		
		2	SSA	7	10.6							
	10							**SAND**				
797.5								Dark brown clayey sand, very moist after 10.5'		SC		
								Trace gravel, saturated after 12'				
	12.5											
795											▽	
		3	SSA	6								
	15											15
792.5								End of Boring				793.3

*The stratification lines represent the approximate boundary lines between material types: in-situ, the transition may be gradual.

Water Level Observation

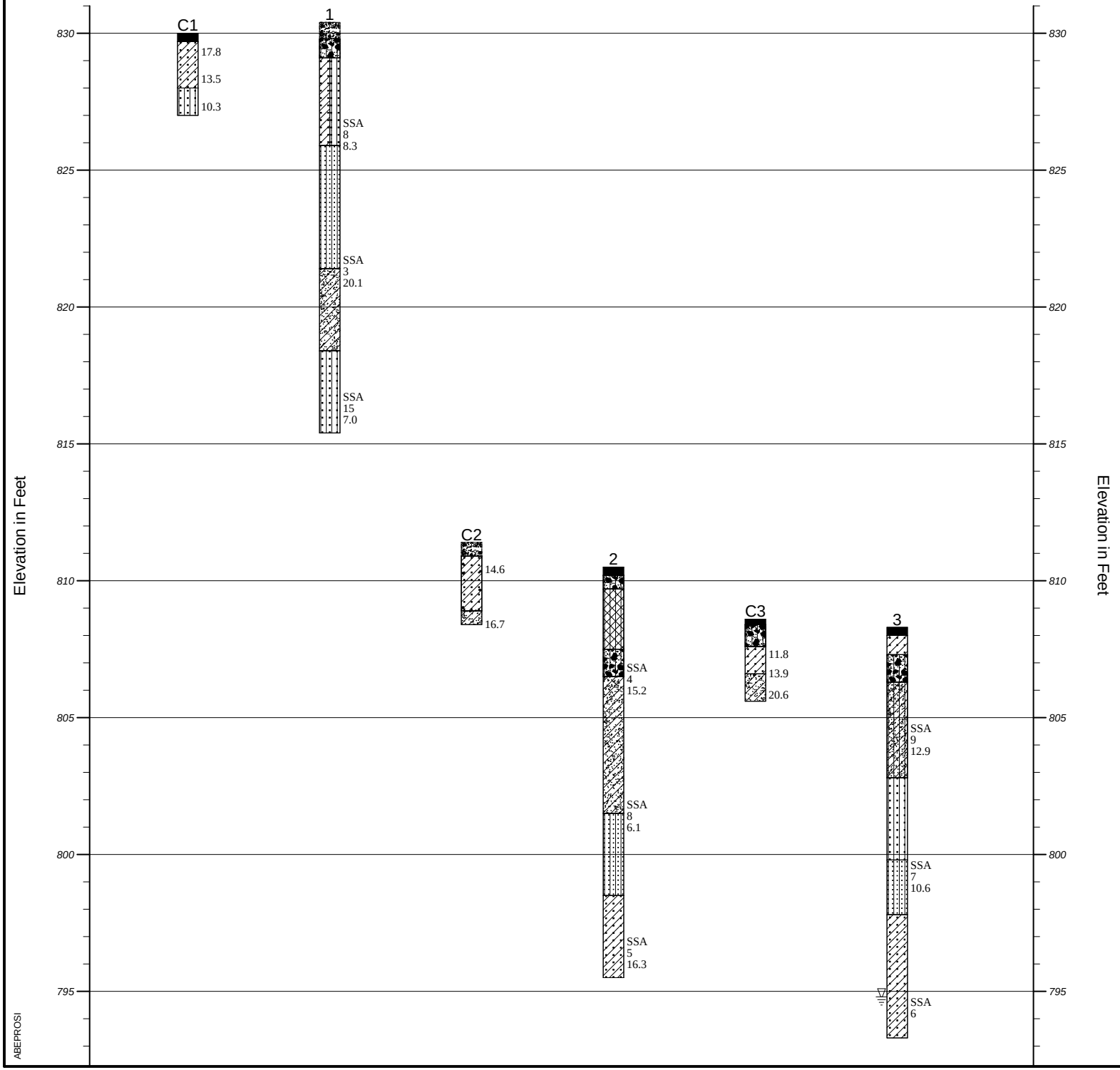
Time: at completion _____ hrs. _____ days

Depth to water: **13.5** ft. ▽ _____ ft. ▽ _____ ft. ▽

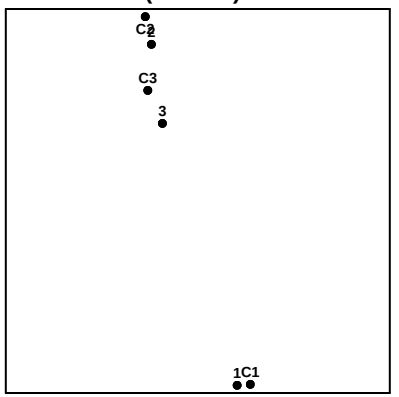
ALLENDER BUTZKE ENGINEERS, INC.

Geotechnical | Environmental | Construction Q.C.

PROFILE OF BORINGS



Plan View (NORTH)



Profile of Borings Legend

Symbol	Description
Strata symbols	
	Paving
	Clayey Sand
	Silty Sand
	PC Concrete
	Crushed Rock With Fines
	Poorly Graded Sand With Silt
	Sandy Lean Clay
	Clayey Sand With Gravel
	Silty Clay Fill
	Sand, Silty Clay

ALLENDER BUTZKE ENGINEERS, INC.

Anamosa Streets Reconstruction

E 2nd St & S Linn St, N Division St

Anamosa, IA

PN 211501

Vertical Scale: 1 inch = 5 feet

Plate A-1

E 2nd Street & S Linn Street

N Division St – E Main St to Old Dubuque Rd

Legend:

Soil Boring and Pavement Core Locations

Not to Scale

ALLENDER BUTZKE ENGINEERS INC. **3660 - 109th Street** **Urbandale, IA 50322**	**Anamosa Streets Reconstruction** **E 2nd St & S Linn St, N Division St** **Anamosa, Iowa**	**PN 211501** **Site Plan**

NOTES

NOTICE TO BIDDERS

JURISDICTION OF ***CITY OF ANAMOSA*** PUBLIC IMPROVEMENT PROJECT

Notice is hereby given that a public hearing will be held by the ***City of Anamosa*** on the proposed contract documents (plans, specifications, and form of contract) and estimated cost for the improvement at its meeting at ***6:00, P.M.*** on ***September 11, 2023***, in said ***Anamosa City Hall Council Chambers*** for the ***2nd Street Lift Station and Sewer System Improvements – Phase 2.***

Sealed bids for the work comprising each improvement as stated below must be filed before ***2:00, P.M.*** according to the clock the office of ***Anamosa City Hall*** on ***October 4, 2023***, in the office of the ***Anamosa City Hall.*** Bids received after the deadline for submission of bids as stated herein shall not be considered and shall be returned to the late bidder unopened.

Sealed proposals will be opened and bids tabulated at ***2:00, P.M***. on ***October 4, 2023***, in the ***Anamosa City Hall*** for consideration by the ***City of Anamosa*** at its meeting on ***October 9, 2023***.

Work on the improvement shall be commenced immediately upon approval of the contract by the Council, and be completed as stated below.

The contract documents may be examined at the ***Anamosa City Hall.*** Hard copies of the project documents may be obtained from Snyder & Associates, Inc. 900 Bell Dr SW, Cedar Rapids, IA 52404 at no cost. Electronic contract documents are available at no cost by clicking on the "Bids" link at www.snyder-associates.com and choosing the ***2nd Street Lift Station and Sewer System Improvements – Phase 2*** on the left. Project information, engineer's cost opinion, and planholder information is also available at no cost at this website. Downloads require the user to register for a free membership at QuestCDN.com.

By virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the State of Iowa, and to Iowa domestic labor, to the extent lawfully required under Iowa statutes.

In accordance with Iowa statutes, a resident bidder shall be allowed a preference as against a nonresident bidder from a state or foreign country if that state or foreign country gives or requires any preference to bidders from that state or foreign country, including but not limited to any preference to bidders, the imposition of any type of labor force preference, or any other form of preferential treatment to bidders or laborers from that state or foreign country. The preference allowed shall be equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident. In the instance of a resident labor force preference, a nonresident bidder shall apply the same resident labor force preference to a public improvement in this state as would be required in the construction of a public improvement by the state or foreign country in which the nonresident bidder is a resident.

General Nature of the Public Improvement

The project generally includes furnishing all labor, material, and equipment necessary for the construction and installation of 8" force main, 12" sanitary sewer, pipe bursting 12" sanitary sewer 12" water main, street replacement, site restoration, and other miscellaneous items.

Each bidder shall accompany its bid with bid security as defined in Iowa Code Section 26.8, as security that the successful bidder will enter into a contract for the work bid upon and will furnish after the award of contract a corporate surety bond, in a form acceptable to the Jurisdiction, for the faithful performance of the contract, in an amount equal to 100% of the amount of the contract. The bidder's security shall be in the amount fixed in the Instruction to Bidders and shall be in the form of a cashier's check or a certified check

drawn on an FDIC insured bank in Iowa or on an FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond on the form provided in the contract documents with corporate surety satisfactory to the Jurisdiction. The bid shall contain no condition except as provided in the specifications.

The ***City of Anamosa*** reserves the right to defer acceptance of any bid for a period of sixty (60) calendar days after receipt of bids and no bid may be withdrawn during this period.

Each successful bidder will be required to furnish a corporate surety bond in an amount equal to 100% of its contract price. Said bond shall be issued by a responsible surety approved by ***City of Anamosa*** and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless ***City of Anamosa*** from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of two years from and after acceptance of the contract. The guaranteed maintenance period for new paving shall be four years.

The ***City of Anamosa***, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Contractor shall complete the project no later than ***April 26, 2024***. Should the contractor fail to complete the work in this timeframe, liquidated damages of ***$1,000.00*** per calendar day will be assessed for work not completed within the designated contract term. Liquidated damages can be assessed against both completion dates.

The ***City of Anamosa*** does hereby reserve the right to reject any or all bids, to waive informalities, and to enter into such contract, or contracts, as it shall deem to be in the best interest of the jurisdiction.

This Notice is given by authority of the ***City of Anamosa***

_____

City of Anamosa

RESOLUTION NO. 2023-55

RESOLUTION APPROVING THE PLANS AND SPECIFICATIONS FOR PHASE 2 OF THE 2nd STREET LIFT STATION AND SEWER SYSTEM IMPROVEMENTS PROJECT AND NOTICE TO BIDDERS.

WHEREAS, the City Council has determined a need to continue with improvements on the 2nd Street Lift Station and other sanitary sewer improvements; and

WHEREAS, Snyder & Associates was selected to prepare the plans, specifications, form of contract, and estimated costs for the 2nd Street Lift Station and Sewer System Improvements – Phase 2 Project; and

WHEREAS, a public notice of said public hearing was published in the designated local paper no less than four and no more than 20 days prior to the public hearing.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa City Council does hereby approve the plans and specifications for Phase 2 of the 2nd Street Lift Station and Sewer System Improvement Project and Notice to Bidders, with bids being opened and tabulated at 2:00, P.M. on October 4, 2023, in the Anamosa City Hall, for consideration by the City of Anamosa at its meeting on October 9, 2023.

Councilmember _____ introduced this Resolution and moved for its adoption.
Councilmember _____ seconded the motion to adopt.
The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
SMITH				
TUETKEN				
ZUMBACH				
STOUT				
GOMBERT				

PASSED AND APPROVED this 11th day of September, 2023.

_____
ROD SMITH, MAYOR

ATTEST:

_____
JEREMIAH HOYT, CITY ADMINISTRATOR

CONSTRUCTION PLANS FOR

CITY OF ANAMOSA

JONES COUNTY, IOWA

WWTP FLOW EQUALIZATION BASIN

PROJECT NUMBER: 119.1164.08

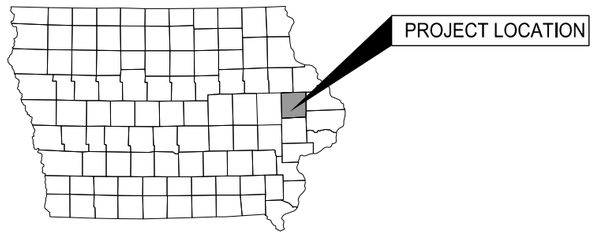
THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2023 VERSION OF THE STATEWIDE URBAN DESIGN AND SPECIFICATIONS (SUDAS) MANUAL.

CITY COUNCIL MEMBERS

ROD SMITH, MAYOR

KAY SMITH
BROOKE GOMBERT
TERESA TUETKEN
RICH CRUMP
JEFF STOUT
ALAN ZUMBACH

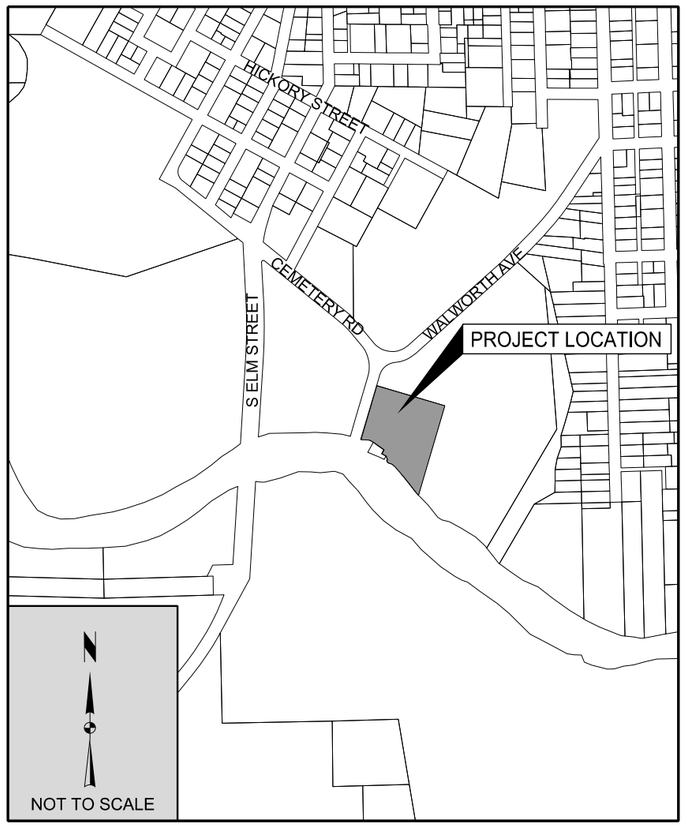
APPROVAL TO CONSTRUCT
NO 2024-0065S
DATED _____
STATE OF IOWA
NATURAL RESOURCES
ENVIRONMENTAL SERVICES
DIVISION
BY _____



IOWA

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

SNYDER & ASSOCIATES
319-362-9394



VICINITY MAP

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 C. GETTLER
P19966
LICENSED PROFESSIONAL ENGINEER
IOWA

Jonathan C. Gettler, P.E. — Date 2023.08.15

License Number P19966

My License Renewal Date is December 31, 2023

Pages or sheets covered by this seal:
'E' SHEETS

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.

NICHOLAS A. EISENBACHER
P25334
LICENSED PROFESSIONAL ENGINEER
IOWA

Nicholas A. Eisenbacher, P.E. — Date 8/16/2023

License Number P25334

My License Renewal Date is December 31, 2024

Pages or sheets covered by this seal:
'G' 'EC' 'C' & 'PR' SHEETS

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"=
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164 | Sheet G0.01

WWTP FLOW EQUALIZATION BASIN
ANAMOSA, IOWA
TITLE SHEET

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

SNYDER & ASSOCIATES

Project No: 1191164
Sheet G0.01

LEGEND

PROCESS PIPING

EXISTING / PROPOSED

- PIPING (4" AND LARGER)
- PIPING (SMALLER THAN 3")
- FLANGED JOINT
- MECHANICAL JOINT
- WELDED JOINT
- FLEXIBLE FITTING (FC)
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- LINK SEAL WALL SLEEVE WITH WALL SEAL

VALVES

EXISTING / PROPOSED

- PLUG VALVE (PV)
- CHECK VALVE (CV)
- BUTTERFLY VALVE (BFV)
- BALL VALVE (BA)
- DIAPHRAGM VALVE (DIV)
- DIAPHRAGM VALVE W/ PNEUMATIC OPERATOR
- BUTTERFLY VALVE W/ PNEUMATIC OPERATOR
- BUTTERFLY VALVE W/ ELECTRIC OPERATOR
- GATE VALVE (GV)
- SOLENOID VALVE (SV)
- PRESSURE RELIEF VALVE (PRV)
- PRESSURE REGULATING VALVE (PRE)
- PINCH VALVE
- BACKFLOW PREVENTER (BFP)
- FLOW METER (FM)
- FLANGED COUPLING ADAPTER (FCA)
- CAP OR PLUG
- UNION
- HOSE BIB (HB)
- FLOOR DRAIN
- 2" FLUSH CONNECTION WITH BALL VALVE AND QUICK COUPLING CONNECTION

SURVEY

	FOUND	SET
SECTION CORNER	▲	△
1/2" REBAR, CAP # 11579 (UNLESS OTHERWISE NOTED)	●	○
ROW MARKER	■	□
ROW RAIL	H	
CONTROL POINT	⊙ CP	
BENCH MARK	⊕ P	
PLATTED DISTANCE	M	
MEASURED BEARING & DISTANCE	R	
RECORDED AS	D	
DEED DISTANCE	C	
CALCULATED DISTANCE	MPE	
MINIMUM PROTECTION ELEVATION		
CENTERLINE		
SECTION LINE		
1/4 SECTION LINE		
1/4 1/4 SECTION LINE		
EASEMENT LINE		

FEATURES

	EXISTING	PROPOSED
SPOT ELEVATION	93.0	93.0
CONTOUR ELEVATION	93	93
FENCE (BARBED, FIELD, HOG)	-x-x-	
FENCE (CHAIN LINK)	-//-//-	
FENCE (WOOD)	-•-•-	
TREE LINE		
TREE STUMP		
DECIDUOUS TREE OR SHRUB		
CONIFEROUS TREE OR SHRUB		
UNDERGROUND COMMUNICATION	C(x)	C
OVERHEAD COMMUNICATION	OC(x)	OC
FIBER OPTIC	FO(x)	FO
UNDERGROUND ELECTRIC	E(x)	E
OVERHEAD ELECTRIC	OE(x)	OE
GAS MAIN WITH SIZE	4" G(x)	4" G
HIGH PRESSURE GAS MAIN WITH SIZE	4" HPG(x)	4" HPG
WATER MAIN WITH SIZE	8" W(x)	8" W
SANITARY SEWER WITH SIZE	8" S(x)	8" S
DUCT BANK	DUCT(x)	
TEST HOLE LOCATION FOR S.U.E.	31	

(*) DENOTES SURVEY QUALITY SERVICE LEVEL FOR UTILITIES

SANITARY MANHOLE		
STORM SEWER WITH SIZE	12" ST	12" ST
STORM MANHOLE		
SINGLE STORM SEWER INTAKE		
DOUBLE STORM SEWER INTAKE		
FIRE HYDRANT		
FIRE HYDRANT ON BUILDING		
WATER MAIN VALVE		
WATER SERVICE VALVE		
WELL		
UTILITY POLE		
GUY ANCHOR		
UTILITY POLE WITH LIGHT		
STREET LIGHT		
YARD LIGHT		
ELECTRIC BOX	EB	
ELECTRIC TRANSFORMER	E	
TRAFFIC SIGN		
COMMUNICATION PEDESTAL	C	
COMMUNICATION MANHOLE	C	
COMMUNICATION HANDHOLE	C	
FIBER OPTIC MANHOLE	FO	
FIBER OPTIC HANDHOLE	FO	
GAS VALVE	G	
GAS MANHOLE	G	
GAS APPARATUS	G	
FENCE POST OR GUARD POST		
UNDERGROUND STORAGE TANK		
ABOVE GROUND STORAGE TANK		
SIGN		
SATELLITE DISH		
MAILBOX		
SOIL BORING	B	B
ELEVATION	EL. 750.00	EL. 750.00
SECTION NUMBER		2
PAGE NUMBER		18
REMOVAL ITEMS		

UTILITY QUALITY SERVICE LEVELS

QUALITY LEVELS OF UTILITIES ARE SHOWN IN THE PARENTHESES WITH THE UTILITY TYPE AND WHEN APPLICABLE, SIZE. THE QUALITY LEVELS ARE BASED ON THE CI /ASCE 38-02 STANDARD.

QUALITY LEVEL (D) INFORMATION IS DERIVED FROM EXISTING UTILITY RECORDS OR ORAL RECOLLECTIONS.

QUALITY LEVEL (C) INFORMATION IS OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION WITH QUALITY D INFORMATION.

QUALITY LEVEL (B) INFORMATION IS OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES.

QUALITY LEVEL (A) IS HORIZONTAL AND VERTICAL POSITION OF UNDERGROUND UTILITIES OBTAINED BY ACTUAL EXPOSURE OR VERIFICATION OF PREVIOUSLY EXPOSED SUBSURFACE UTILITIES, AS WELL AS THE TYPE, SIZE, CONDITION, MATERIAL, AND OTHER CHARACTERISTICS.

UTILITY WARNING

THE UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND/OR RECORDS OBTAINED. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN COMPRISE ALL SUCH ITEMS IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN ARE IN THE EXACT LOCATION INDICATED EXCEPT WHERE NOTED AS QUALITY LEVEL A.

NOTE: THIS IS A STANDARD LEGEND. NOT ALL ITEMS SHOWN WILL BE USED ON THIS PROJECT.

SUBCONSULTANTS

ELECTRICAL
DESIGN ENGINEERS
STRUCTURAL
SHUCK-BRITSON, INC.

UTILITY CONTACTS

UTILITY TYPE	UTILITY PROVIDER	CONTACT NAME	CONTACT PHONE/EMAIL
ELECTRICITY	ALLIANT ENERGY	MICHELLE OLDENBURGER	319-462-6338
NATURAL GAS	BLACK HILLS ENERGY	BRIAN MCWILLIAMS	BRIAN.MCWILLIAMS@BLACKHILLSCORP.COM
WATER & SEWER	CITY OF ANAMOSA	STEVE AGNITSCH	319-558-8335
COMMUNICATIONS	LUMENS	ADREW ALTPETER	319-270-7456

SHEET NUMBERING LEGEND

A	-	ARCHITECTURAL	G	-	GENERAL
C	-	CIVIL	M	-	MECHANICAL
D	-	PLAN & PROFILE	P	-	PLUMBING
E	-	ELECTRICAL	PR	-	PROCESS TREATMENT
EC	-	EROSION CONTROL	S	-	STRUCTURAL

SHEET NUMBERING LEGEND

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"=
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164 | Sheet G0.02

ANAMOSA, IOWA

WWTP FLOW EQUALIZATION BASIN

INDEX OF SHEETS, LEGENDS

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

SNYDER & ASSOCIATES

Project No: 1191164

Sheet G0.02

GENERAL NOTES

1. NOTIFY OWNER AND ENGINEER AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION.
2. LOCATION OF EXISTING UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES SHOWN ARE FROM AVAILABLE SURVEYS AND RECORDS. THESE LOCATIONS SHOULD BE CONSIDERED AS APPROXIMATE ONLY, WITH POSSIBILITY THAT OTHER UTILITIES OR UNDERGROUND FEATURES MAY EXIST. DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES WITHIN CONSTRUCTION LIMITS.
3. NOTIFY UTILITY COMPANIES PRIOR TO COMMENCING WORK. AVOID DAMAGE TO UTILITIES AND UNDERGROUND FEATURES DURING CONSTRUCTION. REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OPERATIONS AT CONTRACTOR'S EXPENSE.
4. COORDINATE CONSTRUCTION OPERATIONS AND COOPERATE WITH UTILITY COMPANIES WITH RESPECT TO RELOCATING ANY CONFLICTING FACILITIES. COSTS FOR LOCATING EXISTING UTILITIES, COORDINATING RELOCATION WORK, PROVIDING TEMPORARY SUPPORTS, AND STAGING CONSTRUCTION TO ACCOMMODATE THE RELOCATION OF UTILITIES IS INCIDENTAL TO CONSTRUCTION.
5. PROVIDE EROSION CONTROL MEASURES NECESSARY TO PROTECT AGAINST SILTATION, EROSION AND DUST POLLUTION WITHIN CONSTRUCTION LIMITS AND ANY OFF-SITE AREAS USED FOR THIS PROJECT. COMPLY WITH SOIL EROSION CONTROL REQUIREMENTS OF IOWA CODE AND LOCAL ORDINANCES.
6. PROVIDE TEMPORARY SUPPORT FOR EXISTING UTILITY LINES THAT ARE ENCOUNTERED DURING CONSTRUCTION UNTIL BACKFILLING IS COMPLETED.
7. CONSTRUCTION LIMITS ARE THE ASSOCIATION OWNED PROPERTY LIMITS SHOWN ON THESE PLANS. CONFINE ALL CONSTRUCTION ACTIVITY TO WITHIN THE CONSTRUCTION LIMITS UNLESS OTHERWISE AUTHORIZED BY THE OWNER. ALL CONSTRUCTION LIMITS SHALL BE CLEARLY MARKED IN THE FIELD AND PROTECTED BY THE CONTRACTOR. THE CONTRACTOR SHALL OBTAIN NECESSARY ACCESS PERMISSION TO THE PROJECT CONSTRUCTION LIMITS.
8. CONSTRUCTION PLANS SHOW THE WORK LIMITS (PERMANENT AND TEMPORARY EASEMENTS). PRESERVE AS MANY TREES AS POSSIBLE, ONLY CLEAR THE MINIMUM NUMBER OF TREES NEEDED TO COMPLETE THE CONSTRUCTION. TREE CLEARING IS INCIDENTAL TO CONSTRUCTION.
9. CONTRACTOR RESPONSIBLE FOR CONSTRUCTING AND MAINTAINING ALL ACCESSES TO THE CONSTRUCTION LIMITS. THE ACCESSES MUST BE ADEQUATELY SIZED AND PROPERLY SURFACED FOR UTILIZATION BY CONSTRUCTION VEHICLES AND INCLUDE PROVISIONS TO MAINTAIN POSITIVE DRAINAGE. WORK WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.
10. LIMIT GRADING AND CONSTRUCTION OPERATIONS TO THE MINIMUM REQUIRED TO COMPLETE THE PROJECT. CONTRACTOR REQUIRED TO PAY DAMAGES TO RESPECTIVE PARTIES FOR DAMAGE TO CROPLAND CAUSED BY CONSTRUCTION ACTIVITIES OUTSIDE OF THE CONSTRUCTION LIMITS IN ADDITION TO THE RESTORATION, AT NO COST TO OWNER.
11. COORDINATE THE CONSTRUCTION TO MINIMIZE THE DISRUPTIONS TO THE ADJACENT PROPERTIES. ANY AREAS DISTURBED BY CONSTRUCTION OUTSIDE OF THE CONSTRUCTION LIMITS SHALL BE REPAIRED AND RESTORED AT THE CONTRACTOR'S EXPENSE.
12. DO NOT RESTRICT DRAINAGE CHANNELS AND PROTECT ALL EXISTING DRAINAGE STRUCTURES. CONTRACTOR FULLY LIABLE FOR ALL DAMAGES TO PUBLIC OR PRIVATE PROPERTY CAUSED BY THEIR ACTION OR INACTION IN THE HANDLING OF STORM WATER FLOWS DURING CONSTRUCTION. ANY EXTRA GRADING WORK NEEDED TO MAINTAIN POSITIVE DRAINAGE WITHIN THE CONSTRUCTION LIMITS IS INCIDENTAL TO CONSTRUCTION.
13. REPAIR ALL FIELD/DRAIN TILES THAT ARE ENCOUNTERED DURING CONSTRUCTION AS SPECIFIED. RECORD THE EXISTING TYPE, SIZE, LOCATION AND DEPTH OF ALL FIELD/DRAIN TILES ENCOUNTERED AND REPAIRED DURING CONSTRUCTION. PROVIDE DATA TO THE ENGINEER FOR INCORPORATION INTO THE RECORD DRAWINGS.
14. PROTECT AND KEEP DEBRIS DEPOSITED BY THE CONSTRUCTION OFF OF ADJACENT PROPERTIES OUTSIDE THE EASEMENT AREA AND STREETS. REMOVE AND REPAIR ANY DAMAGE WITHOUT ADDITIONAL COMPENSATION.
15. PROTECT EXISTING TREES, SHRUBS, FENCES, AND LANDSCAPING UNLESS SPECIFICALLY NOTED OR DESIGNATED OTHERWISE ON THE PLANS. REPLACE ANY ITEMS DAMAGED DURING CONSTRUCTION AT CONTRACTOR'S EXPENSE.
16. COMPLETELY REMOVE AND DISPOSE OF TREES, SHRUBS AND VEGETATION DESIGNATED FOR REMOVAL ON THE PLANS OR AS DIRECTED BY ENGINEER. DISPOSE OF IN ACCORDANCE WITH SPECIFICATIONS.
17. CONTRACTORS SHALL SATISFY THEMSELVES PRIOR TO SUBMISSION OF BIDS AS TO THE SOIL CONDITIONS.
18. AS NECESSARY FOR CONSTRUCTION, THE CONTRACTOR SHALL REMOVE EXISTING IMPROVEMENTS WITHIN THE WORK AREA SHOWN ON THE PLAN AS "REMOVE & REPLACE" AND SHALL REPLACE THEM TO THE CONDITION EXISTING PRIOR TO CONSTRUCTION, OR BETTER, AS DETERMINED BY THE ENGINEER. THE REMOVAL AND REPLACEMENT WORK IS INCIDENTAL AND ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE BID.
19. ADJUST ALL MANHOLES, VALVE PITS, VALVE BOXES AND OTHER BURIED FACILITIES WITH SURFACE ACCESS TO MATCH FINAL GRADES, UNLESS OTHERWISE INDICATED.
20. WHERE SECTION OR SUB-SECTION MONUMENTS, BENCHMARKS, RIGHT-OF-WAY PINS, OR IRON PIPE MONUMENTS ARE ENCOUNTERED, THE CITY SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED OR DISTURBED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL MONUMENTS UNTIL THE CITY AND AUTHORIZED SURVEYOR, OR AGENT, HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION. THE CONTRACTOR WILL BE RESPONSIBLE FOR HAVING AN AUTHORIZED SURVEYOR RE-ESTABLISH ANY MONUMENTS UNNECESSARILY DESTROYED BY CONTRACT OPERATIONS.
21. CONSTRUCTION STAKING PROVIDED BY OWNER. REFER TO PROJECT SPECIFICATIONS FOR COORDINATION REQUIREMENTS.
22. PROVIDE TRAFFIC CONTROL IN ACCORDANCE WITH CURRENT STATE OF IOWA APPROVED MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
23. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING SIGNS THAT ARE IN CONFLICT WITH THE CONSTRUCTION. NOTIFY THE OWNER 48 HOURS BEFORE CONSTRUCTION BEGINS.
24. DO NOT STORE EQUIPMENT AND/OR MATERIALS WITHIN PUBLIC RIGHT OF WAY ON STREETS OPEN TO TRAFFIC. PROVIDE AREAS AS NEEDED FOR STORAGE OF EQUIPMENT AND/OR MATERIALS.
25. BLADING, SHAPING OR MAINTENANCE OF TEMPORARY CONNECTIONS, CROSSINGS DETOURS OR TEMPORARY ACCESSES SHALL BE INCIDENTAL TO THE PROJECT.
26. REMOVE THE EXISTING PAVEMENT AREAS TO THE NEAREST EXISTING JOINT OR AS DIRECTED BY THE ENGINEER.
27. REMOVE AND REPLACE, OR REPAIR ALL ROAD SURFACES AND OTHER ITEMS DAMAGED BY CONSTRUCTION ACTIVITIES TO THEIR ORIGINAL CONDITION AND/OR TO THE SATISFACTION OF THE OWNER AND ENGINEER.
28. EXERCISE EXTREME CARE WHEN PERFORMING ANY NECESSARY SAW CUTTING OPERATIONS FOR THE REMOVAL OF EXISTING PAVEMENT. PROTECT ADJACENT PAVEMENT SURFACING. REMOVE AND REPLACE DAMAGED SURFACING WITHOUT ADDITIONAL COMPENSATION.
29. COMPACT ALL TRENCH BACKFILL, UNDER PAVED SURFACES, AND WITHIN RIGHT-OF-WAY TO 95% STANDARD PROCTOR DENSITY.
30. SLOPE ALL DRIVEWAYS, SIDEWALKS AND ROAD SURFACES 1/4 INCH PER FOOT MINIMUM, UNLESS OTHERWISE NOTED.
31. SURFACE RESTORATION INCLUDES THE REMOVAL OF ALL GRANULAR MATERIAL FROM THE TOP 6 INCHES OF TOPSOIL. THIS WORK IS INCIDENTAL TO CONSTRUCTION.
32. OWNER HAS FIRST RIGHT OF REFUSAL TO RETAIN ANY MATERIAL REMOVED FROM THE PROJECT AREA. IF DIRECTED, DELIVER ITEMS OR MATERIALS TO OWNER AT LOCATION DESIGNATED BY THE PUBLIC WORKS DEPARTMENT. DISPOSE OF NON-SALVAGEABLE MATERIALS IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
33. PROVIDE WASTE AREAS OR DISPOSAL SITES FOR WASTE MATERIAL (CONCRETE, STEEL, SOIL, BUILDING MATERIALS, EQUIPMENT, ETC.). NO EXTRA PAYMENTS WILL BE MADE FOR MATERIAL HAULED TO THESE SITES. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS. DO NOT PLACE WASTE MATERIAL WITHIN THE RIGHT-OF-WAY. KEEP CONSTRUCTION DEBRIS AND DIRT OFF OF THE ADJACENT PROPERTIES AND STREETS.
34. RECONSTRUCT ANY ROAD DITCHES DISTURBED, INCLUDING DITCH GRADES AND CROSS SECTIONS. REPLACE CULVERTS TO ORIGINAL GRADES UNLESS OTHERWISE NOTED. GRADE ALL DITCHES FOR PROPER DRAINAGE. PONDING OF WATER IS NOT ACCEPTABLE. RE-GRADE ANY DITCH WHICH DOES NOT PROPERLY DRAIN. ALL DITCH GRADING IS INCIDENTAL TO CONSTRUCTION.
35. ASSIST ENGINEER'S FIELD REPRESENTATIVE WITH DAILY RECORD KEEPING INCLUDING ALL NECESSARY FIELD LOCATIONS AND MEASUREMENTS. CONTRACTOR REQUIRED TO ATTEND FINAL AND INTERMEDIATE INSPECTIONS OF PROJECT, OPEN ALL MANHOLES FOR INSPECTION.
36. DIMENSIONS, STREET LOCATIONS, UTILITIES, AND GRADING ARE BASED ON AVAILABLE INFORMATION AT THE TIME OF DESIGN. DEVIATIONS MAY BE NECESSARY IN THE FIELD. REPORT ANY SUCH CHANGES OR CONFLICTS BETWEEN THE PLAN AND FIELD CONDITIONS TO PROJECT ENGINEER IMMEDIATELY.
37. IN THE EVENT OF A DISCREPANCY BETWEEN THE QUANTITY ESTIMATES AND THE DETAILED PLANS, THE DETAILED PLANS SHALL GOVERN.
38. MAINTAIN EMERGENCY ACCESS ON ALL STREETS AND ALL AFFECTED PROPERTIES AT ALL TIMES.
39. CONTRACTOR TO PROVIDE A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN PROPOSED WATER MAIN AND EXISTING STORM/SANITARY SEWER SERVICES AND MAINS.
40. REPAIR ANY DAMAGES THAT OCCUR DURING CONSTRUCTION. CONTRACTOR SHALL TAKE PHOTOGRAPHS OF THE SITE BEFORE CONSTRUCTION. ANY DAMAGES NOT DOCUMENTED BEFORE CONSTRUCTION ARE ASSUMED TO BE THE FAULT OF THE CONTRACTOR.
41. #12 AWG TRACER WIRE TO BE INSTALLED WITH ALL PVC PIPE.

PROCESS PIPING AND SITE PIPING NOTES

1. COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
2. ALL EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE UNLESS OTHERWISE NOTED.
3. FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE AS REQUIRED TO COMPLETE CONNECTIONS TO EXISTING PIPING. VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIALS OF CONSTRUCTION. EXCAVATE TEST PITS AS REQUIRED TO LOCATE EXISTING PIPING.
4. PROTECT AND SUPPORT ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO ANY TRENCH EXCAVATION BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. DAMAGE TO ANY SUCH STRUCTURES CAUSED BY OR RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION OR ADJUSTMENT AS A RESULT OF THE WORK SHALL BE COORDINATED THROUGH THE OWNER.
5. REFER TO SPECIFICATIONS FOR PIPE AND STRUCTURE BEDDING AND BACKFILL REQUIREMENTS.
6. MANHOLES ARE 4 FEET IN DIAMETER UNLESS OTHERWISE NOTED. SET TOP OF MANHOLE FRAME FLUSH WITH FINISH GRADE, UNLESS OTHERWISE NOTED ON DRAWINGS.
7. LENGTHS OF GRAVITY SEWER ARE DIMENSIONED FROM CENTER OF MANHOLE TO CENTER OF MANHOLE.
8. MINIMUM COVER OF 5 FEET IS REQUIRED ON ALL LIQUID CARRYING PIPES, UNLESS OTHERWISE NOTED BY PIPE ELEVATIONS. PIPELINE INSULATION SHALL BE USED WHERE DEPTH OF COVER IS LESS THAN 5 FEET.
9. SLOPE ALL PIPELINES UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS IN PIPING WILL BE PERMITTED. RESTRAIN ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED LINES WITH THRUST BLOCKS AND RETAINER GLANDS. PROVIDE ALL BENDS (HORIZONTAL AND VERTICAL) AS REQUIRED TO MEET THE ELEVATIONS AND ALIGNMENT INDICATED ON THE DRAWINGS.
10. ALL EQUIPMENT AND PIPING LAYOUT DIMENSIONS SHALL BE FIELD VERIFIED AND COORDINATED WITH EQUIPMENT PROVIDED, AND/OR EXISTING CONDITIONS.
11. WRITTEN DIMENSIONS SHALL PREVAIL. REPORT ANY DISCREPANCIES IMMEDIATELY TO ENGINEER.
12. COMPACTION TESTS WILL BE PERFORMED IN ACCORDANCE WITH SPECIFICATIONS. CORRECT SETTLEMENT OCCURRING DURING THE CONTRACT WARRANTY PERIOD AT NO ADDITIONAL COST.
13. CLEAN ALL PIPING AS DIRECTED BY ENGINEER, BEFORE TESTING.
14. PRESSURE TEST ALL PIPELINES AFTER INSTALLATION, AS SPECIFIED.
15. ALL BURIED CONNECTIONS TO STRUCTURES, INCLUDING BUT NOT LIMITED TO VALVE VAULTS, WET WELLS, TANKS, AND BUILDINGS SHALL HAVE SLEEVE TYPE FLEXIBLE CONNECTIONS WITHIN 3 TO 4 FEET FROM STRUCTURES. ALL SLEEVE TYPE COUPLINGS ON PRESSURE LINES SHALL BE RESTRAINED SOLID SLEEVE.
16. PROVIDE CAST, DUCTILE IRON WALL CASTINGS, OR GALVANIZED STEEL PIPE SLEEVES FOR ALL PIPE PENETRATIONS MADE THROUGH CONCRETE FOUNDATIONS, WALLS AND SLABS. ALL WALL SLEEVES AND WALL CASTINGS SHALL HAVE WATERSTOPS. SEE PROCESS DRAWINGS FOR LOCATIONS OF PENETRATIONS AND THE SPECIFIC TYPE, WALL PIPE OR SLEEVE, REQUIRED AT EACH LOCATION.
17. ALL INSIDE PROCESS PIPING SHALL BE ADEQUATELY RESTRAINED AND SUPPORTED IN ACCORDANCE WITH SPECIFICATIONS.
18. ELECTRICAL CONDUIT RUNS ARE INDICATED ON ELECTRICAL SITE PLAN.
19. ALL GRAVITY SANITARY SEWER PIPE SHALL BE CONSTRUCTED WITH WATER MAIN MATERIALS.

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	
Engineer:	NAE	Checked By:	LRB	Scale:	1"=
Technician:	RWS	Date:	8/14/2023	Field Bk:	Pg:

Project No: 1191164 — Sheet G0.03

ANAMOSA, IOWA

WWTP FLOW EQUALIZATION BASIN

GENERAL NOTES

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SNYDER & ASSOCIATES

Project No: 1191164

Sheet G0.03

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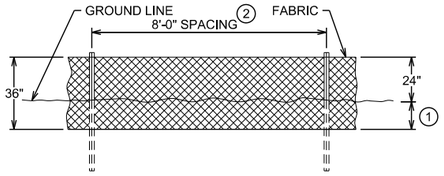
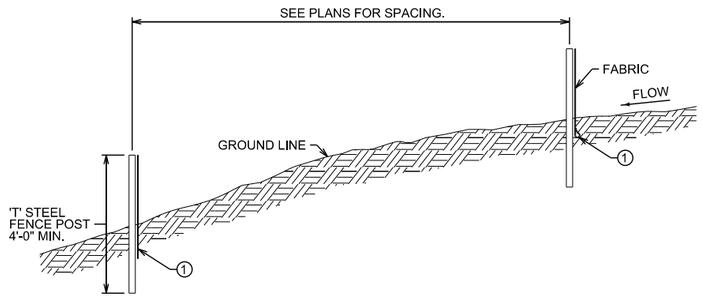
① INSERT 12 INCHES OF FABRIC A MINIMUM OF 6 INCHES DEEP (FABRIC MAY BE FOLDED BELOW THE GROUND LINE).

② REDUCE POST SPACING TO 5'-0" AT WATER CONCENTRATION AREAS, OR AS REQUIRED TO ADEQUATELY SUPPORT FENCE.

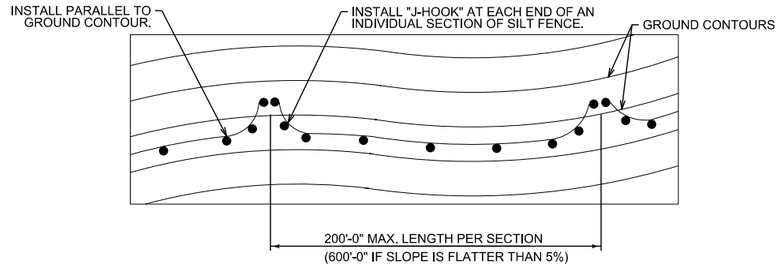


DETAILS OF SILT FENCE ON LONGITUDINAL SLOPES



TYPICAL SILT FENCE INSTALLATION ON LONGITUDINAL SLOPES

(PROFILE VIEW)



TYPICAL SILT FENCE INSTALLATION ON LONGITUDINAL SLOPES

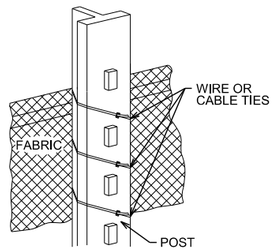
(PLAN VIEW)

1
EC0.01

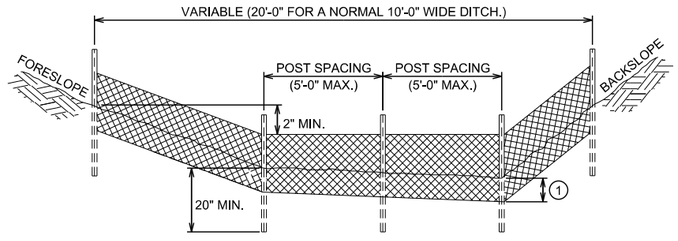
SILT FENCE-SUDAS 9040.119

NO SCALE

① INSERT 12 INCHES OF FABRIC A MINIMUM OF 6 INCHES DEEP (FABRIC MAY BE FOLDED BELOW THE GROUND LINE).



ATTACHMENT TO POST



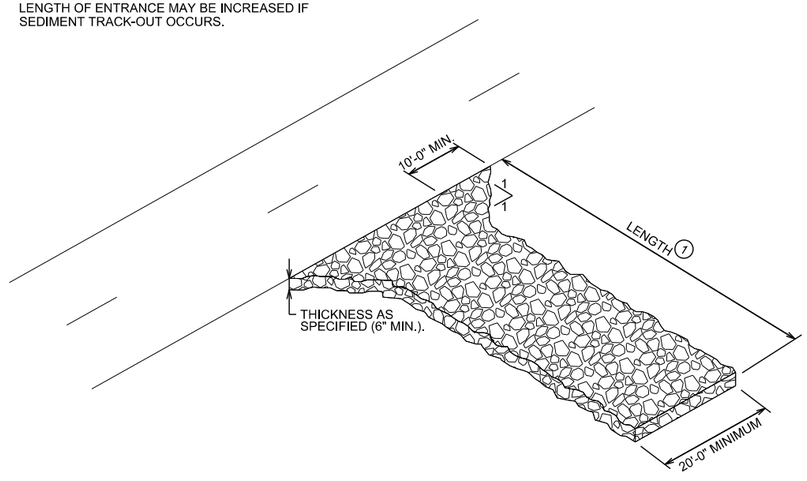
TYPICAL SILT FENCE DITCH CHECK

2
EC0.01

SILT FENCE-SUDAS 9040.119

NO SCALE

① ENTRANCE LENGTH: 50 FOOT MINIMUM (30 FOOT FOR SINGLE FAMILY RESIDENTIAL), OR AS SPECIFIED IN THE CONTRACT DOCUMENTS. LENGTH OF ENTRANCE MAY BE INCREASED IF SEDIMENT TRACK-OUT OCCURS.



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STABILIZED CONSTRUCTION ENTRANCE-SUDAS 9040.120

NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE
Checked By: LRB
Scale: 1"=
Technician: RWS
Date: 8/14/2023
Field Bk:
Pg:
Project No: 1191164
Sheet EC0.01

WWTP FLOW EQUALIZATION BASIN

EROSION AND SEDIMENT CONTROL DETAILS

ANAMOSA, IOWA

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& ASSOCIATES

Project No: 1191164

Sheet EC0.01

STORM WATER POLLUTION PREVENTION NOTES

A. POLLUTION PREVENTION AND EROSION PROTECTION

1. CODE COMPLIANCE: THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL POTENTIAL POLLUTION AND SOIL EROSION CONTROL REQUIREMENTS OF THE IOWA CODE, THE IOWA DEPARTMENT OF NATURAL RESOURCES (IDNR) NPDES PERMIT, THE U.S. CLEAN WATER ACT AND ANY LOCAL ORDINANCES. THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO PROTECT AGAINST EROSION AND POLLUTION FROM THIS PROJECT SITE AND ALL OFF-SITE BORROW OR DEPOSIT AREAS DURING PERFORMANCE OR AS A RESULT OF PERFORMANCE.

2. DAMAGE CLAIMS: THE CONTRACTOR WILL HOLD THE OWNER AND ARCHITECT / ENGINEER HARMLESS FROM ANY AND ALL CLAIMS OF ANY TYPE WHATSOEVER RESULTING FROM DAMAGES TO ADJOINING PUBLIC OR PRIVATE PROPERTY, INCLUDING REASONABLE ATTORNEY FEES INCURRED TO OWNER. FURTHER, IF THE CONTRACTOR FAILS TO TAKE NECESSARY STEPS TO PROMPTLY REMOVE EARTH SEDIMENTATION OR DEBRIS WHICH COMES ONTO ADJOINING PUBLIC OR PRIVATE PROPERTY, THE OWNER MAY, BUT NEED NOT, REMOVE SUCH ITEMS AND DEDUCT THE COST THEREOF FROM AMOUNTS DUE TO THE CONTRACTOR.

B. STORM WATER DISCHARGE PERMIT

1. THIS PROJECT REQUIRES COVERAGE UNDER THE NPDES GENERAL PERMIT NO. 2 FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES FROM THE IDNR, AS REQUIRED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS ARE RESPONSIBLE FOR COMPLIANCE WITH AND FULFILLMENT OF ALL REQUIREMENTS OF THE NPDES GENERAL PERMIT NO. 2 INCLUDING CREATING OR MAINTAINING THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND POSSIBLY OBTAINING THE GENERAL PERMIT COVERAGE FROM THE IDNR. FOR THIS PROJECT THE CONTRACTOR WILL BE RESPONSIBLE FOR CREATING AND MAINTAINING THE SWPPP WITH THE ASSISTANCE OF SUBCONTRACTORS IN PROVIDING THE REQUESTED INFORMATION.

2. ALL DOCUMENTS RELATED TO THE STORM WATER DISCHARGE PERMIT, INCLUDING, BUT NOT LIMITED TO, THE NOTICE OF INTENT, PROOF OF PUBLICATIONS, DISCHARGE AUTHORIZATION LETTER, CURRENT SWPPP, SITE INSPECTION LOG, AND OTHER ITEMS, SHALL BE KEPT ON SITE AT ALL TIMES AND MUST BE PRESENTED TO ANY JURISDICTIONAL AGENCIES UPON REQUEST. FAILURE TO COMPLY WITH THE NPDES PERMIT REQUIREMENTS IS A VIOLATION OF THE CLEAN WATER ACT AND THE CODE OF IOWA.

3. A "NOTICE OF DISCONTINUATION" MUST BE FILED WITH THE IDNR UPON FINAL STABILIZATION OF THE DISTURBED SITE AND REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES. ALL PLANS, INSPECTION REPORTS, AND OTHER DOCUMENTS MUST BE RETAINED FOR A PERIOD OF THREE YEARS AFTER PROJECT COMPLETION. THE CONTRACTOR SHALL RETAIN A RECORD COPY AND PROVIDE THE ORIGINAL DOCUMENTS TO THE OWNER UPON PROJECT ACCEPTANCE AND/OR SUBMITTAL OF THE NOTICE OF DISCONTINUATION. IN THIS PROJECT THE CONTRACTOR WILL BE RESPONSIBLE FOR THE SUBMITTAL OF THE NOTICE OF DISCONTINUATION.

C. POLLUTION PREVENTION PLAN:

1. THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS INCLUDED WITH THE CONTRACT DOCUMENTS IN ADDITION TO THESE PLAN DRAWINGS. THE CONTRACTOR SHOULD REFER TO THE SWPPP FOR ADDITIONAL REQUIREMENTS AND MODIFICATIONS TO THE POLLUTION PREVENTION PLAN MADE DURING CONSTRUCTION.

2. THE SWPPP ILLUSTRATES GENERAL MEASURES AND BEST MANAGEMENT PRACTICES (BMP) FOR COMPLIANCE WITH THE PROJECT'S NPDES PERMIT COVERAGE. ALL BMPS AND EROSION CONTROL MEASURES REQUIRED AS A RESULT OF CONSTRUCTION ACTIVITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY, NOTE AND IMPLEMENT. ADDITIONAL BMPS FROM THOSE SHOWN ON THE PLAN MAY BE REQUIRED.

3. THE SWPPP AND SITE MAP SHOULD BE EXPEDITIOUSLY REVISED TO REFLECT CONSTRUCTION PROGRESS AND CHANGES AT THE PROJECT SITE. THE SUBCONTRACTORS SHALL PROVIDE THE PERTINENT DOCUMENTATION TO THE CONTRACTOR FOR THE TIMELY UPDATES OF THE SWPPP.

4. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL REQUIREMENTS OF THE GENERAL PERMIT AND SWPPP, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING BMPS UNLESS INFEASIBLE OR NOT APPLICABLE:

a. UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE WHEN DISCHARGING FROM BASINS, PROVIDE AND MAINTAIN NATURAL BUFFERS AROUND SURFACE WATERS, DIRECT STORM WATER TO VEGETATED AREAS TO INCREASE SEDIMENT REMOVAL AND MAXIMIZE STORM WATER INFILTRATION, AND MINIMIZE SOIL COMPACTION.

b. INSTALL PERIMETER AND FINAL SEDIMENT CONTROL MEASURES SUCH AS SILT BARRIERS, DITCH CHECKS, DIVERSION BERMS, OR SEDIMENTATION BASINS DOWNSTREAM OF SOIL DISTURBING ACTIVITIES PRIOR TO SITE CLEARING AND GRADING OPERATIONS.

c. PRESERVE EXISTING VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION AND LIMIT TO A MINIMUM THE TOTAL AREA DISTURBED BY CONSTRUCTION OPERATIONS AT ANY TIME.

d. MAINTAIN ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES IN WORKING ORDER, INCLUDING CLEANING, REPAIRING, REPLACEMENT, AND SEDIMENT REMOVAL THROUGHOUT THE PERMIT PERIOD. CLEAN OR REPLACE SILT CONTROL DEVICES WHEN THE MEASURES HAVE LOST 50% OF THEIR ORIGINAL CAPACITY. COMPLETE A DAILY REVIEW OF THE MEASURES AND RE-INSTALL/REPLACE AS NEEDED.

e. INSPECT THE PROJECT AREA AND CONTROL DEVICES (BY CITY) EVERY SEVEN CALENDAR DAYS. RECORD THE FINDINGS OF THESE INSPECTIONS AND ANY RESULTING ACTIONS IN THE SWPPP WITH A COPY SUBMITTED WEEKLY TO THE CONTRACTOR DURING CONSTRUCTION. REVISE THE SWPPP (BY CITY) AND IMPLEMENT ANY RECOMMENDED MEASURES WITHIN 7 DAYS (BY CONTRACTOR).

f. PREVENT ACCUMULATION OF EARTH AND DEBRIS FROM CONSTRUCTION ACTIVITIES ON ADJOINING PUBLIC OR PRIVATE PROPERTIES, INCLUDING STREETS, DRIVEWAYS, SIDEWALKS, DRAINAGEWAYS, OR UNDERGROUND SEWERS. REMOVE ANY ACCUMULATION OF EARTH OR DEBRIS IMMEDIATELY AND TAKE REMEDIAL ACTIONS FOR FUTURE PREVENTION.

g. INSTALL NECESSARY CONTROL MEASURES SUCH AS SILT BARRIERS, EROSION CONTROL MATS, MULCH, DITCH CHECKS OR RIPRAP AS SOON AS AREAS REACH THEIR FINAL GRADES AND AS CONSTRUCTION OPERATIONS PROGRESS TO ENSURE CONTINUOUS RUNOFF CONTROL. PROVIDE INLET AND OUTLET CONTROL MEASURES AS SOON AS STORM SEWERS ARE INSTALLED.

h. RESPREAD A MINIMUM OF 4 INCHES OF TOPSOIL (INCLUDING TOPSOIL FOUND IN SOD) ON ALL DISTURBED AREAS, EXCEPT WHERE PAVEMENT, BUILDINGS OR OTHER IMPROVEMENTS ARE LOCATED.

i. STABILIZE UNDEVELOPED, DISTURBED AREAS WITH MULCH, TEMPORARY SEED MIX, PERMANENT SEED MIX, OR SOD AS SOON AS PRACTICAL UPON COMPLETION OR DELAY OF GRADING OPERATIONS. INITIATE STABILIZATION MEASURES NO LATER THAN 14 CALENDAR DAYS AFTER CONSTRUCTION ACTIVITY HAS FINISHED OR IS PLANNED TO BE DELAYED MORE THAN 21 CALENDAR DAYS.

j. COORDINATE LOCATIONS OF STAGING AREAS WITH THE OWNER AND RECORD IN THE SWPPP. UNLESS NOTED OTHERWISE, STAGING AREAS SHOULD CONTAIN THE FOLLOWING: JOB TRAILERS, FUELING / VEHICLE MAINTENANCE AREA, TEMPORARY SANITARY FACILITIES, MATERIALS STORAGE, AND CONCRETE WASHOUT FACILITY (IF CONCRETE IS POURED). CONTROL RUNOFF FROM STAGING AREAS WITH DIVERSION BERMS AND/OR SILT BARRIERS AND DIRECT TO A SEDIMENT BASIN OR OTHER CONTROL DEVICE WHERE POSSIBLE. CONCRETE WASHOUT MUST BE CONTAINED ONSITE.

k. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND SITE WASTE PRIOR TO FILING OF THE "NOTICE OF DISCONTINUATION".

D. PROJECT SPECIFIC REQUIREMENTS FOR POLLUTION PREVENTION AND EROSION PROTECTION:

1. RESPONSIBILITIES:

a. THE CITY OF MONTICELLO WILL BE RESPONSIBLE FOR:
i. PUBLISH THE PUBLIC NOTICE OF STORM WATER DISCHARGE.
ii. REVIEW AND COMMENT MATERIAL PROVIDED BY CONTRACTOR.
b. THE CONTRACTOR IS RESPONSIBLE FOR:
i. CREATE SWPPP AND SUBMIT TO ENGINEER FOR REVIEW AND COMMENTS PRIOR TO FILING THE NOTICE OF INTENT.
ii. THE NOTICE OF INTENT AND FEE FOR NPDES COVERAGE UNDER GENERAL PERMIT.
iii. WEEKLY INSPECTIONS AND CORRESPONDING RECORDS.
iv. UPDATING THE SWPPP.
v. SUBMITTAL OF THE NOTICE OF DISCONTINUATION.
vi. ALL REQUIREMENTS NOT ASSIGNED HERE TO OTHERS.
vii. COOPERATING TO PROVIDE INFORMATION UNDER THE RESPONSIBILITY OF OTHERS (SUCH AS THE CITY AND THEIR REPRESENTATIVES).

2. PROJECT NATURE AND SWPPP SPECIAL PROVISIONS: THE NATURE OF THIS STREAM RESTORATION/STABILIZATION PROJECT AND CHANNEL EROSION VULNERABILITY FROM STORM FLOWS REQUIRE THE CONTRACTOR TO PREVENT POLLUTION AND PROTECT FROM EROSION WITH APPROPRIATE MEASURES, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

a. MONITOR THE WEATHER TO MANAGE CONSTRUCTION AND REDUCE RISKS, SUCH AS NOT DISTURBING NEW AREAS WHEN STORMS ARE FORECASTED.

b. PLAN AND SEQUENCE THE CONSTRUCTION OF PROJECT ELEMENTS TO MINIMIZE THE RISK OF EROSION IN THE CHANNEL AND IN AREAS WITH UNPROTECTED SOIL, SUCH AS WORKING IN SMALL AREAS AT A TIME THAT CAN BE STARTED AND COMPLETED IN 21 DAYS TO CONCURRENTLY CLEAR AND GRUB, EXCAVATE TO SHAPE THE BANKS, INSTALL ROCK REVETMENT, AND ESTABLISH THE REQUIRED TOPSOIL FILL, SEEDING, AND EROSION CONTROL MEASURES IN CONFORMANCE WITH THE PLANS.

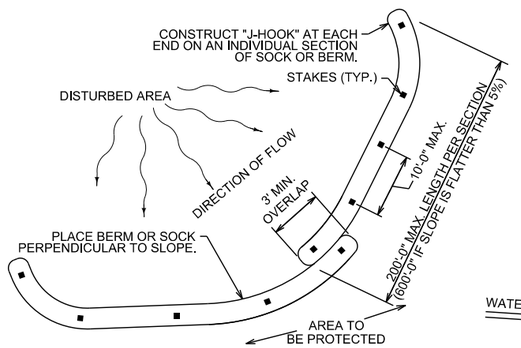
c. TIMELY SEEDING AND RECP INSTALLATION IS CRITICAL TO PROVIDE EROSION PROTECTION.

d. SEQUENCE WORK AND IMPLEMENTATION OF PROJECTS FEATURES TO HELP IN SEDIMENT CONTROL AND REDUCE EROSION POTENTIAL.

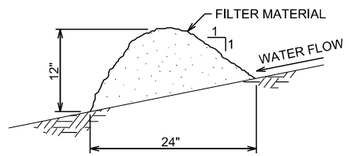
e. INSTALL, MOVE, AND MAINTAIN FILTER SOCKS TO PROVIDE EROSION PROTECTION WHERE NEEDED AS THE PROJECT ADVANCES.

f. USE APPROPRIATE FLOW HANDLING METHODS (DIVERSIONS, DEWATERING, OR OTHERS) TO MINIMIZE EROSION AND POLLUTION TRANSPORT (SEDIMENT AND OTHERS) TO THE MAXIMUM EXTENT PRACTICABLE.

g. USE APPROPRIATE CONTROL MEASURES THAT DO NOT INCREASE FLOOD RISK TO UPSTREAM OR DOWNSTREAM STRUCTURES.



PLAN VIEW OF SLOPE
(FOR SEDIMENT AND SLOPE CONTROL)

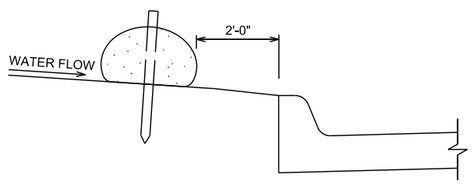


FILTER BERM

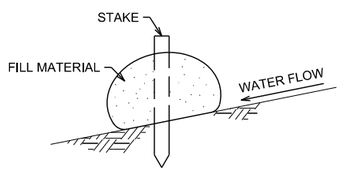
BERM SHOWN IS TYPICAL FOR SLOPES FLATTER THAN 3:1. FOR STEEPER SLOPES, INCREASE BERM SIZE AS DIRECTED BY THE ENGINEER.

PLACE BERM IN UNCOMPACTED WINDROW PERPENDICULAR TO THE SLOPE AT LOCATIONS SPECIFIED IN THE CONTRACT DOCUMENTS.

FILTER SOCK DIAMETER AS SPECIFIED IN THE CONTRACT DOCUMENTS.



SECTION VIEW AT STREET
(FOR PERIMETER CONTROL ALONG STREET)



FILTER SOCK

TYPICAL PLACEMENT OF BERM OR SOCK

1 / C.21 FILTER BERM AND FILTER SOCK-SUDAS 9040.102
NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"=
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164 | Sheet EC0.02

WWTP FLOW EQUALIZATION BASIN
EROSION AND SEDIMENT CONTROL NOTES
ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.
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CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

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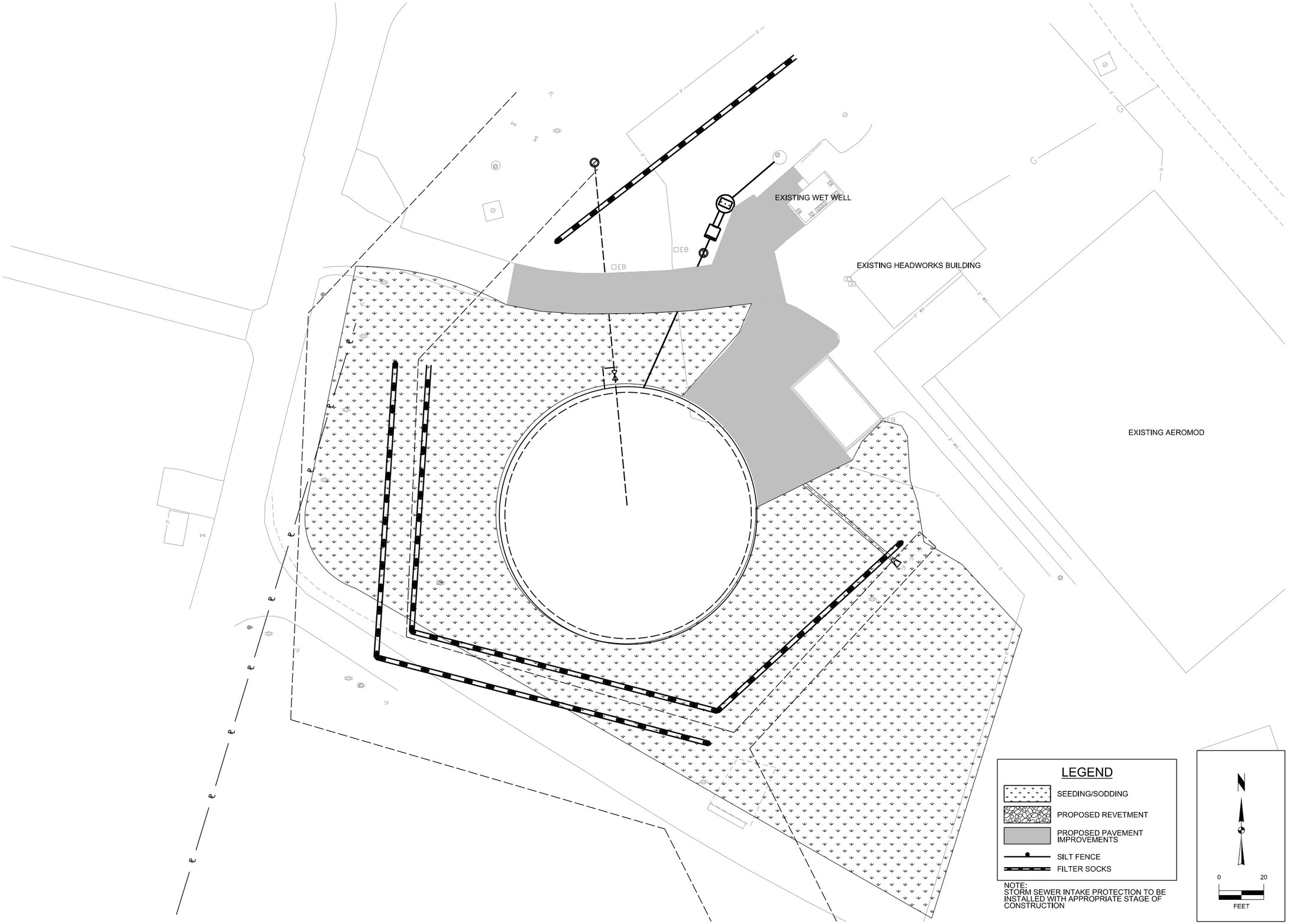
Project No: 1191164
Sheet EC0.02



MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 20'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet EC0.03

WWTP FLOW EQUALIZATION BASIN

EROSION AND SEDIMENT CONTROL

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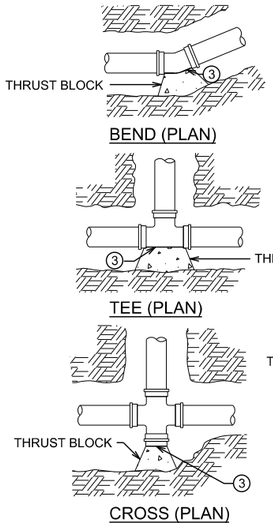
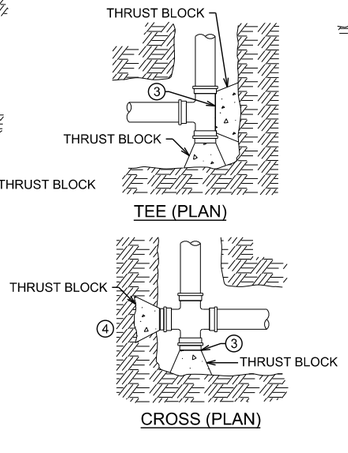
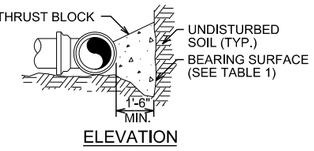
Project No: 1191164

Sheet EC0.03







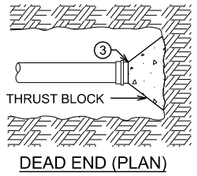
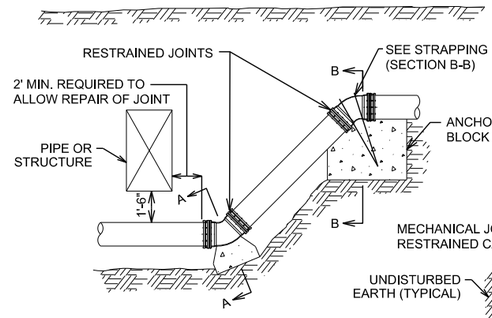


TABLE 1

SIZE OF PIPE (IN)	MINIMUM BEARING SURFACE (SF)				
	BENDS				TEE OR DEAD END
	11.25°	22.5°	45°	90°	
4	1.0	1.0	2.0	4.0	3.0
6	1.0	2.0	4.0	8.0	6.0
8	2.0	4.0	7.0	14.0	10.0
10	3.0	6.0	11.0	21.0	15.0
12	4.0	8.0	16.0	29.0	21.0
14	5.0	11.0	21.0	39.0	28.0
16	7.0	14.0	27.0	50.0	36.0
18	9.0	17.0	34.0	63.0	45.0
20	11.0	21.0	42.0	78.0	55.0
24	15.0	31.0	60.0	111.0	78.0
30	24.0	47.0	92.0	171.0	121.0
36	34.0	67.0	132.0	244.0	173.0

NOTE: AREA BASED UPON WATER PRESSURE OF 150 PSI AND ALLOWABLE SOIL PRESSURE OF 1000 PSF. JURISDICTIONAL ENGINEER MAY MODIFY REQUIRED SIZE BASED UPON SITE CONDITIONS.



GENERAL NOTES:

USE ALTERNATE THRUST BLOCK AT DEAD ENDS ONLY WHEN PERMITTED BY THE JURISDICTIONAL ENGINEER, OR WHEN SPECIFIED IN THE CONTRACT DOCUMENTS.

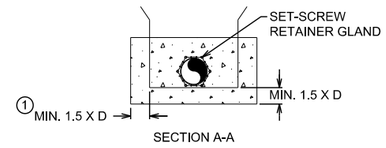
① EXTEND THRUST BLOCKS TO UNDISTURBED SOIL.

② FORM VERTICAL SURFACES OF POURED CONCRETE THRUST BLOCKS EXCEPT ON BEARING SURFACE.

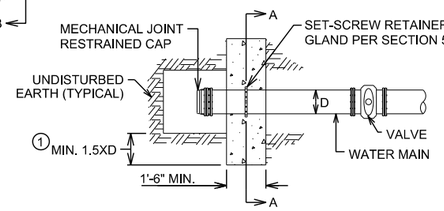
③ ENCASE ALL FITTINGS IN POLYETHYLENE WRAP. DO NOT ALLOW CONCRETE TO DIRECTLY CONTACT JOINTS OR FITTING BOLTS.

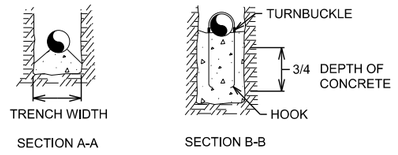
④ EXCAVATION INTO TRENCH WALL MAY BE NECESSARY.

⑤ REFER TO TABLE 1 FOR MINIMUM BEARING SURFACE AREA.



DEAD END (ALTERNATE)





PIPE LOWERING

1 C0.01 THRUST BLOCK DETAIL, SUDAS WM-101

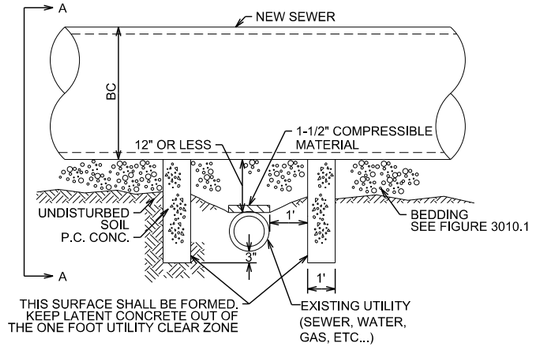
NO SCALE

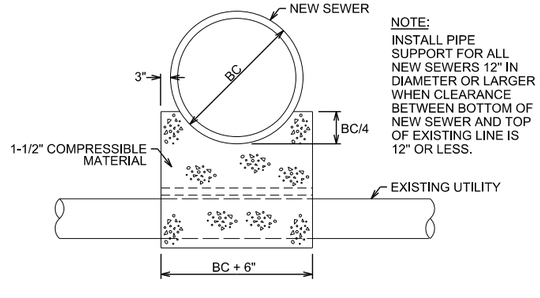
NOTES:

1. PLACE LARGE STONE BLOCK WATERSTOP IN TRENCH AS SHOWN TO PREVENT WATER FLOW THROUGH GRANULAR TRENCH BACKFILL. BLOCKS MAY BE OBTAINED AT BARD CONCRETE LOCATED IN ANAMOSA, IA.
2. IF STABILIZATION (FOUNDATION) MATERIAL IS REQUIRED, EXTEND WATERSTOP THROUGH STABILIZATION MATERIAL TO BOTTOM OF TRENCH.
3. BACKFILL REQUIREMENTS ABOVE WATERSTOP (FINAL TRENCH BACKFILL) SHALL BE IN ACCORDANCE WITH FIGURE 3010.1.
4. WATERSTOPS ARE REQUIRED ONLY WHEN SPECIFIED IN THE CONTRACT DOCUMENTS. WATERSTOPS SHALL BE PLACED AT A NOMINAL SPACING OF 800' OR AS DIRECTED BY THE ENGINEER. INSTALLATION OF WATERSTOPS SHALL BE CONSIDERED INCIDENTAL.

2 C0.01 WATER STOP FOR TRENCH

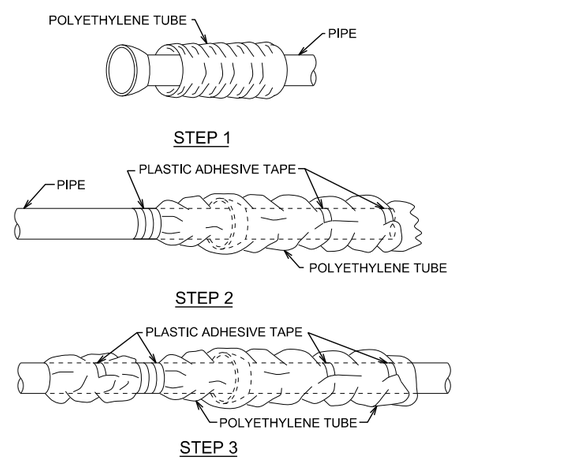
NO SCALE





3 C0.01 PIPE SUPPORT OVER EXISTING UTILITY

NO SCALE



NOTES:

1. PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO THE TRENCH.
2. PULL THE TUBE OVER THE LENGTH OF PIPE. SECURE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH PLASTIC ADHESIVE TAPE TO HOLD THE PLASTIC TUBE IN PLACE.
3. OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH TAPE. LOOSELY COVER THE PIPE WITH A POLYETHYLENE TUBE. NEATLY DRAW UP EXCESS MATERIAL AROUND THE PIPE BARREL, FOLD ON TOP OF, AND SECURE WITH TAPE.
4. WRAP IRON PIPE FITTINGS, INCLUDING VALVES AND HYDRANTS, WITH POLYETHYLENE MATERIAL. EXTEND THE WRAPPING AT LEAST 1' BEYOND THE FITTING JOINTS ONTO THE ADJOINING PIPE AND FASTEN TO THE PIPE WITH TAPE. USE TAPE AS NEEDED TO HOLD WRAP IN PLACE. EITHER POLYETHYLENE SHEETS OR SLIT TUBING MAY BE USED.

4 C0.01 POLYETHYLENE WRAP - FERROUS MATERIALS

NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"=
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet C0.01

ANAMOSA, IOWA

WWTP FLOW EQUALIZATION BASIN

STANDARD DETAILS

SNYDER & ASSOCIATES, INC.
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CEDAR RAPIDS, IA 52404
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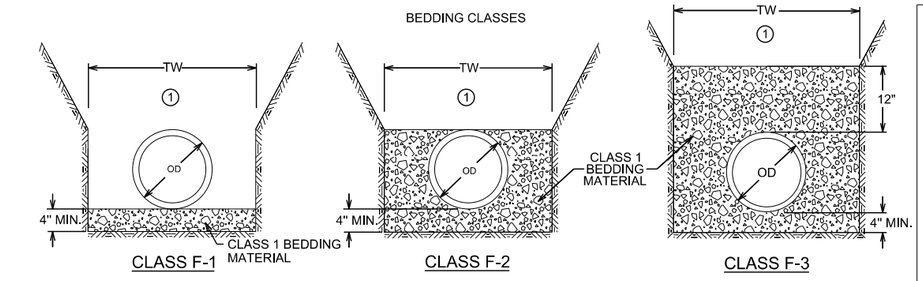
Project No: 1191164

Sheet C0.01



ALLOWABLE BURY DEPTH (2)

(1) PLACE REMAINDER OF BEDDING AND BACKFILL MATERIALS AS SPECIFIED IN THE CONTRACT DOCUMENTS.

(2) MINIMUM DEPTH OF BURY SHALL BE REGIONAL FROST DEPTH UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.

ALLOWABLE BEDDING CLASSES

PIPE MATERIAL	STORM SEWER	SANITARY SEWER
DUCTILE IRON	F-1, F-2, F-3	F-1, F-2, F-3
HDPE	F-2, F-3	NOT ALLOWED
POLYPROPYLENE	F-2, F-3	F-3
PVC	F-2, F-3	F-3

KEY

OD= OUTSIDE DIAMETER OF PIPE

TW= TRENCH WIDTH AT TOP OF PIPE: MIN. = OD+18 INCHES OR 1.25XOD+12 INCHES (WHICHEVER IS GREATER)

PVC PIPE

PIPE DIAMETER (IN)	ASTM D 3034			ASTM F 679	ASTM F 949	ASTM F 1803	ASTM D 2680
	SOLID WALL			SOLID WALL	CORRUG. EXTERIOR	CLOSED PROFILE	COMPOSITE (TRUSS TYPE)
	SDR 23.5	SDR 26	SDR 35	SDR 35			
8	30'	28'	24'	---	24'	---	32'
10	30'	28'	24'	---	24'	---	32'
12	30'	28'	24'	---	24'	---	32'
15	30'	28'	24'	---	24'	---	32'
18	---	---	---	24'	24'	---	---
21	---	---	---	24'	24'	24'	---
24	---	---	---	24'	24'	24'	---
27	---	---	---	24'	---	24'	---
30	---	---	---	24'	24'	24'	---
33	---	---	---	24'	---	---	---
36	---	---	---	24'	24'	24'	---
42	---	---	---	24'	---	24'	---
48	---	---	---	24'	---	24'	---
54	---	---	---	---	---	24'	---
60	---	---	---	---	---	24'	---

DUCTILE IRON, AWWA C151, CLASS 52

PIPE DIAMETER (IN)	CLASS F-1 BEDDING	CLASS F-2 BEDDING	CLASS F-3 BEDDING
4	40'	40'	40'
6	40'	40'	40'
8	40'	40'	40'
10	40'	40'	40'
12	37'	40'	40'
14	31'	40'	40'
16	28'	37'	40'
18	25'	34'	40'
20	23'	32'	40'
24	20'	29'	38'
30	18'	23'	31'
36	18'	22'	30'
42	17'	21'	29'
48	16'	19'	27'
54	16'	19'	27'

HDPE PIPE

PIPE DIAMETER (IN)	AASHTO M 294
12	8'
15	9'
18	9'
24	9'
30	9'
36	9'
42	8'
48	8'
54	8'
60	8'

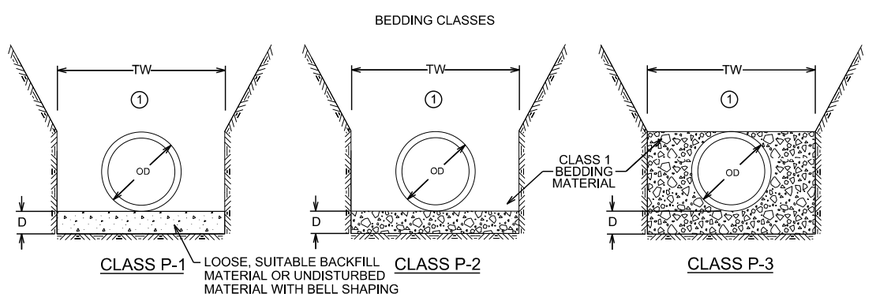
POLYPROPYLENE PIPE

PIPE DIAMETER (IN)	ASTM F 2736	ASTM F 2764
12	24'	---
15	25'	---
18	22'	---
24	20'	---
30	22'	22'
36	---	21'
42*	---	22'
48*	---	23'
54*	---	21'
60*	---	21'

*STORM SEWER ONLY

1 C0.02 FLEXIBLE GRAVITY PIPE TRENCH BEDDING, SUDAS SW-103

NO SCALE



DUCTILE IRON, AWWA C151, CLASS 52

PIPE DIAMETER (IN)	CLASS P-1 BEDDING	CLASS P-2 BEDDING	CLASS P-3 BEDDING
4	40'	40'	40'
6	40'	40'	40'
8	40'	40'	40'
10	36'	40'	40'
12	31'	40'	40'
14	26'	40'	40'
16	23'	37'	40'
18	20'	34'	40'
20	18'	32'	40'
24	16'	29'	38'
30	13'	23'	31'
36	13'	22'	30'
42	13'	21'	29'
48	13'	19'	27'
54	13'	19'	27'

PVC, AWWA C900, DR18

PIPE DIAMETER (IN)	CLASS P-1 BEDDING	CLASS P-2 BEDDING	CLASS P-3 BEDDING
4	19'	29'	40'
6	19'	29'	40'
8	19'	29'	40'
10	19'	29'	40'
12	19'	29'	40'
14	19'	29'	40'
16	19'	29'	40'
18	19'	29'	40'
20	19'	29'	40'
24	19'	29'	40'

(1) PLACE REMAINDER OF BEDDING AND BACKFILL MATERIALS AS SPECIFIED IN THE CONTRACT DOCUMENTS.

KEY

OD= OUTSIDE DIAMETER OF PIPE

TW= TRENCH WIDTH AT TOP OF PIPE: MIN. = OD+18 INCHES OR 1.25XOD+12 INCHES (WHICHEVER IS GREATER)

D = DEPTH OF BEDDING MATERIAL BELOW PIPE: MIN.=OD/8 OR 4 INCHES (WHICHEVER IS GREATER)

2 C0.02 PRESSURE PIPE TRENCH BEDDING, SUDAS SW-104

NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"=

Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet C0.02

WWTP FLOW EQUALIZATION BASIN

STANDARD DETAILS

ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder-associates.com

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Project No: 1191164

Sheet C0.02

NOTES:

1) REFER TO C4.01 & C4.02 FOR INFORMATION ON PROPOSED PIPING

2) REFER TO PR SHEETS FOR FLOW EQ. TANKS

3) CONTRACTOR TO MINIMIZE DISTURBANCE WITHIN ITC EASEMENT. NO PERMANENT ABOVE GROUND STRUCTURES SHALL BE BUILT WITHIN THIS EASEMENT.

4) THE EXISTING PLANT SHALL REMAIN OPERATIONAL WHILE CONSTRUCTION IS ON GOING.

5) CONTRACTOR TO COORDINATE WITH UTILITY COMPANIES TO RELOCATE UTILITIES AS NECESSARY.

6) SHEETING AND SHORING IS INCIDENTAL TO INSTALLATION OF STRUCTURES AND PIPES BELOW GRADE.

7) DEWATERING IS INCIDENTIAL TO INSTALLATION OF PIPING AND STRUCTURES BELOW GRADE.

8) ATTACH MCNICHOLS SAFPLATE FIBERGLASS FLOORING TO THE EXISTING 2" BAR GRATING. CONTRACTOR TO MATCH EXISTING SIZES OF THE EXISITNG BAR GRATING. PROVIDE TWO HANDLES PER PIECE TO ALLOW FOR REMOVAL OF INDIVIDUAL PIECES AS NEEDED.

EXISTING 24" SANITARY SEWER
ITC EASEMENT
EX. 48" STORM
PROTECT EX. 48" STORM
PROPOSED 48" MANHOLE CONNECT TO EXISTING GRAVITY SEWER
EXISTING COLLECTION MANHOLE
Abandoned Storm Pipe
MODIFY EXISTING GRATING OVER WET WELL. SEE NOTE #8
EX. WET WELL REMOVE AND REPLACE EXISTING PUMPS
PROPOSED LIFT STATION. SEE PR SHEET FOR MORE DETAILS
PROPOSED CONTROLS BUILDING SEE PR SHEETS
EXISTING HEADWORKS BUILDING
PROPOSED 8" SANITARY SEWER
PROTECT EX. 18" STORM
PROPOSED 8" FORCE MAIN
PROPOSED 8" TEE
PROPOSED 8" 90° BEND
PROPOSED 8" TANK OVERFLOW
PLUG VALVE
PROTECT EX. 18" STORM
EX. TANK FFE= 780.66
EXISTING AEROMOD
EXTEND 18" RCP STORM SEWER SLOPE= 3.38% L= 80-FT FL @ END OF PIPE 781.86 FL @ FES= 782.00
FLOW EQUALIZATION BASIN
CONTRACTOR TO COORDINATE WITH COMMUNICATIONS UTILITY TO TEMPORARILY RELOCATE COMMUNICATIONS POLE
ITC EASEMENT
ITC EASEMENT
ITC EASEMENT
FLOODWAY

N
0 20
FEET

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	
Engineer:	NAE	Checked By:	LRB	Scale:	1" = 20'
Technician:	RWS	Date:	8/14/2023	Field Bk:	Pg:

Project No: 1191164

Sheet C1.01

WWTP FLOW EQUALIZATION BASIN

SITE PLAN

ANAMOSA, IOWA

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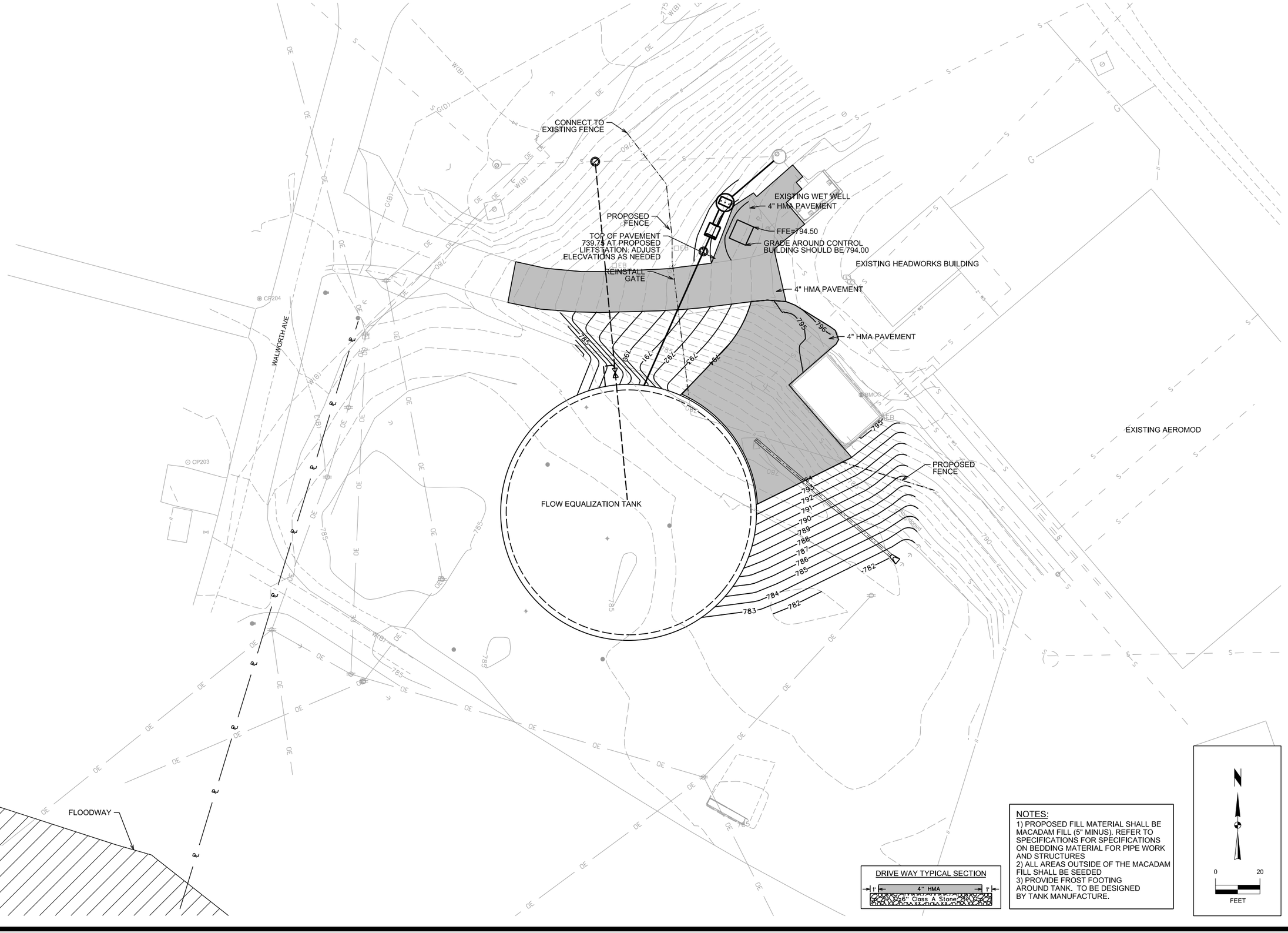
Project No: 1191164

Sheet C1.01



MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 20'
Technician: RWS | Date: 8/14/2023 | Field Bk: Pg:

Project No: 1191164

Sheet C2.01

WWTP FLOW EQUALIZATION BASIN

ANAMOSA, IOWA

GRADING PLAN

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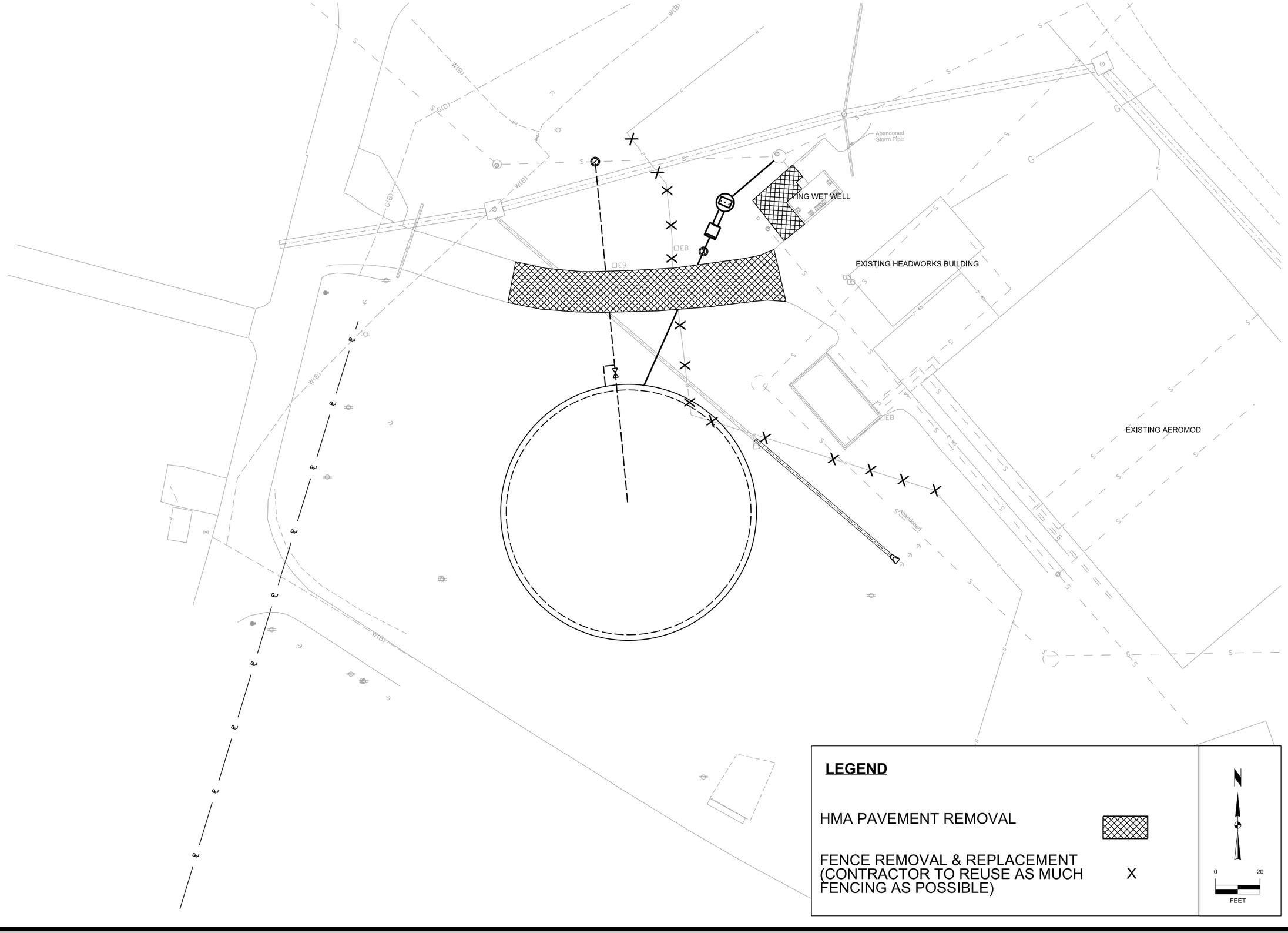
SNYDER & ASSOCIATES

Project No: 1191164

Sheet C2.01



LEGEND

HMA PAVEMENT REMOVAL

FENCE REMOVAL & REPLACEMENT (CONTRACTOR TO REUSE AS MUCH FENCING AS POSSIBLE) X

N

0 20

FEET

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer:	NAE	Checked By:	LRB	Scale:	1"=
Technician:	RWS	Date:	8/14/2023	Field Bk:	Pg:

Project No: 1191164

Sheet

WWTP FLOW EQUALIZATION BASIN

PROJECT REMOVALS

ANAMOSA, IOWA

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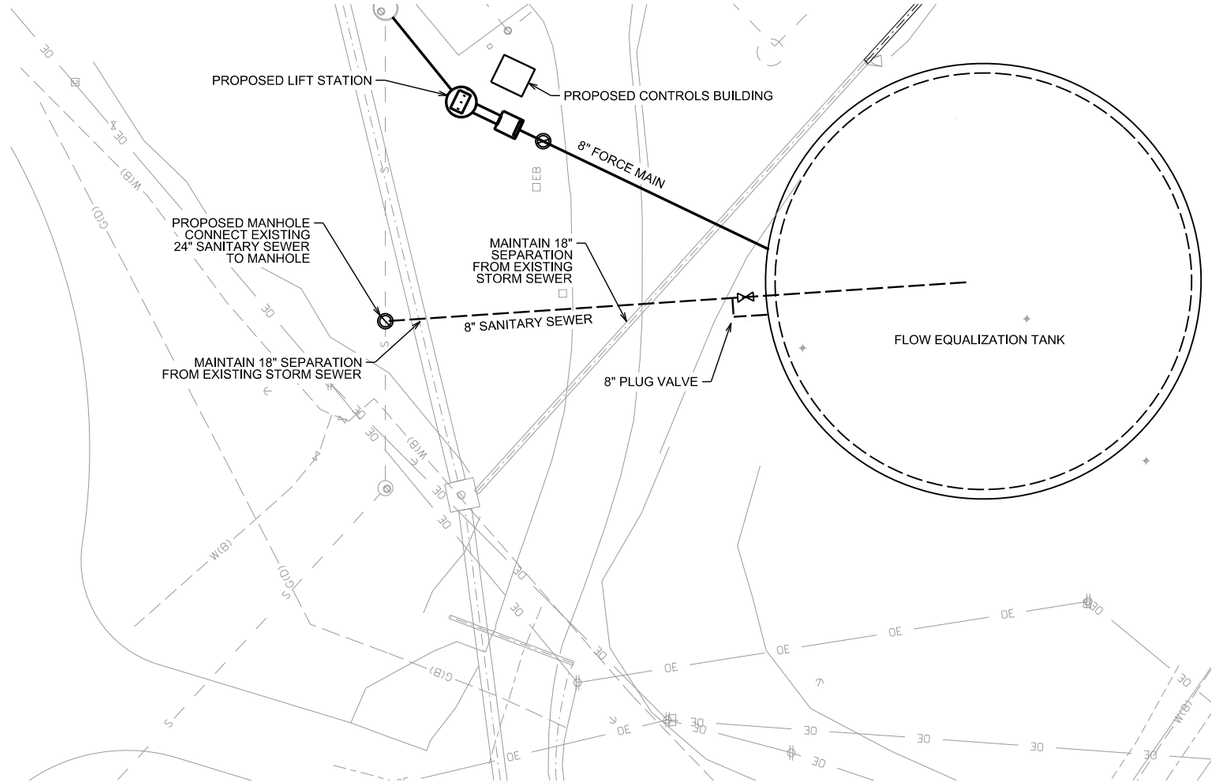
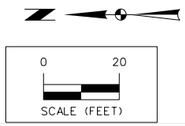
Project No: 1191164

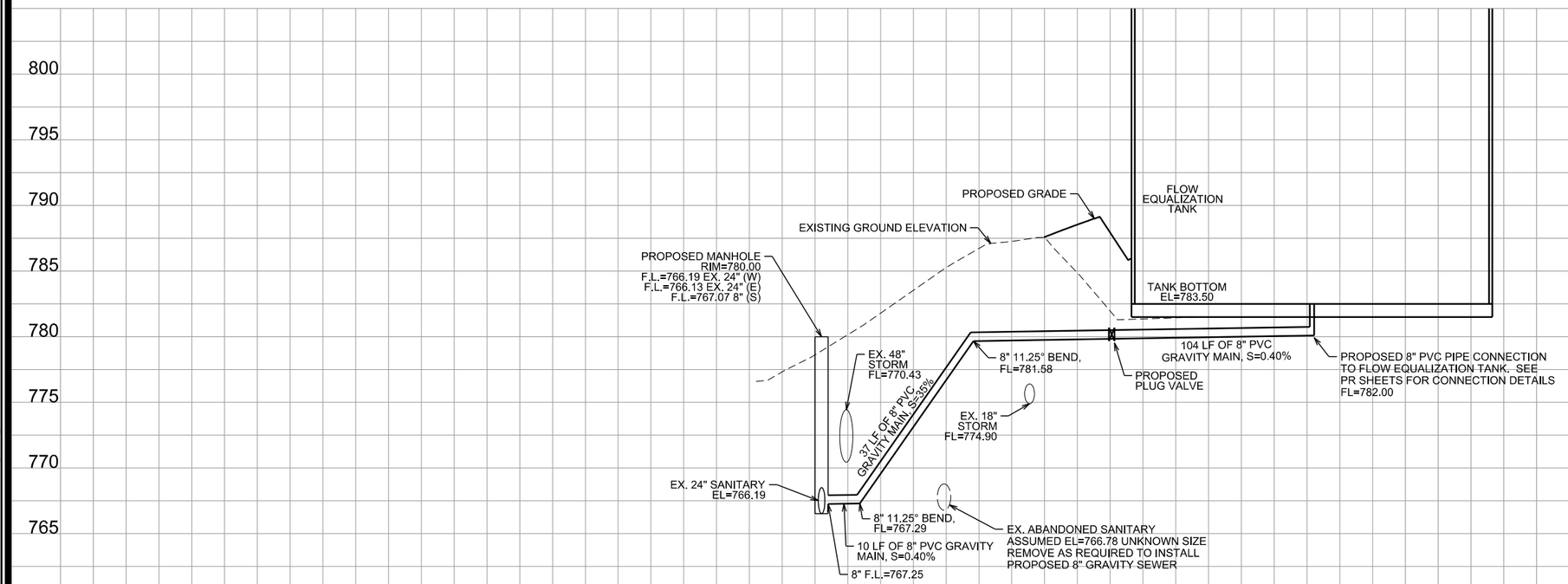
Sheet C3.01

NOTES:

1. REFER TO SHEET C1.01 FOR ADDITIONAL SITE INFORMATION
2. REFER TO SHEET C4.02 FOR FORCE MAIN INFORMATION
3. REFER TO PR SHEETS FOR LIFT STATION AND FLOW EQUALIZATION TANK DETAILS
4. CONTRACTOR TO PROTECT EXISTING UTILITIES U.N.O.
5. EXISTING PLANT, LIFT STATION AND GRAVITY SEWER SHALL REMAIN FULLY OPERATIONAL DURING CONSTRUCTION. CONTRACTOR RESPONSIBLE FOR BYPASS PUMPING AS REQUIRED.
6. CONTRACTOR TO COORDINATE WITH UTILITIES TO SUPPORT AND/OR RELOCATE UTILITIES AS NEEDED.
7. SHEETING AND SHORING IS INCIDENTAL TO INSTALLATION OF STRUCTURES BELOW GRADE.
8. CONTRACTOR SHALL PROVIDE THRUST BLOCKS AT ALL BENDS ALONG THE GRAVITY MAIN. THRUST BLOCKS SHALL MEET SUDAS DETAIL 5010.101.







MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	
Engineer:	NAE	Checked By:	LRB	Scale:	1"= 20'
Technician:	RWS	Date:	8/14/2023	Field Bk:	Pg:

Project No: 1191164

Sheet C4.01

WWTP FLOW EQUALIZATION BASIN

GRAVITY SEWER PIPING PLAN & PROFILE

ANAMOSA, IOWA

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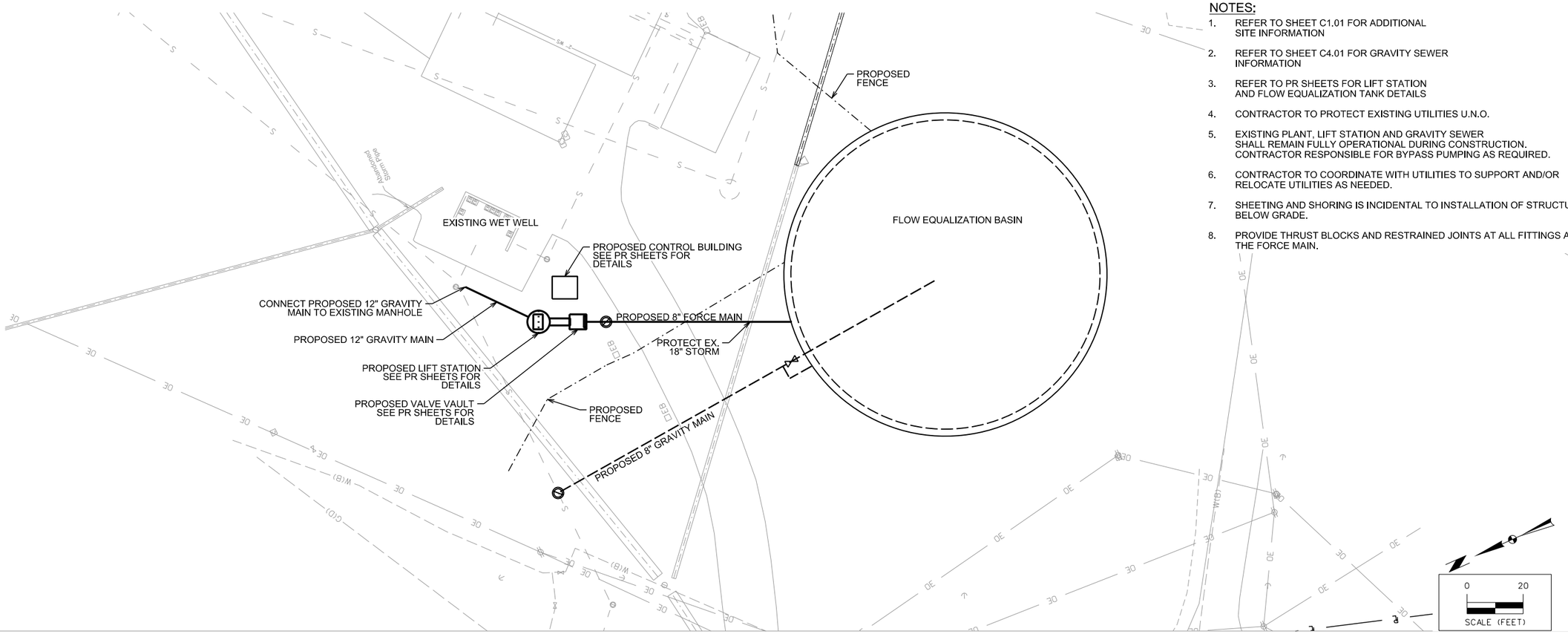
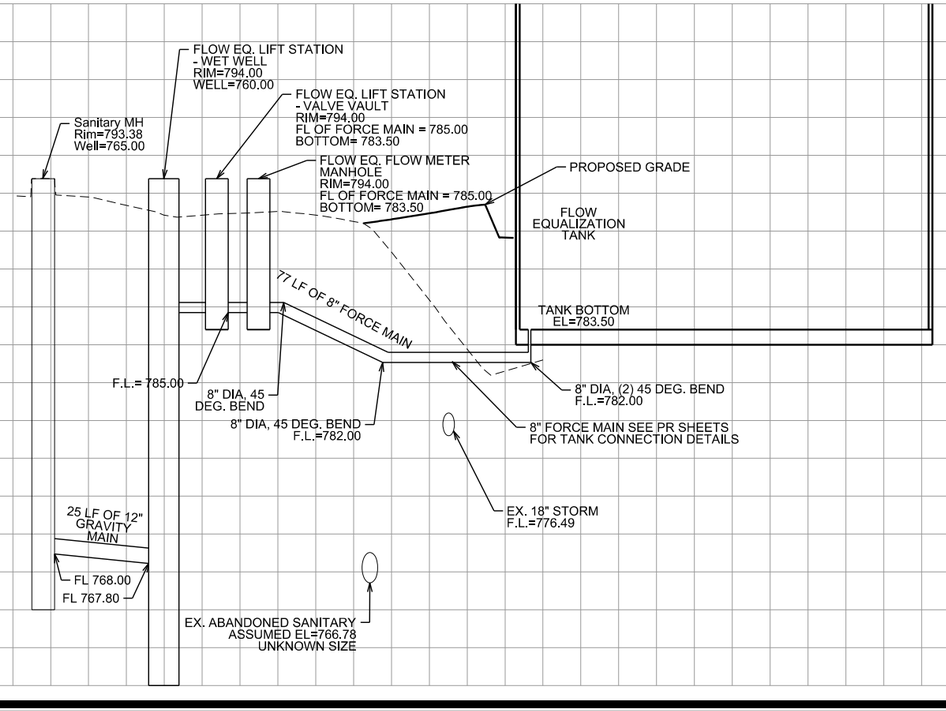
Project No: 1191164

Sheet C4.01



NOTES:

1. REFER TO SHEET C1.01 FOR ADDITIONAL SITE INFORMATION
2. REFER TO SHEET C4.01 FOR GRAVITY SEWER INFORMATION
3. REFER TO PR SHEETS FOR LIFT STATION AND FLOW EQUALIZATION TANK DETAILS
4. CONTRACTOR TO PROTECT EXISTING UTILITIES U.N.O.
5. EXISTING PLANT, LIFT STATION AND GRAVITY SEWER SHALL REMAIN FULLY OPERATIONAL DURING CONSTRUCTION. CONTRACTOR RESPONSIBLE FOR BYPASS PUMPING AS REQUIRED.
6. CONTRACTOR TO COORDINATE WITH UTILITIES TO SUPPORT AND/OR RELOCATE UTILITIES AS NEEDED.
7. SHEETING AND SHORING IS INCIDENTAL TO INSTALLATION OF STRUCTURES BELOW GRADE.
8. PROVIDE THRUST BLOCKS AND RESTRAINED JOINTS AT ALL FITTINGS ALONG THE FORCE MAIN.



MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 20'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet C4.02

WWTP FLOOD EQUALIZATION BASIN

ANAMOSA, IOWA

FORCE MAIN PLAN & PROFILE

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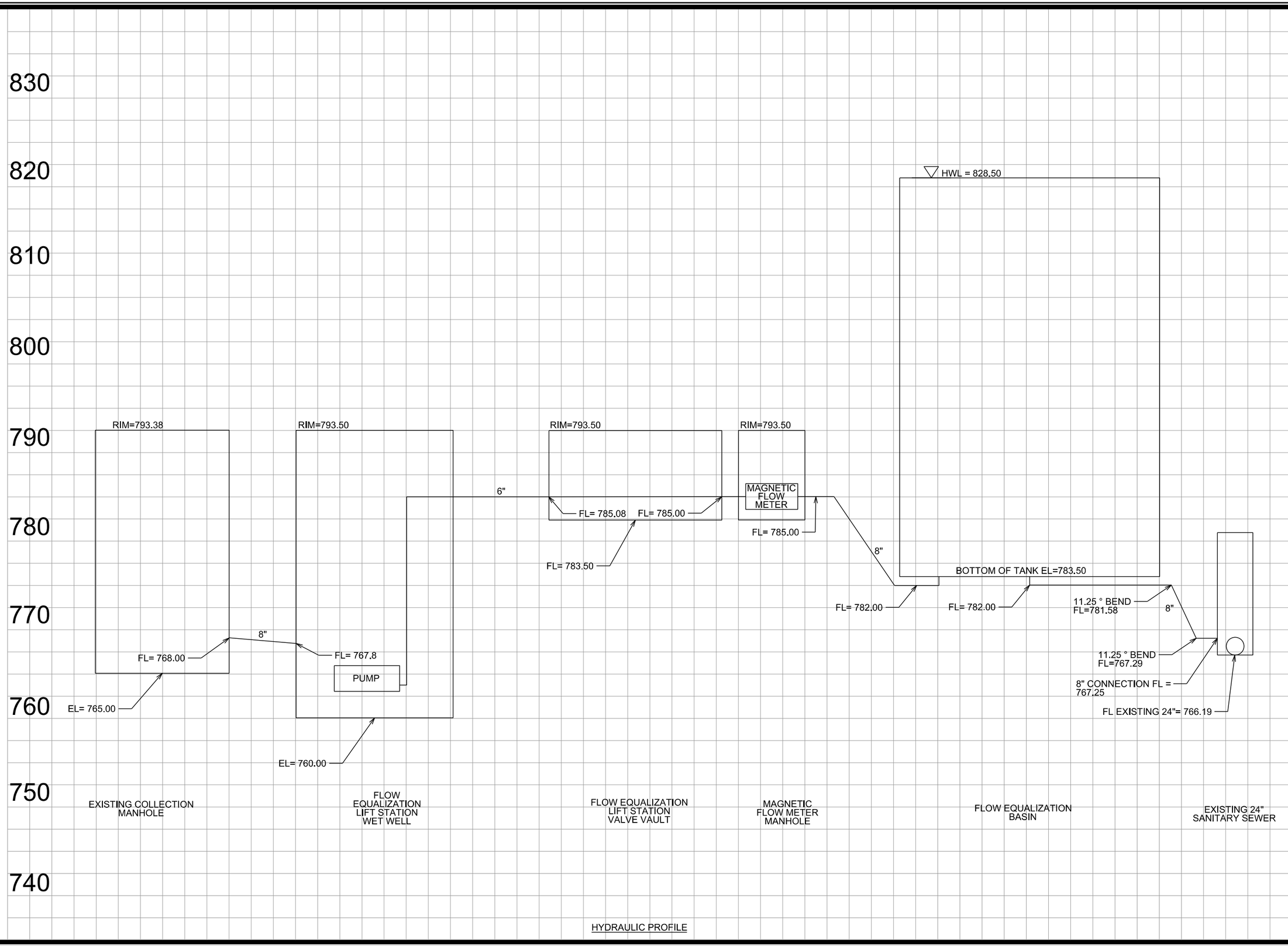
Project No: 1191164

Sheet C4.02



HYDRAULIC PROFILE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 5'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet PR0.01

WWTP FLOW EQUALIZATION BASIN

HYDRAULIC PROFILE

ANAMOSA, IOWA

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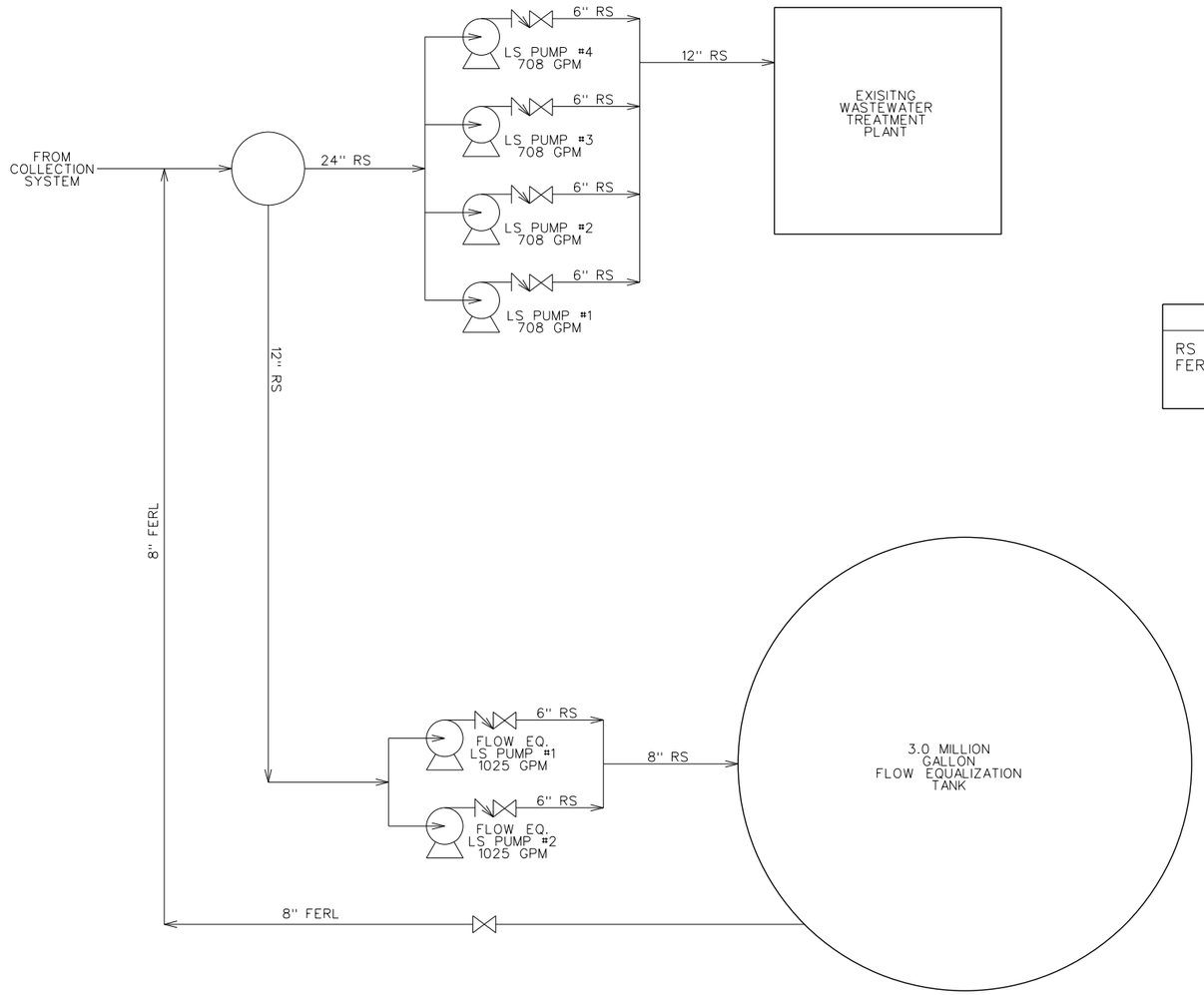
Project No: 1191164

Sheet PR0.01



PROCESS LEGEND	
RS	RAW SEWAGE
FERL	FLOW EQUALIZATION RETURN LINE

FLOW EQUAILZATION PROCESS FLOW SCHEMATIC

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"=
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet PR0.02

WWTP FLOW EQUALIZATION BASIN

ANAMOSA, IOWA

FLOW SCHEMATIC

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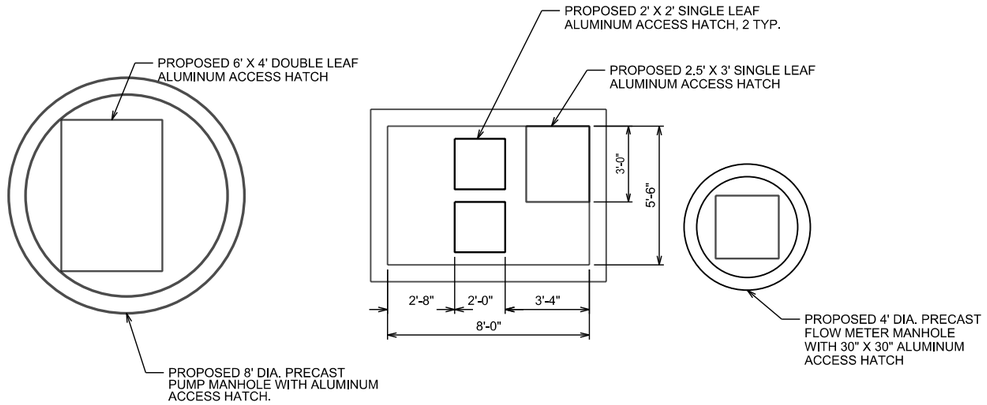
Project No: 1191164

Sheet PR0.02

NOTES:

1) ALUMINUM HATCH TO BE FLOOR DOOR ACCESS HATCHES, SERIES S ACCESS DOOR. DOOR SHALL BE 1/4 ALUMINUM DIAMOND PLAT WITH REINFORCED STIFFENERS AS NEEDED, SHALL BE ABLE TO OPEN 90 ° AND LOCK AUTOMATICALLY IN POSITION, WITHSTAND LIVE LOAD OF 300 PSF AND EQUIPPED WITH LOCK AND REMOVABLE HANDLE. FRAM E SHALL BE MADE OF 1/4" EXTRUDED WITH BUILT-IN NEOPRENE CUSHION AND STRAP ANCHORS. FINISH SHALL BE MILL FINISH WITH BITUMINOUS COATING APPLIED TO PORTIONS OF EXTERIOR OF FRAME THAT IS IN CONTACT WITH CONCRETE. MANUFACTURED BY HALLIDAY PRODUCTS OR EQUAL



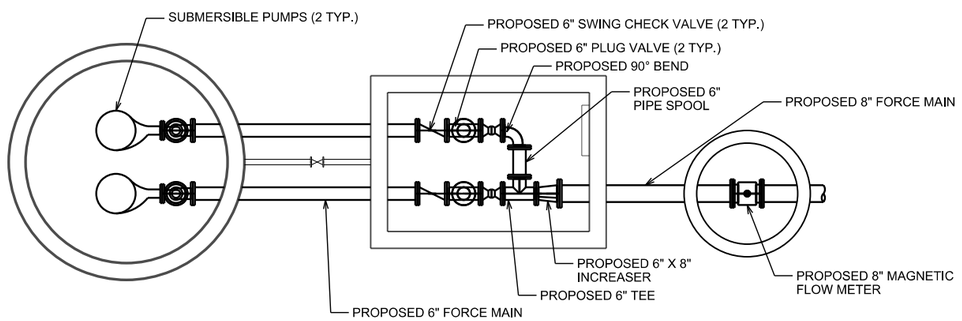
1 / PR1.01 FLOW EQUALIZATION LIFT STATION - HATCH PLAN VIEW
1"=3'

NOTES:

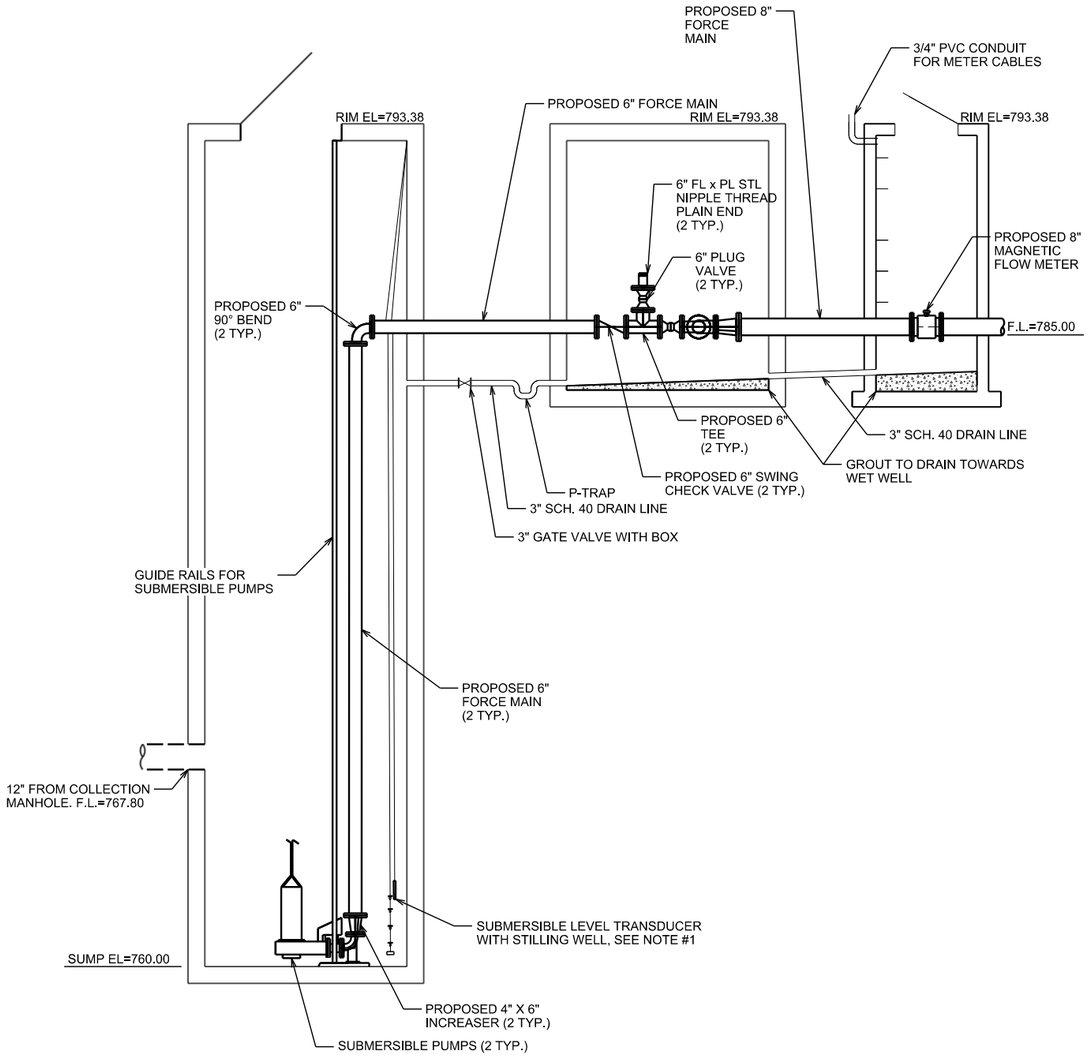
1) A STILLING WELL SHALL BE INSTALLED FOR A SUBMERSIBLE LEVEL TRANSDUCER. AT A MINIMUM, THE STILLING PIPE SHALL CONSIST OF A PERFORATED 8" DIA. PVC PIPE ATTACHED TO MH WELL FROM 1'-0" OFF THE BASE TO AT LEAST 14'-0" WITH STAINLESS STEEL HARDWARE.

2) PUMPS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

3) ALL VALVES SHALL HAVE STEM EXTENSIONS WITH A 2" OPERATING NUT LOCATED BELOW THE CONCRETE CAP AND AN OPENING IN THE CONCRETE CAP FOR OPERATING THE VALVE STEM EXTENSION. STEM EXTENSIONS SHALL EXTEND TO JUST BELOW THE CONCRETE CAP. THE CASTINGS COVERING THE OPENING SHALL BE INSTALLED TO BE FLUSH WITH THE TOP OF THE VALVE VAULT LID.



2 / PR1.01 FLOW EQUALIZATION LIFT STATION - PLAN VIEW
1"=3'



3 / PR1.01 FLOW EQUALIZATION LIFT STATION - PLAN VIEW
1"=3'

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 3'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164 | Sheet PR1.01

WWTP FLOW EQUALIZATION BASIN
LIFT STATION PLAN AND PROFILE VIEWS
ANAMOSA, IOWA

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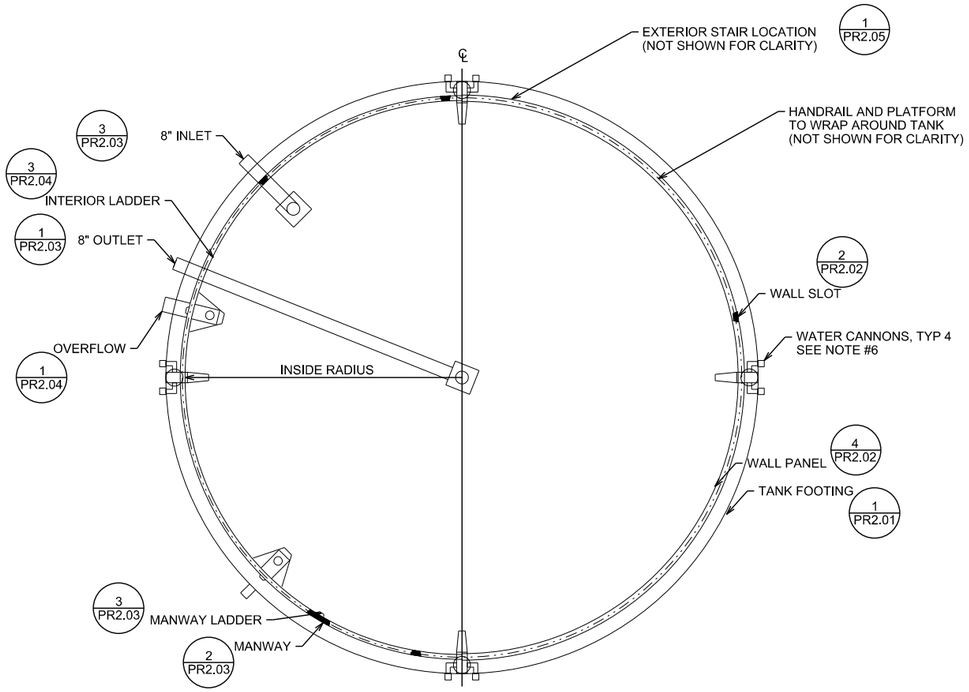
Project No: 1191164
Sheet PR1.01

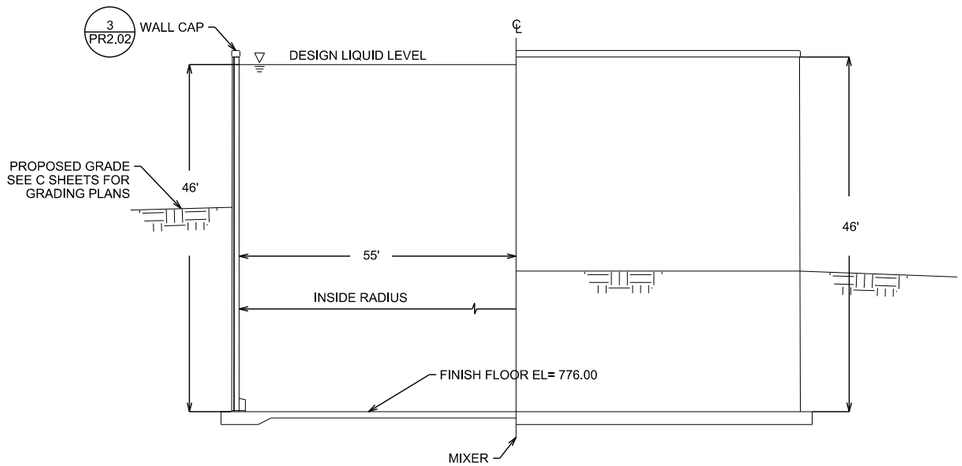


FLOOR PLAN

WALL CAP PLAN

1 PR2.01 TANK FLOOR AND WALL PLANS

NO SCALE

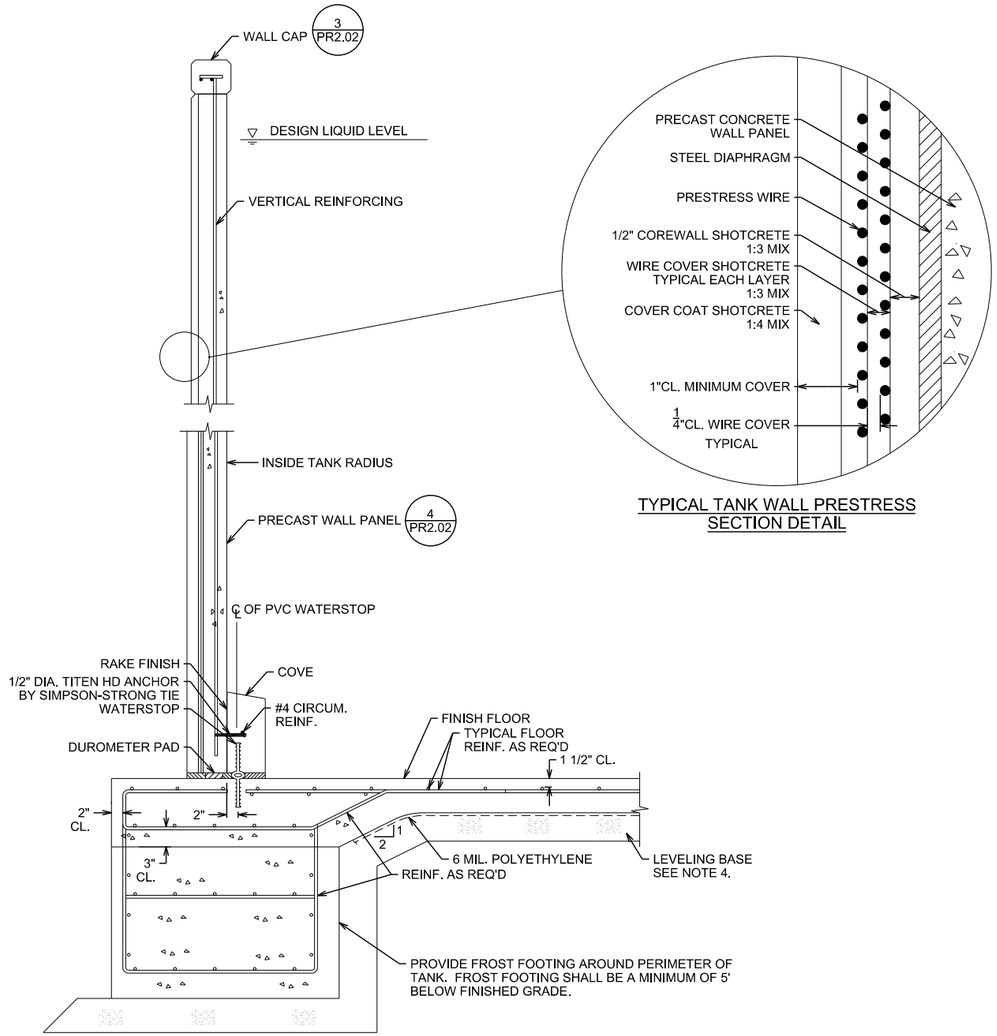


2 PR2.01 TANK SECTION & ELEVATION

NO SCALE

NOTES:

1. THE TANK FLOOR SLAB SHALL RECEIVE A BULLFLOAT AND/OR A FRESNO FINISH.
2. FOUNDATION AND FLOOR CONCRETE, f'c = 3,500 psi. WALL CONCRETE, f'c = 4,000 psi. COVE, COREWALL, AND WIRE COVER SHOTCRETE, f'c = 4,500 psi, 1:3 MIX. COVERCOAT SHOTCRETE, f'c = 4,500 psi, 1:4 MIX. ALL REINFORCING SHALL BE GRADE 60.
3. FLOOR AND FOOTING REINFORCING SHALL BE DETERMINED BY TANK DESIGNER.
4. REFER TO CONTACT DOCUMENTS FOR LEVELING BASE SPECIFICATION, COMPACTION REQUIREMENTS, AND FOUNDATION PREPERATION. LEVELING BASE MATERIAL SHALL BE PROVIDED BENEATH THE TANK FLOOR, FOOTING AND BOTTOM OF PIPE ENCASEMENTS.
5. THE EXPOSED EXTERIOR WALL CONCRETE SURFACES TO ONE FOOT BELOW GRADE SHALL RECEIVE TWO COATS OF TAMMSCOAT SMOOTH. COLOR SHALL BE SELECTED BY OWNER.
6. PROVIDE 4 WATER CANNONS ALONG THE TOP OF THE TANK. THESE SHALL BE EVENLY SPACED AND ATTACHED PER TANK MANUFACTURERS REQUIREMENTS. WATER CANNONS SHALL BE PIRANAH 1.50" MANUAL STATION MONITOR WITH THE FOLLOW REQUIREMENTS: 50-300 GPM FLOW RATE; 50-150 PSI OPERATING PRESSURE; 7 PSI PRESSURE LOSS AT 300 GPM; OPTIMUM OPERATING PRESSURE OF 120 PSI; LOCK KNOB TRAVEL LOCK; 1.50" MALE NH OUTLET. THE CANNONS WILL BE MOUNTED UP HIGH AND SHOOT BELOW THE HORIZONTAL. CONTRACTOR SHALL PROVIDE PVC CONNECTION PIPE FROM CANNON TO GROUND LEVEL AND ATTACHED TO TANK. SUPPORTS SHALL BE PROVIDED AT A MINIMUM OF 10' SPACING. QUICK CONNECT SHALL BE PROVIDED AT THE GROUND LEVEL.



3 S.1 WALL SECTION

NO SCALE

TYPICAL TANK WALL PRESTRESS SECTION DETAIL

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 1'
Technician: RWS | Date: 8/14/2023 | Field Bk-, Pg:

Project No: 1191164

Sheet PR2.01

WWTP FLOW EQUALIZATION BASIN

FLOW EQUALIZATION TANK PLAN VIEW AND DETAILS

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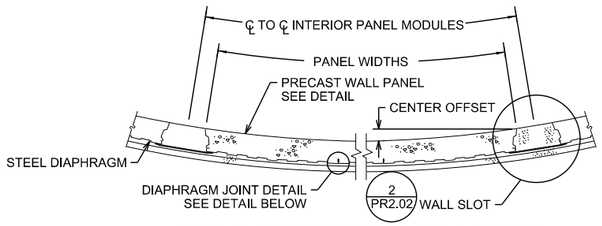
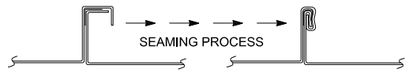
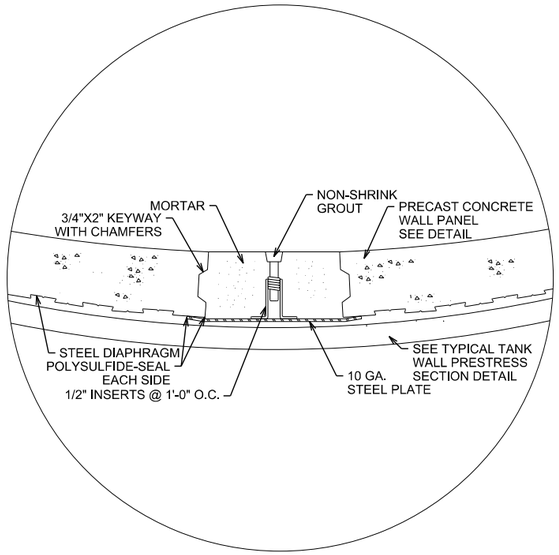
Sheet PR2.01



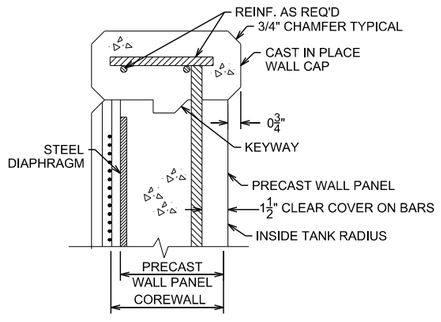
TYPICAL CIRCUMFERENTIAL WALL SECTION



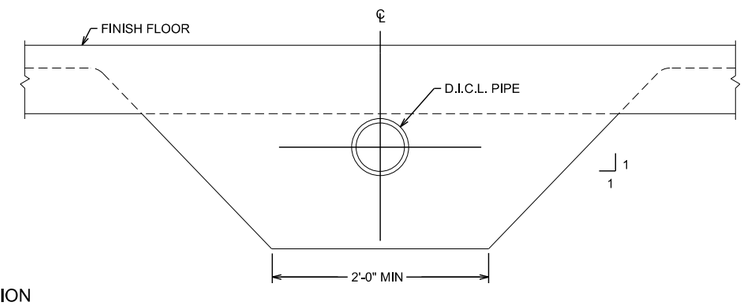
DIAPHRAGM JOINT DETAIL



1 PR2.02 WALL PANEL AND JOINT
NO SCALE



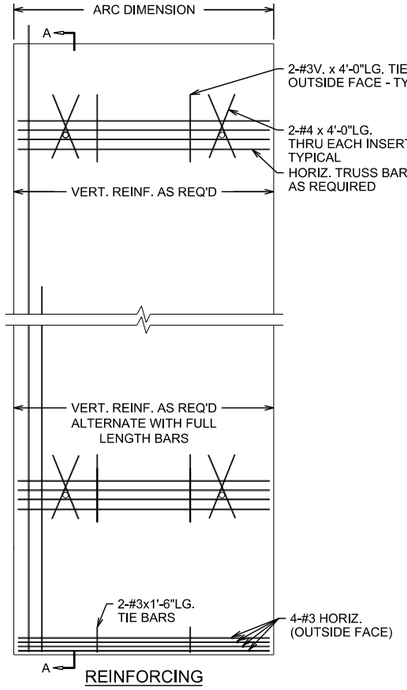
3 PR2.02 WALL CAP DETAIL
NO SCALE



3 PR2.02 SECTION
NO SCALE

2 PR2.02 WALL SLOT DETAIL
NO SCALE

NOTE:
WALL PANELS SHALL RECEIVE A HORIZ. LIGHT BROOM FINISH ABOVE KEYWAY AND A HORIZ. ROUGH BROOM FINISH BELOW KEYWAY.



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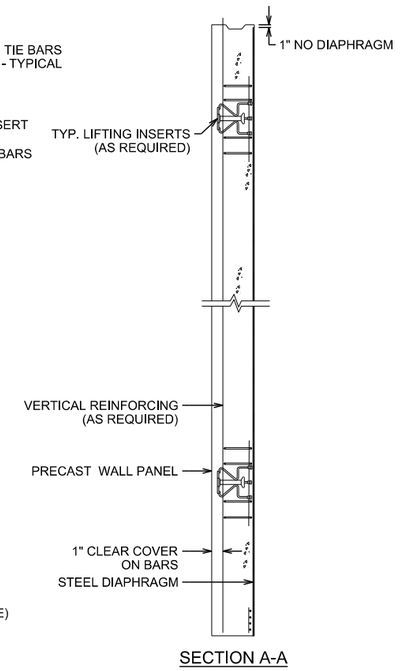

SECTION A-A

4 PR2.02 PRECAST WALL PANEL DETAIL
NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 1'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet PR2.02

WWTP FLOW EQUALIZATION BASIN

FLOW EQUALIZATION TANK DETAILS

ANAMOSA, IOWA

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CEDAR RAPIDS, IA 52404
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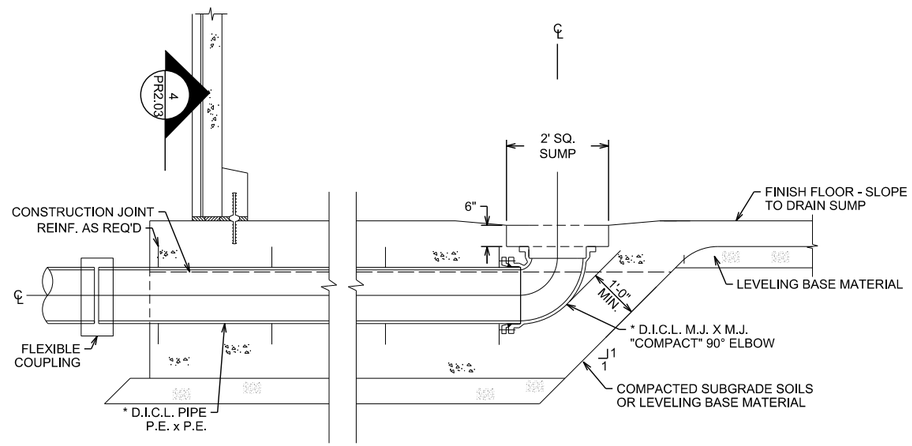
Project No: 1191164

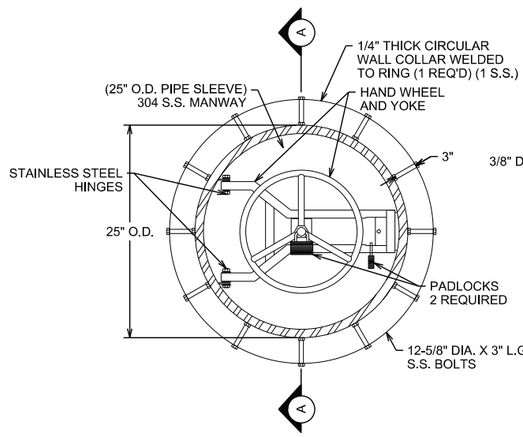
Sheet PR2.02



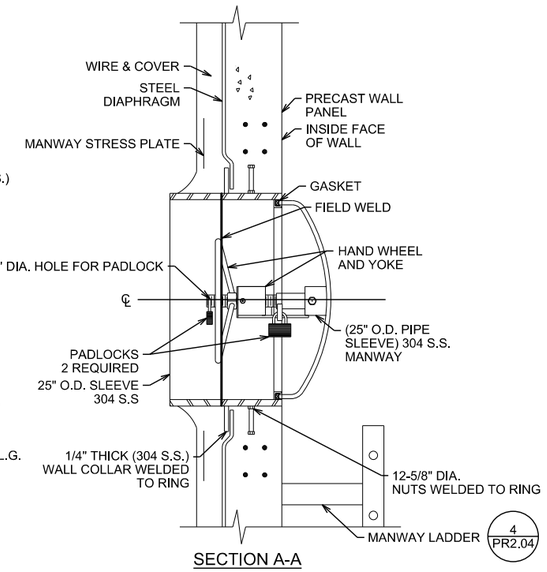
1 PR2.03 OUTLET PIPE AND CENTER DRAIN
NO SCALE

NOTES:

1. 1 WALL MANWAY REQUIRED.
2. MANWAY TO BE LOCATED IN THE MIDDLE OF TYPE "A" WALL PANEL.

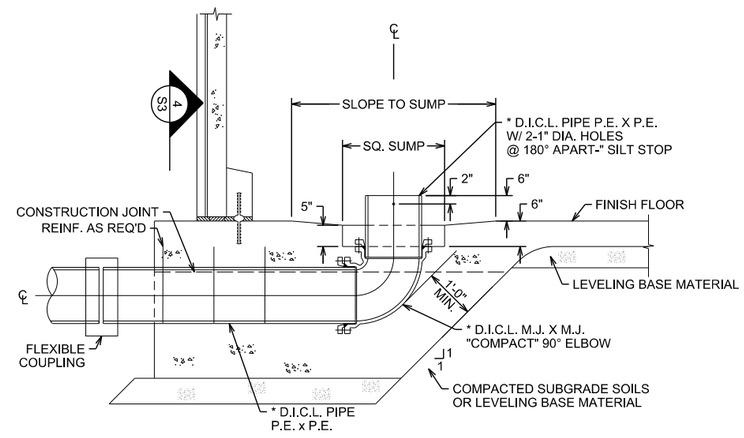


ELEVATION



SECTION A-A

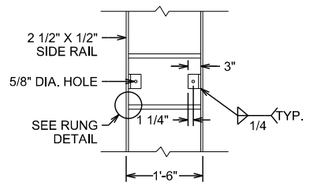
2 PR2.03 WALL MANWAY
NO SCALE



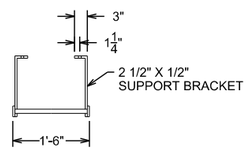
1 S.3 INLET PIPE
NO SCALE

NOTES:

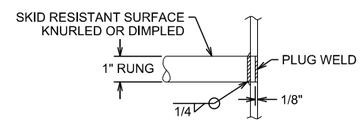
1. LADDER SHALL BE 6061-T6 ALUMINUM
2. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL RECEIVE A PVC SHIM.
3. LADDERS SHALL BE CONNECTED TO TANK USING STAINLESS STEEL WEDGE ANCHORS.



ELEVATION



SECTION



RUNG DETAIL

4 PR2.03 MANWAY LADDER DETAILS
NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 1'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164 | Sheet PR2.03

WWTP FLOW EQUALIZATION BASIN

FLOW EQUALIZATION TANK DETAILS

ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
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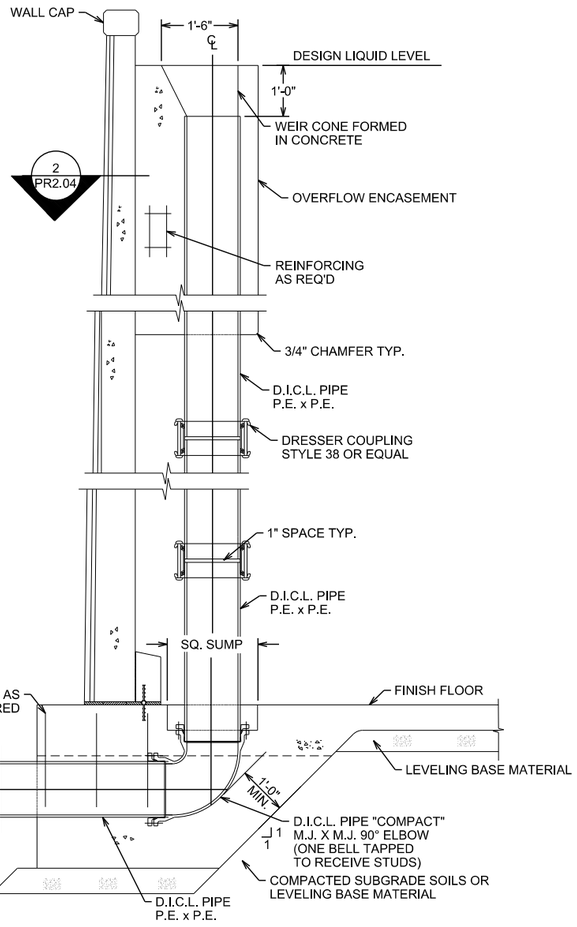
SNYDER & ASSOCIATES

Project No: 1191164

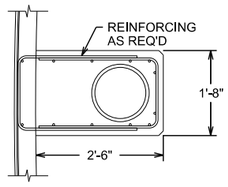
Sheet PR2.03

NOTE:

* PIPE SIZE, WEIR, AND OVERFLOW ENCASEMENT DIMENSIONS AS REQ'D BY OVERFLOW RATE.



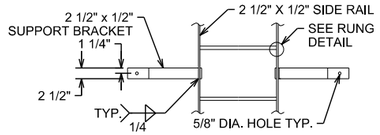
1 PR2.04 WALL SECTION @ OVERFLOW
NO SCALE



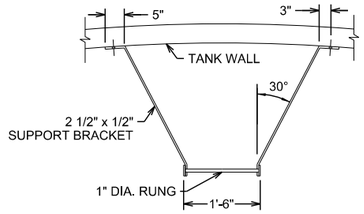
2 PR2.04 SECTION
NO SCALE

NOTES:

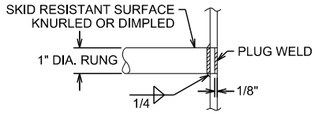
1. LADDER SHALL BE 6061-T6 ALUMINUM
2. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL RECEIVE A PVC SHIM.
3. LADDERS SHALL BE CONNECTED TO TANK USING STAINLESS STEEL WEDGE ANCHORS.
4. OSHA APPROVED FALL PREVENTION DEVICE TO BE INSTALLED (STAINLESS STEEL).



ELEVATION



SECTION



RUNG DETAIL

3 PR2.04 INTERIOR LADDER DETAILS
NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 1'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164

Sheet PR2.04

WWTP FLOW EQUALIZATION BASIN

ANAMOSA, IOWA

FLOW EQUALIZATION TANK DETAILS

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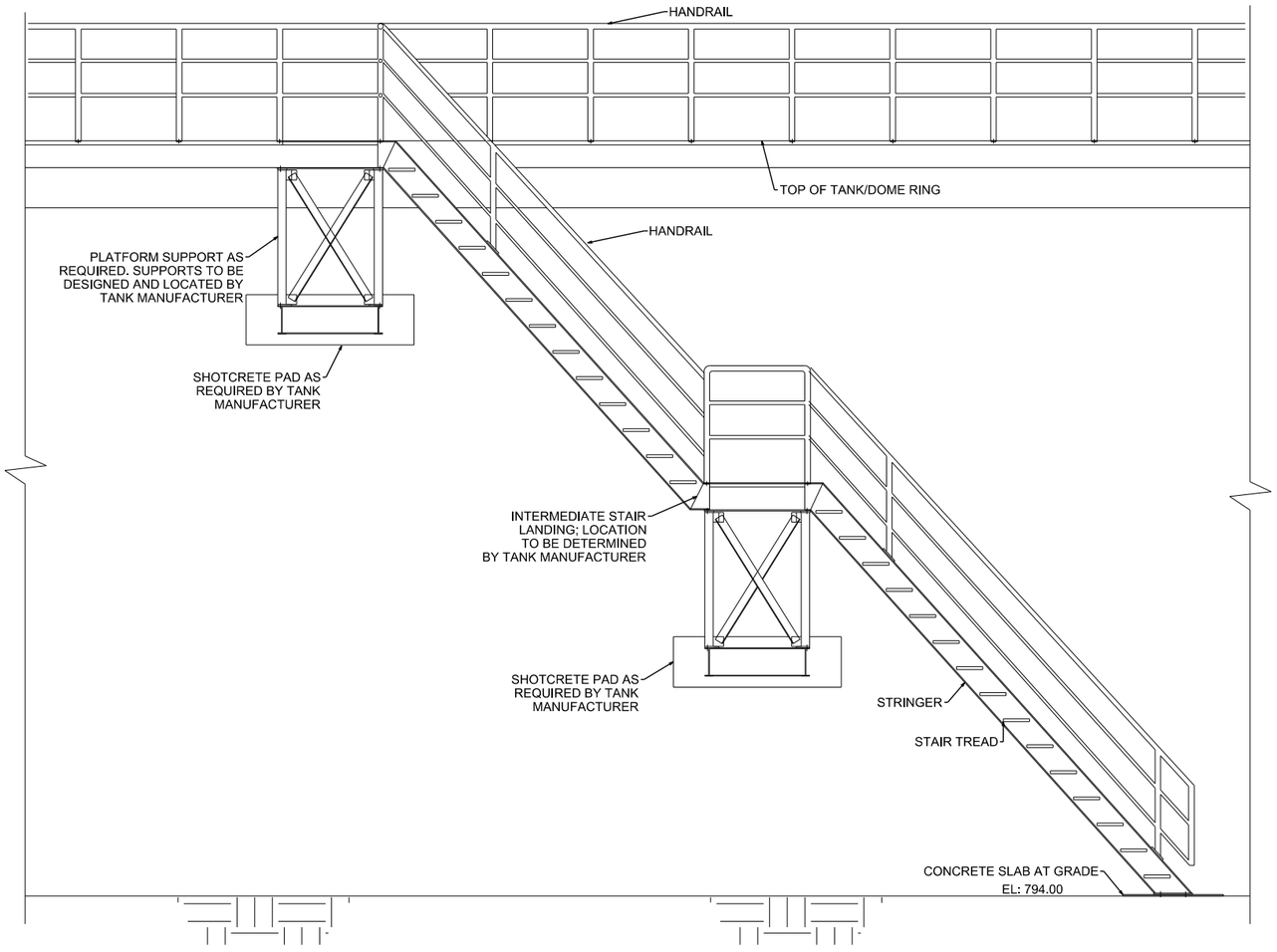
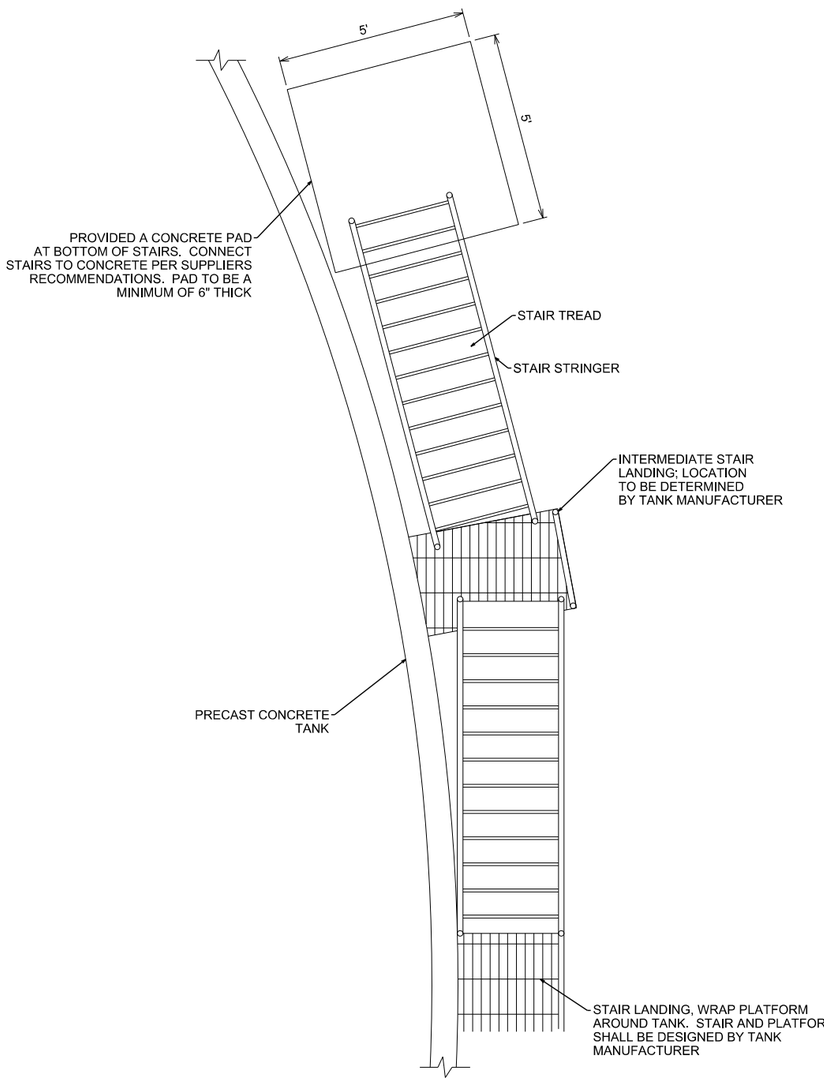
Project No: 1191164

Sheet PR2.04

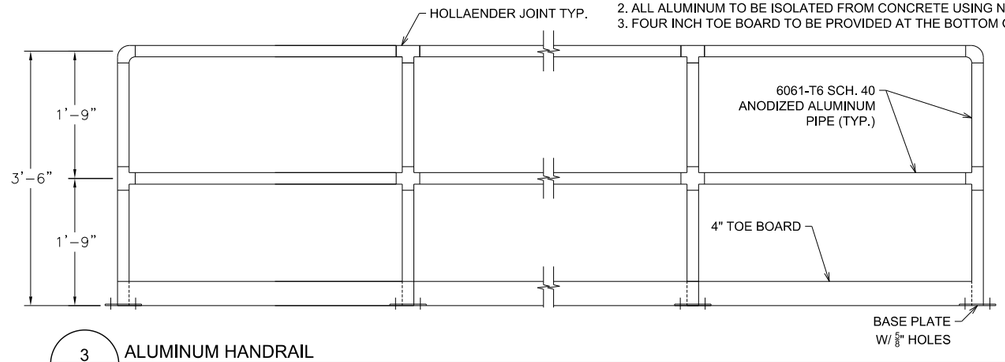


1 PR2.05 ALUMINUM STAIRWAY - PROFILE VIEW
NO SCALE



2 PR2.05 ALUMINUM STAIRWAY - PLAN VIEW
NO SCALE

NOTES:
1. S.S. WEDGE ANCHORS TO BE USED AT EACH HANDRAIL/TANK CONNECTION.
2. ALL ALUMINUM TO BE ISOLATED FROM CONCRETE USING NEOPRENE GASKETS.
3. FOUR INCH TOE BOARD TO BE PROVIDED AT THE BOTTOM OF HANDRAIL.



3 PR2.05 ALUMINUM HANDRAIL
NO SCALE

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	
Engineer:	NAE	Checked By:	LRB	Scale:	1"=1'
Tech/Estim:	RWS	Date:	8/14/2023	Field Bk:	Pg:

Project No: 1191164

Sheet PR2.05

WWTP FLOW EQUALIZATION BASIN

ANAMOSA, IOWA

FLOW EQUALIZATION TANK DETAILS

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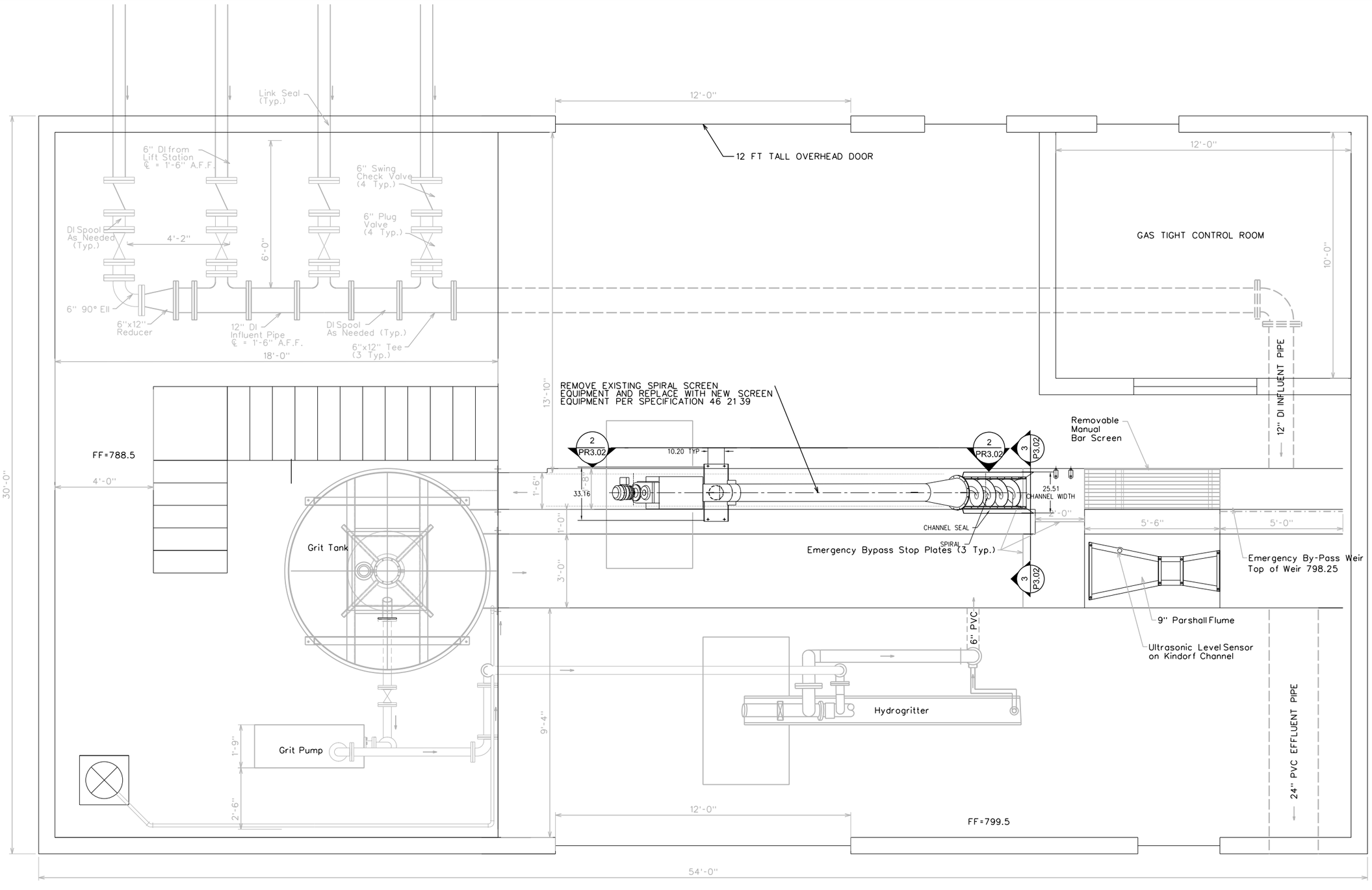
Project No: 1191164

Sheet PR2.05



SCALE
1/4"=1'

	FLOOD PLAIN PERMIT APPLICATION		5/23/2023	BY
MARK	REVISION		DATE	
Engineer:	NAE	Checked By:	LRB	Scale: 1"= 2'
Technician:	RWS	Date:	8/14/2023	Field Bk: Pg:

Project No: 1191164

Sheet PR3.01

WWTP FLOW EQUALIZATION BASIN

SCREEN REPLACEMENT PLAN

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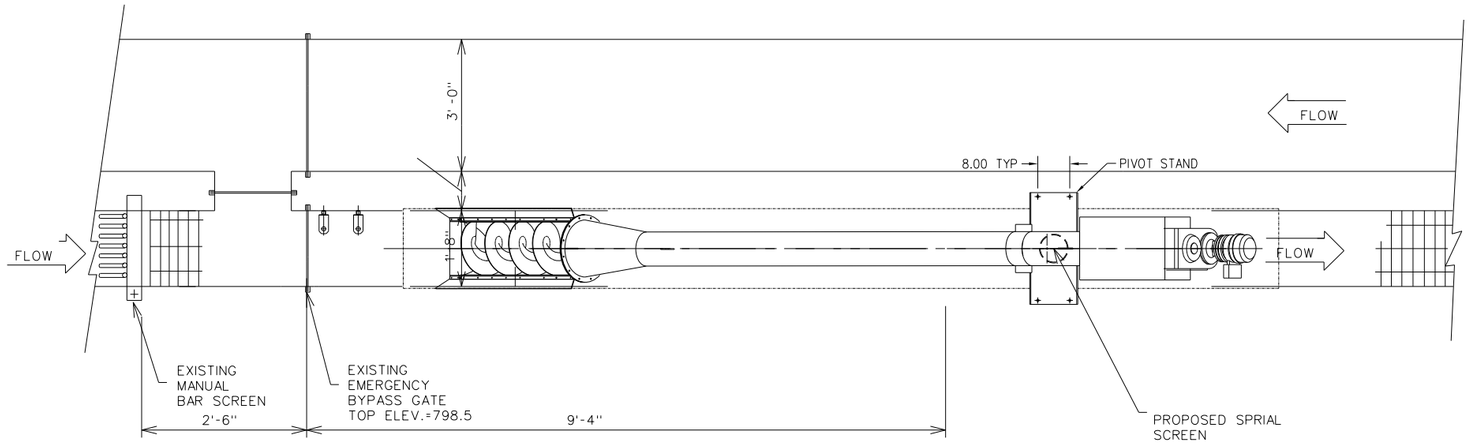
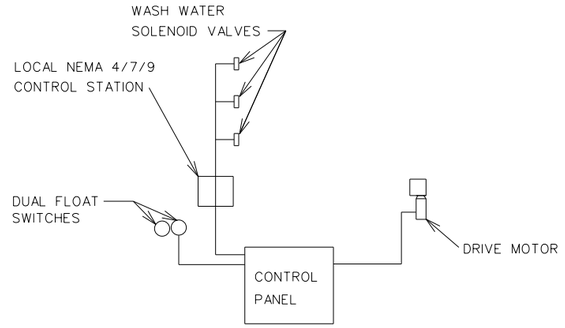
Project No: 1191164

Sheet PR3.01

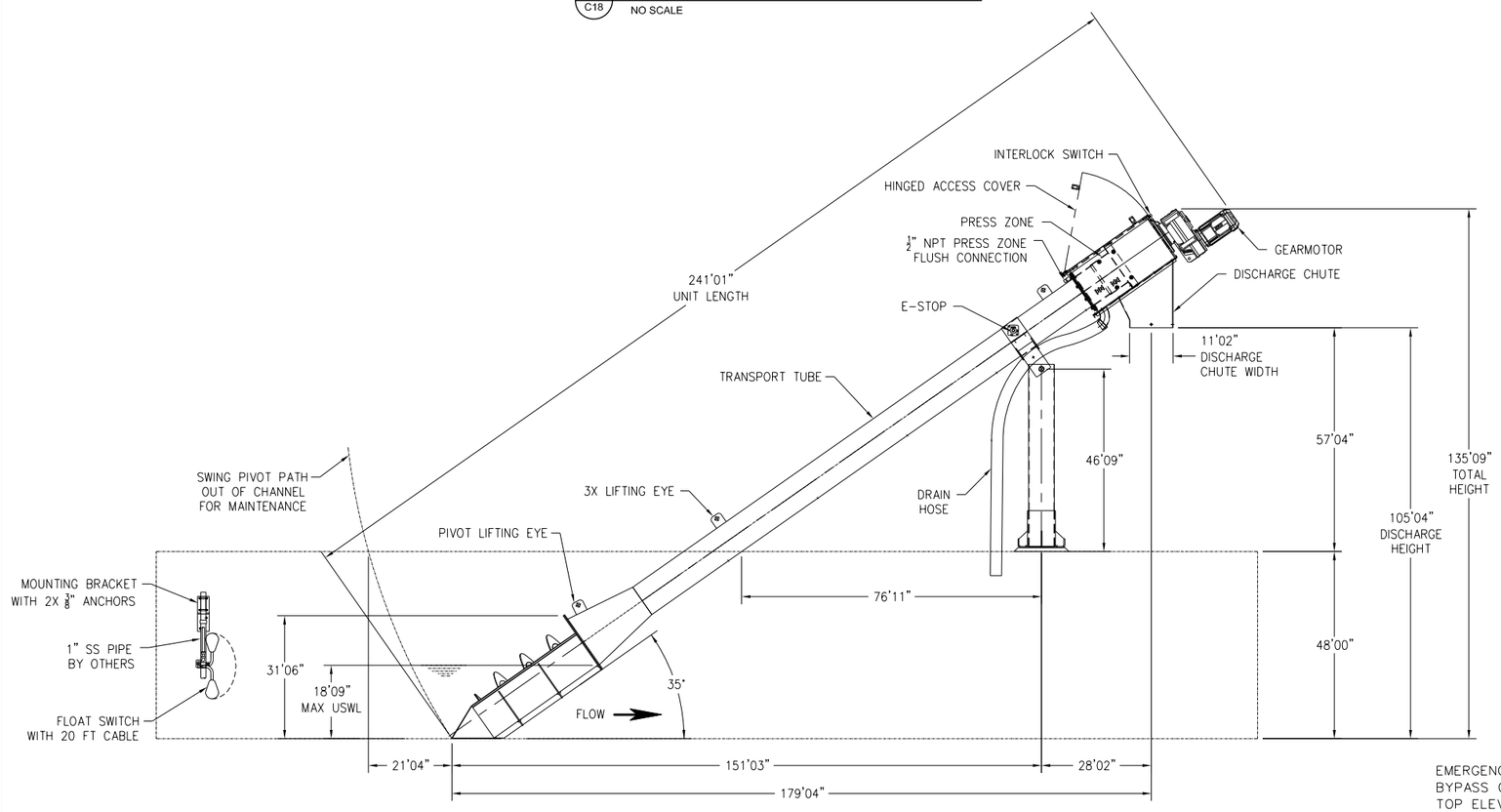


1 C18 **PLAN VIEWS**
NO SCALE

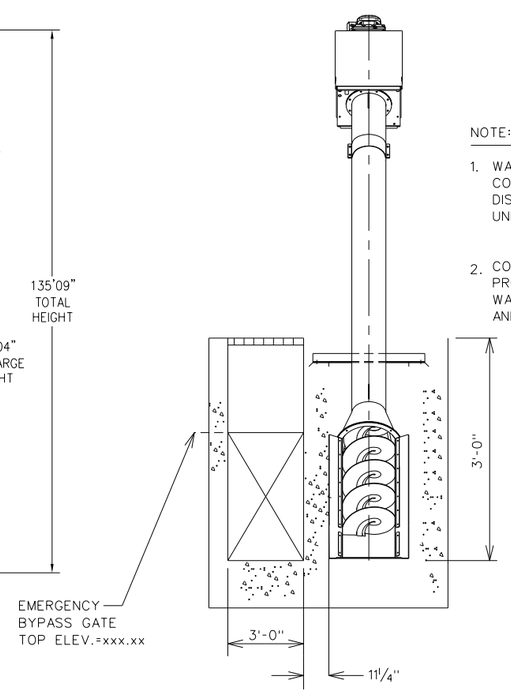


CONTROL INTERCONNECTION DIAGRAM

ALL CONDUIT AND WIRE CONNECTIONS BETWEEN CONTROL PANEL AND SCREEN COMPONENTS BY CONTRACTOR.



2 C18 **SIDE ELEVATION VIEW**



3 C18 **REAR ELEVATION VIEW**
NO SCALE

NOTE:

1. WATER SUPPLY LINES AND ELECTRICAL CONNECTION TO BE FLEXIBLE or QUICK DISCONNECT TYPE TO ALLOW UNIT TO PIVOT OUT OF CHANNEL.
2. CONTRACTOR SHALL CONNECT PROPOSED SCREEN TO EXISTING WATER SUPPLY LINES AND ELECTRICAL CONNECTION

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE | Checked By: LRB | Scale: 1"= 1'
Technician: RWS | Date: 8/14/2023 | Field Bk: | Pg:

Project No: 1191164 | Sheet P3.02

WWTP FLOW EQUALIZATION BASIN

SCREEN EQUIPMENT DETAILS

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Project No: 1191164
Sheet PR3.02

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8/14/2023
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pwilliams
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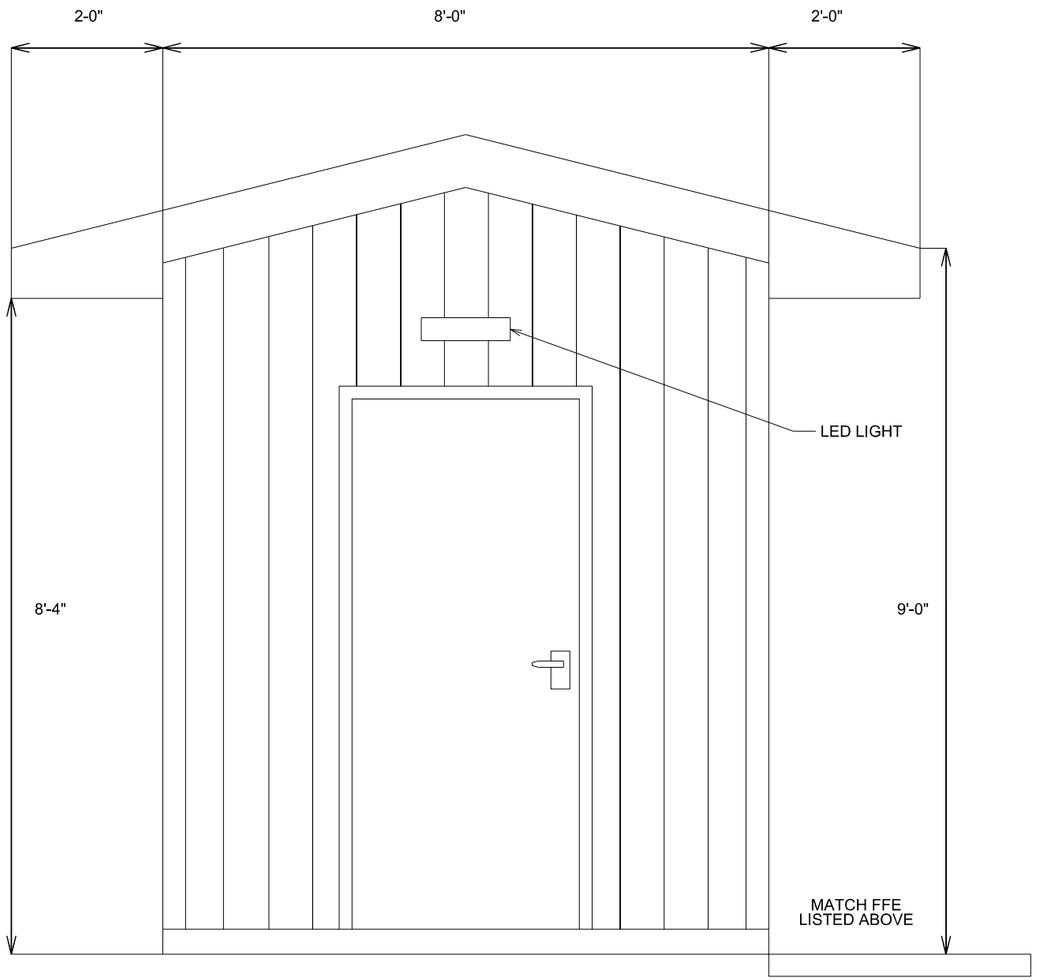
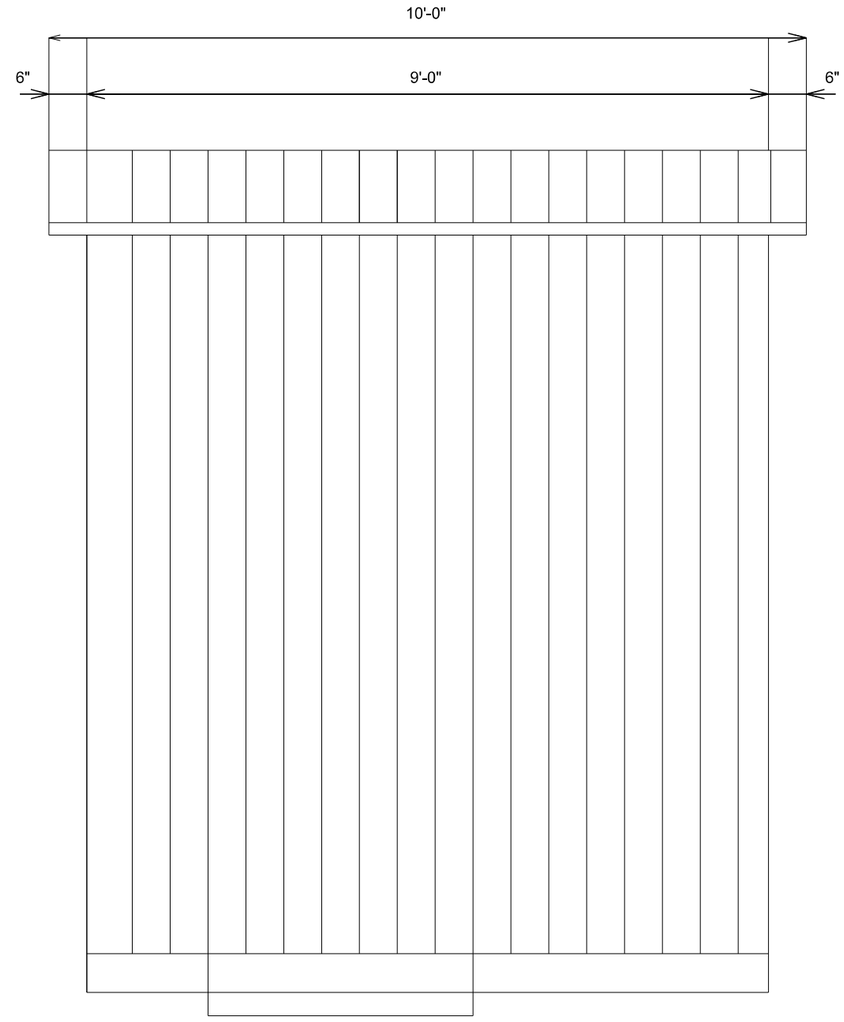


1 PR4.04 FLOW EQ. CONTROL BUILDING
1"=1'



2 PR4.04 FLOW EQ. CONTROL BUILDING
1"=1'

MARK	REVISION	DATE	BY
	FLOOD PLAIN PERMIT APPLICATION	5/23/2023	

Engineer: NAE
Checked By: LRB
Scale: 1"=
Technician: RWS
Date: 8/14/2023
Field Bk:
Pg:
Project No: 1191164
Sheet PR4.01

WWTP FLOW EQUALIZATION BASIN

CONTROL BUILDING PLAN

ANAMOSA, IOWA

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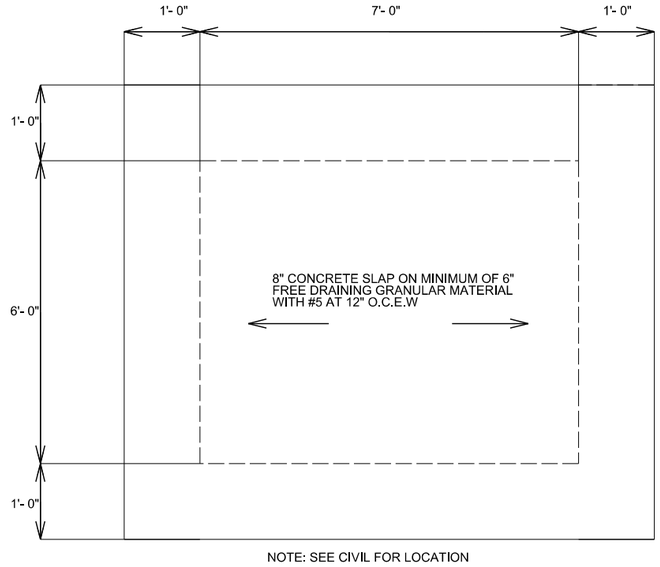
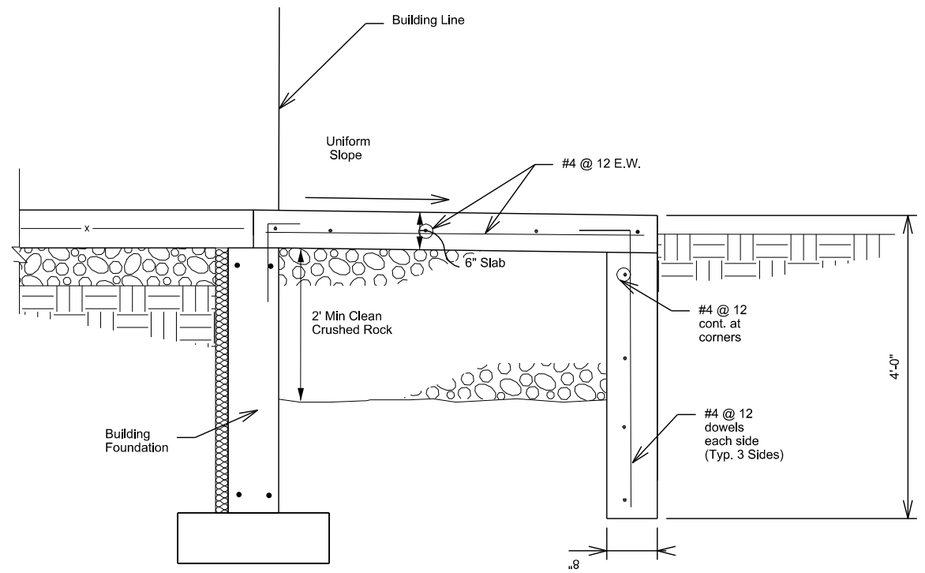
Project No: **1191164**
Sheet PR4.01

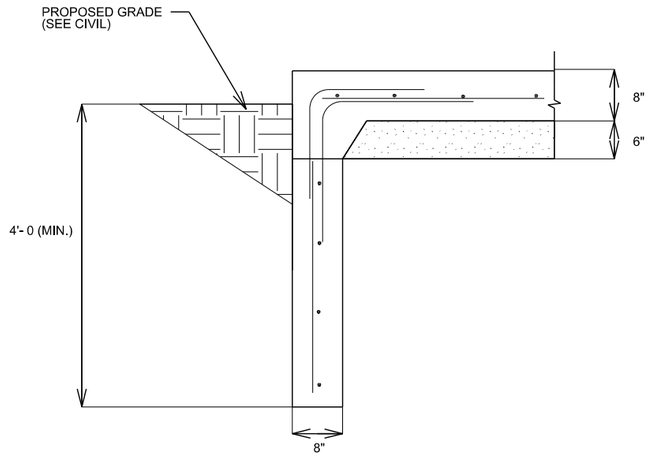


NOTE: SEE CIVIL FOR LOCATION

1 PR4.05 CONTROLS BUILDING FOUNDATION PLAN
1"=1'



2 PR4.05 TYPICAL STOOP
1"=1'



3 PR4.05 FOOTING DETAIL
1"=1'

MARK	
REVISION	
DATE	5/23/2023
BY	
Engineer:	NAE
Checked By:	LRB
Scale:	1"=
Technician:	RWS
Date:	8/14/2023
Field Bk:	
Pg:	

FLOOD PLAIN PERMIT APPLICATION

Project No: 1191164

Sheet PR4.02

WWTP FLOW EQUALIZATION BASIN

ANAMOSA, IOWA

CONTROL BUILDING PLAN

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Project No: 1191164

Sheet PR4.02

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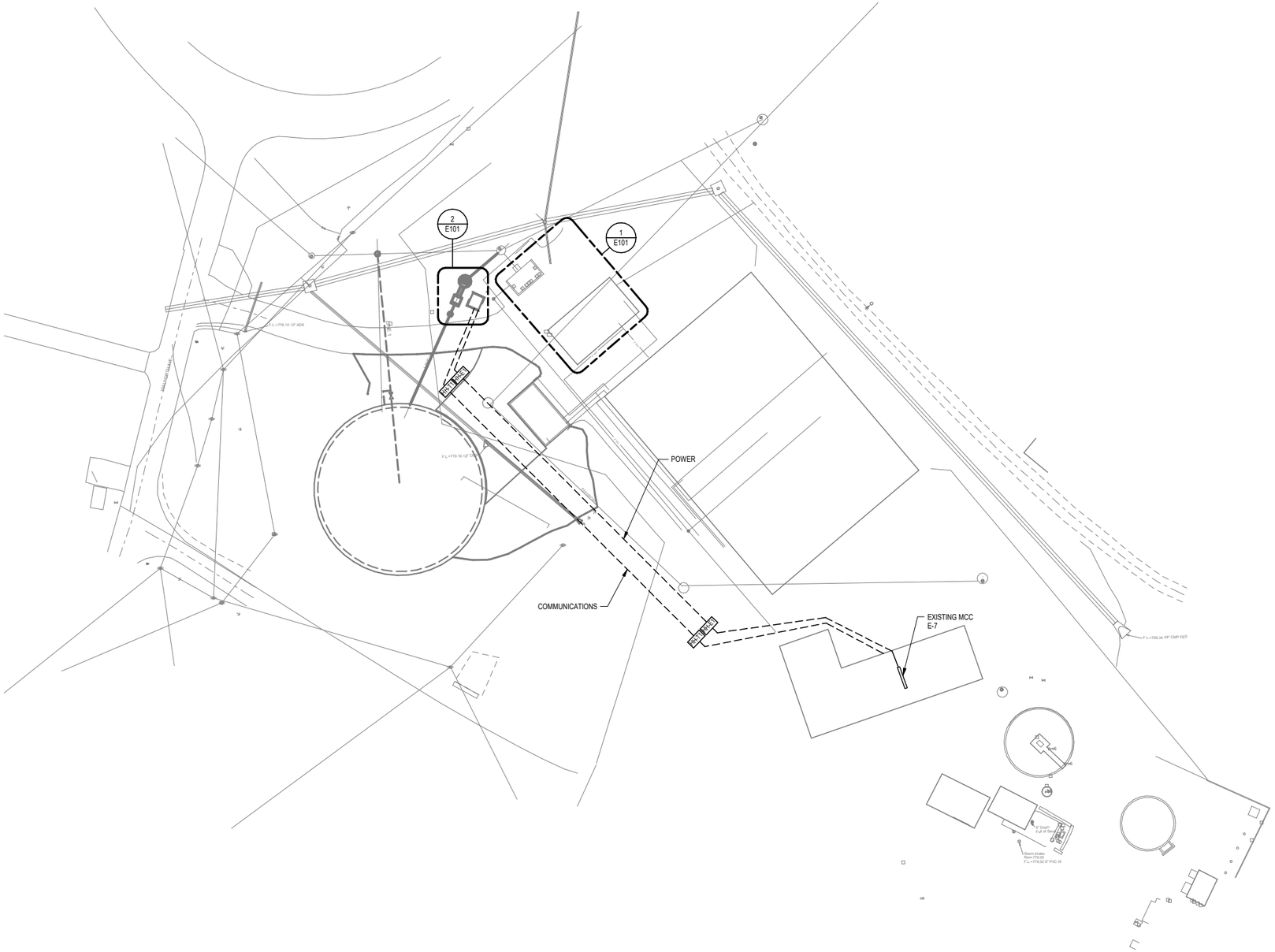
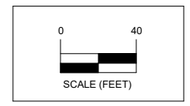


1 ELECTRICAL SITE PLAN
1" = 40'-0"



NEW WORK KEY
- EXISTING
- NEW / REVISED
- EXISTING EQUIPMENT
- NEW / REVISED EQUIPMENT

KEYED NOTES

E-7	APPROXIMATE LOCATION OF EXISTING MOTOR CONTROL CENTER. SQUARE D MODEL 6.

DESIGN ENGINEERS
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MARK	REVISION	DATE	BY

Engineer: ADJ | Checked By: ADJ | Scale: 1" = 40'-0"
Technician: TSK | Date: 05/19/2023 | Field Bk: Pg:

Project No: 1191164 | Sheet E100

WATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL SITE PLAN

ANAMOSA, IOWA

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Project No: 1191164
Sheet E100

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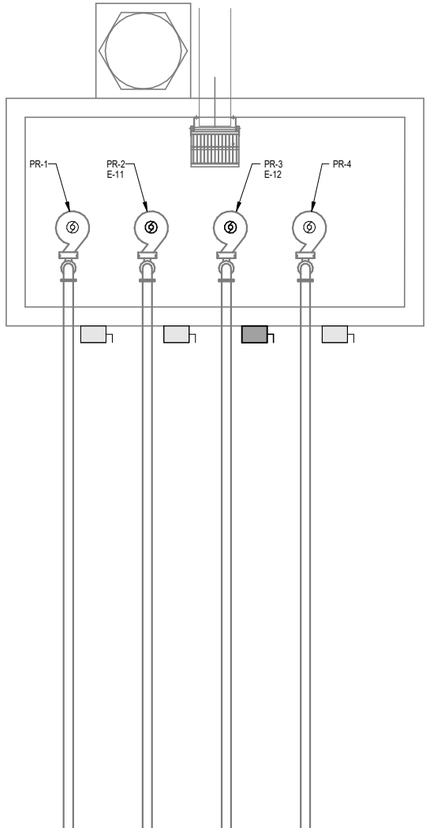
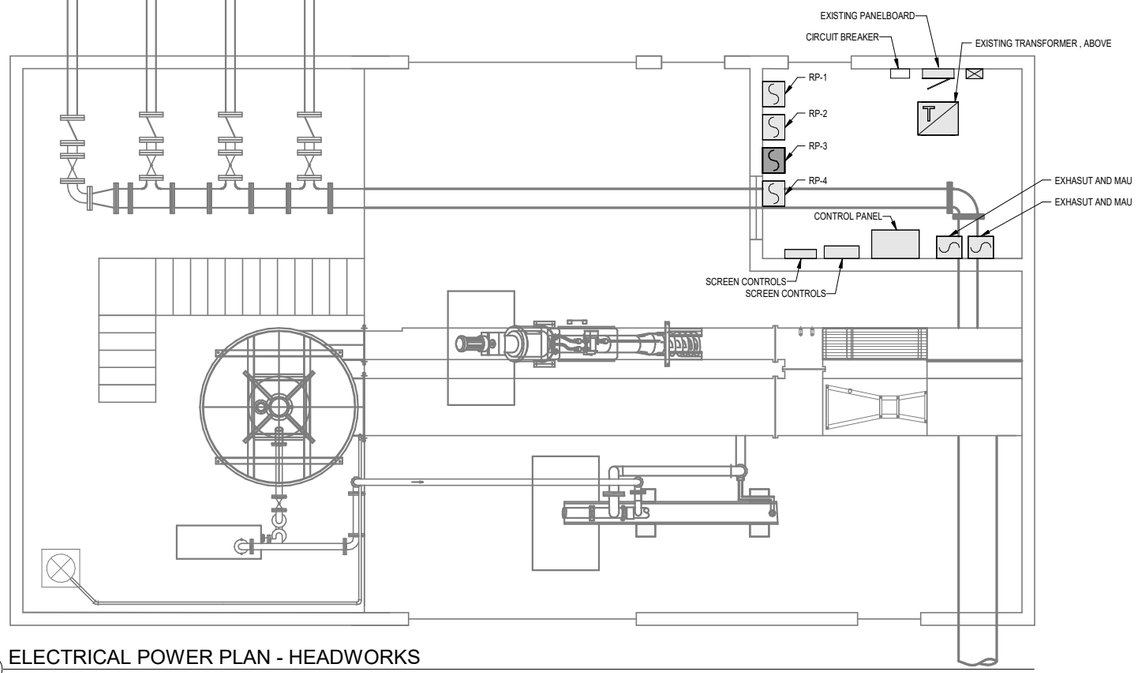
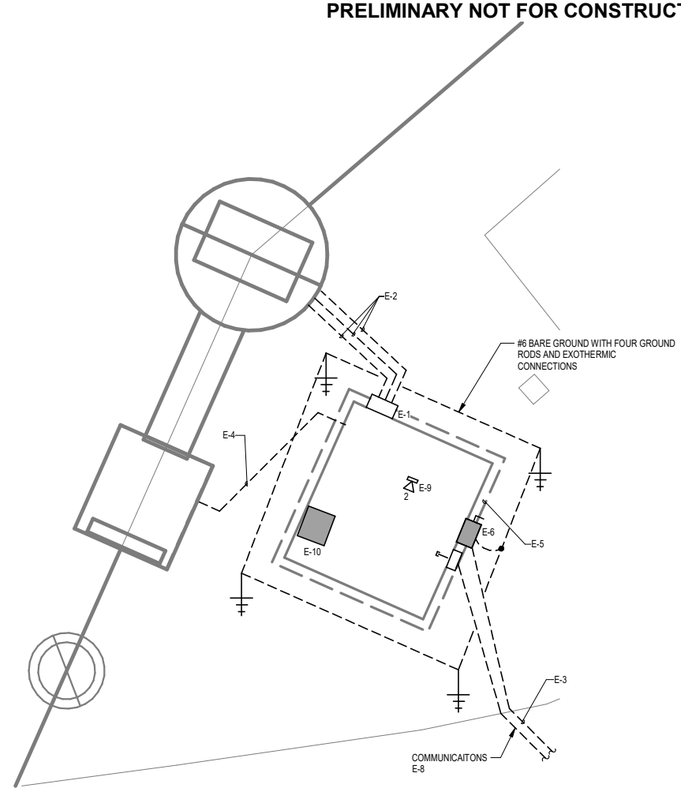




1 ELECTRICAL POWER PLAN - HEADWORKS
1/4" = 1'-0"



2 ELECTRICAL POWER PLAN - LIFT STATION
1/4" = 1'-0"

KEYED NOTES

E-1	VENTILATED J-BOX ON EXTERIOR OF PRE-FABRICATED CONTROL BUILDING FURNISHED WITH CONTROL BUILDING. J-BOX TO SERVICE AS A TRANSITION FROM THE C101 WETWELL TO THE NON-CLASSIFIED CONTROL BUILDING.
E-2	UNDERGROUND FEEDS FROM PRE-FABRICATED CONTROL BUILDING TO WET WELL FOR PUMP FEEDS AND LEVEL CONTROLS.
E-3	480V FEED FROM MAIN MOTOR CONTROL CENTER.
E-4	RACEWAY FROM PRE-FABRICATED CONTROL BUILDING TO VALVE VAULT FOR FLOW METERS.
E-5	PREFABRICATED CONTROL BUILDING. BUILDING PROVIDED COMPLETE WITH 480V POWER DISTRIBUTION, VFDS, TRANSFORMER, LIGHTING AND RECEPTACLES.
E-6	200A FUSIBLE NEMA 4X DISCONNECT SWITCH WITH SOLID NEUTRAL PROVIDED BY DIVISION 26 CONTRACTOR.
E-8	2" CONDUIT WITH FIBER OPTIC CABLE FROM MAIN BUILDING.
E-9	REFER TO E-510. PROVIDE TELECOMMUNICATION OUTLET WITH FIBER OPTIC FEED FROM MAIN PLANT FOR CONTROLS SYSTEM USE. FIELD VERIFY ALL REQUIREMENTS.
E-10	WALL MOUNTED TELECOM RACK DRW-1. REFER TO E510. FIELD VERIFY EXACT LOCATION.
E-11	EXISTING 25HP PUMP BEING REPLACED WITH NEW 20HP PUMP. 25HP VFD TO BE RE-USED.
E-12	EXISTING 15HP PUMP BEING REPLACED WITH NEW 20HP PUMP. 15HP VFD TO BE REPLACED WITH NEW 20HP VFD. 30A DISCONNECT TO BE REPLACED WITH 60A DISCONNECT. EXISTING #8 CONDUCTORS FROM CONTROL BUILDING TO DISCONNECT ARE SUFFICIENT FOR 20HP MOTOR.

0 4
SCALE (FEET)

NEW WORK KEY
- EXISTING
- NEW / REVISED
- EXISTING EQUIPMENT
- NEW / REVISED EQUIPMENT

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Engineer: ADJ	Checked By: ADJ	Scale: 1/4" = 1'-0"	
Technician: TSK	Date: 05/19/2023	Field Bk: Pg:	

Project No: 1191164 Sheet E101

WATER TREATMENT PLANT IMPROVEMENTS
ELECTRICAL HEADWORKS & LIFT STATION PLAN
ANAMOSA, IOWA

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Project No: 1191164
Sheet E101

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Madison, WI 53719 | 608.424.8815
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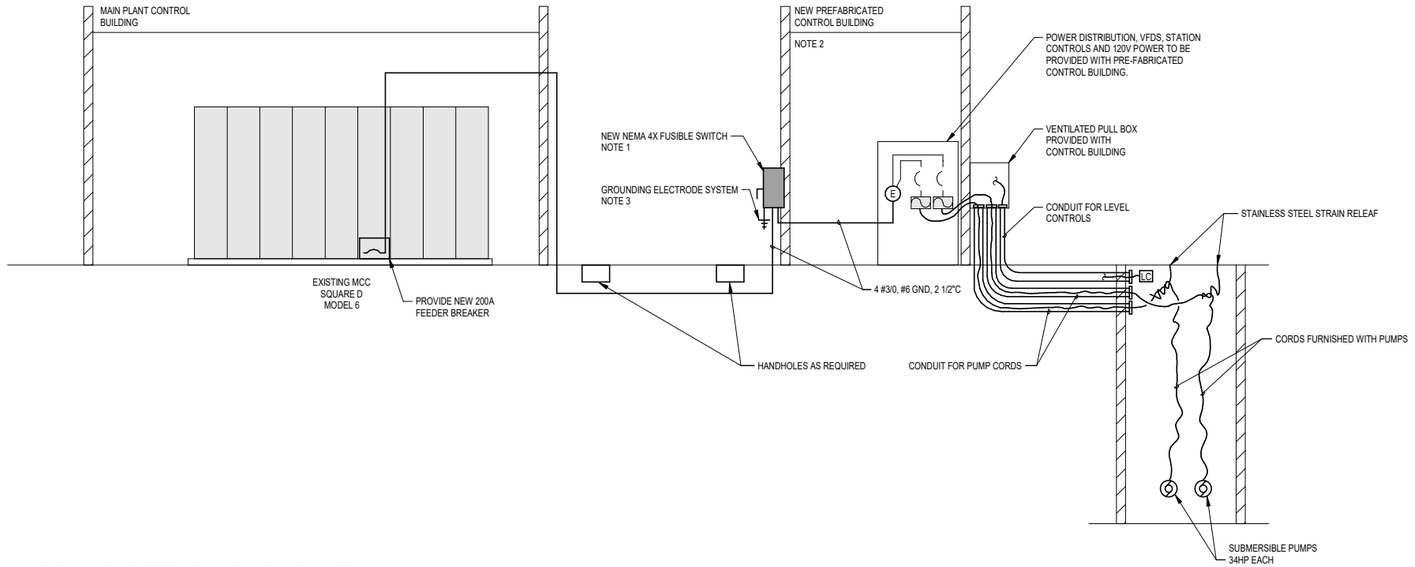
KEYED NOTES



1 PARTIAL ELECTRICAL RISER DIAGRAM
NOT TO SCALE

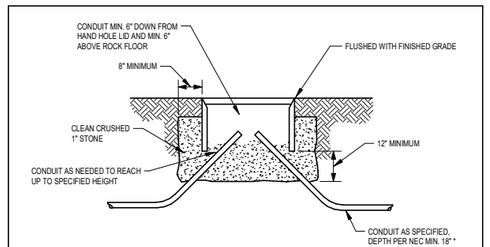
ELECTRICAL RISER DIAGRAM NOTES:

1. 200A FUSIBLE NEMA 4X CONTROL BUILDING MAIN DISCONNECT. DO NOT BOND NEUTRAL. BOND EQUIPMENT GROUNDING CONDUCTOR TO NEW GROUNDING ELECTRODE SYSTEM.
2. PRE-FABRICATED CONTROL BUILDING TO BE PROVIDED COMPLETE AND PRE-WIRED WITH 480V DISTRIBUTION, MOTOR CONTROLS, STATION CONTROLS, TRANSFORMER, 120V DISTRIBUTION, LIGHTS AND RECEPTACLES.
3. REFER TO PLAN SHEET FROM GROUND RING. BOND TO CONTROL BUILDING FOUNDATION.

HANDHOLE SCHEDULE

PLAN MARK	SIZE	DEPTH	COVER IDENTIFICATION	QUAZITE CATALOG NO.	DESCRIPTION
HH-T1	13" x 24"	18"	TELECOMMUNICATIONS	PG SERIES, TIER 22 COVER	Open Bottom, Note 1
HH-E1	13" x 24"	18"	ELECTRICAL	PG SERIES, TIER 22 COVER	Open Bottom, Note 1

Notes:
1. Provide clean fill for drainage 12" beneath and 8" around handhole. Refer to specifications.



TYPICAL HAND HOLE INSTALLATION DETAIL
E115-24

NEW WORK KEY
- EXISTING
- NEW / REVISED
- EXISTING EQUIPMENT
- NEW / REVISED EQUIPMENT

MARK	REVISION	DATE	BY
Engineer: ADJ		Scale: 1/8" = 1'-0"	
Technician: TSK	Checked By: ADJ	Field Bk:	
	Date: 05/19/2023	Pg:	
Project No: 1191164		Sheet E500	

WATER TREATMENT PLANT IMPROVEMENTS
ANAMOSA, IOWA
ELECTRICAL RISER DIAGRAM

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Project No: 1191164
Sheet E500

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Madison, WI 53719 | 608.424.8815
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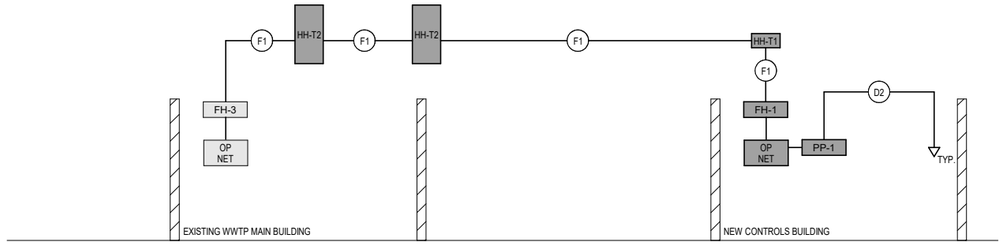
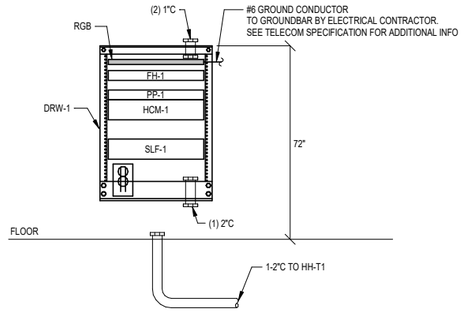


1 STRUCTURED CABLE DIAGRAM
NOT TO SCALE



2 TYPICAL TELECOM WALL ELEVATION
NOT TO SCALE

TELECOMMUNICATIONS CABLE AND EQUIPMENT SCHEDULE

PLAN MARK	DESCRIPTION	FURNISHED BY	INSTALLED BY	REMARKS	NOTES
D2	Data Branch, 4 Pair UTP, Cat 6	DIV.27	DIV.27	Blue In Color	
D3	Data Patch Cord, Cat 6, RJ-45 To RJ-45,	DIV.27	DIV.27	10 5', 10 10', Blue In Color, Same Mfr. As UTP	
F1	Fiber Optic Cable, Plenum, 12 Strand, SM, Outdoor rated for Duct installation Only	DIV.27	DIV.27	Corning: 012ESP-T4101D20	
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DRW-1	12U WALL-MOUNTED TELECOM RACK FOR MDF, HARSH ENVIRONMENT	DIV.27	DIV.27	TRIPP-LITE SRW12USNEMA FOR HARSH ENVIRONMENTS W/LOCKING DOOR	
UPS-1	1500VA UNINTERRUPTIBLE POWER SUPPLY	DIV.27	DIV.27	TRIPP-LITE SMART1500RM2U	
FH-1	Fiber Housing, Rack Mount, 1RU	DIV.27	DIV.27	Corning: CCH-01U	
HCM-1	Horizontal Cable Manager, 2RU	DIV.27	DIV.27	CPI: 30130-719	
PP-1	Patch Panel, 8P8C Modular,24 Port High Density, Cat 6	DIV.27	DIV.27	For Mounting In DRW-1 And DRW-2. Product Per Spec.	
SLF-1	Shelf, Wall Mounted	DIV.27	DIV.27	CPI, Standard Single-Sided Steel Shelf, Black, Part # 40750-719	
RGB	Data Rack Grounding Busbar, 1RU	DIV.27	DIV.27	Per Spec.	
TMGB-1	Telecommunications Main Grounding Busbar	DIV.27	DIV.27	Panduit Part # GB4B0624TPI-1	
OP-NET	Owner Provided Network Equipment	Owner	Owner		
Contractor Shall Check Specifications For Possible Further Details					

MARK	REVISION	DATE	BY
Engineer: ADJ	Checked By: ADJ	Scale: 1/8" = 1'-0"	
Technician: TSK	Date: 05/19/2023	Field Bk: Pg:	Sheet E510
Project No: 1191164			

WATER TREATMENT PLANT IMPROVEMENTS
ELECTRICAL SCHEDULES & DETAILS
ANAMOSA, IOWA

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
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Project No: 1191164
Sheet E510

ELECTRICAL ABBREVIATIONS

(NOTE: ALL ABBREVIATIONS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT)

*** ABBREVIATIONS ***

3R	NEMA 3R ENCLOSURE
4X	NEMA 4X ENCLOSURE
A	AMPERES
AF	AMPERE FRAME
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMP INTERRUPTING CAPACITY
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
ACT	ACOUSTICAL CEILING TILE
BRKR	BREAKER
C	CONDUIT
C1D1	CLASS I DIVISION 1
C1D2	CLASS I DIVISION 2
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CMS	COMBINATION MOTOR STARTER
CT	CURRENT TRANSFORMER
DB	DISTRIBUTION BOARD
DISC	DISCONNECT
DN	DOWN
DP	DISTRIBUTION PANEL
DS	DISCONNECT SWITCH
EGC	EQUIPMENT GROUND CONDUCTOR
EM/EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FDR	FEEDER
FDS	FUSED DISCONNECT SWITCH
FLA	FULL LOAD AMPERES
FMC	FLEXIBLE METAL CONDUIT
FLR	FLOOR
FVNR	FULL VOLTAGE NON-REVERSING
FSD	FIRE/SMOKE DAMPER
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTED
GND	GROUND
HH	HAND HOLE
HOA	HAND OFF AUTOMATIC
HP	HORSE POWER
HGT	HEIGHT
IESCR	INTEGRATED ELECTRICAL SHORT CIRCUIT RATING
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
INV	INVERTER
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
KWH	KILOWATT HOURS
LAN	LOCAL AREA NETWORK
LCP	LIGHTING CONTROL PANEL
LED	LIGHT EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LI	LONG-TIME / INSTANTANEOUS
LSI	LONG-TIME / SHORT-TIME / INSTANTANEOUS
LSIA	LONG-TIME / SHORT-TIME / INSTANTANEOUS / GROUND ALARM
LSIG	LONG-TIME / SHORT-TIME / INSTANTANEOUS / GROUND
LTG	LIGHTING
LV	LOW VOLTAGE (0-49V)
MCB/MB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CIRCUIT
MCP	MOTOR CIRCUIT PROTECTOR
MCS	MOLDED CASE SWITCH
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTR	MOTOR / METER
MV	MEDIUM VOLTAGE (601V TO 69KV)
NA	NOT APPLICABLE
NAC	NOTIFICATION APPLIANCE CIRCUIT
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OS	OCCUPANCY SENSOR
P	POLE
PB	PULL BOX / PUSH BUTTON
PC	PHOTOCELL
PDU	POWER DISTRIBUTION UNIT
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
PT	POTENTIAL TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVYNYL CHLORIDE CONDUIT
PWR	POWER
RAC	RIGID ALUMINUM CONDUIT
REC	RECESSED
RCPT	RECEPTACLE
REL	RELOCATE
REQD	REQUIRED
RGS	RIGID GALVANIZED STEEL CONDUIT
SCCR	SHORT CIRCUIT CURRENT RATING
SIM	SIMILAR
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SSBJ	SUPPLY SIDE BONDING JUMPER
ST	SHUNT TRIP
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SD	SMOKE DAMPER
TS	TAMPER SWITCH
TR	TAMPER RESISTANT
TVSS	TRANSIENT VOLT SURGE SUPPRESSOR
TYP	TYPICAL
UC	UNDER COUNTER
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTED POWER SUPPLY
USB	UNIVERSAL SERIAL BUS TYPE DEVICE
V	VOLTS
VA	VOLT AMPS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WG	WIRE GUARD
WP	WEATHERPROOF
WPD	WEATHERPROOF DEVICE - IN USE
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL SYMBOLS

(NOTE: ALL SYMBOLS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT)
(NOTE: '##' INDICATES DIMENSION HEIGHT TO CENTER OF DEVICE ABOVE FINISHED FLOOR. IN GENERAL, ALL RECEPTACLES ARE TO BE +18" UNLESS NOTED OTHERWISE.)

*** LIGHTING FIXTURES ***

- INDICATES DAYLIGHT HARVEST ZONE
- CEILING FIXTURE - PENDANT MOUNTED
- CEILING FIXTURE
- CEILING FIXTURE - RECESSED
- FIXTURE - WALL MOUNTED
- LINEAR FIXTURE
- LINEAR FIXTURE - RECESSED
- LINEAR FIXTURE - WALL MOUNTED
- STRIP FIXTURE
- STRIP FIXTURE - WALL MOUNTED
- DIRECT / INDIRECT FIXTURE - SUSPENDED (○ = FEED/SUSPENSION POINT, + = SUSPENSION POINT)
- LED STRIP FIXTURE (■ = FEED POINT)
- EXIT SIGN - CEILING MOUNTED
- EXIT SIGN - WALL MOUNTED
- EXIT / EMERGENCY SIGN - CEILING MOUNTED
- EXIT / EMERGENCY SIGN - WALL MOUNTED

(SOLID FILL) - INDICATES EXIT FACE
(ARROWS) - INDICATES CHEVRON DIRECTION

- EMERGENCY LIGHT - CEILING MOUNTED
- EMERGENCY LIGHT - WALL MOUNTED
- LIGHT TRACK (○ = FEED POINT, △ = HEAD)
- POLE AND LUMINAIRE, ARROW INDICATES AIMING
- POLE AND TWO LUMINAIRE, ARROWS INDICATE AIMING
- POST TOP LUMINAIRE
- FLOOD LIGHT - GROUND MOUNTED
- BOLLARD ON CONCRETE BASE
- FLOOD LIGHT - IN GROUND

*** RACEWAYS ***

- SURFACE RACEWAY - CONDUIT UNLESS NOTED OTHERWISE
- CONDUIT CONCEALED IN WALL OR CEILING
- CONDUIT CONCEALED IN FLOOR OR UNDERGROUND
- HOME RUN TO PANELBOARD - NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS
- CABLE TRAY
- LADDER RACK
- CABLE J-HOOKS
- UNDERFLOOR DUCT WITH SERVICES AS NOTED (▫ =ACTIVATION)
- BUSDUCT
- WIREWAY
- PLUG IN STRIP-TYPE RECEPTACLES OR OTHER OUTLETS AS NOTED
- MULTI-OUTLET RACEWAY AS NOTED (□ = FEED POINT / JUNCTION BOX; - GENERAL NOTE: BOXED DEVICES INDICATE RACEWAY MOUNTED)

(INFO. JACK, SPECIAL RCPT, DUPLEX RCPT)

- JUNCTION BOX
- JUNCTION BOX - WALL MOUNTED
- HANDHOLE BOX - IN GROUND
- GROUND
- SPLICE CONNECTION FROM EXISTING TO NEW
- CONDUIT STUB
- CONDUIT CONTINUATION
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- NEW FEEDER/CONDUIT PER SCHEDULE
- EXISTING FEEDER / CONDUIT PER SCHEDULE

*** EQUIPMENT ***

- SPECIAL EQUIPMENT DESIGNATION PER SCHEDULE
- EQUIPMENT DESIGNATION PER SCHEDULE
- MOTOR OUTLET AND CONNECTION
- EQUIPMENT CONNECTION
- EQUIPMENT CONNECTION - WALL MOUNTED
- FURNITURE FEED CONNECTION
- FURNITURE FEED CONNECTION - WALL MOUNTED
- SAFETY DISCONNECT SWITCH
- MOTOR STARTER OR CONTACTOR
- COMBINATION SAFETY DISCONNECT SWITCH/MOTOR STARTER
- SURFACE BRANCH CIRCUIT PANELBOARD
- FLUSH BRANCH CIRCUIT PANELBOARD
- POWER DISTRIBUTION PANELBOARD
- SPECIAL CABINET AS NOTED - SURFACE MOUNTED
- SPECIAL CABINET AS NOTED - RECESSED MOUNTED
- VARIABLE FREQUENCY DRIVE
- GROUND BAR
- TRANSFORMER
- EQUIPMENT SERVICE CLEARANCE

*** SCHEMATIC RISER DIAGRAM ***

- FEEDER INSTALLATION - LINE VOLTAGE
- FEEDER INSTALLATION - LOW VOLTAGE
- NEW FEEDER/CONDUIT PER SCHEDULE
- EXISTING FEEDER / CONDUIT PER SCHEDULE
- SAFETY SWITCH/MOTOR DISCONNECT
- TRANSFORMER - OIL FILLED
- TRANSFORMER - DRY TYPE
- MOTOR STARTER
- METER
- PULL BOX
- JUNCTION BOX
- PANEL OR AS NOTED
- SWITCHBOARD
- VARIABLE FREQUENCY DRIVE
- SURGE PROTECTION DEVICE
- GROUND
- FUSE
- CIRCUIT BREAKER, NUMBER DENOTES TRIP RATING
- FUSIBLE DISCONNECT SWITCH
- TRANSFER SWITCH
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- GROUND SENSOR (WINDOW TYPE) CURRENT TRANSFORMER
- TRANSFORMER, RATINGS AS SHOWN
- PROTECTION AND MONITORING SYSTEM
- AMPERE DEMAND METER TRANSFER SWITCH
- PROGRAMMABLE LOGIC CIRCUIT MONITOR
- PROGRAMMABLE LOGIC DISPLAY MONITOR

*** SCHEMATIC RISER DIAGRAM ***

- DRAWOUT AIR CIRCUIT BREAKER (AF=AMPERE FRAME SIZE, AT=AMPERE TRIP RATING)
- FLOW SWITCH
- LEVEL SWITCH
- MOTOR ACTUATOR
- TEMPERATURE SWITCH
- TIME DELAY RELAY
- CONTROL RELAY
- VIBRATION SWITCH
- REFRIGERANT SENSOR
- SOLENOID
- CONTROL TRANSFORMER
- KW METER
- VOLTAGE METER
- AMPERE METER
- GROUND FAULT
- MOTOR STARTER COIL
- CONTROL RELAY COIL
- TIME DELAY RELAY COIL
- ALTERNATOR COIL
- INDICATING LIGHT (R=RED, A=AMBER, G=GREEN)
- NORMALLY-OPEN PUSHBUTTON
- NORMALLY-CLOSED PUSHBUTTON
- SELECTOR SWITCH, NO. OF POSITIONS AS INDICATED
- NORMALLY-OPEN CONTACT
- NORMALLY-CLOSED CONTACT

(LETTER DENOTES DEVICE WITH WHICH ASSOCIATED)

- OUTPUT CONTACT OF DCS SYSTEM
- FLOW SWITCH
- TIME DELAY RELAY CONTACT
- LEVEL SWITCH
- THERMOSTAT
- LIMIT SWITCH
- OVERLOAD RELAY CONTACT
- SELECTOR SWITCH AS NOTED
  - B - SELECTOR SWITCH, "ON-OFF-REMOTE"
  - H - SELECTOR SWITCH "HAND-OFF-AUTO"
  - D - PUSHBUTTON STATION, "START-STOP" WITH RED INDICATING LIGHT FOR "ON"
  - E - SELECTOR SWITCH "OPEN-CLOSE-REMOTE
  - S - SELECTOR SWITCH "FORWARD-REVERSE"

PRELIMINARY NOT FOR CONSTRUCTION

DESIGN ENGINEERS
MECHANICAL & ELECTRICAL CONSULTANTS
8801 Prairie View Lane SW, Suite 200
Cedar Rapids, IA 52404 | 319.841.1944
437 S. Yellowstone Drive, Suite 110
Madison, WI 53719 | 608.424.8815
designengineers.com

MARK	REVISION	DATE	BY

Engineer: ADJ | Checked By: ADJ | Scale: 1/8" = 1'-0" | Field Bk: Pg:
Technician: TSK | Date: 05/19/2023 | Sheet E520
Project No: 1191164

ELECTRICAL KEYED NOTES

E-1	VENTILATED J-BOX ON EXTERIOR OF PRE-FABRICATED CONTROL BUILDING FURNISHED WITH CONTROL BUILDING. J-BOX TO SERVICE AS A TRANSITION FROM THE C1D1 WETWELL TO THE NON-CLASSIFIED CONTROL BUILDING.
E-2	UNDERGROUND FEEDS FROM PRE-FABRICATED CONTROL BUILDING TO WET WELL FOR PUMP FEEDS AND LEVEL CONTROLS.
E-3	480V FEED FROM MAIN MOTOR CONTROL CENTER.
E-4	RACEWAY FROM PRE-FABRICATED CONTROL BUILDING TO VALVE VAULT FOR FLOW METERS.
E-5	PREFABRICATED CONTROL BUILDING. BUILDING PROVIDED COMPLETE WITH 480V POWER DISTRIBUTION, VFDS, TRANSFORMER, LIGHTING AND RECEPTACLES.
E-6	200A FUSIBLE NEMA 4X DISCONNECT SWITCH WITH SOLID NEUTRAL PROVIDED BY DIVISION 26 CONTRACTOR.
E-7	APPROXIMATE LOCATION OF EXISTING MOTOR CONTROL CENTER. SQUARE D MODEL 6.
E-8	2" CONDUIT WITH FIBER OPTIC CABLE FROM MAIN BUILDING.
E-9	REFER TO E-510. PROVIDE TELECOMMUNICATION OUTLET WITH FIBER OPTIC FEED FROM MAIN PLANT FOR CONTROLS SYSTEM USE. FIELD VERIFY ALL REQUIREMENTS.
E-10	WALL MOUNTED TELECOM RACK DRW-1. REFER TO E510. FIELD VERIFY EXACT LOCATION.
E-11	EXISTING 25HP PUMP BEING REPLACED WITH NEW 20HP PUMP. 25HP VFD TO BE RE-USED.
E-12	EXISTING 15HP PUMP BEING REPLACED WITH NEW 20HP PUMP. 15HP VFD TO BE REPLACED WITH NEW 20HP VFD. 30A DISCONNECT TO BE REPLACED WITH 60A DISCONNECT. EXISTING #8 CONDUCTORS FROM CONTROL BUILDING TO DISCONNECT ARE SUFFICIENT FOR 20HP MOTOR.

GENERAL ELECTRICAL NOTES:

1. BELOW IS A LIST OF COMMON REQUIREMENTS OUTLINED IN THE PROJECT MANUAL. REFER TO THE PROJECT MANUAL AND STANDARD DETAILS FOR MORE DETAILED INFORMATION FOR THESE ITEMS AND FOR ALL OTHER MATERIALS AND CONSTRUCTION METHODS REQUIRED.
   a. MINIMUM WIRE SIZE TO BE #12 FOR POWER.
   b. MINIMUM SIZE CONDUIT BURIED IN EARTH OR UNDERGROUND IS 1"
   c. ALL CONDUITS, JUNCTION BOXES, WIRING, EQUIPMENT, ETC. TO BE PROPERLY LABELED.
   d. PROVIDE GREEN GROUND CONDUCTOR THROUGHOUT ENTIRE ELECTRICAL SYSTEM.
   e. ALL CIRCUITS SHALL HAVE DEDICATED NEUTRALS TO MEET NEC WITHOUT HAVING HANDLE TIES. SHARED NEUTRALS ARE NOT ALLOWED.
2. WET WELLS AND SIMILAR OPEN PROCESS AREAS ARE CLASS I, DIVISION 1 IN ACCORDANCE WITH NFPA 820. INSTALLATION IS TO BE IN COMPLIANCE WITH NEC ARTICLE 500.
   a. ALL CONDUIT IS TO BE PVC COATED RIGID STEEL.
   b. ALL EXPOSED THREADS ARE TO BE TOUCHED UP WITH MANUFACTURER'S RECOMMENDED CORROSION RESISTANT MATERIAL.
   c. AREA WITHIN 3' OF OPENINGS OR UNDERGROUND VAULTS ARE TO BE CLASS 1, DIVISION 2. ELECTRICAL AND CONTROLS INSTALLATIONS ARE TO BE IN COMPLIANCE WITH NEC ARTICLE 500.

1. COORDINATE EQUIPMENT ROUGH-IN LOCATIONS WITH PROCESS EQUIPMENT SUBMITTALS PRIOR TO ROUGH IN.
2. IN GENERAL, CONTROL WIRING HAS NOT BEEN INDICATED ON THE ELECTRICAL PLANS. CONTRACTOR SHALL COORDINATE WITH THE CONTROLS INTEGRATOR AND PROVIDE PATHWAYS AND WIRING.
3. MAINTAIN 18" OF SEPARATION BETWEEN UNDERGROUND POWER CONDUITS AND LOW VOLTAGE CONTROL CONDUITS.
4. WHERE CONDUIT OR SLEEVES PASS THROUGH FLOORS, ROOFS, WALLS AND PARTITIONS THAT ARE NOT FIRE OR SMOKE RATED, PENETRATIONS SHALL BE SEALED WITH GROUT OR CAULK.
5. DRAWINGS ARE IN PART DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK, AND TO INDICATE THE GENERAL LOCATIONS OF EQUIPMENT AND SOME FEEDERS. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LAYOUT HIS OWN WORK ACCORDING TO THE FOLLOWING GUIDELINES:
   a. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS FOR EQUIPMENT AND ROUGH-INS AND THE EXACT ROUTING OF FEEDERS PRIOR TO CONSTRUCTION SO AS TO BEST FIT THE LAYOUT OF THE WORK. SPACE ABOVE CEILINGS IS LIMITED; COORDINATE FINAL LAYOUT WITH ALL TRADES.
   b. WHERE OFFSETS IN FEEDERS ARE REQUIRED TO COORDINATE THE WORK OF OTHER TRADES OR TO MAINTAIN REQUIRED CEILING HEIGHTS, THEY SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
   c. COORDINATE LOCATION OF EQUIPMENT AND ROUTING OF FEEDERS TO MAINTAIN ACCESS TO EQUIPMENT, AND CONTROLS.
   d. CONTRACTOR SHALL INSTALL EQUIPMENT PER CLEARANCES LISTED IN NEC.
6. ALL ELEMENTS OF THE CONSTRUCTION SHALL BE PERFORMED BY TRADESPEOPLE SKILLED IN THE PARTICULAR CRAFT INVOLVED, AND REGULARLY EMPLOYED IN THAT PARTICULAR CRAFT. ALL WORK SHALL BE PERFORMED IN A NEAT, PROFESSIONAL MANNER IN KEEPING WITH THE HIGHEST STANDARDS OF THE CRAFT.
7. REFER TO PLANS AND SPECIFICATIONS FOR CONSTRUCTION PHASING AND SCHEDULE REQUIREMENTS.
8. COORDINATE INSTALLATION OF ALL ITEMS PENETRATING THE EXTERIOR BUILDING ENVELOPE WITH GENERAL CONTRACTOR. ALL PENETRATIONS SHALL BE WEATHER TIGHT. INTERIORS OF CONDUITS SHALL BE SEALED WITH DUCT SEAL.
9. COORDINATE LOCATIONS AND SIZES OF OPENINGS IN NEW STRUCTURE WITH GENERAL CONTRACTOR. SEAL AND/OR FIRE STOP ALL PENETRATIONS AS REQUIRED.
10. CIRCUIT NUMBERS SHOWN HAVE BEEN CHOSEN TO AID IN DESIGN AND TO PROVIDE CLARITY OF SCOPE OF WORK. ADJUST AS NECESSARY BASED ON FIELD CONDITIONS.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL UNDERGROUND CONDUIT ROUTING.

WATER TREATMENT PLANT IMPROVEMENTS
ANAMOSA, IOWA
ELECTRICAL NOTES AND SYMBOLS

SNYDER & ASSOCIATES, INC.
5005 BOWLING STREET S.W.
CEDAR RAPIDS, IA 52404
319-362-9394 | www.snyder- associates.com

Project No: 1191164
Sheet E520

APPROVAL TO CONSTRUCT
NO 2024-0065S
DATED
STATE OF IOWA
NATURAL RESOURCES
ENVIRONMENTAL SERVICES
DIVISION
BY

WWTP FLOW EQUALIZATION BASIN

ANAMOSA, IOWA

S&A PROJECT NO. 119.1164.08

August 2023

LICENSED PROFESSIONAL ENGINEER
NICHOLAS A. EISENBACHER
P25334
IOWA

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.

8/16/2023

NICHOLAS A. EISENBACHER Date

License Number P25334

My License Renewal Date is December 31, 2024

Pages or sheets covered by this seal:
All except division 26 & 27

LICENSED PROFESSIONAL ENGINEER
JONATHAN C. GETTLER
P19966
IOWA

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.

2023.08.15

Jonathan C. Gettler, P.E. Date

License Number P19966

My License Renewal Date is December 31, 2023

Pages or sheets covered by this seal:
DIVISONS 26 & 27

Prepared by SNYDER & ASSOCIATES, INC.
900 Bell Drive SW - Cedar Rapids, Iowa 52404 - (319) 362-9394

WWTP Flow Equalization Basin

City of Anamosa, Iowa

Table of Contents

The following documents are a part of this contract:

TECHNICAL SPECIFICATIONS (cont'd)

Standard Specifications:

The 2023 edition of the SUDAS Standard Specifications are adopted by reference, in their entirety, as part of these contract documents. The SUDAS Standard Specifications are available on-line at www.iowasudas.org or may be obtained by contacting the SUDAS Program at: 515-294-04674 or SUDAS Program, 2711 S. Loop Drive, Suite 4700, Ames, IA 50010.

NOTICE TO BIDDERS
JURISDICTION OF ***CITY OF ANAMOSA*** PUBLIC IMPROVEMENT PROJECT

Notice is hereby given that a public hearing will be held by the ***City of Anamosa*** on the proposed contract documents (plans, specifications, and form of contract) and estimated cost for the improvement at its meeting at ***6:00 P.M.*** on ***July 22nd, 2024***, in said ***Anamosa City Hall Council Chambers*** for the ***WWTP Flow Equalization Basin***

Sealed bids for the work comprising each improvement as stated below must be filed before ***2:00 P.M.,*** according to the clock the office of ***Anamosa City Hall*** on ***July 17th, 2024***, in the office of the ***Anamosa City Hall***. Bids received after the deadline for submission of bids as stated herein shall not be considered and shall be returned to the late bidder unopened.

Sealed proposals will be opened and bids tabulated at ***2:00 P.M.*** on ***July 17th, 2024***, in the ***Anamosa City Hall*** for consideration by the ***City of Anamosa*** at its meeting on ***July 22nd, 2024.***

Work on the improvement shall be commenced immediately upon approval of the contract by the Council, and be completed as stated below.

The contract documents may be examined at the ***Anamosa City Hall.*** Hard copies of the project documents may be obtained from Snyder & Associates, Inc. 600 Bell Dr. SW, Cedar Rapids, IA 52404 at no cost. Electronic contract documents are available at no cost by clicking on the "Bids" link at www.snyder-associates.com and choosing the ***WWTP Flow Equalization Basin*** on the left. Project information, engineer's cost opinion, and planholder information is also available at no cost at this website. Downloads require the user to register for a free membership at QuestCDN.com.

By virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the State of Iowa, and to Iowa domestic labor, to the extent lawfully required under Iowa statutes.

In accordance with Iowa statutes, a resident bidder shall be allowed a preference as against a nonresident bidder from a state or foreign country if that state or foreign country gives or requires any preference to bidders from that state or foreign country, including but not limited to any preference to bidders, the imposition of any type of labor force preference, or any other form of preferential treatment to bidders or laborers from that state or foreign country. The preference allowed shall be equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident. In the instance of a resident labor force preference, a nonresident bidder shall apply the same resident labor force preference to a public improvement in this state as would be required in the construction of a public improvement by the state or foreign country in which the nonresident bidder is a resident.

General Nature of the Public Improvement

The project generally includes furnishing all labor, material, and equipment necessary for construction and installation of prestressed concrete flow equalization basin, precast lift station and valve vault, submersible pumps, force main, gravity sewer and other miscellaneous items.

Each bidder shall accompany its bid with bid security as defined in Iowa Code Section 26.8, as security that the successful bidder will enter into a contract for the work bid upon and will furnish after the award of contract a corporate surety bond, in a form acceptable to the Jurisdiction, for the faithful performance of the contract, in an amount equal to 100% of the amount of the contract. The bidder's security shall be in the amount fixed in the Instruction to Bidders and shall be in the form of a cashier's check or a certified check drawn on an FDIC insured bank in Iowa or on an FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond on the form provided in the contract documents with corporate surety satisfactory to the Jurisdiction. The bid shall contain no condition except as provided in the specifications.

The ***City of Anamosa*** reserves the right to defer acceptance of any bid for a period of sixty (60) calendar days after receipt of bids and no bid may be withdrawn during this period.

Each successful bidder will be required to furnish a corporate surety bond in an amount equal to 100% of its contract price. Said bond shall be issued by a responsible surety approved by ***City of Anamosa*** and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless ***City of Anamosa*** from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of two years from and after acceptance of the contract. The guaranteed maintenance period for new paving shall be four years.

The ***City of Anamosa***, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Contractor shall fully complete the project in (no later than) ***September 30, 2025***. Should the contractor fail to complete the work in this timeframe, liquidated damages of ***$1,500*** per calendar day will be assessed for work not completed within the designated contract term.

The ***City of Anamosa*** does hereby reserve the right to reject any or all bids, to waive informalities, and to enter into such contract, or contracts, as it shall deem to be in the best interest of the jurisdiction.

A preletting conference will be held at ***2:00 PM*** on ***July 9th, 2024*** in the ***Anamosa City Hall.*** Immediately after the conference, a site tour will be conducted.

This Notice is given by authority of the ***City of Anamosa***

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City of Anamosa

NOTICE OF HEARING

NOTICE OF PUBLIC HEARING ON PROPOSED PLANS, SPECIFICATIONS, FORM OF CONTRACT, AND ESTIMATE OF COST FOR THE ***WWTP Flow Equalization Basin*** FOR THE ***City of Anamosa***.

Public Notice is hereby given that at ***6:00, P.M.*** on the ***2nd*** day of ***July,*** 2024., the ***Anamosa City Council*** will, in the ***Anamosa City Hall Council Chambers***, hold a hearing whereat said ***Council*** will resolve to adopt plans, specifications, form of contract and estimate of cost for the construction of the ***WWTP Flow Equalization Basin*** and, at the time, date and place specified above, or at such time, date and place as then may be fixed, to act upon proposals and enter into contract for the construction of said improvements.

General Nature of the Public Improvement

The project generally includes furnishing all labor, material, and equipment necessary for construction and installation of prestressed concrete flow equalization basin, precast lift station and valve vault, submersible pumps, force main, gravity sewer and other miscellaneous items.

At said hearing, the ***City Council*** will consider the proposed plans, specifications, form of contract and estimate of cost for said project, the same now being on file in the ***Anamosa City Hall***, reference to which is made for a more detailed and complete description of the proposed improvements, and at said time and place the said Council will also receive and consider any comments/objections to said plans, specifications and form of contract or to the estimated cost of said improvements made by any interested party.

This Notice is given by authority of the ***City of Anamosa***

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City of Anamosa

Published in the ***Journal-Eureka***

Bid Date: 7/17/2024
Time: 2:00 PM

INSTRUCTIONS TO BIDDERS

Project Name WWTP Flow Equalization Basin

The work comprising the above referenced project shall be constructed in accordance with the 2023 edition of the SUDAS Standard Specifications and as further modified by supplemental specifications and special provisions included in the contract documents. The terms used in the contract revision of the documents are defined in said Standard Specifications. Before submitting your bid, review the requirements of Division 1, General Provisions and Covenants, in particular the sections regarding proposal requirements, bonding, contract execution and insurance requirements. Be certain that all documents have been completed properly, as failure to complete and sign all documents and to comply with the requirements listed below can cause your bid not to be read.

I. BID SECURITY

The bid security must be in the minimum amount of ***5%*** of the total bid amount including all add alternates (do not deduct the amount of deduct alternates). Bid security shall be in the form of a cashier's check or a certified check, drawn on an FDIC insured bank in Iowa or drawn on an FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond executed by a corporation authorized to contract as a surety in Iowa or satisfactory to the Jurisdiction. The bid bond must be submitted on the enclosed Bid Bond form as no other bid bond forms are acceptable. All signatures on the bid bond must be original signatures in ink; facsimile (fax) of any signature or use of an electronic signature on the bid bond is not acceptable. Bid security other than said bid bond shall be made payable to ***City of Anamosa.*** "Miscellaneous Bank Checks," and personal checks, as well as "Money Orders" and "Traveler's Checks" issued by persons, firms, or corporations licensed under Chapter 533C of the Iowa Code, are not acceptable bid security.

II. SUBMISSION OF THE PROPOSAL AND IDENTITY OF BIDDER

A. The proposal shall be sealed in an envelope, properly identified as the Proposal with the project title and the name and address of the bidder, and deposited with the Jurisdiction at or before the time and at the place provided in the Notice to Bidders. It is the sole responsibility of the bidder to see that its proposal is delivered to the Jurisdiction prior to the time for opening bids, along with the appropriate bid security sealed in a separate envelope identified as Bid Security and attached to the outside of the bid proposal envelope. Any proposal received after the scheduled time for the receiving of proposals will be returned to the bidder unopened and will not be considered. If the Jurisdiction provides envelopes for proposals and bid security, bidders shall be required to utilize such envelopes in the submission of their bids.

B. The following documents shall be completed, signed, and returned in the Proposal envelope. The bid cannot be read if any of these documents are omitted from the Proposal envelope.

1. PROPOSAL – Complete each of the following parts:

- Part B – Acknowledgment of Addenda, if any have been issued
- Part C – Bid Items, Quantities, and Prices
- Part F – Additional Requirements

The following proposal attachments must be completed and attached:

ITEM NO.	DESCRIPTION OF ATTACHMENT
1.	SRF Attachment 1: Certification of Non-Segregated Facilities Form
2.	SRF Attachment 2: Statement in Advertisement for Bids on Debarment and Suspension/Certification Regarding Debarment and Suspension Form
3.	SRF Attachment 3: Disadvantaged Business Enterprise Certification Form
4.	SRF Attachment 4: DBE Program Subcontractor Performance Form
5.	SRF Attachment 5: DBE Program Subcontractor Utilization Form
6.	DBE Program Subcontractor Participation Form (for Voluntary use of DBEs)
7.	SRF Attachment 10: Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

- Part G – Identity of Bidder (including the Bidder Status Form)

Sign the proposal. The signature on the proposal and all proposal attachments must be an original signature in ink signed by the same individual who is the Company Owner or an authorized Officer of the Company; copies or facsimile of any signature or electronic signatures will not be accepted. The Bidder Status Form is required by the Iowa Labor Commissioner, pursuant to the Iowa Administrative Code rule 875-156.2(1). The Bidder must complete and submit the Bidder Status Form, signed by an authorized representative of the Bidder, with their bid proposal. Under Iowa Administrative Code rule 875-156.2(1), failure to provide the Bidder Status Form with the bid may result in the bid being deemed non-responsive and may result in the bid being rejected. The Worksheet: Authorized to Transact Business from the Labor Commissioner is including on the following page and can be used to assist Bidders in completing the Bidder Status Form.

The following documents must be submitted as printed. No alterations, additions, or deletions are allowed. If the Bidder notes a requirement in the contract documents that the Bidder believes will require a conditioned or unsolicited alternate bid, the Bidder must immediately notify the Engineer in writing. The Engineer will issue any necessary interpretation by an addendum.

PROPOSAL

PROPOSAL: PART A – SCOPE

The City of Anamosa, hereinafter called the "Jurisdiction," has need of a qualified contractor to complete the work comprising the below referenced improvement. The undersigned Bidder hereby proposes to complete the work comprising the below referenced improvement as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the Anamosa City Hall, at the prices hereinafter provided in Part C of the Proposal, for the following described improvements:

PROJECT DESCRIPTION:

The project generally includes furnishing all labor, material, and equipment necessary for construction and installation of prestressed concrete flow equalization basin, precast lift station and valve vault, submersible pumps, force main, gravity sewer and other miscellaneous items.

PROPOSAL: PART B – ACKNOWLEDGMENT OF ADDENDA

The Bidder hereby acknowledges that all addenda become a part of the contract documents when issued, and that each such addendum has been received and utilized in the preparation of this bid. The Bidder hereby acknowledges receipt of the following addenda by inserting the number of each addendum in the blanks below:

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

and certifies that said addenda were utilized in the preparation of this bid.

PROPOSAL: PART C – BID ITEMS, QUANTITIES, AND PRICES

LUMP SUM PRICE CONTRACTS: The Bidder must provide the Lump Sum Price on the Proposal Attachment: Part C – Bid Items, Quantities, and Prices. The Total Construction Cost plus any alternates selected by the Jurisdiction, shall be used only for comparison of bids. The Total Construction Cost, including any Add-Alternates, shall be used for determining the sufficiency of the bid security.

PROPOSAL: PART D – GENERAL

The Bidder hereby acknowledges that the Jurisdiction, in advertising for public bids for this project, reserves the right to:

1. Reject any or all bids. Award of the contract, if any, to be to the lowest responsible, responsive bidder; and
2. Reject any or all alternates in determining the items to be included in the contract. Designation of the lowest responsible, responsive bidder to be based on comparison of the total bid plus any selected alternates; and
3. Make such alterations in the contract documents or in the proposal quantities as it determines necessary in accordance with the contract documents after execution of the contract. Such alterations shall not be considered a waiver of any conditions of the contract documents, and shall not invalidate any of the provisions thereof; and

The Bidder hereby agrees to:

1. Enter into a contract, if this proposal is selected, in the form approved by the Jurisdiction, provide proof of registration with the Iowa Division of Labor in accordance with Chapter 91C of the Iowa Code, and furnish a performance, maintenance, and payment bond; and
2. Forfeit bid security, not as a penalty but as liquidated damages, upon failure to enter into such contract and/or to furnish said bond; and
3. Commence the work on this project on or before a date to be specified in a written notice to proceed by the Jurisdiction, and to fully complete the project _____ _____; and to pay liquidated damages for noncompliance with said completion provisions at the rate of _____dollars ($_____) for each calendar day thereafter that the work remains incomplete.

PROPOSAL: PART E – NON-COLLUSION AFFIDAVIT

The Bidder hereby certifies:

1. That this proposal is not affected by, contingent on, or dependent on any other proposal submitted for any improvement with the Jurisdiction; and

2. That no individual employed by the Bidder has employed any person to solicit or procure the work on this project, nor will any employee of the Bidder make any payment or agreement for payment of any compensation in connection with the procurement of this project; and

3. That no part of the bid price received by the Bidder was or will be paid to any person, corporation, firm, association, or other organization for soliciting the bid, other than the payment of their normal compensation to persons regularly employed by the Bidder whose services in connection with the construction of the project were in the regular course of their duties for the Bidder; and

4. That this proposal is genuine and not collusive or sham; that the Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidder or person, to submit a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought, by agreement or collusion, or communication or conference, with any person, to fix the bid price of the Bidder or of any other bidder, and that all statements in this proposal are true; and

5. That the individual(s) executing this proposal have the authority to execute this proposal on behalf of the Bidder.

PROPOSAL: PART F – ADDITIONAL REQUIREMENTS

The Bidder hereby agrees to comply with the additional requirements listed below that are included in this proposal and identified as proposal attachments:

ITEM NO.	DESCRIPTION OF ATTACHMENT
1.	SRF Attachment 1: Certification of Non-Segregated Facilities Form
2.	SRF Attachment 2: Statement in Advertisement for Bids on Debarment and Suspension/Certification Regarding Debarment and Suspension Form
3.	SRF Attachment 3: Disadvantaged Business Enterprise Certification Form
4.	SRF Attachment 4: DBE Program Subcontractor Performance Form
5.	SRF Attachment 5: DBE Program Subcontractor Utilization Form
6.	DBE Program Subcontractor Participation Form (for Voluntary use of DBEs)
7.	SRF Attachment 10: Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

PROPOSAL: PART G – IDENTITY OF BIDDER

The Bidder shall indicate whether the bid is submitted by a/an:

- ☐ Individual, Sole Proprietorship
- ☐ Partnership
- ☐ Corporation
- ☐ Limited Liability Company
- ☐ Joint-venture: all parties must join-in and execute all documents
- ☐ Other

The Bidder shall enter its Public Registration Number ___ ___ ___ ___ ___ - ___ ___ issued By the Iowa Commissioner of Labor Pursuant Section 91C.5 of the Iowa Code.

Failure to provide said Registration Number shall result in the bid being read under advisement. A contract will not be executed until the Contractor is registered.

_____
Bidder

_____
Signature

By _____
Name (Print/Type)

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone Number

Type or print the name and title of the company's owner, president, CEO, etc. if a different person than entered above

_____
Name

_____
Title

NOTE: The signature on this proposal must be an original signature in ink; copies, facsimiles, or electronic signatures will not be accepted.

PROPOSAL ATTACHMENT: PART C **Project Name** _____

PROPOSAL

PROPOSAL ATTACHMENT: PART C – BID ITEMS, QUANTITIES, AND PRICES

LUMP SUM PRICE CONTRACTS: The Bidder must provide the Lump Sum Price on the Proposal Attachment: Part C – Bid Items, Quantities, and Prices. The Total Construction Cost plus any alternates selected by the Jurisdiction, shall be used only for comparison of bids. The Total Construction Cost, including any Add-Alternates, shall be used for determining the sufficiency of the bid security.

The project generally includes furnishing all labor, material, and equipment necessary for construction and installation of prestressed concrete flow equalization basin, precast lift station and valve vault, submersible pumps, force main, gravity sewer and other miscellaneous items.

_____Dollars
(amount in words)

($_____)
(amount in figures)

SRF Required Front-End Specifications

PLEASE NOTE: Attachment 10 is a new program requirement and is effective for all SRF projects bid after January 2021.

Attachment 1: Certification of Non-Segregated Facilities Form *(to be completed and signed by Prime Contractor and submitted with the bid)*

Attachment 2: Statement in Advertisement for Bids on Debarment and Suspension/Certification Regarding Debarment and Suspension Form *(to be completed and signed by Prime Contractor and submitted with the bid)*

Attachment 3: Disadvantaged Business Enterprise Certification Form *(to be completed and signed by Prime Contractor and submitted with the bid)*

Attachment 4: DBE Program Subcontractor Performance Form (*to be completed and signed by Prime and DBE Subcontractor for each subcontract and submitted with the bid)*

Attachment 5: DBE Program Subcontractor Utilization Form *(to be completed and signed by Prime Contractor and submitted with the bid)*

Attachment 6: DBE Program Subcontractor Participation Form *(for voluntary use of DBEs)*

Attachment 7: Other Federal Requirements Language

A. Standard Equal Employment Opportunity Specifications
B. Federal Labor Standards Provisions (including Davis-Bacon prevailing wage rates**)
C. Preservation of Open Competition and Government Neutrality
D. Historical and Archeological Finds
E. Prohibitions on Procurement from Violating Facilities

Attachment 8: Right of Entry and Records Retention

Attachment 9: Use of American Iron and Steel

Attachment 10: Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment
(to be completed and signed by Prime Contractor and submitted with the bid)

***The Davis Bacon wage determination received from the Iowa Finance Authority must also be included in the front-end specifications.*

Attachment 1
SRF Required Front-End Specifications
(This form must be completed and signed by Prime Contractor and submitted with the bid)

U.S. Environmental Protection Agency
Certification of Non-Segregated Facilities

(Applicable to contracts, subcontracts, and agreements with applicants who are themselves performing federally assisted construction contracts, exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause.)

By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national original, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A Certification of Non-segregated Facilities, as required by the May 9, 1967, order (33 F.R. 7808, May 28, 1968) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

_____
Signature Date

_____
Name and Title of Signer (Please Type)

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

EPA-7 5720-4.2

Attachment 2
SRF Required Front-End Specifications

(This form must be completed and signed by the Prime Contractor and submitted with the bid)

Debarments and Suspensions

Any bidder or equipment supplier whose firm or affiliate is listed in on the U.S. General Services Administration Excluded Parties List will be prohibited from the bidding process. The excluded parties records search engine is located at the System for Award Management (SAM) website: https://beta.sam.gov. Pursuant to 2 CFR Part 180, as supplemented by 2 CFR 1532, any entity submitting a bid while the SAM website lists that entity as having an active exclusion will be determined by the DNR to be a non-responsive bidder and will not be able to receive SRF funding.

United States Environmental Protection Agency Washington, DC 20460

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and the principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction: violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 U SC Sec. 10 01, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____

Typed Name & Title of Authorized Representative

_____

Signature of Authorized Representative Date

☐ I am unable to certify to the above statements. My explanation is attached.

Attachment 3

SRF Required Front-End Specifications

(This form must be completed and signed by Prime Contractor and submitted with the bid)

Disadvantaged Business Enterprise (DBE) Solicitation

It is EPA's policy that recipients of EPA financial assistance through the State Revolving Fund programs award a "fair share" of subagreements to small, minority and women-owned businesses, collectively know as Disadvantaged Business Enterprises (DBEs). Iowa's Fair Share goals are:

	Minority-Owned Business Enterprise (MBE) Goal	Women-Owned Business Enterprise (WBE) Goal
Construction	1.7%	2.2%
Supplies	0.6%	5.6%
Services	2.5%	11.3%
Goods/Equipment	2.5%	10.4%
Average	1.8%	7.4%

Only work performed by certified DBEs can be counted toward the goals. In Iowa, DBEs must be certified through the Iowa Department of Transportation (IDOT). Information on certification requirements and a list of certified DBEs is on the IDOT website at https://secure.iowadot.gov/DBE/Home/Index/.

Prime contractors' DBE requirements for SRF projects include:

- Taking affirmative steps for DBE participation
- Documenting the efforts and the proposed utilization of certified DBEs

PROJECT INFORMATION

SRF Applicant:	
Bidder:	
Address:	
Contact Person:	
Signature:	
Phone Number:	
E-Mail Address:	
Check if Prime Contractor is: ☐ **Minority-Owned** ☐ **Women-Owned**	

GOOD FAITH EFFORTS CHECKLIST

Please complete the checklist to determine if you have complied with the requirement to make good faith efforts to ensure that certified DBEs have the opportunity to compete for procurements funded by EPA financial assistance funds. Bidders/offerors must make good faith efforts prior to submission of bids/proposals.

1. Did you ensure that DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities? ☐ Yes ☐ No

2. Did you make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process? This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date. ☐ Yes ☐ No

3. Did you consider in the contracting process whether firms competing for large contracts could subcontract with DBEs? This will include dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process. ☐ Yes ☐ No

4. Did you encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually? ☐ Yes ☐ No

5. Did you use the services of the Small Business Administration and the Minority Business Development Agency of the Department of Commerce to identify potential subcontractors? ☐ Yes ☐ No

6. List the potential DBE subcontractors that were contacted. Only list those that are certified through the Iowa Department of Transportation.

Name	**How Contacted (e.g. letter, phone call, fax, e-mail)**	**Response (e.g. did not respond, not interested, not competitive)**

PROPOSED UTILIZATION OF DBE SUBCONTRACTORS

Please include Attachments 4 and 5 to document the proposed utilization of certified DBE subcontractors.

CONTRACT ADMINISTRATION PROVISIONS

Several contract provisions are required to prevent unfair practices that adversely affect DBEs. These include:

1. Prime Contractor must pay its Subcontractor for satisfactory performance no more than 30 days from the Prime Contractor's receipt of payment from the SRF loan recipient.

2. Prime Contractor must notify the SRF loan recipient in writing prior to termination of a DBE subcontractor for convenience.

3. Prime Contractor must employ the six Good Faith Efforts to solicit a replacement subcontractor if a DBE subcontractor fails to complete work under a subcontract for any reason.

Attachment 4
SRF Required Front-End Specifications

(This form must be completed and signed by Prime and DBE Subcontractor for each subcontract and submitted with the bid)

Disadvantaged Business Enterprise Program
DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Subcontractor Name	Project Name	
Bid/Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor

DBE Certified by ____ DOT _____ SBA _____Other: _____	Meets/exceeds EPA certification standards? _____ YES _____ NO _____ Unknown

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certification as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

IASRF6100-3 DBE Subcontractor Performance Form – Page 1

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	**Print Name**
Title	**Date**

Subcontractor Signature	**Print Name**
Title	**Date**

IASRF6100-3 DBE Subcontractor Performance Form – Page 2

Attachment 5
SRF Required Front-End Specifications
(This form must be completed and signed by Prime Contractor and submitted with the bid if utilizing DBE subcontractors)

Disadvantaged Business Enterprise Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or intended use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name	Project Name	
Bid/Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Issuing/Funding Entity		
I have identified potential DBE certified subcontractors _____ YES _____ NO If yes, please complete the table below. If no, please explain: _____		

Subcontractor Name/Company Name	Company Address/Phone/Email	Estimated Dollar Amount	Currently DBE Certified?

Continue on back if needed

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certification as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

IASRF6100-4 DBE Subcontractor Utilization Form – Page 1

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	**Print Name**
Title	**Date**

IASRF6100-4 DBE Subcontractor Utilization Form – Page 2

Attachment 6
SRF Required Front-End Specifications
(This form is for the voluntary use of DBE Subcontractors)

Disadvantaged Business Enterprise Program
DBE Subcontractor Participation Form

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. ***The use of this form by DBE subcontractors is voluntary and is not required for bidding.*** This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g. in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name	Project Name	
Bid/Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor

[1]A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certification as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2]Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

IASRF6100-2 DBE Subcontractor Participation Form – Page 1

Please use the space below to report any concerns regarding the above EPA-funded project:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Subcontractor Signature	Print Name
Title	**Date**

Return to: Regional Coordinator, Small Business Utilization, U.S. Environmental Protection Agency, Region 7, 11201 Renner Blvd., Lenexa, KS 66219

IASRF6100-2 DBE Subcontractor Participation Form – Page 2

Attachment 7
SRF Required Front-End Specifications

Other Federal Requirements Language

A. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

1. As used in these specifications:
   a. “Covered area” means the geographical area described in the solicitation from which this contract resulted;
   b. “Director” means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d. "Minority" includes:
      (i) Black (all persons having origin in any of the Black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Sub-continent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 6-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor’s or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employee in the covered area. Covered construction contractors performing construction work in geographical areas where they do not have a

Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work in being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal emp1oyment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor employees are assigned to work. The Contractor, where possible will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's effort, to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The

Contractor shall provide notice of these programs to the source complied under 7b above.
f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and test to be used in the selection process.
j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.
k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
1. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
m. Ensure that seniority practices, job classifications work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
p. Conduct a review, at least annually, of all supervisors’ adherence to and performance under the Contractor’s EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetable or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps at least as extensive as those standards prescribed in paragraph 7 of these specifications so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Federal Register, Vol. 43, No. 68 - Friday, April 7, 1978 (Corrected May 5, 1978).
Effective Date: May 8, 1978
Federal Register, Vol. 45, No. 194. Paragraph 4, revised October 3, 1980
Effective Date: September 30, 1980

APPENDICES A and B-80

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity

(Executive Order 11246)

1. The Offerors or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

(See Appendix B-80 and Appendix A Below)

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and in the regulations in 41 CFR Part 60—4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60—4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60—4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer Identification number of the subcontractor, estimated dollar amount of the subcontract, and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the “covered area” is (State of Iowa).

APPENDIX A

The following goals and timetables for female utilization shall be included in all Federal and federally assisted construction contracts and subcontracts in excess of $10,000. The goals are applicable to the contractor’s aggregate on-site construction workforce whether or not part of that workforce is performing work on a Federal or federally assisted construction contract or subcontract.

Area covered: Goals for Women apply nationwide.

Timetable Goals (percent)
From Apr. 1, 1978 until March 31, 1979 . . . . . .3.1
From Apr. 1, 1979 until March 31, 1980 . . . . . .5.0
From Apr. 1, 1980 until March 31, 1981 . . . . . .6.9

Published, Federal Register May 5, 1978

APPENDIX B-80

Until further notice, the following goals for minority utilization in each construction craft and trade shall be included in all Federal or federally assisted construction contracts and subcontracts in excess of $10,000 to be performed in the respective geographical areas. The goals are applicable to each nonexempt contractor’s total onsite construction workforce, regardless of whether or not part of that workforce is performing work in a Federal, federally assisted or nonfederally related project, contract or subcontract. Construction contractors which are participating in an approved Hometown Plan (see 41 CFR 60—4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA of EA goal contained in this appendix B-80.

Economic Areas

State: Iowa Goal %

096 Dubuque IA:
SMSA Counties:
2200 Dubuque, IA …….. 0.6
IA Dubuque
Non-SMSA
Counties ……..… 0.5
IA Allamakee, IA Clayton, IA Delaware, IA, Jackson IA, Winneshiek

099 Davenport Rock Island Moline, IA-IL:
SMSA Counties:
1960 Davenport Rock Island Moline, IA-IL …..… 4.6
IL Henry, IL Rock Island Moline, IA Scott

Non-SMA
Counties ……. 3.4
IL Carroll, IL Hancock, IL Henderson, IL ,Mercer, IL Whiteside, IA Clinton, IA Des Moines, IA Henry, IA Lee, IA Louisa, IA, Muscatine, MO Clark

100 Cedar Rapids, IA:
SMSA Counties:
1360 Cedar Rapids, IA ……. 1.7
IA Linn

Non-SMSA Counties ……..…… 1.5
IA Benton, IA Cedar, IA Iowa, IA Johnson, IA, Jones, IA, Washington

101 Waterloo, IA:
SMSA Counties:
8920 Waterloo-Cedar Falls, IA …… 4.7
IA Black Hawk

Non-SMSA Counties ……..… 2.0
IA Bremer, IA Buchanan, IA Butler, IA Cerro Gordo, IA Chickasaw, IA Fayette, IA Floyd, IA Franklin, IA Grundy, IA Hancock, IA Hardin, IA Howard, IA Mitchell, IA Winnebago, IA Worth

102 Fort Dodge, IA:
Non-SMSA Counties …….. 0.4
IA Buena Vista, IA Calhoun, IA Carroll, IA Clay, IA Dickinson, IA Emmet, IA Greene, IA Hamilton, IA Humboldt, IA Kossuth, IA Palo Alto, IA Pocahontas, IA Sac, IA Webster, IA Wright

103 Sioux City, IA:
SMSA Counties:
7720 Sioux City, IA-NE ……..……..… 1.9
IA Woodbury, NE Dakota

Non-SMSA Counties …… 1.2
IA Cherokee, IA Crawford, IA Ida, IA Monona, IA O'Brien, IA Plymouth, IA Sioux, NE Antelope, NE Cedar, NE Cuming, NE Dixon, NE Knox, NE Madison, NE Pierce, NE Stanton, NE Thurston, NE Wayne, SD Bon Homme, SD Clay, SD Union, SD Yankton

104 Des Moines, IA:
SMSA Counties:
2120 Des Moines, IA ……..…… 4.5
IA Polk, IA Warren

Non SMSA Counties: ……..……. 2.4
IA Adair, IA Appanoose, IA Boone, IA Clarke, IA Dallas, IA Davis, IA Decatur, IA Guthrie, IA Jasper, IA Jefferson, IA Keokuk, IA Lucas, IA Madison, IA Mahaska, IA Marion, IA Marshall, IA Monroe, IA Poweshiek, IA Ringgold, IA Story, IA Tama, IA Union, IA Van Buren, IA Wapello, IA Wayne

143 Omaha, NE:
SMSA Counties:
5920 Omaha, NE-IA …….……..…… 7.6
IA Pottawattamie, NE Douglas, NE Sarpy

Non-SMSA Counties ……... 5.3
IA Adams, IA Audubon, IA Cass, IA Fremont, IA Harrison, IA Mills, IA Montgomery, IA Page, IA Shelby, IA Taylor, NE Burt, NE Cass, NE Colfax, NE Dodge, NE Platte, NE Saunders, NE Washington

Published, Federal Register October 3, 1980

B. Federal Labor Standards Provisions (including Davis-Bacon prevailing wage rates)

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

(1) Minimum wages. (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill,

except as provided in Sec. 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that, the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The EPA shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the EPA may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records. (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/whd/programs/dbra/forms.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own

records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a ``Statement of Compliance,'' signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the ``Statement of Compliance'' required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's

hourly rate) specified in the contractor's or subcontractors registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (and any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility. (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) Contract Work Hours and Safety Standards Act. The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Sec. 5.5(a) or 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The loan recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the

subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in Sec. 5.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

C. Preservation of Open Competition and Government Neutrality Towards Government Contractors' Labor Relations on Federal and Federally Funded Construction Projects (Executive Order 13202, as amended by Executive Order 13208)

Executive Order 13202, signed February 17, 2001 and amended April 4, 2001, requires all executive agencies that issue grants to ensure Government neutrality toward contractors' labor relations. This applies to recipients of SRF assistance. The Executive Order prohibits discrimination against contractors and their employees in construction contracts based upon labor affiliation or lack thereof.

SRF assistance recipients and any construction managers acting on their behalf must ensure that bidding specifications, project agreements, and other controlling documents do not require, prohibit, or otherwise discriminate, with respect to labor affiliation or lack thereof.

D. Historical and Archeological Finds

If, during the course of construction, evidence of deposits of historical or archeological interest is found, the contractor shall cease operations affecting the find. The owner shall then notify the State Revolving Fund Environmental Review Specialist, who shall in turn notify the State Historic Preservation Office. The SRF shall consult with the SHPO and other interested parties to determine the proper course of action regarding the discovery. No further disturbance of the deposits shall ensue until the SRF Environmental Review Specialist determines that the project activities in that area may proceed. Compensation to the contractor, if any, for lost time or changes in construction to avoid the find, shall be determined in accordance with changed conditions or change order provisions of the specifications.

Authority for this derives from the National Historic Preservation Act (16 U.S.C. §§ 470 *et seq.*) and 36 CFR Part 800. If human remains are discovered then state law also applies IC 263B.

E. Prohibitions on Procurement from Violating Facilities (Section 306, Clean Air Act; Section 508, Clean Water Act; Executive Order 11738)

Both the Clean Water Act and the Clean Air Act prohibit federal agencies from extending assistance by way of loans or contracts to persons who have been convicted of violations of either law. Executive Order 11738 was issued to coordinate enforcement by the U.S. Environmental Protection Agency, which shall designate facilities which have given rise to a conviction for an offense under the criminal provisions of the Clean Air Act and the Clean Water Act.

The Executive Order also prohibits agencies from extending assistance to facilities that are not in compliance with either Act.

SRF assistance recipients may not procure goods, services, or materials from suppliers listed by the EPA as violators.

The Excluded Parties Listing search engine is located at the System for Award Management (SAM) website: https://www.sam.gov/SAM/.

Attachment 8
SRF Required Front-End Specifications

Right of Entry and Records Retention

The recipient shall provide access at all times for the Department of Natural Resources, the Iowa Finance Authority, the state auditor, and the U.S. EPA Office of the Inspector General to all project records and documents for inspection and audit purposes for a period of three years after the date of last loan payment. The same access to the project site(s) shall be provided for inspection purposes.

567 Iowa Administrative Code paragraph 92.8(2).e. State inspections. Personnel of the department shall have the right to examine all construction aspects of the project, including materials and equipment delivered and stored on site for use on the project.

Attachment 9
SRF Required Front-End Specifications

"American Iron and Steel" Requirements

H.R. 3547, the "Consolidated Appropriations Act, 2014," enacted January 17, 2014 by the U.S. Congress, includes "American Iron and Steel" provisions that require Clean Water and Drinking Water State Revolving Fund assistance recipients of these funds to use iron and steel produced in the United States.

H.R. 3547 includes the following language in Division G, Title IV, under the heading, "Use of American Iron and Steel":

> Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.
>
> (2) In this section, the term "iron and steel products" means the following products made primarily of iron and steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.
>
> (b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the "Administrator") find that—
>
> (1) Applying subsection (a) would be inconsistent with the public interest;
>
> (2) Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quantity; or
>
> (3) Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.
>
> (c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

The final guidance and any published waivers are found at: https://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement. In particular the contractor should pay attention to the guidance for documentation of compliance. There is also a waiver for incidental items; in order to qualify for this waiver the total materials and costs for the project must be tracked and incidental items identified.

Sample "American Iron and Steel" Contract Language

In order to fulfill the requirements, the assistance recipient must in good faith design the project and solicit bids for construction with U.S.-made iron and steel. The following information will be included in any contracts resulting from this request for bids:

The Contractor acknowledges to and for the benefit of the City of _____ ("Purchaser") and the State of Iowa (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund and such law contains provisions commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement.

The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Sample Certifications

As indicated in the contract language, it will be the responsibility of the Contractor to obtain certifications that the products and materials used in the project are U.S.-made. EPA recommends the use of a step certification process for documenting compliance with AIS requirements, similar to one used by the Federal Highway Administration. Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. Each handler (supplier, fabricator, manufacturer, processor, coater, etc.) of the iron and steel products certifies that their step in the process was domestically performed.

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead. In this example, there may be multiple letters from different manufacturers if one manufacturer did not perform all of the steps.

Date

Company Name
Company Address
City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx

2. Xxxx

3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the U.S. and providing detailed information on the steps involved.

The following is a template for this type of final certification.

Template American Iron and Steel Certification Letter

On Manufacturer's Letterhead

IRON & STEEL INC.

IRON & STEEL, INC.
1959 Steel Drive
Ironville, OH 12345

MATERIAL CERTIFICATION

April 30, 2015

RE: Job Name: Waterprojectville, Iowa – 2015 State Revolving Fund Water Infrastructure Project
SRF Project Number: CS1920999 01

References the SRF Project

I certify that the processes for manufacturing or fabricating the following products and/or materials provided for the subject project took place at the following U.S. locations:

Quantity	Description	Manufacturing Processes	Location Where Processes Occurred
3 count	AB123456 4" Gate Valve	Melting, poured, machined	Ironville, OH
60 count	XY654321 Reinforced Concrete Manhole	Melted, rolled, fabricated	Steel City, IA
60 count	XZ123456 Manhole Cover	Melted, cast, finished	Stainless, MS
1200 linear feet	AB654321 4" Ductile Iron Water Pipe	Melted, rolled, finished	Pipetown, CA

I further certify that the products and/or materials are in full compliance with the American Iron and Steel requirements as mandated in the U.S. Environmental Protection Agency's State Revolving Fund programs. If any of the above compliance statements change while providing material to this project we will immediately notify the supplier, prime contractor, consulting engineer, or project owner.

Specifies the Products and Quantities

Specifies the Manufacturing Processes and the U.S. Locations Where They Were Performed

On behalf of IRON & STEEL, INC.,

Jane Smith
Jane Smith
Product Quality Manager

Signature of Manufacturer's Representative

Covered and Non-Covered Items

The EPA issued a waiver for De Minimis incidental components of eligible water and wastewater infrastructure projects. Funds used for such De Minimis incidental components cumulatively may comprise no more than a total of 5% of the total cost of the materials used in and incorporated into a project. The cost of an individual incidental item may not exceed 1% of the total cost of the materials used in and incorporated into a project.

De Minimis incidental items include miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives are not readily or reasonably identifiable prior to procurement in the normal course of business. For others, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental.

Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes, treatment and storage tanks, large structural supports, etc.

In consultation with their contractors, assistance recipients should determine the items to be covered by this waiver and must retain relevant documentation (i.e. invoices) as to those items. Assistance recipients must summarize in reports to the State of Iowa the types and/or categories of items to which this waiver is applied, the total cost of incidental components for each type or category, and the calculations by which they determined the total cost of materials used in and incorporated into the project.

The successful bidder will fill out the materials spreadsheet (shown below) and submit it to the assistance recipient to indicate iron and steel items proposed to be procured for the project.

American Iron and Steel Materials Spreadsheet – to be Submitted by Successful Bidder
Iowa Department of Natural Resources - January 2021
Based on EPA Memorandum (4/15/2014): De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriation Acts (CAA), 2014

Project:			
Bidder:		Date:	

*Covered Product Categories include: Lined or unlined pipes or fittings; manhole covers; municipal castings; pipe clamps and restraints; valves; structural steel; hydrants, tanks; flanges; reinforced precast concrete; construction materials.

**Incidental items are miscellaneous, generally low-cost items, often procured in bulk, such as washers, screws, fasteners, small amounts of wire, etc.

	Covered Products Category*	Description of Covered Products	Documentation Will be Obtained	Item is Incidental and will be claimed under De Minimis Waiver**	Bid Amount Covered Products	Bid Amount Incidentals
1	Choose an item.					
2	Choose an item.					
3	Choose an item.					
4	Choose an item.					
5	Choose an item.					

.

At the end of construction, the contractor will submit a final list showing covered items being claimed as incidental components under the De Minimis Waiver. Assistance recipients will complete a De Minimis Waiver Incidental Components List for the entire project to demonstrate compliance with the De Minimis Waiver cost requirements outlined above.

American Iron and Steel - De Minimus Waiver Incidental Components List

Iowa Department of Natural Resources – January 2021

Based on EPA Memorandum (4/15/2014): De Minimus Waiver of Section 436 of P.L. 113-76, Consolidated Appropriation Acts (CAA), 2014

This form is to be used by the State Revolving Fund (SRF) applicant to identify all non-domestic iron and steel incidental components permanently incorporated into an SRF project that meet the requirements of the public interest De Minimis Waiver. This form can also be used by individual contractors to submit their final incidental components list to the SRF applicant.

SRF Applicant:					
SRF Project #:		Submitted By:			
Date:		Individual Contractor De Minimis List ☐ Final De Minimis List for SRF Project ☐			
Total Materials Cost:		Total amount claimed as De Minimis Incidental Components:		Percent: *(must be 5% or less of total materials cost)*	

	Contractor Name	Covered Products	Description of Covered Products *(list each item type separately)*	Date Purchased	Individual Item/Unit Cost	Quantity Claimed as Incidental	Dollar Amount Incidental Components
Example	*JB Construction*	*Construction materials*	*Steel Doors*	*1-21-2020*	*$500*	*5*	*$2500*
1		Choose an item.					
2		Choose an item.					
3		Choose an item.					

These documents are available on-line at http://www.iowasrf.com/about_srf/use-of-american-iron-and-steel/.

Attachment 10
SRF Required Front-End Specifications
(This form must be completed and signed by Prime Contractor and submitted with the bid)

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

This term and condition implements 2 CFR 200.216 and is effective for obligations and expenditures of EPA financial assistance funding on or after 8/13/2020. EPA recipients and subrecipients, including borrowers under EPA funded revolving loan fund programs, are prohibited from obligating or expending loan or grant funds to:

(a) Procure or obtain, extend or renew a contract to procure or obtain;
(b) Enter into a contract (or extend or renew a contract) to procure; or
(c) Obtain the equipment, services, or systems that use "covered telecommunications equipment or services" identified in the regulation as a substantial or essential component of any system, or as critical technology as part of any system.

Certain equipment, systems, or services, including equipment, systems, or services produced or provided by entities subject to the prohibition are recorded in the System for Award Management exclusion list, website: **https://www.sam.gov/SAM/.**

(1) As described in Public Law 115-232, section 889, covered telecommunications equipment or services includes:

(i) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(ii) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(iii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iv) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(2) Consistent with 2 CFR 200.471, costs incurred for telecommunications and video surveillance services or equipment such as phones, internet, video surveillance, and cloud servers are allowable except for the following circumstances:

(i) Obligating or expending EPA funds for covered telecommunications and video surveillance services or equipment or services to procure (enter into, renew or extend contracts) or obtain the equipment, services, or systems as described in 2 CFR 200.216.

I understand the above prohibitions and certify that the project will be in compliance with all the requirements.

_____
Typed Name & Title of Authorized Representative

_____
Signature of Authorized Representative Date

"General Decision Number: IA20230003 01/06/2023

Superseded General Decision Number: IA20220003

State: Iowa

Construction Type: Heavy Sewer/Water Treating Plant

Counties: Iowa Statewide.

EXCEPT SCOTT COUNTY

SEWER AND WATER TREATMENT PLANTS ONLY

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least $12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be

adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/06/2023

SUIA2002-004 12/01/2014

	Rates	Fringes
Carpenters (ALL OF THE STATE OF IOWA, except the named cities and counties listed below:)	$ 27.26	13.68
Carpenters (BURLINGTON AND KEOKUK)	$ 29.53	17.49
Carpenters (CLINTON COUNTY, City of Clinton)	$ 29.53	17.49
Carpenters (CLINTON, DUBUQUE, JOHNSON, LOUISA, MUSCATNE, DES MOINES, CEDAR and LEE COUNTIES, Except any of the previously named cities)	$ 25.45	15.49
Carpenters (COUNCIL BLUFFS)	$ 33.33	13.68
Carpenters (DUBUQUE COUNTY (City of Dubuque))	$ 29.53	17.49
Carpenters (FORT MADISON)	$ 29.53	17.49
Carpenters (IOWA CITY)	$ 29.53	17.49
Carpenters (LINN COUNTY)	$ 33.58	17.49
Carpenters (MUSCATINE COUNTY, City of Muscatine)	$ 27.97	18.50
Carpenters (POLK COUNTY)	$ 37.53	13.54

Carpenters (SIOUX CITY).....$ 33.33 13.68

Carpenters (WATERLOO/CEDAR FALLS).....$ 29.53 17.49

Cement mason (ALL OF THE STATE OF IOWA, except for the named cities and couties listed below:).....$ 27.40 11.05

Cement mason (BURLINGTON AND KEOKUK).....$ 36.89 11.05

Cement mason (CLINTON COUNTY, City of Clinton).....$ 36.89 11.05

Cement mason (CLINTON, DUBUQUE, JOHNSON, LOUISA, MUSCATINE, DES MOINES, CEDAR and LEE COUNTIES, Except any of the previously named cities).....$ 31.53 11.05

Cement mason (COUNCIL BLUFFS)....$ 33.55 11.05

Cement mason (DUBUQUE COUNTY (City of Dubuque)).....$ 36.98 11.05

Cement mason (FORT MADISON).....$ 35.45 11.05

Cement mason (IOWA CITY).....$ 36.89 11.05

Cement mason (LINN COUNTY).....$ 36.89 11.05

Cement mason (MUSCATINE COUNTY).....$ 36.89 11.05

Cement mason (POLK COUNTY).....$ 36.89 11.05

Cement mason (SIOUX CITY).....$ 34.17 11.05

Cement mason (WATERLOO/CEDAR FALLS).....$ 31.68 11.05

IRONWORKER (ALL OF THE STATE OF IOWA, except for the named cities or counties listed below:).....$ 23.75 16.37

IRONWORKER (BURLINGTON AND KEOKUK).....$ 28.58 16.37

IRONWORKER (CLINTON COUNTY, City of Clinton).....$ 35.04 16.37

IRONWORKER (CLINTON, DUBUQUE, JOHNSON, LOUISA, MUSCATINE, DES MOINES, CEDAR and LEE COUNTIES, Except any of the previously named cities).....$ 23.75 16.37

IRONWORKER (COUNCIL BLUFFS).....$ 24.15 16.37

IRONWORKER (DUBUQUE COUNTY (City of Dubuque)).....$ 27.53 16.37

IRONWORKER (FORT MADISON).....$ 28.58 16.37

IRONWORKER (IOWA CITY).....$ 27.53 16.37

IRONWORKER (LINN COUNTY).....$ 27.53 16.37

IRONWORKER (MUSCATINE COUNTY)....$ 35.04 16.37

IRONWORKER (POLK COUNTY).....$ 27.37 16.37

IRONWORKER (SIOUX CITY).....$ 18.57 16.37

IRONWORKER (WATERLOO/CEDAR FALLS).....$ 27.53 16.37

LABORERS (ALL OF THE STATE OF IOWA, except for the named cities and counties listed below:).....$ 25.14 9.38

LABORERS (BURLINGTON AND KEOKUK).....$ 30.11 9.38

LABORERS (CLINTON COUNTY, City of Clinton).....$ 29.52 9.38

LABORERS (CLINTON, DUUQUE, JOHNSON, LOUISA, MUSCATINE, DES MOINES, CEDAR and LEE COUNTIES, Except any of the previously named cities).....$ 26.89 9.38

LABORERS (COUNCIL BLUFFS).....$ 26.89 9.38

LABORERS (DUBUQUE COUNTY (City of Dubuque)).....$ 26.89 9.38

LABORERS (FORT MADISON).....$ 30.11 9.38

LABORERS (IOWA CITY).....$ 28.35 9.38

LABORERS (LINN COUNTY).....$ 30.87 9.38

LABORERS (MUSCATINE COUNTY
(City of Muscatine)).....$ 30.35 9.38

LABORERS (POLK COUNTY).....$ 30.77 9.38

LABORERS (SIOUX CITY).....$ 26.89 9.38

LABORERS (WATERLOO/CEDAR
FALLS).....$ 26.89 9.38

OPERATOR: Power Equipment
(POLK, WARREN, DALLAS, STORY
& JASPER COUNTIES)
SEWER
Class A.....$ 36.00 14.55
Class B.....$ 34.30 14.55
Class C.....$ 31.91 14.55
WATER
Class A.....$ 35.73 14.55
Class B.....$ 34.03 14.55
Class C.....$ 31.65 14.55

Power Equipment Operator (ALL
OF THE STATE OF IOWA, except
for the named cities and
counties listed below:)
Class A.....$ 35.73 14.55
Class B.....$ 34.03 14.55
Class C.....$ 31.65 14.55

Power Equipment Operator
(BURLINGTON AND KEOKUK)
Class A.....$ 34.50 31.85
Class B.....$ 31.85 31.85

Power Equipment Operator
(CLINTON COUNTY, City of
Clinton)
Class A.....$ 34.50 31.85
Class B.....$ 31.85 31.85

Power Equipment Operator
(CLINTON, LOUISA, MUSCATINE,
DES MOINES, CEDAR and LEE

COUNTIES, Except any of the previously named cities)

Class A	$ 34.50	31.85
Class B	$ 31.85	31.85

Power Equipment Operator (COUNCIL BLUFFS)

SEWER		
Class A	$ 36.00	14.55
Class B	$ 34.30	14.55
Class C	$ 31.91	14.55
WATER		
Class A	$ 35.73	14.55
Class B	$ 34.03	14.55
Class C	$ 31.65	14.55

Power Equipment Operator (DUBUQUE COUNTY (Including City of Dubuque) and JOHNSON COUNTY)

SEWER		
Class A	$ 36.00	14.55
Class B	$ 34.30	14.55
Class C	$ 31.91	14.55
WATER		
Class A	$ 35.73	14.55
Class B	$ 34.03	14.55
Class C	$ 31.65	14.55

Power Equipment Operator (FORT MADISON)

Class A	$ 34.50	31.85
Class B	$ 31.85	31.85

Power Equipment Operator (IOWA CITY)

SEWER		
Class A	$ 36.00	14.55
Class B	$ 34.30	14.55
Class C	$ 31.91	14.55
WATER		
Class A	$ 35.73	14.55
Class B	$ 34.03	14.55
Class C	$ 31.65	14.55

Power Equipment Operator (LINN COUNTY)

SEWER		
Class A	$ 36.00	14.55
Class B	$ 34.30	14.55
Class C	$ 31.91	14.55

WATER
Class A.....$ 35.73 14.55
Class B.....$ 34.03 14.55
Class C.....$ 31.91 14.55

Power Equipment Operator
(MUSCATINE COUNTY)
Class A.....$ 34.50 31.85
Class B.....$ 31.85 31.85

Power Equipment Operator
(SIOUX CITY)
SEWER
Class A.....$ 36.00 14.55
Class B.....$ 34.30 14.55
Class C.....$ 31.91 14.55
WATER
Class A.....$ 35.73 14.55
Class B.....$ 34.03 14.55
Class C.....$ 31.91 14.55

Power Equipment Operator
(WATERLOO/CEDAR FALLS)
SEWER
Class A.....$ 36.00 14.55
Class B.....$ 34.30 14.55
Class C.....$ 31.91 14.55
WATER
Class A.....$ 35.73 14.55
Class B.....$ 34.03 14.55
Class C.....$ 31.91 14.55

Truck drivers (ALL OF THE
STATE OF IOWA, except for the
named cities and counties
listed below:).....$ 21.66 10.50

Truck drivers (BURLINGTON AND
KEOKUK).....$ 24.59 10.50

Truck drivers (CLINTON
COUNTY, City of Clinton).....$ 25.03 10.50

Truck drivers (CLINTON,
DUBUQUE, JOHNSON, LOUISA,
MUSCATINE, DES MOINES, CEDAR
and LEE COUNTIES, Except any
of the previously named
cities).....$ 22.76 10.50

Truck drivers (COUNCIL BLUFFS)...$ 25.68 10.50

Truck drivers (DUBUQUE COUNTY (City of Dubuque))..... $ 24.06 10.50

Truck drivers (FORT MADISON)..... $ 24.59 10.50

Truck drivers (IOWA CITY)..... $ 26.34 10.50

Truck drivers (LINN COUNTY)..... $ 27.10 10.50

Truck drivers (MUSCATINE COUNTY)..... $ 24.59 10.50

Truck drivers (POLK COUNTY)..... $ 25.68 10.50

Truck drivers (SIOUX CITY)..... $ 23.28 10.50

Truck drivers (WATERLOO/CEDAR FALLS)..... $ 24.21 10.50

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

CLASS A: Asphalt laydown machine, Asphalt Plant Operator, Asphalt heater-planer unit, Backhoe, Bulldozer, Central Mix Plant, Concrete Pump, Crawler Tractor Pulling Scraper, Dredge Engineer, Dredge Leverman, Front-end Loader (over 2 yds), Group Equipment Greaser (unsupervised), Horizontal boring machine, Master Mechanic, Milling Machine, Motor Patrol, Porland Concrete Paver, Power Shovel, Crane & Dragline, Pushcat, Scraper (10 yards & over or finish), Self-propelled Elevation Grader or Similar Machine, Sideboom Tractor, Subgrader (or equivalent), Tow Push Boat or Work Boat, Trenching Machine (Cleveland 80 or similar capacity).

CLASS B: Asphalt Distributor, Asphalt Finish Roller, Asphalt Screed, Belt Loader or Similar Machine, Bullfloat, Churn or Rotary Drill, Concrete Widening Machine, Concrete Curbing Machine, Conveyor, Crawler Tractor - Pulling ripper, Disc, Sheepsfoot or Roller, Deckhand/Oiler, Finishing Machine (on concrete), Flex-plane, forklift, Form Grader, Front-end Loader (under 2 yeards), Group greaser (supervised), Haiss loader or similar, Mechanic-welder, Offroad articulated hauler, Paving breaker pumps (over 3""), Screening & wash plant, Skid loader, Spreader Operator, Self-propell Roller (other than asphalt), Self-propelled vibrating compactor, shoulder machine, Trenching Machine (other than above), Water wagon on compaction.

CLASS C: Asphalt Roller (other than finish), Boiler, Boom & Winch Truck, Compressor, Concrete Spreader, Belt Placer,

Farm Type or Utility Tractor with attachments (under 50 hp), Group Greaser Light plant, Mechanical Broom, Mechanical Heater, Oiler, Pile Hammer Power Unit, Pump (Other than Dredge), Pumps (3"" and under), Pumps on well points & deep wells for dewatering, Safety Boat, Truck Crane combination Driver Oiler, Welding Machine.

FOOTNOTE:

IRONWORKERS: (Setting of all structural steel and reinforcing steel installation)

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical

order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010

08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.

Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

"General Decision Number: IA20230078 08/04/2023

Superseded General Decision Number: IA20220078

State: Iowa

Construction Type: Building

Counties: Benton and Jones Counties in Iowa.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least $12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the

Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2023
1	01/13/2023
2	04/07/2023
3	05/12/2023
4	05/19/2023
5	06/02/2023
6	06/09/2023
7	07/07/2023
8	07/28/2023
9	08/04/2023

ASBE0081-001 06/01/2022

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR	$ 31.86	22.95

BOIL0083-009 01/01/2021

	Rates	Fringes
BOILERMAKER	$ 41.52	30.36

BRIA0003-002 05/01/2023

	Rates	Fringes
BRICKLAYER	$ 33.75	16.32

BRIA0003-019 05/01/2023

	Rates	Fringes
TILE SETTER	$ 33.75	16.32

CARP0308-003 05/01/2022

	Rates	Fringes

CARPENTER (Includes
Acoustical Ceiling
Installation, Drywall
Hanging, Form Work, and Metal
Stud Installation).....$ 29.22 22.35

CARP2158-004 06/01/2023

Rates Fringes

MILLWRIGHT.....$ 33.70 27.26

ELEV0033-002 01/01/2023

Rates Fringes

ELEVATOR MECHANIC.....$ 51.68 37.335+a+b

FOOTNOTES:

A. Employer contributes 8% of regular basic hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for employees with less than 5 years of service.

B. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veteran's Day; Thanksgiving Day; Day after Thanksgiving; & Christmas Day.

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* ENGI0150-044 06/01/2023

Rates Fringes

POWER EQUIPMENT OPERATOR
(Loader).....$ 39.50 38.05

Class 2)

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* ENGI0150-045 06/01/2023

Rates Fringes

POWER EQUIPMENT OPERATOR
(Paver-All Types).....$ 39.50 38.05

Class 2

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* ENGI0150-046 06/01/2023

Rates Fringes

POWER EQUIPMENT OPERATOR
(Roller).....$ 39.50 38.05

Class 2

ENGI0234-006 05/01/2021

Rates Fringes

POWER EQUIPMENT OPERATOR
(Backhoe/Excavator/Trackhoe).....$ 31.95 16.40

IRON0089-002 05/01/2023

Rates Fringes

IRONWORKER (Ornamental).....$ 31.81 23.34
IRONWORKER (Structural).....$ 31.81 23.34

IRON0111-002 07/01/2022

Rates Fringes

IRONWORKER (Reinforcing).....$ 35.00 29.31

LABO0043-004 05/01/2022

Rates Fringes

LABORER (Common or General).....$ 26.52 16.16

LABO0309-010 05/01/2023

Rates Fringes

LABORER (Pipelayer).....$ 27.56 23.50

PAIN0447-001 05/01/2023

Rates Fringes

PAINTER (Brush and Roller).....$ 28.30 10.80

PAIN0447-002 05/01/2023

Rates Fringes

PAINTER (Spray).....$ 28.30 10.80

PLUM0125-003 05/01/2023

	Rates	Fringes
PIPEFITTER (Includes HVAC Pipe Installation)	$ 41.24	20.24

PLUM0125-004 05/01/2023

	Rates	Fringes
PLUMBER	$ 41.24	20.24

SFIA0669-002 04/01/2023

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers)	$ 41.15	25.25

SHEE0263-007 05/01/2020

	Rates	Fringes
SHEET METAL WORKER (Includes HVAC Duct and Unit Installation)	$ 35.78	19.72

SUIA2016-053 07/19/2016

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 21.66	2.47
ELECTRICAL INSTALLER (Low Voltage Wiring)	$ 24.04	8.68
ELECTRICIAN	$ 28.70	10.85
FLOOR LAYER: Floor Coating/Epoxy	$ 22.43	0.00
LABORER: Mason Tender - Brick	$ 19.39	8.17
OPERATOR: Bulldozer	$ 26.13	13.56
OPERATOR: Crane	$ 24.15	8.10
OPERATOR: Forklift	$ 22.96	7.49
ROOFER	$ 21.92	5.07

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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WAGE DETERMINATION APPEALS PROCESS

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Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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Washington, DC 20210

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Administrative Review Board
U.S. Department of Labor

200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

Worksheet: Authorization to Transact Business

This worksheet may be used to help complete Part A of the Resident Bidder Status form. If at least one of the following describes your business, you are authorized to transact business in Iowa.

☐ Yes ☐ No My business is currently registered as a contractor with the Iowa Division of Labor.

☐ Yes ☐ No My business is a sole proprietorship and I am an Iowa resident for Iowa income tax purposes.

☐ Yes ☐ No My business is a general partnership or joint venture. More than 50 percent of the general partners or joint venture parties are residents of Iowa for Iowa income tax purposes.

☐ Yes ☐ No My business is an active corporation with the Iowa Secretary of State and has paid all fees required by the Secretary of State, has filed its most recent biennial report, and has not filed articles of dissolution.

☐ Yes ☐ No My business is a corporation whose articles of incorporation are filed in a state other than Iowa, the corporation has received a certificate of authority from the Iowa Secretary of State, has filed its most recent biennial report with the Secretary of State, and has neither received a certificate of withdrawal from the Secretary of state nor had its authority revoked.

☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in this state and the statement has not been canceled.

☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in a state other than Iowa, has filed a statement of foreign qualification in Iowa and a statement of cancellation has not been filed.

☐ Yes ☐ No My business is a limited partnership or limited liability limited partnership which has filed a certificate of limited partnership in this state, and has not filed a statement of termination.

☐ Yes ☐ No My business is a limited partnership or a limited liability limited partnership whose certificate of limited partnership is filed in a state other than Iowa, the limited partnership or limited liability limited partnership has received notification from the Iowa Secretary of state that the application for certificate of authority has been approved and no notice of cancellation has been filed by the limited partnership or the limited liability limited partnership.

☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in Iowa and has not filed a statement of termination.

☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in a state other than Iowa, has received a certificate of authority to transact business in Iowa and the certificate has not been revoked or canceled.

All bidders must submit the following completed form to the governmental body requesting bids per 875 Iowa Administrative Code Chapter 156.

Bidder Status Form

To be completed by all bidders — Part A

Please answer "Yes" or "No" for each of the following:

☐ Yes ☐ No My company is authorized to transact business in Iowa.
(To help you determine if your company is authorized, please review the worksheet on the next page).

☐ Yes ☐ No My company has an office to transact business in Iowa.

☐ Yes ☐ No My company's office in Iowa is suitable for more than receiving mail, telephone calls, and e-mail.

☐ Yes ☐ No My company has been conducting business in Iowa for at least 3 years prior to the first request for bids on this project.

☐ Yes ☐ No My company is not a subsidiary of another business entity or my company is a subsidiary of another business entity that would qualify as a resident bidder in Iowa.

If you answered "Yes" for each question above, your company qualifies as a resident bidder. Please complete Parts B and D of this form.

If you answered "No" to one or more questions above, your company is a non-resident bidder. Please complete Parts C and D of this form.

To be completed by resident bidders — Part B

My company has maintained offices in Iowa during the past 3 years at the following addresses:

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____
(mm/dd/yyyy) City, State, Zip: _____

You may attach additional sheet(s) if needed.

To be completed by non-resident bidders — Part C

1. Name of home state or foreign country reported to the Iowa Secretary of State:

   _____

2. Does your company's home state or foreign country offer preferences to bidders who are residents? ☐ Yes ☐ No

3. If you answered "Yes" to question 2, identify each preference offered by your company's home state or foreign country and the appropriate legal citation.

   _____

   _____

   You may attach additional sheet(s) if needed.

To be completed by all bidders — Part D

I certify that the statements made on this document are true and complete to the best of my knowledge and I know that my failure to provide accurate and truthful information may be a reason to reject my bid.

Firm Name: _____

Signature: _____ Date: _____

BID BOND

KNOW ALL BY THESE PRESENTS:

That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto_____, as Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of _____ _____ _____dollars ($_____), or _____ percent of the amount bid in lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

The condition of the above obligation is such that whereas the Principal has submitted to the Jurisdiction a certain proposal, in a separate envelope, and hereby made a part hereof, to enter into a contract in writing, for the following described improvements;

The project generally includes furnishing all labor, material, and equipment necessary for construction and installation of prestressed concrete flow equalization basin, precast lift station and valve vault, submersible pumps, force main, gravity sewer and other miscellaneous items.

The Surety hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Jurisdiction may accept such bid or execute such Contract; and said Surety does hereby waive notice of any such extension.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Jones County, State of Iowa. If legal action is required by the Jurisdiction against the Surety or Principal to enforce the provisions of the bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Surety or Principal agrees to pay the Jurisdiction all damages, costs, and attorney fees incurred by enforcing any of the provisions of this Bond. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against Surety for any amount guaranteed hereunder whether action is brought against Principal or whether Principal is joined in any such action or actions or not.

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then
this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____ day of _____, 20_____.

SURETY:	PRINCIPAL:
_____ Surety Company	_____ Bidder
By _____ Signature Attorney-in-Fact/Officer	By _____ Signature
_____ Printed Name of Attorney-in-Fact/Officer	_____ Printed Name
_____ Company Name	_____ Title
_____ Company Address	_____ Address
_____ City, State, Zip Code	_____ City, State, Zip Code
_____ Company Telephone Number	_____ Telephone Number

NOTE: All signatures on this bid bond must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted. This bond must be sealed with the Surety's raised, embossing seal. The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal.

CONTRACT NO. _____

DATE _____

CONTRACT

THIS CONTRACT, made and entered into at _____ this _____ day of _____, _____, by and between the _____ by its _____, upon order of its _____ hereinafter called the "Jurisdiction," and _____, hereinafter called the "Contractor."

WITNESSETH:

The Contractor hereby agrees to complete the work comprising the below referenced improvement as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the Anamosa City Hall. This contract includes all contract documents. The work under this contract shall be constructed in accordance with the SUDAS Standard Specifications, 2023 Edition, and as further modified by the supplemental specifications and special provisions included in said contract documents, and the Contract Attachment - Item 1: General, which is attached hereto. The Contractor further agrees to complete the work in strict accordance with said contract documents, and to guarantee the work as required by law, for the time required in said contract documents, after its acceptance by the Jurisdiction.

This contract is awarded and executed for completion of the work specified in the contract documents for the bid prices shown on the Contract Attachment - Item 2: Bid Items, Quantities, and Prices, which were proposed by the Contractor in its proposal submitted in accordance with the Notice to Bidders and Notice of Public Hearing for the following described improvements:

The project generally includes furnishing all labor, material, and equipment necessary for construction and installation of prestressed concrete flow equalization basin, precast lift station and valve vault, submersible pumps, force main, gravity sewer and other miscellaneous items.

The Contractor agrees to perform said work for and in consideration of the Jurisdiction's payment of the bid amount of _____ dollars ($_____) which amount shall constitute the required amount of the performance, maintenance, and payment bond. The Contractor hereby agrees to commence work under this contract on or before a date to be specified in a written notice to proceed by the Jurisdiction and to fully complete the project _____; and to pay liquidated damages for noncompliance with said completion provisions at the rate of one thousand five hundred dollars ($1,500) for each calendar day thereafter that the work remains incomplete.

IN WITNESS WHEREOF, the Parties hereto have executed this instrument, in triplicate on the date first shown written.

JURISDICTION

By _____

(Seal)
ATTEST:

_____

FORM APPROVED BY:

_____
Attorney for Jurisdiction

CONTRACTOR

_____
Contractor

By _____
Signature

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone

CONTRACTOR PUBLIC REGISTRATION INFORMATION To Be Provided By:

1. All Contractors: The Contractor shall enter its Public Registration Number __ __ __ __ __ - __ __ issued by the Iowa Commissioner of Labor pursuant to Section 91C.5 of the Iowa Code.

2. Out-of-State Contractors:

   A. Pursuant to Section 91C.7 of the Iowa Code, an out-of-state contractor, before commencing a contract in excess of five thousand dollars in value in Iowa, shall file a bond with the division of labor services of the department of workforce development. It is the contractor's responsibility to comply with said Section 91C.7 before commencing this work.

   B. Prior to entering into contract, the designated low bidder, if it is a corporation organized under the laws of a state other than Iowa, shall file with the Engineer a certificate from the Secretary of the State of Iowa showing that it has complied with all the provisions of Chapter 490 of the Iowa Code, or as amended, governing foreign corporations.

NOTE: All signatures on this contract must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted.

CORPORATE ACKNOWLEDGMENT

State of_____)
) SS
_____County)

On this _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known, who, being by me duly sworn, did say that they are the _____, and _____, respectively, of the corporation executing the foregoing instrument; that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed (and sealed) on behalf of the corporation by authority of this Board of Directors; that _____ and _____acknowledged the execution of the instrument to be the voluntary act and deed of the corporation, by it and by them voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20 _____

PARTNERSHIP ACKNOWLEDGMENT

State of _____)
) SS
_____County)

On this ____ day of _____, 20 ___, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ to me personally known, who being by me duly sworn, did say that the person is one of the partners of _____, a partnership, and that the instrument was signed on behalf of the partnership by authority of the partners and the partner acknowledged the execution of the instrument to be the voluntary act and deed of the partnership by it and by the partner voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

INDIVIDUAL ACKNOWLEDGMENT

State of _____)
) SS
_____County)

On this _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known to be the identical person(s) named in and who executed the foregoing instrument, and acknowledged that (he) (she) (they) executed the instrument as (his) (her) (their) voluntary act and deed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

LIMITED LIABILITY COMPANY ACKNOWLEDGMENT

State of _____)
) SS
_____County)

On this _____ day of _____, 20____, before me a Notary Public in and for said county, personally appeared _____, to me personally known, who being by me duly sworn did say that person is _____ of said _____, that (the seal affixed to said instrument is the seal of said OR no seal has been procured by the said) _____, and that said instrument was signed and sealed on behalf of the said _____, by authority of its managers and the said _____ acknowledged the execution of said instrument to be the voluntary act and deed of said _____, by it voluntarily executed.

_____
Notary Public in and for the State of_____
My commission expires _____, 20 _____

CONTRACT ATTACHMENT: ITEM 1 - GENERAL

This contract is awarded and executed for completion of the work specified in the contract documents for the lump sum price below as proposed by the Contractor in its proposal submitted in accordance with notice to bidders and notice of public hearing.

_____Dollars
(amount in words)

($_____)
(amount in figures)

SURETY BOND NO. _____

PERFORMANCE, PAYMENT, AND MAINTENANCE BOND

KNOW ALL BY THESE PRESENTS:

That we, _____, as Principal (hereinafter the "Contractor" or "Principal" and _____, as Surety are held and firmly bound unto _____ , as Obligee (hereinafter referred to as "the Jurisdiction"), and to all persons who may be injured by any breach of any of the conditions of this Bond in the penal sum of _____ dollars ($_____), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, legal representatives and assigns, jointly or severally, firmly by these presents.

The conditions of the above obligations are such that whereas said Contractor entered into a contract with the Jurisdiction, bearing date the _____ day of _____, _____, hereinafter the "Contract") wherein said Contractor undertakes and agrees to construct the following described improvements:

The project generally includes furnishing all labor, material, and equipment necessary for construction and installation of prestressed concrete flow equalization basin, precast lift station and valve vault, submersible pumps, force main, gravity sewer and other miscellaneous items.

and to faithfully perform all the terms and requirements of said Contract within the time therein specified, in a good and workmanlike manner, and in accordance with the Contract Documents. Provided, however, that one year after the date of acceptance as complete of the work under the above referenced Contract, the maintenance portion of this Bond shall continue in force but the penal sum for maintenance shall be reduced to the sum of _____DOLLARS ($_____), which is the cost associated with those items shown on the proposal and in the Contract that require a maintenance bond period in excess of one year.

It is expressly understood and agreed by the Contractor and Surety in this bond that the following provisions are a part of this Bond and are binding upon said Contractor and Surety, to-wit:

1. PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill, and abide by each and every covenant, condition, and part of said Contract and Contract Documents, by reference made a part hereof, for the above referenced improvements, and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor's default of failure to perform as required. The Contractor shall also be responsible for the default or failure to perform as required under the Contract and Contract Documents by all its subcontractors, suppliers, agents, or employees furnishing materials or providing labor in the performance of the Contract.

2. PAYMENT: The Contractor and the Surety on this Bond hereby agreed to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract on account of which this Bond is given, including but not limited to claims for all amounts due for labor, materials, lubricants, oil, gasoline, repairs on machinery, equipment, and tools, consumed or used by the Contractor or any subcontractor, wherein the same are not satisfied out of the portion of the contract price the Jurisdiction is required to retain until completion of the improvement, but the Contractor and Surety shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Chapter 573 of the Iowa Code, which by this reference is made a part hereof as though fully set out herein.

3. MAINTENANCE: The Contractor and the Surety on this Bond hereby agree, at their own expense:

   A. To remedy any and all defects that may develop in or result from work to be performed under the Contract within the period of ***2*** year (s) from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work;

   B. To keep all work in continuous good repair; and

   C. To pay the Jurisdiction's reasonable costs of monitoring and inspection to assure that any defects are remedied, and to repay the Jurisdiction all outlay and expense incurred as a result of Contractor's and Surety's failure to remedy any defect as required by this section.

4. GENERAL: Every Surety on this Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

   A. To consent without notice to any extension of time to the Contractor in which to perform the Contract;

   B. To consent without notice to any change in the Contract or Contract Documents, which thereby increases the total contract price and the penal sum of this bond, provided that all such changes do not, in the aggregate, involve an increase of more than 20% of the total contract price, and that this bond shall then be released as to such excess increase; and

   C. To consent without notice that this Bond shall remain in full force and effect until the Contract is completed, whether completed within the specified contract period, within an extension thereof, or within a period of time after the contract period has elapsed and the liquidated damage penalty is being charged against the Contractor.

   D. That no provision of this Bond or of any other contract shall be valid that limits to less that five years after the acceptance of the work under the Contract the right to sue on this Bond.

   E. That as used herein, the phrase "all outlay and expense" is not to be limited in any way, but shall include the actual and reasonable costs and expenses incurred by the Jurisdiction including interest, benefits, and overhead where applicable. Accordingly, "all outlay and expense" would include but not be limited to all contract or employee expense, all equipment usage or rental, materials, testing, outside experts, attorneys fees (including overhead expenses of the Jurisdiction's staff attorneys), and all costs and expenses of litigation as they are incurred by the Jurisdiction. It is intended the Contractor and Surety will defend and indemnify the Jurisdiction on all claims made against the Jurisdiction on account of Contractor's failure to perform as required in the Contract and Contract Documents, that all agreements and promises set forth in the Contract and Contract Documents, in approved change orders, and in this Bond will be fulfilled, and that the Jurisdiction will be fully indemnified so that it will be put into the position it would have been in had the Contract been performed in the first instance as required.

   In the event the Jurisdiction incurs any "outlay and expense" in defending itself against any claim as to which the Contractor or Surety should have provided the defense, or in the enforcement of the promises given by the Contractor in the Contract, Contract Documents, or approved change orders, or in the enforcement of the promises given by the Contractor and Surety in this Bond, the Contractor and Surety agree that they will make the Jurisdiction whole for all such outlay and expense, provided that the Surety's obligation under this bond shall not exceed 125% of the penal sum of this bond.

In the event that any actions or proceedings are initiated regarding this Bond, the parties agree that the venue thereof shall be Jones County, State of Iowa. If legal action is required by the Jurisdiction to enforce the provisions of this Bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Contractor and the Surety agree, jointly, and severally, to pay the Jurisdiction all outlay and expense incurred therefor by the Jurisdiction. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers, and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against surety for any amount guaranteed hereunder whether action is brought against the Contractor or whether Contractor is joined in any such action(s) or not.

NOW THEREFORE, the condition of this obligation is such that if said Principal shall faithfully perform all the promises of the Principal, as set forth and provided in the Contract, in the Contract Documents, and in this Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

When a work, term, or phrase is used in this Bond, it shall be interpreted or construed first as defined in this Bond, the Contract, or the Contract Documents; second, if not defined in the Bond, Contract, or Contract Documents, it shall be interpreted or construed as defined in applicable provisions of the Iowa Code; third, if not defined in the Iowa Code, it shall be interpreted or construed according to its generally accepted meaning in the construction industry; and fourth, if it has no generally accepted meaning in the construction industry, it shall be interpreted or construed according to its common or customary usage.

Failure to specify or particularize shall not exclude terms or provisions not mentioned and shall not limit liability hereunder. The Contract and Contract Documents are hereby made a part of this Bond.

Witness our hands, in triplicate, this _____ day of _____, _____.

Surety Countersigned By:

_____
Signature of Agent

_____
Printed Name of Agent

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

FORM APPROVED BY:

_____
Attorney for Jurisdiction

PRINCIPAL:

_____
Contractor

By: _____
Signature

_____
Title

SURETY:

_____
Surety Company

By: _____
Signature Attorney-in-Fact Officer

_____
Printed Name of Attorney-in-Fact Officer

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

NOTE:

1. **All signatures on this performance, payment, and maintenance bond must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted.**
2. **This bond must be sealed with the Surety's raised, embossing seal.**
3. **The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal.**
4. **The name and signature of the Surety's Attorney-in-Fact/Officer entered on this bond must be exactly as listed on the Certificate or Power of Attorney accompanying this bond.**

NOTICE TO PROCEED

PROJECT: _____

OWNER: _____ DATE: _____

TO: Contractor Name: _____

Contractor Address: _____

_____

You are hereby notified to commence work in accordance with the Contract dated _____, _____; on or before _____, and you are to complete the work as follows:

The Contractor shall fully complete the project by September 30, 2025. Fully complete shall be defined as all sewer, force main, lift station, pumps, flow equalization basin, screen equipment, buildings, culverts, electrical equipment, controls, grading, driveways, and seeding/mulching construction being completed, with the new driveways being fully open for traffic and all improvements being ready for final acceptance. Should the Contractor fail to fully complete the work in this timeframe, liquidated damages of one thousand dollars ($1,500) per calendar day will be assessed for work not completed within the designated, Contract term(s).

_____

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by _____ of

_____ on this the _____ day of _____, 20___.

By: _____

Title: _____

SUPPLEMENTAL GENERAL CONDITIONS

The **2023** edition of the Iowa Statewide Urban Design and Specifications (SUDAS) are applicable to this project. The purpose of this section is to revise, identify, add, and/or clarify conditions relating to SUDAS Division 1 – General Provisions and Covenants on this project.

1. SUBSTITUTIONS

Whenever a material, article or piece of equipment is identified on the PLANS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality, and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the WORK will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

1.01 – PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product fully meeting those standards, requirements, and description.

B. Products Specified by Naming One or More Manufacturers followed by words indicating no substitutions: No options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.02 – SUBSTITUTIONS

A. Substitutions may be considered when:

1. Product becomes unavailable through no fault of the Contractor.

2. Contractor feels substitute Product will meet or exceed specified in function and quality.

B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents. Any deviations from the specifications shall be clearly defined within the submittal.

C. A request constitutes a representation that the Contractor:

1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.

2. Will provide the same warranty for the Substitution as for the specified Product.

3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to Owner.

4. Waives claims for additional costs or time extension, which may subsequently become apparent.

5. Will reimburse Owner for charges of Engineer for evaluation of each proposed substitution.

6. Will reimburse Owner for review and redesign services by the Engineer.

D. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

E. Submittal Procedure:

1. Submit two (2) copies of request for Substitutions for consideration. Limit each request to one proposed Substitution.

2. Approval of a substitution does not guarantee the acceptance of a product after awarded. The Engineer reserves the right to reject any substitutions that does not meet the requirements of the contract documents.

3. The contractor may submit other manufacturer's equipment for consideration as an alternative to the equipment specified. To qualify alternate equipment, the contractor must submit the request to the Engineer at least 15 days prior to the bid date.

4. Drawings, specifications, and product literature with adequate detail to determine that what is proposed will meet the requirements of the plans and specifications. Submit Shop Drawings, Product data, and certified test results attesting to the proposed Product equivalence.

5. Form of Acceptance: Addendum prior to bid. Substitutions and alternate equipment not prequalified will not be accepted.

2. PROJECT CLOSEOUT

Following completion of the WORK but prior to final acceptance and payment, the CONTRACTOR shall submit the following:

A. Lien Waivers from all suppliers, subcontractors and others with lien rights against the Owner.

3. OWNER'S RIGHT TO SALVAGE

The OWNER may designate and have rights to any material herein demolished by the CONTRACTOR.

SPECIAL PROVISIONS

The 2023 edition of the Iowa Statewide Urban Design and Specifications (SUDAS), and SUDAS details, are applicable to this project. The purpose of this section is to revise, identify, add, and/or clarify conditions relating to specific bid items on this project.

Division 1 – General Provisions and Covenants

Section 1050: Control of Work

MODIFY 1.06 – Conflict Avoidance

A. Expose possible conflicts, such as utility lines and drainage structures. Verify elevations of each and verify clearances for proposed construction prior to completing submittals. Report any discrepancies to the Engineer for evaluation and potential modification. Failure of the contractor to verify elevations and locations of conflicts prior to completing submittals shall be deemed a waiver by the Contractor of all claims for additional compensation for modifications or rework necessary to complete the project.

ADD 1.16 – Value Engineering

A. The Contractor may submit written value engineering proposals to the Engineer, for changing the plans, specifications, or other contract requirements. The purpose of this provision is to encourage the Contractor to suggest alternative lower cost or more efficient construction. The changes shall not impair the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards.

B. Value Engineering Proposals shall contain the following information:

1. Existing requirements and proposed changes;
2. Contract requirements that must be changed if the value engineering proposal is adopted;
3. A detailed cost estimate of performing the work as stipulated and as proposed;
4. The time within which the Engineer must make a decision thereon;
5. The items of work affected by the proposed changes, including quantity variations

C. The provisions of this article do not require the Engineer to consider any value engineering proposal that is submitted.

D. If a value engineering proposal is similar to a change in the contract documents under consideration by the Contracting Authority for the project at the time the value engineering proposal is submitted, or if the value engineering proposal is based on or similar to standard specifications, special provisions, or plans adopted by the Contracting Authority, the Engineer will not accept the value engineering proposal.

E. The Contractor shall continue to perform the work in accordance with contract requirements until a change order incorporating the value engineering proposal has been processed. If a change order has not been processed by the date on which the Contractor's value engineering proposal specifies that a decision thereon should be made, or such other date as the Contractor may subsequently have specified in writing, the proposal shall be rejected.

F. The Contracting Authority will not be liable to the Contractor for failure to accept or act upon any value engineering proposal submitted or for any delays to the work attributable to any such value engineering proposal.

G. The Engineer shall be the sole judge of the acceptability of a value engineering proposal and of the estimated net savings in construction costs from adoption of all or any part of such value engineering proposal. In determining the estimated net savings, the right is reserved to disregard the contract bid prices if, in the judgment of the Engineer, the prices do not represent a fair measure of the value of work to be performed or to be deleted.

H. The Contracting Authority reserves the right to require the Contractor to share in the Contracting Authority's costs of investigating a value engineering proposal. Where this condition is imposed, the Contractor shall indicate acceptance in writing, and acceptance may constitute authority for the Contracting Authority to deduct up to 50% of the investigation costs from any money due to the Contractor resulting from the change.

I. If the Contractor's value engineering proposal is accepted in whole or in part, such acceptance will be by change order. The change order will incorporate the changes in the contract documents which are necessary to permit the value engineering proposal to be put into effect, and will include any conditions upon which the Contracting Authority's approval is based. The change order shall also set forth the estimated net savings in the cost of performing the work attributable to the value engineering proposal effectuated by the change order, and will further provide that the Contractor be paid 50% of the estimated net savings amount.

J. Acceptance of the value engineering proposal and performance of the work will not extend the time of completion of the contract, unless specifically provided for in the change order authorizing the proposal.

K. The amount specified to be paid to the Contractor in the change order for a value engineering proposal shall constitute full compensation to the Contractor for the proposal and performance of the work.

L. The Contracting Authority reserves the right to adopt a value engineering proposal for general use on contracts administered by the Contracting Authority when it determines that a value engineering proposal is suitable for application to other contracts. When an accepted value engineering proposal is adopted for general use, only the Contractor who first submitted this value engineering proposal will be eligible for compensation according to this article, and in that case, only on those contracts awarded to the same Contractor prior to submission of the accepted value engineering proposal and on which such value engineering proposal is also submitted and accepted. Value engineering proposals identical or similar to previously submitted value engineering proposals will be eligible for consideration and compensation under provisions of this article if those value engineering proposals were not adopted for general application to other contracts administered by the Contracting Authority. Subject to the provisions contained herein, the State or any other public agency will have the right to use all or any part of any submitted value engineering proposal without obligation or compensation of any kind to the Contractor.

M. The Contractor is encouraged to include the provisions of this article in contracts with subcontractors. All value engineering proposals by subcontractors shall be submitted by the prime contractor.

SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Form-facing material for cast-in-place concrete.

2. Shoring, bracing, and anchoring.

1.3 DEFINITIONS

A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.

B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following:

1. Exposed surface form-facing material.

2. Concealed surface form-facing material.

3. Form ties.

4. Waterstops.

5. Form-release agent.

B. Shop Drawings: Prepared by, and signed and sealed by, a qualified professional engineer responsible for their preparation, detailing fabrication, assembly, and support of forms.

1. For exposed vertical concrete walls, indicate dimensions and form tie locations.

2. Indicate dimension and locations of construction and movement joints required to construct the structure in accordance with ACI 301.

a. Location of construction joints is subject to approval of the Engineer.

3. Indicate location of waterestops.

4. Indicate proposed schedule and sequence of stripping of forms, shoring removal, and reshoring installation and removal.

C. Samples:

1. For waterstops.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing and inspection agency.

B. Research Reports: For insulating concrete forms indicating compliance with International Code Council Acceptance Criteria AC353.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Testing and Inspection Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.

1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."

2. Design formwork to limit deflection of form-facing material to 1/240 of center-to-center spacing of supports.

a. For architectural concrete specified in Section 033300 "Architectural Concrete," limit deflection of form-facing material, studs, and walers to 0.0025 times their respective clear spans (L/400).

B. Design, engineer, erect, shore, brace, and maintain insulating concrete forms in accordance with ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.

1. Design cross ties to transfer the effects of the following loads to the cast-in-place concrete core:

a. Wind Loads: As indicated on Drawings.

1) Horizontal Deflection Limit: Not more than 1/360 of the wall height.

2.2 FORM-FACING MATERIALS

A. As-Cast Surface Form-Facing Material:

1. Provide continuous, true, and smooth concrete surfaces.

2. Furnish in largest practicable sizes to minimize number of joints.

3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete, and as follows:

a. Plywood, metal, or other approved panel materials.

b. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

1) APA Structural 1 Plyform, B-B or better; mill oiled and edge sealed.

2) APA Plyform Class I, B-B or better; mill oiled and edge sealed.

B. Concealed Surface Form-Facing Material: Lumber, plywood, metal, plastic, or another approved material.

1. Provide lumber dressed on at least two edges and one side for tight fit.

2.3 WATERSTOPS

A. Flexible PVC Waterstops: U.S. Army Corps of Engineers CRD-C 572, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

2.4 RELATED MATERIALS

A. Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

B. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2. Form release agent for form liners shall be acceptable to form liner manufacturer.

F. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.

3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

PART 3 - EXECUTION

3.1 INSTALLATION OF FORMWORK

A. Comply with ACI 301.

B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes

C. Limit concrete surface irregularities as follows:

1. Surface Finish-1.0: ACI 117 Class D, 1 inch.

2. Surface Finish-2.0: ACI 117 Class B, 1/4 inch.

3. Surface Finish-3.0: ACI 117 Class A, 1/8 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

1. Minimize joints.

2. Exposed Concrete: Symmetrically align joints in forms.

E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.

1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.

2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

3. Install keyways, reglets, recesses, and other accessories, for easy removal.

F. Do not use rust-stained, steel, form-facing material.

G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.

1. Provide and secure units to support screed strips

2. Use strike-off templates or compacting-type screeds.

H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.

1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.

2. Locate temporary openings in forms at inconspicuous locations.

I. Chamfer exterior corners and edges of permanently exposed concrete.

J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.

K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.

1. Determine sizes and locations from trades providing such items.

2. Obtain written approval of Engineer prior to forming openings not indicated on Drawings.

L. Construction and Movement Joints:

1. Construct joints true to line with faces perpendicular to surface plane of concrete.

2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.

3. Place joints perpendicular to main reinforcement.

4. Locate joints for beams, slabs, joists, and girders in the middle third of spans.

a. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

6. Space vertical joints in walls as indicated on Drawings.

a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.

2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.

N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.

5. Clean embedded items immediate prior to concrete placement.

3.3 INSTALLATION OF WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm.

1. Install in longest lengths practicable.

2. Locate waterstops in center of joint unless otherwise indicated on Drawings.

3. Allow clearance between waterstop and reinforcing steel of not less than 2 times the largest concrete aggregate size specified in Section 033000 "Cast-In-Place Concrete."

4. Secure waterstops in correct position at 12 inches on center.

5. Field fabricate joints in accordance with manufacturer's instructions using heat welding.

a. Miter corners, intersections, and directional changes in waterstops.

b. Align center bulbs.

6. Clean waterstops immediately prior to placement of concrete.

7. Support and protect exposed waterstops during progress of the Work.

3.4 REMOVING AND REUSING FORMS

A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved its 28-day design compressive strength.

2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work.

1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.

2. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.

1. Align and secure joints to avoid offsets.

2. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

3.5 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.6 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.

2. Inspect insulating concrete forms for shape, location, and dimensions of the concrete member being formed.

END OF SECTION 03 10 00

SECTION 03 20 00
CONCRETE REINFORCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.

2. Bar supports.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.

2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.

3. For insulated connection system, indicate general configuration, insulation dimensions, tension bars, compression pads, shear bars, and dimensions.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of the Engineer.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For testing and inspection agency.

B. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage and to avoid damaging coatings on steel reinforcement.

1. Store reinforcement to avoid contact with earth.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

2.2 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.

2.3 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.

2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.

2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

D. Provide concrete coverage in accordance with ACI 318.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Splices: Lap splices as indicated on Drawings.

1. Bars indicated to be continuous, and all vertical bars shall be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.

2. Stagger splices in accordance with ACI 318.

3.3 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.

1. Place joints perpendicular to main reinforcement.

2. Continue reinforcement across construction joints unless otherwise indicated.

3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

A. Comply with ACI 117.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel-reinforcement placement.

END OF SECTION 03 20 00

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 032000 "Concrete Reinforcing" for steel reinforcing bars.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.

2. Minimum 28-day compressive strength.

3. Durability exposure class.

4. Maximum w/cm.

5. Calculated equilibrium unit weight, for lightweight concrete.

6. Slump limit.

7. Air content.

8. Nominal maximum aggregate size.

9. Indicate amounts of mixing water to be withheld for later addition at Project site if permited.

10. Intended placement method.

11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

a. Location of construction joints is subject to approval of the Engineer.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.

2. Admixtures.

3. Curing compounds.

4. Bonding agents.

5. Joint-filler strips.

6. Repair materials.

B. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.

2. Fly ash.

3. Aggregates.

4. Admixtures.

C. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

1.6 QUALITY ASSURANCE

A. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated, and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency

laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.8 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301and ACI 306.1 and as follows.

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

2. When average high and low temperature is expected to fall below 40 deg Ffor three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

3. Do not use frozen materials or materials containing ice or snow.

4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.

5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301and ACI 305.1, and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301.

2.2 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.

2. Obtain aggregate from single source.

3. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II,.

2. Fly Ash: ASTM C618, Class C or F.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal unless noted otherwise.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.

2. Retarding Admixture: ASTM C494/C494M, Type B.

3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

F. Water and Water Used to Make Ice: ASTM C94/C94M, potable

2.3 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

D. Water: Potable or complying with ASTM C1602/C1602M.

E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

F. Clear, Waterborne, Membrane-Forming, Nondissipating Curing Compound: ASTM C309, Type 1, Class B, , certified by curing compound manufacturer to not interfere with bonding of floor covering.

2.4 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

B. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

C. Floor Slab Protective Covering: Eight-feet-wide cellulose fabric.

2.5 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.

2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.

4. Compressive Strength: Not less than 4100 psiat 28 days when tested in accordance with ASTM C109/C109M.

2.6 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Other Pozzolans: 25 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.

2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, and concrete with a w/cm below 0.50.

2.7 CONCRETE MIXTURES

A. Normal-weight concrete used for footings.

1. Minimum Compressive Strength: 4000 psi at 28 days.

2. Maximum w/cm: 0.44.

3. Slump Limit: 4 inches, plus or minus 1 inch.

4. Air Content:

a. Exposure Classes F2 and F3: 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inchnominal maximum aggregate size.

B. Normal-weight concrete used for interior slabs-on-ground.

1. Minimum Compressive Strength: 4000 psi at 28 days.

2. Maximum w/cm: 0.44.

3. Minimum Cementitious Materials Content: 564 lb/cu. yd.

4. Slump Limit: 4 inches, plus or minus 1 inch.

5. Air Content:

a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

C. Normal-weight concrete used for exterior walls.

1. Exposure Class: ACI 318 F2 and F3, W1, C1.

2. Minimum Compressive Strength: 4000 psi at 28 days.

3. Maximum w/cm: 0.44.

4. Slump Limit: 4 inches, plus or minus 1 inch.

5. Air Content:

a. Exposure Classes F2 and F3: 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 3/4-inch nominal maximum aggregate size.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.

2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.

3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.3 JOINTS

A. Construct joints true to line, with faces perpendicular to surface plane of concrete.

B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.

1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Engineer.

2. Place joints perpendicular to main reinforcement.

a. Continue reinforcement across construction joints unless otherwise indicated.

b. Do not continue reinforcement through sides of strip placements of floors and slabs.

3. Form keyed joints as indicated. Embed keys at least 1-1/2 inchesinto concrete.

4. Locate joints for slabs and joists at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

6. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.

7. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.

D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.

3.4 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.

2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Engineer and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.

2. Deposit concrete to avoid segregation.

3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.

4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.

a. Do not use vibrators to transport concrete inside forms.

b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inchesinto preceding layer.

c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.

d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete floors and slabs in a checkerboard sequence.

2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

3. Maintain reinforcement in position on chairs during concrete placement.

4. Screed slab surfaces with a straightedge and strike off to correct elevations.

5. Level concrete, cut high areas, and fill low areas.

6. Slope surfaces uniformly to drains where required.

7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.

8. Do not further disturb slab surfaces before starting finishing operations.

3.5 FINISHING FORMED SURFACES

A. ACI 301 Surface Finish SF-3.0:

a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.

b. Remove projections larger than 1/8 inch.

c. Patch tie holes.

d. Surface Tolerance: ACI 117 Class A.

3.6 FINISHING FLOORS AND SLABS

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.

2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.

3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

4. Do not add water to concrete surface.

5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.

6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a floor surface to specified overall values of flatness,F_F 25; and of levelness, F_L 20; with minimum local values of flatness, F_F 17; and of levelness, F_L 15 or flatter.

8. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch.

3.7 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.

2. Mix, place, and cure concrete, as specified, to blend with in-place construction.

3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.

2. Construct concrete bases flush with slab unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.

3. Minimum Compressive Strength: 4000 psi at 28 days.

4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.

5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.

6. Prior to pouring concrete, place and secure anchorage devices.

   a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

   b. Cast anchor-bolt insert into bases.

   c. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.8 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301and ACI 306.1 for cold weather protection during curing.

2. Comply with ACI 301and ACI 305.1for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x hbefore and during finishing operations. Apply in accordance with manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Curing Formed Surfaces: Comply with ACI 308.1as follows:

1. Cure formed concrete surfaces, including walls, slabs, and other similar surfaces.

2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.

3. If forms remain during curing period, moist cure after loosening forms.

4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:

a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.

b. Continuous Sprinkling: Maintain concrete surface continuously wet.

c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.

d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.

e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.

1) Recoat areas subject to heavy rainfall within three hours after initial application.

2) Maintain continuity of coating and repair damage during curing period.

D. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:

1. Begin curing immediately after finishing concrete.

2. Interior Concrete Floors:

a. Floors to Receive Curing Compound:

1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.

2) Recoat areas subjected to heavy rainfall within three hours after initial application.

3) Maintain continuity of coating, and repair damage during curing period.

b. Floors to Receive Curing and Sealing Compound:

1) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.

2) Recoat areas subjected to heavy rainfall within three hours after initial application.

3) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.9 TOLERANCES

A. Conform to ACI 117.

3.10 CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Engineer.

2. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inchin any dimension to solid concrete.

a. Limit cut depth to 3/4 inch.

b. Make edges of cuts perpendicular to concrete surface.

c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.

d. Fill and compact with patching mortar before bonding agent has dried.

e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.

a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.

b. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Engineer.

D. Repairing Unformed Surfaces:

1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.

a. Correct low and high areas.

b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

3. After concrete has cured at least 14 days, correct high areas by grinding.

4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.

a. Finish repaired areas to blend into adjacent concrete.

5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.

a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

b. Feather edges to match adjacent floor elevations.

6. Repair defective areas, except random cracks and single holes 1 inchor less in diameter, by cutting out and replacing with fresh concrete.

a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inchclearance all around.

b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.

c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.

d. Place, compact, and finish to blend with adjacent finished concrete.

e. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inchor less in diameter with patching mortar.

a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.

b. Dampen cleaned concrete surfaces and apply bonding agent.

c. Place patching mortar before bonding agent has dried.

d. Compact patching mortar and finish to match adjacent concrete.

e. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Engineer's approval.

3.11 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

B. Inspections:

1. Steel reinforcement placement.

2. Headed bolts and studs.

3. Verification of use of required design mixture.

4. Concrete placement, including conveying and depositing.

5. Curing procedures and maintenance of curing temperature.

6. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143/C143M:

a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.

b. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete;.

a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C1064/C1064M:

   a. One test hourly when air temperature is 40 deg Fand below or 80 deg F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C31/C31M:

   a. Cast and laboratory cure two sets of two 6-inchby 12-inch cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C39/C39M.

   a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days.

   b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psiif specified compressive strength is 5000 psi, or no compressive strength test value is less than 1 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.

8. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

9. Additional Tests:

   a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

   b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Engineer.

      1) Acceptance criteria for concrete strength shall be in accordance with ACI 301section 1.6.6.3.

10. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

11. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 03 30 00

Section 13 42 10

PREFABRICATED ENGINEERED CONTROL MODULE

PART 1 - SUMMARY

1.1 The work in this section shall include furnishing a complete prefabricated engineered control module building.

1.2 In accordance with the plans and specifications, the Contractor shall provide and install a complete pre-fabricated, pre-tested pump station control building, including all required equipment, accessories, wiring and adjusting as indicated in the project specifications, on the project plan, and installed in accordance with applicable National, State and Local Codes.

1.3 All materials used and work performed under this section shall comply with rules and regulations of the latest edition of the State Electrical Code and local ordinances. Shop drawings and materials lists shall be submitted for equipment listed under this section.

1.4 It will be the responsibility of the contractor to protect and maintain all materials and work furnished and installed under this section until acceptance. The control module shall consist of two separate components:

A. Site poured concrete foundation. Base shall be poured by contractor prior to delivery of the control building.

B. Control module designed to be set over and house mechanical piping and valves, complete with MSD, ATS, Controls, Generator, HVAC, telemetry equipment, and electrical work pre-installed and be a product of Arrow Starnet supplied by Electric Pump.

1.5 Related Specification Sections:
A. 26 60 00 – Controls
B. 43 25 00 - Submersible Pumps
C. 46 00 00 – General Equipment Requirements

PART 2 - QUALITY ASSURANCE

2.1 MANUFACTURER EXPERIENCE AND CAPABILITIES

A. The prefabricated control structure and control panel(s) shall be manufactured by and at the same factory to ensure proper coordination and system integrity.

B. The manufacturer shall be normally engaged in the manufacture of the described system(s).

C. The manufacturer shall be a company specializing in manufacturing of prefabricated control buildings with minimum 10 years' experience.

D. The manufacturer shall have provided at least twenty (20) successful installations of prefabricated control buildings in the last five (5) years.

E. The manufacturer shall provide, or provide a modified version of, their standard product to meet these specifications.

F. Upon request, the manufacturer shall provide the following information:
   a. Successful installations list with locations, dates and drawings, as proof of conformance to the above requirements.
   b. Minimum of three (3) end-user/customer references.

PART 3 - SUBMITTALS

3.1 Submittals shall be provided as described herein for the prefabricated control building. Submittal and Shop Drawings' format shall be as described below.

3.2 The Submittals shall be a PDF document organized as follows:

A. Cover with the following information:
   a. Manufacturer product line.
   b. Project name.
   c. General description of equipment.
   d. Project City and State.
   e. Date of submittal in MM/YYYY format.

B. Table of Contents:
   a. Control building drawing set.
   b. Control panel drawing set.
   c. Control building bill of materials.
   d. Control panel bill of materials.
   e. Product Documentation.

C. Building drawing set in the following format:
   a. Title block with the following information:
      I. Project City and State.
      II. Project number/name.
      III. Drawing by, checked by, and approved by.
      IV. Date.
      V. Space for record of drawing revision (e.g. "As-built") with MM/YY date of revision.
      VI. Manufacturer contact information.
      VII. Drawing file save path.
      VIII. Date and time of most recent drawing save.
   b. Cover with the following information:
      I. Product model number.
      II. Project description.
      III. Equipment description.
      IV. Project locations.
      V. Local area map with install location noted.
      VI. Drawing set index.
   c. Structure elevations.
      I. Exterior colors shall be noted in a table, which notes specific colors for each item:
         i. Exterior.
         ii. Louvers.

iii. Ventilation Fan.
iv. Fascia.
v. Soffits.
vi. Doors.
vii. Trim.
viii. Junction boxes.
ix. Roof steel

II. Elevations shall be labeled by site orientation (e.g. “North View”).
III. All major items shall be identified with leaders.
IV. Scale noted
V. Elevations’ width, length, and height.
VI. Roof pitch.

d. Structure floor plan.
I. Typical abbreviations and component descriptions.
II. Floor plan, which details pertinent dimensions.
III. Site orientation.

e. Structure mounting details.
I. Plan and section view of proposed concrete foundation.
II. Anchoring detail.

D. Control panel drawing set in the following format:
a. Title block with the following information:
I. Project City and State.
II. Project number/name.
III. Drawing by, checked by, and approved by.
IV. Date.
V. Space for record of drawing revision (e.g. “As-built”) with MM/YY date of revision.
VI. Manufacturer contact information.
VII. Drawing file save path.
VIII. Date and time of most recent drawing save.

b. Cover with the following information:
I. Product model number.
II. Project description.
III. Equipment description.
IV. Project locations.
V. Local area map with install location noted.
VI. Drawing set index.

c. Typical symbols and abbreviations.
I. Explanations for symbols and abbreviations commonly used in the schematics.

d. Control elevations and nameplate schedule.
I. Control panel(s) front elevation(s).
i. Tag/location for individual compartments/panels.
ii. Dimensions.
iii. Door component layout(s) with numerical ID for each component depicted.

II. Nameplate schedule.
i. Item tag/location.
ii. Numerical ID.
iii. Device tag (based on internal schematic tag).
iv. Notes.
v. Text height.
vi. Nameplate text.

e. Control subpanel layout.
    I. Control panel(s) subpanel layout(s).
        i. Tag/location for individual compartments/panels.
        ii. Item type ID number.
    II. Subpanel layout schedule.
        i. Item tag/location.
        ii. Numerical ID.
        iii. Tag prefix.
        iv. Component description.
f. Schematics
    I. Each sheet shall have two sets of sequential rung numbers.
    II. Component tags and wire numbers shall reference the first rung they appear at within the drawing set.
    III. Voltage characteristics shall be identified.
    IV. Ampacity/trip rating shall be identified for fuses, circuit breakers and similar.
    V. Each component or circuit shall be described in a margin to the right.
    VI. Spare rungs may be reserved between pages to accommodate future additions or for unused optional features.
g. Field connections page.
    I. Termination points required to be connected to by the site electrician shall be duplicated at the end of the drawing set, so that all required field connections are depicted in one dedicated location.

E. Product Documentation.
    a. Datasheets for all major equipment shall be included with specific selections indicated with red boxes, underlines, arrows, and/or text.

PART 4 - FACTORY TESTING

4.1 The completed assemblies and control panels shall be tested at the factory prior to shipment. Panels shall be energized at the main disconnect using the project specific voltage configuration. Controls shall be tested to confirm proper operation in all modes.

4.2 Factory witness testing shall be available to the Engineer and Owner upon request.

PART 5 - CONTROL MODULE

5.1 The walk-in module specified herein shall be designed to be set on and anchored to the foundation assembly described below. The interior pump control center shall be pre-installed prior to delivery. System module shall be adequately sized to incorporate all controls specified herein and to include utility and standby power connections, indicating lights, selector switches, pump control logic, VFD, alarm, etc., where specified to be associated with the lift station.

5.2 CONTROL MODULE FOUNDATION

A. Foundation shall consist of concrete slab, with frost wall footings, properly dimensioned for the control building. Provide submittal of foundation for approval. Placement of piping stubbed up through this slab is critical as the control building arrives with a floor opening for installation. Contractor to coordinate with Prefabricated Control Module

supplier. See drawings and related sections for additional information.

5.3 CONTROL MODULE GENERAL DESCRIPTION

A. Control module shall be a weather-tight completely prewired automatic walk-in style control system for pump control and alarming. The Walk-In Module shall be Arrow Model G Series with the following included:
   a. Prefabricated Module with nominal dimensions of 8’ Wide x 9’ Long x 11/13’ High.
   b. Airgap method Terminal Junction Box (TJB) for wet well connections pre-installed on module exterior.
   c. Pressure Transducer.
   d. Fiberglass Entry Door.
   e. Exterior Light with photocell.
   f. Interior Lighting.
   g. Pump Protection Module if required.
   h. Telemetry equipment (Programmed by City Selected Integrator).
   i. ArcSafe® Pump Control Center pre-installed in module.

5.4 CONTROL MODULE CONSTRUCTION

A. Wall and Roof requirements:
   a. Walls shall have a minimum effective R-Value of 15.5 at a maximum panel thickness of 5”
   b. Roof shall have a minimum effective R-Value of 23.4 at a maximum panel thickness of 7”
   c. Structure Roof and walls - The sum of the ratios of applied loads over allowable loads must be less the 1.0.
   d. The core material, for the walls and roof, shall be Type 1 expanded polystyrene (EPS) foam plastic with a minimum thickness of 3-1/2”.
   e. The EPS shall be supplied to Unitized Control Structure by a manufacturer having ICC-ES evaluation reports, which are listed in the ICC-ES approved Insulspan quality control documentation.
   f. The Wall and Roof structural material shall comply with the 2015 International Building Code.
   g. Panel facing material shall be 7/16”-thick, Exposure 1, oriented strand board (OSB) with a span rating of 24/16 and complying with the performance-rated panel requirements specified in U.S. Department of Commerce Product Standard PS-2 and supplied by a manufacturer listed in the ICC-ES approved quality control documentation.
   h. The roof covering must comply with Chapter 15 of the IBC, or IRC Section R901, as applicable. Roofs with hot-asphalt or hot-coal tar pitch are prohibited.
   i. The exterior face of wall panels is required to be covered with a wall covering complying with the applicable code or recognized in a current ICC-ES evaluation report.
   j. A water-resistive barrier must be installed over the panels in accordance with IBC Section 1404.2 or IRC Section R703.2, as applicable, prior to application of the wall covering.
   k. The manufacturer of the Wall and Roof structural material shall have the following evidence submitted
      I. Reports of tests conducted in accordance with ASTM E 119.
      II. Report of a room corner fire test conducted in accordance with NFPA 286.

l. The Wall and Roof panels must have a label containing the name and address of the panel manufacturer, the product panel number, the evaluation report number and the name of the inspection agency.
m. ½" non-combustible gypsum core drywall shall be installed between structurally insulated panels and interior surface FRP panels.
n. Interior wall and ceiling surfaces shall be white FRP panels.

B. Exterior requirements:
   a. Control Module shall be provided with a standing seam metal roof over synthetic weather barrier felt and vinyl siding, as shown on the drawings and described.
      I. Steel roof requirements are as follows:
         i. Panel specifications:
            1) Material: Structural strength ASTM-A653 grade 80 steel pre-painted to ASTM-A755 specifications
            2) Rib Spacing: 16" on center
            3) Hail Resistance: Class 4
            4) Fire Rating: Class A
            5) Coating: G100 galvanization plus zinc phosphate
            6) Tensile Strength: Nominal 100,000 PSI
            7) Thickness: 0.0157"
            8) Weight: 0.77 PSF
            9) Fy: 82 KSI
            10) Wind Load: 182 PSF (based on 2ft girt spacing)
            11) Live Load: 127 PSF (based on 2ft purlin spacing)
            12) Fade Rating: Will not fade more than 7 NBS Rating: (Hunter) Units on non-vertical installations for a period of 30 years as determined by ASTM D-2244 and ASTM D-3964. (Distance from salt water environment must exceed 2000 meters for warranty to apply.)
   b. Control Module wall exterior shall be covered with vinyl siding.
   c. Vinyl Siding shall have the following typical properties:
      I. Integrally colored vinyl siding complying with ASTM D 3679
      II. Horizontal Pattern: 6.5-Inch or 7-inch exposure in beaded-edge, single-board style
      III. Texture: Wood grain
      IV. Nominal Thickness: 0.040 Inch
      V. Minimum Profile Depth (butt Thickness): ½ inch
      VI. Nailing Hem: Double thickness
      VII. Finish: Wood-grain print with clear protective coating containing not less than 70% PVDF
      VIII. Color: To be selected by the City from the manufacturer's full range of industry colors.
      IX. Accessories:
         i. Siding accessories, General: provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration. Provide accessories made from same material as adjacent siding unless otherwise indicated.
         ii. Vinyl Accessories: Integrally colored vinyl accessories complying with ASTM D 3679 except for wind-load resistance.
            1) Texture wood grain.
         iii. Flashing: provide aluminum flashing where required.
            1) Finish for aluminum flashing: siliconized polyester coating, same color as

siding.

iv. Fasteners:
   1) For fastening to wood, use siding nails of sufficient length to penetrate a minimum of 1-inch into substrate.
   2) For fastening to aluminum, use aluminum fasteners. Where fasteners will be exposed to view, use prefinished aluminum fasteners in color to match item being fastened.
   3) For fastening to vinyl, use hot-dip galvanized fasteners. Where fasteners will be exposed to view, use prefinished aluminum fasteners in color to match item being fastened.

C. Floor requirements:
   a. Control Module shall be constructed with an integral steel frame base.
   b. Floor decking shall be constructed of gray slip-resistant fiberglass.
      I. Interlocking plank.
      II. Fine grit gray surface.
      III. 2" channel depth.

D. Door requirements:
   a. Moisture-resistant fiberglass entry doors.
   b. Sized as shown on the Project plan drawings.
   c. Hold-open type door closer shall be provided.
   d. Color selection by Owner.
   e. Closed cellular structure ensures doorframe and molding will not absorb moisture and resists splitting, rotting and insect damage.

E. Door Lockset:
   a. Grade 2 ANSI/BHMA certified
   b. Commercial grade clutching motor drive; tested to one million cycles.
   c. Vandal resistant clutching lever and knob design.
   d. Code control; 6-digit programming code required to add and delete user codes.
   e. Warning sounds after four incorrect codes entered; keypad disabled for 30 seconds.
   f. Mechanical key override.
   g. 19 user code capacity; 10,000 user code combinations.
   h. Emergency exit feature; allows for panic-free exit.
   i. Certifications and Standard Features:
      I. Latch: 1" x 2-1/4" radius corner faceplate, 7/8" housing diameter, Triple-Option™ square corner, radius corner and circular drive-in faceplates.
      II. Strikes: 1-5/8" x 2-1/4", square and radius corner, full lip, no box, latch strike.
      III. Backset: Universal backset, fits 2-3/8" to 2-3/4" backsets.
      IV. Cylinder: 5-pin solid brass, keyed 5-pin, C keyway, keyed different (KD).
      V. Keys: Nickel silver cut keys, 5-pin, C-section.
      VI. Codes: Pre-set random six-digit programming code, two pre-set four-digit user codes (19 code capacity).
      VII. Minimum 5-1/2" center-to-center distance between cross bore holes.
      VIII. 9-volt battery included with average three-year battery life.
      IX. All-metal chassis and escutcheons.
      X. Silicone rubber, wear-resistant buttons with LED backlight.
      XI. ANSI A 156.2-2003 bored locks and latches.
      XII. A 156.5-2001 Grade 2 cylinders.
      XIII. FCC Part 15

XIV. CE Mark

j. Or City Selected preferred lock system

F. Hydraulic Door Closer:
   a. Heavy duty, hold-open type.
   b. Standards:
      I. ANSI A156.4 Grade 2
      II. UL and cUL Listed.
   c. Finish: Aluminum painted.
   d. Max. door opening: 140 degrees.
   e. Interior/exterior rated.

G. Ventilation requirements:
   a. A ventilation fan shall be provided and installed as part of the enclosure, for cooling.
   b. Ventilation fan shall have an aluminum filter, permanently lubricated & thermally protected motor and polymeric fan blade.
   c. The steel housing of the fan shall have foam insulated door for energy efficiency.
   d. Air delivery shall be no less than 360 CFM with sound levels no greater than 8.0 Sones.
   e. All air and sound ratings shall be certified by HVI and UL listed.
   f. A backdraft damper, wall mounted, shall be provided and installed as part of the enclosure.
   g. Backdraft damper shall be constructed of 16-gauge extruded aluminum frame, aluminum blades, galvanized steel tie rods and stainless-steel hardware with felted edges for quiet operation.
   h. The Damper shall be rated at a max velocity (FPM) of 2000.

H. Terminal Junction Box (TJB) and Vented Skirt requirements:
   a. TJB shall be provided pre-installed on control module by manufacturer.
   b. 16-gauge plated steel, with Rolex Brown factory powder-coat baked enamel.
   c. Drip shield top and seam-free sides, front, and back.
   d. Quarter-turn latch and locking hasp.
   e. Vented skirt shall be provided pre-installed on control module by manufacturer.
   f. Vented skirt shall be a minimum of 18” High with proper venting to accommodate Airgap method of dispersing potentially explosive gases.
   g. Vented skirt to have open bottom to accommodate conduit stub-ups from Wetwell.
   h. Overall dimensions of TJB and Vented Skirt shall not exceed 38” High x 24” Wide x 8” Deep.
   i. Contractor shall provide conduit stub-ups from remote deviceto Vented skirt with duct-putty seal.
   j. Contractor shall use sealing cord-grip connector for all penetrations from vented skirt into TJB, so as to provide a gas-tight seal.
   k. Refer to Control Module manufacturer drawings prior to stubbing-up conduits to terminate in Vented Skirt to ensure proper location. Verify with Control Module manufacturer that drawings being referenced are As-built revision.

I. Lifting and Mounting
   a. The Control Module shall be provided with integral fastening provisions which shall serve as the attachment location for both the lifting eyes and the anchoring plates (lifting eyes and anchoring plates provided by the control module manufacturer).
   b. Contractor shall coordinate delivery to the jobsite with the Control Module

manufacturer.

c. Contractor shall be responsible for providing a properly sized crane and spreader bars for offloading and setting of the Control Module onto the foundation.
d. Contractor shall be responsible for securing the Control Module to the foundation and provide the necessary anchors, epoxy, and other for proper installation. Contractor to contact Control Module manufacturer to verify provisions required for proper installation prior to installation.
e. As outlined in factory installation instructions.

PART 6 - CONTROL SYSTEM

6.1 PUMP CONTROL PANEL (PCP)

A. In accordance with the plans and specifications, the Contractor shall provide the Prefabricated Control Module with a complete pre-installed, pre-tested ArcSafe® Pump Control Center, including all required equipment, accessories, wiring and adjusting as indicated in the project specifications, on the project plan, and installed in accordance with applicable National, State and Local Codes.

B. The PCC shall be a completely prewired automatic ArcSafe® system for pump control and alarming. The entire panel shall have a minimum Short Circuit Current Rating of 35kA. The control system shall be designed to assure operation for wet wells categorized as hazardous - Class 1, Division 1. The control panel shall be UL listed and carry a UL Label indicating suitable for use with intrinsically safe circuits extending to classified hazardous locations. The PCC shall be an ArcSafe® PCC as manufactured by Starnet Technologies as supplied by Electric Pump.

6.2 PANEL EQUIPMENT

A. Primary Pump Controller with Operator Interface (PPC)
   a. PPC shall utilize a s pressure transducer/remote telemetry for automatic operation of pumps, as described in specific section.
   b. PPC shall display well pump operation and level as determined
   c. See – 6.5 CONTROL SYSTEM – PRODUCTS AND PERFORMANCE, C. Primary Pump Controller (PPC).

B. Redundant Float Backup Pump Controller (BPC)
   a. BPC backup operation of pump during conditions when the Primary PLC Controller is either failed or forced off.
   b. See – 6.5 CONTROL SYSTEM – PRODUCTS AND PERFORMANCE, D. Backup Pump Controller (BPC).

C. Telemetry System
   a. Telemetry equipment shall be provided as factory installed in the PCP or next to the panel.
   b. System shall operate as described in the relevant sections of this specification.

D. Variable Frequency Drives mounted in separate compartments
   a. VFD shall be provided in individual compartments, separated from PCP, BPC, and ATS.
   b. VFD shall be as described in “Pump Starters” portion of this Specification section.

c. Provide type, quantity, and with ratings to accommodate the described pumps of the project as shown on the Project drawings.
d. See – 6.6 PUMP STARTERS.

E. Lighting Transformer to step down line voltage to 120 volts
   a. 600V rated primary side circuit breaker.
   b. 5kVA Transformer, open-type, mounted in line voltage compartment.
   c. 1-Pole and 2-Pole load side 250V rated circuit breakers as required.
   d. See – 6.5 BREAKER/TRANSFORMER COMPARTMENT.

F. Transient-Voltage Surge-Suppressor (TVSS)
   a. 75kA Imax per mode.
   b. Configured for appropriate voltage, determined by the site utility power.
   c. Accessory contacts to indicate condition of TVSS if “OK”.
   d. Separate press-to-test, 30mm White Indicating Light, door mounted.
   e. UL 1449 Listed.

G. Molded Case Circuit Breakers
   a. SE Molded case circuit breakers.
   b. 65kAIC at 480Vac.
   c. Thermal-magnetic protection.
   d. UL Listed.

H. 250Vac Distribution Circuit Breakers
   a. SE QC series.
   b. 10kAIC at 240Vac.
   c. Front-mount through-door cable-in/cable-out.
   d. Thermal-magnetic protection.

I. Uninterruptible Power Supply
   a. Puls U-series.
   b. 24Vdc 10 Amp UPS System, in Pump Control Panel.
   c. Input voltage range: 22.5-30Vdc (24Vdc nominal).
   d. Integrated battery: 12V 5Ah.
   e. Operational temperature range: 0 to 40 degrees Celsius.
   f. UPS shall provide temporary power to Primary Controller and Telemetry System when normal and/or generator power fails.
   g. UL Listed.

J. Room Heater
   a. The PCC shall be provided with a factory installed Heater with integral thermostat.
   b. Electric fan forced heater shall be 120V AC, commercially approved.
   c. Heater shall have a lubricated motor, tangential blower, heavy gauge steel finned heating element and an automatic high temperature shutting system.
   d. Amps AC: 12.5/6.3
   e. Watts: 1500/750
   f. BtuH: 5120/2560

K. 24Vdc Power Supplies
   a. Idec PS5R-V series.
   b. Power Supply Input: 85-264Vac / 100-370Vdc.

c. Power Supply Output: 24Vdc nominal.
d. Wattage rating sufficient for application.
e. DIN rail mount.
f. UL Listed.

L. Pilot Devices
   a. Indicating Lights
      I. SE series
      II. 30.5mm Heavy Duty.
      III. Full-voltage LED Type.
      IV. Push-to-test.
      V. UL Listed
   b. Pushbuttons
      I. SE Series
      II. 30.5 Heavy Duty.
      III. UL Listed.

M. Terminal Block (Interface) Relays
   a. Screw-type connection.
   b. Pluggable relay.
   c. LED status indication.
   d. DIN rail mount.
   e. Coil voltage and contact configuration to match application.
   f. UL Listed.

N. Control Relays and Sockets
   a. 10 amp contact(s).
   b. Compact power type relay.
   c. LED status indication.
   d. DIN rail mount socket base.
   e. Coil voltage and contact configuration to match application.
   f. UL Listed.

O. Timer Relays
   a. Multiple user-selectable timing functions and timing ranges.
   b. LED status indication.
   c. DIN rail mount.
   d. 12-240 Vac/Vdc.
   e. 250 Vac rated contacts.
   f. UL Listed.

P. Elapsed Runtime Meters
   a. Display: Six-digit LCD, 0.20 in.
   b. Accuracy: ±0.1%
   c. Resolution: 0.1 hour (6 minutes).
   d. Solid-state hour meter.
   e. Record and display up to 99,999.9 hours, rollover and continue timing.
   f. EEPROM memory.
   g. Time accumulation indicated by flashing hourglass icon.
   h. UL recognized.
   i. Power Supply: 12–48 Vdc/20–60 Vac.

Q. Terminal Blocks
   a. Screw connection type.
   b. Feed-through type.
   c. UL Listed.

R. Analog Isolators / Repeaters
   a. Active Converter, 3-Way.
   b. Calibrated change over via DIP switch.
   c. Power Supply: 24Vdc ± 15%
   d. UL Listed.

S. Temperature Transmitters
   a. Range: 0-135 degrees Fahrenheit.
   b. Accuracy: ±2.5°F
   c. Repeatability: ±0.3°C (±0.5°F)
   d. Output: 4 to 20 mA or 1 to 5 Vdc (user selectable)
   e. Power Supply: 12-24Vdc

T. Intrinsically Safe Barriers
   a. Phoenix Contact.
   b. Repeater power supply and input isolation amplifier.
   c. Sends fed or active 0/4-20 mA signals from the Ex area to a load (active or passive) to the safe area.
   d. Electrical 3-way isolation, SIL 2 in accordance with IEC 61508.
   e. Power Supply: 19.2-30Vdc (24Vdc nominal).
   f. Screw type connection.
   g. LED power status indication.
   h. UL Listed.

U. Intrinsically Safe Relays
   a. Phoenix Contact.
   b. 2-channel Ex-i NAMUR isolation amplifier.
   c. 3-way isolation, SIL 2.
   d. Power Supply: 19.2 ... 253 Vac/dc
   e. Screw type connection.
   f. LED indicators for supply voltage, switching state, and malfunction according to NAMUR NE 44.
   g. 2-Channel 2PDT contacts.
   h. UL Listed.

V. Phase Monitor Relay
   a. Detects phase loss, low voltage, phase reversal.
   b. Automatic reset.
   c. UL recognized.
   d. 10 amp @ 240Vac resistive SPDT contacts.

W. Pre-wired Field Terminals
   a. PCC shall arrive onsite with factory wiring to terminals for the following field connections:
      I. Well Pump

II. Float Meter
III. Network Telemetry equipment.
IV. Incoming Power.

6.3 PCC CONSTRUCTION

A. The ArcSafe® Pump Control Center specified herein shall be designed to be a compartmentalized control center with all included ArcSafe® modular units having interconnects, power, and control wiring factory installed and tested. Modular units shall include the following:
   a. Pump Control Panel (Housing Primary and Backup Pump Controllers as well as telemetry equipment.
   b. Individual starter compartments.
   c. TVSS compartment.
   d. 120V AC power distribution compartment.
   e. Lighting transformer and line-voltage circuit breaker compartment.
   f. Separate compartment/housing for field connection terminals.

B. The control panel unit shall be the product of a manufacturer that is authorized by Underwriters Laboratories, Inc. to build products in compliance with UL Standard 698A (Enclosed Industrial Control Panel – Enclosure in Non-Hazardous area with extensions into hazardous area).

C. Constructed as a single assembly with modular compartments.

D. All nameplates shall be engraved type with white text on black field.

E. All internal wiring shall be provided by manufacturer as specified herein.
   a. All wiring shall be alphanumerically labeled in reference to manufacturer's standard wiring schematics with minimum 10pt font.
   b. Labels shall be high performance matte white polyester type. Labels shall be thermal transfer type and shall be UL recognized, CSA approved, and AGA approved.
   c. Terminal blocks shall be identified by reference number, which clearly indicates the purpose of each terminal block. Reference number used for identification shall reference rung number and component type as indicated by manufacturer's project specific drawings.
   d. Conductor color coding and marking shall conform to the following UL508A standards:
      I. Line voltage, ungrounded: Black (Appropriately phase marked)
      II. Line voltage, grounded: White
      III. AC controls, ungrounded: Red
      IV. AC controls, grounded: White
      V. DC controls, ungrounded: Blue
      VI. DC controls, grounded: White with Blue Stripe
      VII. Interconnect, ungrounded: Yellow
      VIII. Interconnect, grounded: White with Yellow Stripe
      IX. Ground Green

F. Termination compartments shall not contain any exposed current carrying conductors where exposed segment of conductor exceeds 0.125 inches.

G. Total enclosure shall be adequately sized to incorporate all controls specified herein and to include normal and emergency power connections, indicating lights, selector switches, pump control logic, motor starters, telemetry equipment, etc.

H. All lugs and terminals for line voltage field wiring shall be “finger-safe”.

I. All current carrying conductors shall be fully insulated. The use of bus bars and/or exposed metal lugs is not acceptable.

J. Modular compartments shall be constructed in accordance with the following criteria:
   a. 14-gauge steel, powder coat painted manufacturer’s standard white. All hardware including the hinges, latches, and padlock provisions shall be steel. Panel shall have been degreased, cleaned, and treated with a phosphatizing process, then primed and painted.
   b. Continuously welded and ground smooth seams.
   c. Flanged doors and body flange trough.
   d. 3-point latching mechanism operated by pad-lockable handle, for control component compartments.
   e. Oil resistant door gaskets.
   f. Removable 14-gauge steel panels mounted on collar studs.
   g. Control wiring to removable plates and doors shall utilize pull-apart terminals, allowing for simple unit replacement and servicing.
   h. Removable doors.

6.4 SAFETY PROVISIONS AND STUDIES

A. The pump control system shall be connected to the level sensors through intrinsically safe barriers and relays.

B. The completed assembly shall conform to all applicable federal, state, and local codes & regulations.

C. Procedures and Hazard Levels:
   a. Manufacturer shall provide written procedures for servicing in compliance with OSHA 1910 and NFPA 70E. Manufacturer shall provide Labels for NFPA 70E hazard levels, for each compartment as well as a written procedure.
   b. Hazard Levels shall be determined using simulation software that is the product of a UL registered firm and meets the requirements set forth by the following:
      I. ISO 9001:2009
      II. 10 CFR 21
      III. ASME NQA-1
      IV. CAN/CSA-Q396.1.2
      V. 10 CFR 50 Appendix B
      VI. ANSI/ASME N45.2
      VII. ANSI/IEEE 730.1
      VIII. ANSI N45.22
   c. Hazard Level determinations and written procedures shall be completed under the direct supervision of, and signed by, a State Licensed P.E.

D. The enclosure shall have a separate hinged door with interlocked pad-lockable disconnect handle for each individual motor starter compartment. Disconnects shall

include flexible cable mechanisms to operate circuit breakers in separate breaker compartment. Units shall be designed such that ALL power (including that at line-side lugs) is removed from each starter compartment when disconnect is open. All control wiring within motor starter compartments shall be sourced from the starter control power supply such that all circuits within the compartment are de-energized by the disconnect.

E. The PCC shall include a separate low voltage Pump Control Panel (PCP) compartment with lockable door. All Voltages within the PCP compartment shall be 24V or lower. Thru-wall pull-apart terminal strips shall be used for interconnects.

6.5 CONTROL SYSTEM – PRODUCTS AND PERFORMANCE

A. The pump shall be controlled as described herein. The well shall be monitored by telemetry system and pressure transmitter. The system shall provide fully automated pump control despite failure pump, or manual selection of an OFF status. After power failure, delay shall precede the sequential start of the pump cycle. The control system shall allow for the following set-points:
   a. High Level Alarm
   b. Start Lead Pump
   c. Stop Lead
   d. Low Level Alarm (Redundant Pump Stop)

B. The pumps shall selection switch is in the AUTO position. Each pump shall be disabled until manually reset if its respective protective device or control circuit trips or otherwise inhibits operation. Each pump, at a minimum shall have the following door mounted devices:
   a. HAND-OFF-AUTO Selector Switch
   b. RESET Pushbutton
   c. Elapsed Runtime Meter
   d. RUN Indicator, Press-to-Test LED
   e. FAIL Indicator, Press-to-Test LED
   f. Pump Protection Monitor Status Indicator(s)

C. Primary Pump Controller (PPC)
   a. PPC PLC shall be Allen-Bradley CompacLogix and shall have inputs which include digitals and 4 analogs, outputs which include digital and analog, and capability of future expansion modules. The overall accuracy of the analog ports shall be greater than or equal to 1% of full scale. The controller shall display status of Power, Run, Fault and Force. (Programming by City Selected Integrator)
   b. Operator Interface Touchscreen shall be Allen-Bradley PanelView The Operator Interface shall be powered by 24V DC, 64MB, color display, and utilize Ethernet communications.
   c. Level alarms shall include of high alarm, low alarm and input signal out of range. (Programming by City Selected Integrator)
   d. Monitor functions shall include control power and normal system operation.
   e. The control circuits shall be forced OFF by activation of the external inhibit input or upon power loss. Upon power restoration, or removal of the inhibit input, the controller shall enable its outputs in an adjustable time-step sequence as required to meet the demand.
   f. The controller shall continuously indicate the status of the selected sequence, pumping direction, and control modes.

g. The controller shall have a configurable security lockout feature.
h. It is the specific intention of this functional requirement that a standard program shall be provided with features as described herein. Additionally, this controller shall be an integrated assembly with door mounted interface. That is, the furnishing of similar functions using extensive relay/timer logic to accomplish control sequences, etc., is specifically precluded by this specification and is not acceptable.

D. Backup Pump Controls (BPC)
   a. BPC shall be a separate and independent from PPC PLC to ensure redundancy. The BPC shall be an alternating relay and control relays as required to achieve the described functionality,
   b. Pump control shall automatically switch to backup control in the event of primary control system failure. The BPC can also be forced on by a selector switch. When the BPC has assumed pumping operation, it shall cutout the PPC's ability to call pumps via hardwired relays.
   c. The controller shall be hard wired to each Pump Starter Compartment (Via relays as necessary) for automatic pump calls.
   d. The intent of the specification is that a standard controller be provided, with standard documentation.
   e. The system shall allow prevention of simultaneous pump starts and shall allow limiting the maximum number of pumps when operating on standby power.
   f. The BPC shall utilize pressure/primary PLC failuire for pump operation. The High Level and Low-Level elevations shall be above and below, respectively, normal operation. The backup controller shall permit locating of all within the normal transducer operating range.
   g. A hardware selector switch for controlling backup activation will be provided. This switch will allow the following selections:
      I. Force Backup
      II. Off
      III. Automatic
   h. BPC as well as High- and Low-level alarms shall be locked in until manually reset. An alarm contact shall also be provided to indicate that the backup system is in operation.

6.6 PUMP STARTERS

A. Adjustable Frequency Drives (AFD)
   a. AFD motor starters shall be provided in the PCC for pump control. Each starter shall be installed in an electrically isolated compartment with door-interlocked disconnect. Circuit breaker shall be remote mounted and connected via flexible cable mechanism to the Starter Compartment disconnect operator.
   b. AFD's shall be Schneider Electric or equal
   c. AFD's shall be flange-mount type with heat-sinks outside the starter compartment and isolated. No fans or filter-grilles shall be door-mounted on the starter compartment. Ventilation provisions shall include a separate air-intake and discharge fan, for the area containing the AFD heat-sinks.
   d. Each AFD shall be supplied with IEC contactor combination for bypass operation.
   e. Each AFD shall include the following door mounted devices:
      I. Nameplate showing HP, voltage, and FLA
      II. HAND-OFF-AUTO Selector Switch
      III. AFD-BYPASS Selector Switch

IV. AFD Keypad
V. RESET Pushbutton
VI. RUN Indicator, Push-to-Test LED
VII. AFD TRIP Indicator, Push-to-Test LED
VIII. POWER OK Indicator, Push-to-Test LED
IX. OVERTEMPERATURE Indicator, LED
X. SEAL FAIL Indicator, LED
XI. Electronic Overload Remote Display
XII. Elapsed Runtime Meter, non-resettable

f. Each AFD shall include the following panel mounted devices:
I. Thermal-Magnetic Circuit Breaker (Remote mounted)
II. Control Power Transformer
III. Adjustable Frequency Drive
IV. DC Bus Choke
V. IEC Output Contactor
VI. IEC Bypass Contactor
VII. Bypass Electronic Overload
VIII. Current Transformer
IX. Relays and Timers as required for proper operation
X. Fast-acting Class J fuses, with blown-fuse indicators, for short-circuit protection
XI. Thru-wall Pull-Apart Connection Terminals for interconnect wiring

6.7 BREAKER/ TRANSFORMER COMPARTMENT

A. Circuit breakers shall be provided in the PCC for each motor starter and for control power transformers. Breakers shall be thermal-magnetic type. Pump and Transformer breakers shall have a short circuit interrupting capacity of 35kA at 480V. Circuit Breakers shall be UL Listed.

B. Lighting Transformer shall be 5kVA open type iron core. Transformer Breaker shall be accessible to switch on/off thru-door. Transformer secondary shall feed remote front mount breakers in separate 120V AC compartment.

PART 7 - INSTALLATION

7.1 It shall be the installing Arrow Starnet responsibility to secure from the manufacturer – installation instructions prior to delivery. Arrow Starnet shall coordinate delivery with manufacturer at least 4 weeks prior to shipment of the Control Module to the jobsite. The Contractor shall study the instructions and drawings provided and direct any questions they have to the Control Module manufacturer representative for answers before proceeding with the station installation. The Contractor shall then install the Control Module in complete conformance with the manufacturer's recommendations.

7.2 CALIBRATION, ADJUSTMENTS AND TESTING

A. Devices requiring field calibration shall be calibrated in the presence of the Owner's representative and be documented.

7.3 STATION START-UP

A. The Contractor/Arrow Starnet/Electric Pump shall include in their Bid Price the cost of a

field installation inspection and equipment start-up trip performed by the equipment manufacturer's authorized representative. The authorized representative shall certify in writing to the Engineer that the installation is in accordance with the respective manufacturer's requirements and that the warranty is validated.

B. The Contractor shall provide Operation & Maintenance manuals (including as-built wiring diagrams) for pumps, motors, controls, electrical, and instrumentation. The Operations and Maintenance manuals shall be submitted to and approved by the Contractor and then submitted to the Engineer. The manuals shall be complete at the time of the start-up. The Contractor shall also provide machine-specific Lockout and Tag-out procedures for all station equipment. Owner's representative shall sign off on the start-up. Start-up shall include the respective representatives for the following:
   a. Pumps
   b. Control Module
   c. Electrical Controls and Instrumentation
   d. Owner
   e. Engineer

C. Demonstrate proper operation of all system features and functions to the Owner's representative and Engineer. Coordinate installation and start-up scheduling with Owner and Engineer.

PART 8 - OPERATIONS & MAINTENANCE MANUALS (O&Ms)

8.1 O&Ms shall be provided as described herein for the prefabricated control building. Manual and Shop Drawings' format shall be as described below.

8.2 The O&M shall be a PDF and hardcopy document organized as follows:

A. Cover with the following information:
   a. Manufacturer product line.
   b. Project name.
   c. General description of equipment.
   d. Project City and State.
   e. Date of submittal in MM/YYYY format.

B. Table of Contents:
   a. Control building drawing set.
   b. Control panel drawing set.
   c. Control building bill of materials.
   d. Control panel bill of materials.
   e. Product Documentation.

C. Building drawing set in the following format:
   a. Title block with the following information:
      I. Project City and State.
      II. Project number/name.
      III. Drawing by, checked by, and approved by.
      IV. Date.
      V. Space for record of drawing revision (e.g. "As-built") with MM/YY date of revision.
      VI. Manufacturer contact information.

VII. Drawing file save path.
VIII. Date and time of most recent drawing save.

b. Cover with the following information:
   I. Product model number.
   II. Project description.
   III. Equipment description.
   IV. Project locations.
   V. Local area map with install location noted.
   VI. Drawing set index.
c. Structure elevations.
   I. Exterior colors shall be noted in a table, which notes specific colors for each item:
      i. Exterior.
      ii. Louvers.
      iii. Ventilation Fan.
      iv. Fascia.
      v. Soffits.
      vi. Doors.
      vii. Trim.
      viii. Junction boxes.
      ix. Roof steel/shingles.
   II. Elevations shall be labeled by site orientation (e.g. “North View”).
   III. All major items shall be identified with leaders.
   IV. Scale noted
   V. Elevations’ width, length, and height.
   VI. Roof pitch.
d. Structure floor plan.
   I. Typical abbreviations and component descriptions.
   II. Floor plan, which details pertinent dimensions.
   III. Site orientation.
e. Structure mounting details.
   I. Plan and section view of proposed concrete foundation.
   II. Anchoring detail.

D. Control panel drawing set in the following format:
   a. Title block with the following information:
      I. Project City and State.
      II. Project number/name.
      III. Drawing by, checked by, and approved by.
      IV. Date.
      V. Space for record of drawing revision (e.g. “As-built”) with MM/YY date of revision.
      VI. Manufacturer contact information.
      VII. Drawing file save path.
      VIII. Date and time of most recent drawing save.
   b. Cover with the following information:
      I. Product model number.
      II. Project description.
      III. Equipment description.
      IV. Project locations.
      V. Local area map with install location noted.
      VI. Drawing set index.
   c. Typical symbols and abbreviations.

I. Explanations for symbols and abbreviations commonly used in the schematics.

d. Control elevations and nameplate schedule.
   I. Control panel(s) front elevation(s).
      i. Tag/location for individual compartments/panels.
      ii. Dimensions.
      iii. Door component layout(s) with numerical ID for each component depicted.
   II. Nameplate schedule.
      i. Item tag/location.
      ii. Numerical ID.
      iii. Device tag (based on internal schematic tag).
      iv. Notes.
      v. Text height.
      vi. Nameplate text.
e. Control subpanel layout.
   I. Control panel(s) subpanel layout(s).
      i. Tag/location for individual compartments/panels.
      ii. Item type ID number.
   II. Subpanel layout schedule.
      i. Item tag/location.
      ii. Numerical ID.
      iii. Tag prefix.
      iv. Component description.
f. Schematics
   I. Each sheet shall have two sets of sequential rung numbers.
   II. Component tags and wire numbers shall reference the first rung they appear at within the drawing set.
   III. Voltage characteristics shall be identified.
   IV. Ampacity/trip rating shall be identified for fuses, circuit breakers and similar.
   V. Each component or circuit shall be described in a margin to the right.
   VI. Spare rungs may be reserved between pages to accommodate future additions or for unused optional features.
g. Field connections page.
   I. Termination points required to be connected to by the site electrician shall be duplicated at the end of the drawing set, so that all required field connections are depicted in one dedicated location.

E. Product Documentation.
   a. Datasheets for all major equipment shall be included with specific selections indicated with red boxes, underlines, arrows, and/or text.
   b. Manufacturer's manuals shall be included for all components which are programmable, configurable, or have specific maintenance requirements.

PART 9 - GUARANTEE

9.1 Manufacturer of the Control Module shall furnish a limited warranty of 24-months from start-up that all equipment shall be free from defects in design, materials, and workmanship. The manufacturer shall furnish replacement parts for any component proven defective within the provided equipment, whether assembled by them or other manufacturer during the warranty period, excepting only those items which are normally consumed in service.

END OF SECTION 13 42 10

SECTION 26 0010 - ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Refer to Division 00 – Procurement, Contracting and Warranty Requirements and Division 01 - General Requirements, which all apply to work under this section.

1.02 DESCRIPTION OF WORK

A. Work shall include furnishing of all systems, equipment and material specified in this division and as called for on the electrical drawings, to include supervision, operations, methods and labor for the fabrication, installation, start up and tests for the complete electrical installation.

B. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.

C. All work shall be performed in a neat, professional manner in keeping with the highest standards of the craft.

1.03 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:
   1. National Electrical Code
   2. National Fire Protection Association
   3. National Electrical Manufacturers Association
   4. Standards of Institute of Electrical and Electronic Engineers
   5. International Building Code
   6. Occupational Safety and Health Act
   7. Iowa Administrative Code
   8. NECA Standards
   9. Americans With Disabilities Act (ADA)

B. All Contractors shall familiarize themselves with all codes and standards applicable to their work and shall notify Design Professional of any discrepancies between the design and applicable code requirements so that any conflicts can be resolved. Where two or more codes or standards are in conflict, that requiring the highest order of professionalism shall take precedence, but such questions shall be referred to Design Professional for final decision.

1.04 REQUIREMENTS & FEES OF REGULATORY AGENCIES

A. Contractor shall comply with the rules and regulations of the local utility companies. He shall check with each utility company providing service to this project and determine or verify their requirements regarding incoming services.

B. Meters for incoming services shall be selected based on the project requirements. Any questions concerning this shall be referred to Design Professional prior to bidding. Contractor shall provide the appropriate meter and associated materials if not furnished by the utility company.

C. Secure all required permits and pay for all inspections, licenses and fees required in connection with the electrical work including State of Iowa Electrical Inspections. Contractor shall post all bonds and obtain all licenses required by the State, City, County and Utility.

D. Contractor shall make all arrangements with each utility company.

1.05 ELECTRICAL DRAWINGS

A. The electrical drawings indicate in general the building arrangement only. Contractor shall examine construction drawings to become familiar with the specific type of building construction, i.e. type of structural system, floors, walls, ceilings, room finishes and elevations.

B. Drawings for the electrical work are in part diagrammatic, and are intended to convey the scope of the work and to indicate in general the location of equipment.

C. Contractor shall layout their own work and shall be responsible for determining the exact locations for equipment and rough ins and the exact routing of conduits and raceway so as to best fit the layout of the work.

D. Contractor shall take their own field measurements for verifying locations and dimensions; scaling of the drawings will not be sufficient for laying out the work.

E. Because of the scale of the drawings, certain basic items such as couplings, pull or splice boxes may not be shown, but where such items are required by code or by other sections of the specifications or where they are required for proper installation of the work, such items shall be furnished and installed.

1.06 ACTIVE SERVICES

A. Contractor shall be responsible for verifying exact locations of all existing services prior to beginning work in that area.

B. Existing active services, i.e., water, gas, sewer, electric, when encountered, shall be protected against damage. Do not prevent or disturb operation of active services which are to remain.

C. When active services are encountered which require relocation, Contractor shall make request to authorities with jurisdiction for determination of procedures.

D. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the authorities having jurisdiction.

1.07 SITE INSPECTION

A. Contractor shall inspect the site prior to submitting bid for work to familiarize themself with the conditions of the site which will affect their work and shall verify points of connection with utilities, routing of outside conduit to include required clearances from any existing structures, trees or other obstacles.

B. Extra payment will not be allowed for changes in the work required because of Contractor's failure to make this inspection.

1.08 PROJECT PHASING

A. The project will be completed in multiple phases. All portions of the existing water treatment process shall remain active throughout construction. Electrical contractor shall review project phasing requirements. Protect existing electrical, communications, and control infrastructure throughout construction. Provide temporary electrical connections as required to accommodate phasing.

1.09 COORDINATION AND COOPERATION

A. It shall be Contractor's responsibility to schedule and coordinate their work with the schedule of the General Contractor so as to progress the work expeditiously, and to avoid unnecessary delays.

B. Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of their work with the work of the other contractors. Contractor shall consult and cooperate with the other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to their equipment, other equipment and the building. The Design Professional reserves the right to determine space priority of the contractors in the event of interference between piping, conduit, ducts and equipment of the various contractors.

C. Conflicts between the drawings and the specifications or between the requirements set forth for the various contractors shall be called to the attention of the Design Professional. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required, and that the Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, such clarification will be made by the Design Professional and their decision will be final.

D. Special care shall be taken for protection for all equipment. All equipment and material shall be completely protected from weather elements, painting, plaster, etc., until the project is substantially completed. Damage from rust, paint, scratches, etc., shall be repaired as required to restore equipment to original condition.

E. Protection of all equipment during the painting of the building shall be the responsibility of the Painting Contractor, but this shall not relieve Contractor of the responsibility for checking to assure that adequate protection is being provided. Refer to Division 09 for painting protection.

F. Where the final installation or connection of equipment in the building requires the contractor to work in areas previously finished by the General Contractor, the Electrical Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. Electrical Contractor shall arrange with the General Contractor for patching and refinishing of such areas which may be damaged in this respect.

1.10 OPENINGS, CUTTING AND PATCHING

A. Refer to Division 1 for additional cutting and patching information.

B. Conduits and sleeves passing through all fire or smoke rated floors, roofs, walls, and partitions shall be provided with firestopping. Space between wall/floor and conduit or sleeve shall be sealed with UL listed intumescent fire barrier material equivalent to rating of wall/floor. Where conduit or sleeves pass through floors, roofs, walls and partitions that are not fire or smoke rated, penetrations shall be sealed with grout or caulk.

C. New structure:
   1. Contractor will coordinate the placing of openings and lintels in the new structure as required for the installation of the electrical work with the General Contractor.
   2. Contractor shall furnish to General Contractor the accurate locations and sizes for required openings, but this shall not relieve Contractor of the responsibility of checking to assure that proper size openings are provided. When additional cutting and patching is required due to Contractor's failure to coordinate this work, Contractor shall make arrangements for the cutting, patching, and painting required.

D. Existing Structure:
   1. Contractor shall provide cutting, lintels and patching, and patch painting in the existing structure, as required for the installation of their work, and shall furnish lintels and supports as required for openings.
   2. Cutting of structural support members will not be permitted without prior approval of the Design Professional. Extent of cutting shall be minimized; use core drills, power saws or other machines which will provide neat, minimum openings.
   3. Patching shall match adjacent materials and surfaces and shall be performed by craftsmen skilled in the respective craft required.

E. Conduits and wireways passing through all fire or smoke rated floors, roofs, walls, and partitions shall be provided with firestopping. Space between wall/floor and conduits, sleeves and/or wireways, shall be sealed with UL listed intumescent fire barrier material equivalent to rating of wall/floor. Where conduits, sleeves and/or wireways pass through floors, roofs, walls and partitions that are not fire or smoke rated, penetrations shall be sealed with grout or caulk.

F. For exterior walls below grade, sleeves shall be cast iron. Space between sleeve and conduit shall be sealed with modular mechanical rubber links tightened with bolts as made by Thunderline Corporation, Wayne, Michigan 48184. Waterproofing of conduit penetrations in exterior walls shall be coordinated with waterproofing contractor.

1.11 EXCAVATING AND BACKFILLING

A. Contractor shall do all excavating necessary for light pole bases, underground wiring, conduit and duct banks, and shall backfill trenches and excavations after work has been inspected. Care shall be taken in excavating that walls and footings and adjacent load bearing soils are not disturbed in any way, except where lines must cross under a wall footing. Where a line must pass under a footing, the crossing shall be made by the smallest possible trench to accommodate the conduit. Excavation shall be kept free from water by pumping if necessary.

B. Backfill about the structure shall be placed, when practical, as the work of construction progresses. Backfilling on or against concrete work shall be done only when directed. Backfilling of trenches shall progress as rapidly as the testing and acceptance of the finished sections of the work will permit. Backfill shall be in accordance with Specification Division 31.

1.12 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be the standard product of a reputable U.S.A. manufacturer regularly engaged in the manufacture of the specified item unless authorized in writing by Design Professional. Where more than one unit is required of the same system, they shall be furnished by the same manufacturer except where specified otherwise.

B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items when required shall be furnished as part of the equipment, whether or not specifically called for.

1.13 SUBMITTALS

A. Contractor shall furnish, to the Design Professional, complete sets of shop drawings and other submittal data. Contractor shall review and sign shop drawings before submittal. Refer to Division 01 specifications for additional requirements. Refer to Section 01 3000 - Administrative Requirements for additional requirements.

B. Shop drawings shall be bound into sets and cover related items for a complete system as much as practical and shall be identified with symbols or "plan marks" used on drawings. Incomplete, piecemeal or unbound submittals will be rejected.

C. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.

D. After award of contract, the contractor shall provide a completed submittal schedule including dates that the submittals will be to the Design Professional for review.

E. Submit required information on the following items:

SPEC SECTION	EQUIPMENT	DETAIL DWGS	PROD DATA	SAMPLES	INSTALL METHODS	O & M MANUAL	CERTIFICATE OF SYSTEM DEMON-STRATION	OTHER (SEE NOTES)
26 0519	Low-Voltage Power Conductors and Cables		X			X		
26 0533	Raceway and Boxes for Electrical Systems		X			X		
26 0573	Short Circuit-Coordination Study/Arc Flash Hazard Analysis		X			X		1
26 0923	Lighting Control Systems	X	X			X	X	
26 2200	Low-Voltage Transformers	X	X			X	X	
26 2413	Switchboards	X	X			X	X	
26 2416	Panelboards	X	X			X	X	
26 2726	Wiring Devices		X			X		
26 2816	Enclosed Switches and Circuit Breakers		X			X	X	
	Fuses		X			X		
	Overload Relays		X			X		
26 2913	Motor Starters		X			X	X	
26 2923	Variable Frequency Motor Controllers		X			X	X	
26 3213	Engine Generators	X	X			X	X	
26 3600	Transfer Switch		X			X	X	
26 4313	Surge Protective Devices		X			X		
26 5000	Lighting	X	X			X	X	

NOTES:
1. Provide preliminary report; refer to specification section for requirements.

F. Design Professional will review shop drawings solely to assist contractors in correctly interpreting the plans and specifications.

G. Contract requirements cannot be changed by shop drawings which differ from contract drawings and specifications.

1.14 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall be submitted to Design Professional. Refer to Division 01 specifications for additional information.

B. Submit manuals in duplicate upon completion of the job. Manuals shall be bound in a three ring hard-backed binder. Front cover and spine of each binder shall have the following lettering done:

OPERATION
AND
MAINTENANCE
MANUAL
FOR
ELECTRICAL SYSTEMS

(PROJECT NAME)
(LOCATION)
(DATE)

SUBMITTED BY
(NAME AND ADDRESS OF CONTRACTOR)

C. Provide a master index at the beginning of manual showing items included. Use plastic tab indexes for sections of manual. Each section shall contain the following information for equipment furnished under this contract:
   1. Equipment and system warranties and guarantees.
   2. Installation instructions.
   3. Operating instructions.
   4. Maintenance instructions.
   5. Spare parts identification and ordering list.
   6. Local service organization, address, contact and phone number.
   7. Shop drawings with reviewed stamp of Design Professional and Contractor shall be included, if applicable, along with the items listed above.

D. Items to be included shall be those listed in shop drawing section.

1.15 TESTS AND DEMONSTRATIONS

A. All systems shall be tested by Contractor and placed in proper working order prior to demonstrating systems to Owner.

B. Contractor shall test the electrical grounding system resistance in accordance with Specification Section 26 0526 – Grounding and Bonding for Electrical Systems and submit a report to Design Professional stating the results.

C. Prior to acceptance of the electrical installation, the Contractor shall demonstrate to the Owner, or their designated representatives, all essential features and functions of all systems installed, and shall instruct the Owner in the proper operation and maintenance of such systems. Owner instruction shall be provided for the following systems:

Sections	Description	Hrs. on Site	Hrs. off Site	Presented By	Others Present	Remarks
26 2200 26 2413 26 2416 26 2419 26 2816	Electrical Dist. System	4		Contractor		
26 0913	Power Monitoring	2		Contractor		
26 2913 26 2419	Motor Controls	4		Contractor		
26 3213 26 3600	Emergency Generator	4		Manufacturer's Representative	Contractor	1
26 0923 26 5000	Building Lighting Controls	2		Manufacturer's Representative	Contractor	2

REMARKS:

1. Perform complete system test at time of instruction.
2. Refer to 26 0923 for training requirements.
3. Any unused hours shall be used at Owner's discretion during the first year of occupancy.

D. Contractor shall submit to the Design Professional a certificate signed by the Owner stating the date, time, and persons instructed and that the instruction has been completed to the Owner's satisfaction. An example of a certificate form is as follows:

CERTIFICATE OF SYSTEM DEMONSTRATION

This document is to certify that the contractor has demonstrated the hereafter listed systems to the Owner's representatives in accordance with the Contract documents and that the instruction has been completed to the Owner's satisfaction.

A. Project:

B. System(s):

C. Contractor's representatives giving instruction and demonstration:

Contractor: _____

NAMES	DATE	HOURS

D. Owner's representatives receiving instruction:

Owner: _____

NAMES	DATE	HOURS

E. Acknowledgement of demonstration:

Contractor's Representative: _____
signature

_____
date

Owner's Representative: _____
signature

_____
date

1.16 SUBSTITUTIONS

A. To obtain approval to use unspecified equipment, Bidding Contractors (not equipment supplier, manufacturers, etc.) shall submit written requests to Design Professional at least 10 days prior to bid due date. Requests shall clearly describe the equipment for which approval is being requested. Include all data necessary to demonstrate that equipment's capacities, features and performance are equivalent between specified equipment and equipment for which approval is being requested. If the equipment is acceptable, Design Professional will approve it in an addendum. Design Professional will, under no circumstances, be required to prove that an item proposed for substitution is or is not of equal quality to the specified item.

B. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

1.17 ACCEPTABLE MANUFACTURERS

A. In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the plan schedules are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to Design Professional at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.

B. Manufacturers, who do not submit prior to bidding, run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of the Contractor and/or the manufacturer.
   1. If Contractor chooses to use a manufacturer listed as an equal, it shall be their responsibility to assure that the manufacturer has complied with the requirements in 'A' above. Contractor shall assume all responsibility for physical dimensions, operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.
   2. Where a model or catalog number is provided, it may not be inclusive of all product requirements. Refer to additional requirements provided on the plans or in the specifications as required. Similarly, there may be additional requirements included in the model or catalog number that are not specifically stated. These requirements shall also be met.

1.18 WARRANTY

A. Refer to Divisions 00 and 01 for information on warranties and correction of work within the warranty period.
   1. If a warranty or warranty period are not defined in Division 00 or 01, then the start of all warranty periods shall be the date of Substantial Completion and the length of the warranty shall be for one year.
      a. If construction is phased with distinct and separate Substantial Completion dates for portions of the building and/or systems, separate warranties shall be provided for each of these phased areas and/or systems.
      b. The entire Electrical system, including all sub-systems, shall be guaranteed against defect in materials and installation for the duration of the warranty period. Any malfunctions or defects which occur within the warranty period shall be promptly corrected without cost to the Owner. This guarantee shall not limit or void any manufacturer's express or implied warranty.

B. Refer to other Division 26 sections for systems, equipment, or material requiring extended warranties.

C. The date of systems/equipment startup or equipment/material shipment to the site shall not be considered the notable date with relation to the warranty of that item. All systems, equipment, material, etc., shall have the same start date with respect to the warranty period.

D. Systems, equipment or material put into use to facilitate construction activities (e.g. testing and balancing, commissioning, temporary conditioning, etc.) prior to the start of the warranty period shall not impact the length of the warranty in any way.

1.19 CHANGES IN THE WORK

A. Refer to Divisions 00 and 01.

1.20 COMPLETION

A. Systems, at time of completion, shall be complete, efficiently operating, non hazardous and ready for normal use by the Owner.

B. When all the electrical work is complete Contractor shall thoroughly clean all material and equipment installed as a part of this contract and leave all equipment and material in new condition.

C. Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

1.21 CLEANING

A. Prior to assembly of electrical equipment, all loose dirt, scale, oil, and other foreign matter on internal and exterior surfaces shall be removed by means consistent with good electrical practices.

B. All temporary labels, stickers, etc., shall be removed from all fixtures and equipment. Name plates, ratings, instruction plates, etc., shall not be obscured by paint, insulation, or placement of units.

C. Electrical equipment shall be thoroughly cleaned on the interior and exterior of equipment. This includes, but is not limited to: removal of wiring trimmings within electrical panels and dirt/debris from activation boxes.

D. All light fixtures shall be wiped clean with all fingerprints and dust removed.

1.22 ACCESS DOORS

A. When the Electrical Contractor provides any equipment requiring periodic servicing which will be concealed by non-accessible architectural construction, the Electrical Contractor shall provide a flush access door. The access door shall be equal to a Karp DSC 211 Universal access door or Nystrom APWB or type for the specific construction involved.

B. Access doors in fire rated construction shall be fire rated and have U.L. label.

C. Construction:
   1. Door and trim shall be 13 gauge steel, frames shall be 16 gauge steel.
   2. Trim shall be of one piece construction.
   3. Finish shall be prime coat of rust inhibitive baked grey enamel.
   4. Hinges shall be concealed, offset, floating hinge.
   5. Locks shall be flush, screwdriver operated with stainless steel cam and studs.

1.23 TEMPORARY UTILITIES

A. Refer to Specification Division 1 for specific requirements concerning temporary utilities.

1.24 CONCRETE EQUIPMENT PADS

A. Provide equipment housekeeping pads for all floor mounted equipment. Anchor equipment to concrete equipment pads according to equipment manufacturer's recommendations.
   1. Construct concrete bases of dimensions indicated or as required to be 4 inches larger in both directions than supported unit. Pads to be a minimum of 4" in height unless noted otherwise.
   2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
   3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
   4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   5. Install anchor bolts according to manufacturer's recommendations and to elevations required for proper attachment to supported equipment.
   6. Use 3000-psi compressive strength concrete with #3 rebar 12" O.C.

END OF SECTION 26 0010

SECTION 26 0500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. This section includes the following:
   1. Demolition.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials removed shall be the property of the removing contractor and shall be removed from the site unless otherwise specified.

PART 3 - EXECUTION

3.01 GENERAL

A. Demolition shall be accomplished by the proper tools and equipment for the work to be removed. Personnel shall be experienced and qualified in the type of work to be performed.

3.02 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on Drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition Drawings are based on casual field observation. Report discrepancies to Owner before disturbing existing installation.

3.03 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

B. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

C. Existing Electrical Services: Maintain existing system in service. Disable system only to make switchovers and connections. Obtain permission from Owner at least 72 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

D. Existing Telecommunications Systems: Maintain existing systems in service. Disable systems only to make switchovers and connections. Obtain permission from Owner at least 72 hours before partially or completely disabling system.

3.04 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Demolish and extend existing electrical work under provisions of this Section.

B. Remove, relocate, and extend existing installations to accommodate new construction. Extend existing installations using materials and methods as specified.

C. Remove abandoned wiring to source of supply.

D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.

F. Disconnect and remove abandoned panelboards and distribution equipment.

G. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

H. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

I. Repair adjacent construction and finishes damaged during demolition and extension work.

J. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.

K. Clean and repair existing materials and equipment which remain or are to be reused.

3.05 FLUORESCENT LAMP AND BALLAST DISPOSAL

A. Unless noted otherwise, all existing fluorescent lamps and ballasts within light fixtures to be removed shall be assumed to contain mercury and PCB's respectively. These items need to be disposed of by a mercury and PCB Disposal Contractor, who shall be a subcontractor to Electrical Contractor. This Disposal Contractor shall have all local, state, and federal authorization for handling, transporting, and processing these materials. Disposal Contractor shall have pollution insurance and shall generate a Certificate of Disposal. Ballasts and all contaminated materials shall be incinerated. Lamps shall be recycled.

3.06 WORK BY OTHERS

A. Unless specifically noted under other contracts, Electrical Contractor shall assume all required work shall be performed by him. In general, the following will be performed by others:
   1. General Contractor will remove any bases, floor fill, wall work and footings; neatly patch, match, complete and finish all affected surfaces.
   2. Mechanical Contractor will disconnect all mechanical services and remove pipe back to behind finish surfaces, close and cap ends of pipe.

3.07 OWNER'S RIGHT OF SALVAGE

A. Owner may designate and have salvage rights to any material herein demolished by the Contractor.

B. The engine-generator and automatic transfer switch is to be salvaged by the Owner. Contractor shall remove items and deliver to a storage location within the City of Monticello selected by the Owner.

END OF SECTION 26 0500

SECTION 26 0519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. Contractor shall furnish all material, tools, labor, and supervision necessary to install all wiring systems.

B. This section describes the basic materials and methods of installation for general wiring systems of 600 volts and less. Wiring for a higher voltage rating, if required, shall be as specified in other sections or called for on the drawings.

1.03 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical wire, cable, and connectors.

B. UL Compliance: Comply with UL standards pertaining to wire, cable, and connectors.

C. UL Labels: Provide electrical wires, cables and connectors which have been UL listed and labeled.

D. NEMA/ICEA Compliance: Comply with applicable portions of NEMA/Insulated Cable Engineers Association standards pertaining to materials, construction and testing of wire and cable.

E. ANSI/ASTM: Comply with applicable portions of ANSI/ASTM standards pertaining to construction of wire and cable.

F. The materials used for wiring systems shall be the products of a manufacturer regularly engaged in the manufacturing of the specified material.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data for each product specified.

PART 2 - PRODUCTS

2.01 WIRE AND CABLE

A. All wire and cable for power, lighting, control, and signal circuits shall have copper conductors of not less than 98% conductivity and shall be insulated to 600 V. Conductor sizes #12 AWG and smaller shall be solid, conductor sizes #10 AWG and larger shall be stranded.

B. Minimum size conductors shall be #12 AWG for power and lighting.

C. Type of wire and cable for various applications shall be as follows:
   1. Type THHN/THWN-2, or XHHW-2 (90 deg. C) use for branch circuits, panel and equipment feeders in dry locations.
   2. Type XHHW-2 (90 deg. C) use for branch circuits, panel and equipment feeders located underground and in wet and dry locations.
   3. For all vibration type installations (i.e. motors, etc.), provide stranded type conductors.

2.02 CONDUCTOR COLOR CODING

A. Wiring systems shall be color coded. Conductor insulation shall be colored. Colors shall be assigned to each conductor as described below and carried throughout all main and branch circuit distribution. When necessary to use tape, use colored tape on black wire.

	120/208V - Wye	277/480V - Wye
Phase 'A' Conductor	Black	Brown
Phase 'B' Conductor	Red	Orange
Phase 'C' Conductor	Blue	Yellow
Neutral Conductor	White*	Grey*
Equipment Grounding Conductor	Green	Green
Isolated Grounding Conductor	Green w/Yellow Stripe	Green w/Yellow Stripe

* For branch circuits with non-shared neutral conductors, provide colored tracer to match associated phase conductor. Tracers shall be Black, Red, Blue, Brown, Orange, or Yellow.

** Use red and black for phases which are 120V to neutral. Use orange for "wild leg".

2.03 CONNECTORS

A. Twist-on Wire Connectors.
   1. Dry Locations. 600V rated, UL 486C listed, Ideal Industries 451/452/454 or equal by 3M or Thomas and Betts. Use for #8 and smaller.
   2. Wet locations. 600V rated, UL 485D listed with pre-filled silicone sealant. Ideal industries 61/62/63 series or equal by 3M or Thomas and Betts. Use for #8 and smaller. To be used for all above ground splices in exterior locations and interior wet locations.
   3. Underground locations. 600V rated, UL 485D listed for direct burial with pre-filled silicone sealant. Ideal Industries 60/64/66 series or equal buy 3M or Thomas and Betts. Use for #8 and smaller. To be used for all below ground and in-slab locations.

B. Conductor Taps and Splices.
   1. Dry Locations. 600V rated, UL 486A/B listed, insulated mechanical termination. Ilsco ClearTap PCT or equal by Burndy. Use for #6 and larger.
   2. Wet and Underground Locations. 600V rated, UL 486D listed, watertight mechanical termination suitable for direct burial in earth. Ilsco SafetySub PDSS or equal by Burndy or 3M. Use for #6 and larger.
   3. Insulation piercing taps are not allowed.
   4. Split bolt connectors and spices are not allowed.

PART 3 - EXECUTION

3.01 PREPARATION

A. Wire shall not be installed in the conduit system until the building is enclosed and masonry work is completed.

B. Conduit shall be swabbed free of moisture and debris prior to pulling in wiring. Pull mouse through conduits prior to pulling conductors.

3.02 INSTALLATION

A. All cable for major feeders shall be continuous from origin to termination, unless otherwise indicated.

B. Branch circuit conductor sizes shall be increased to maintain a maximum 3% voltage drop.
   1. 120V, 20A homeruns shall be sized as follows based on one-way circuit length:
      a. 0-80': #12 AWG
      b. 81'-140': #10 AWG
      c. 141'- 210': #8 AWG
      d. 211' and over: #6 AWG
   2. 277V, 20A homeruns shall be sized as follows based on the one-way circuit length:
      a. 0-200': #12 AWG
      b. 201'-300': #10 AWG
      c. 301' and over: #8 AWG

C. Conductors for emergency power systems shall be kept in entirely independent of all other wiring and equipment. Emergency system wiring shall not occupy the same raceway, wireway or junction box,

D. Conductors for critical branch, life safety branch, equipment branch and normal shall be kept entirely independent of one another and all other wiring and equipment. Wiring for these systems shall not occupy the same raceway, wireway or junction box,

E. Conductors for 208V and 480V systems shall be installed in separate raceway systems.

F. Splices shall be made only in accessible junction boxes or handholes.

G. All power feeder cable shall be pulled with the use of approved pulling compound or powder. Compound must not deteriorate conductor or insulation.

H. If conductor insulation is damaged during installation, replace entire conductor.

I. Use pulling means, including fish tape, cable or rope which cannot damage raceway.

J. Install exposed cable, parallel and perpendicular to surfaces or exposed structural members and follow surface contours, where possible.

K. Keep branch circuit conductor splices to a minimum.

L. The continuity of circuit conductors shall not be dependent on service connections such as lamp holders, receptacles, etc., where the removal of such devices would interrupt the continuity.

M. Provide separate green equipment ground conductor throughout entire electrical system.

N. Isolated ground conductors shall be kept isolated from the equipment grounding system from the outlet back to where the system is derived.

O. All branch circuits shall have dedicated neutrals.

P. Install 2-hour rated cable systems in strict accordance with the manufacturer's instructions and the UL Listing.

3.03 FIELD QUALITY CONTROL

A. Prior to energizing system, test cable and wire for continuity of circuitry, and for short circuits. Correct malfunctions when detected.

B. After wire terminations are complete, energize circuitry and demonstrate functioning in accordance with requirements.

END OF SECTION 26 0519

SECTION 26 0526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. Extent of grounding work is indicated by drawings and shall comply with NEC.

B. Applications of grounding work in this section include the following:
   1. Underground metal piping.
   2. Underground metal water piping.
   3. Underground metal structures.
   4. Metal building frames.
   5. Grounding electrodes.
   6. Grounding rods.
   7. Ground loops.
   8. Separately derived systems.
   9. Service equipment.
   10. Enclosures.
   11. Equipment.

C. Requirements of this section apply to electrical grounding work specified elsewhere in these specifications.

1.03 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC requirements as applicable to materials and installation of electrical grounding systems, associated equipment and wiring. Provide grounding products which are UL-listed and labeled.

B. UL Compliance: Comply with applicable requirements of UL Standards Nos. 467 and 869 pertaining to electrical grounding and bonding.

C. IEEE Compliance: Comply with applicable requirements of IEEE Standard 142 and 241 pertaining to electrical grounding.

PART 2 - PRODUCTS

2.01 GROUNDING SYSTEMS

A. Materials and Components
   1. General: Except as otherwise indicated, provide electrical grounding systems indicated; with assembly of materials, including, but not limited to, cables/wires, connectors, terminals (solderless lugs), grounding rods/electrodes and plate electrodes, bonding jumper braid, surge arresters, and additional accessories needed for complete installation. Where more than one type unit meets indicated requirements, selection is Installer's option. Where materials or components are not indicated, provide products complying with NEC, UL, IEEE, and established industry standards for applications indicated.
   2. All components shall be listed under ANSI/UL 467 – “Grounding and bonding Equipment”.
   3. Raceways: Provide raceways, and electrical boxes and fittings complying with Division 26, Section 26 0533 – Raceway and Boxes for Electrical Systems.
   4. Conductors: Unless otherwise indicated, provide electrical grounding conductors for grounding connections matching power supply wiring materials and sized according to NEC.

B. Connectors
   1. Lugs: Grounding and bonding conductors shall terminate in two-hole, long barrel irreversible compression lugs, Burndy YGA series or equal by Blackburn, Ilsco, or Anderson.

2. Exothermic welds: Graphite mold designed for the specific connection type required. Weld metal used for grounding connections shall contain copper oxide, aluminum and not less than 3% tin as the wetting agent. Exothermic weld products by Erico, Harger or approved equal.
3. Ground clamps for pipes: Bronze with pad for 2-hole lug, Burndy GAR-TC series or equal by Blackburn, Ilsco, or Anderson.

C. Ground bars: Ground bars shall be 4” wide, ¼” thick solid copper with insulating bushings and 7/16” holes. Hole spacing to accommodate ¾”, 1” and 1-3/4” lugs. Ground bars shall be a minimum of 12” long, refer to plans for specific length.

D. Grounding Rods
1. Ground Rods:
a. Copper clad steel, 3/4" dia. x 10' for service entrance.
b. Copper clad steel, 5/8” dia x 8’ for other applications.

PART 3 - EXECUTION

3.01 INSTALLATION OF ELECTRICAL GROUNDING

A. General: Install electrical grounding systems where shown, in accordance with applicable portions of NEC, with NECA's "Standard of Installation", and in accordance with recognized industry practices to ensure that products comply with requirements and serve intended functions.

B. Coordinate with other electrical work as necessary to interface installation of electrical grounding system with other work.

C. Install bonding jumpers with ground clamps on water meter piping to electrically bypass water meters.

D. Install clamp-on connectors only on thoroughly cleaned metal contact surfaces, to ensure electrical conductivity and circuit integrity.

E. When making ground and ground bonding connections, apply a corrosion inhibitor to all contact surfaces. Use corrosion inhibitor appropriate for protecting a connection between the metals used.

F. Bury ground rods vertically with rod top a minimum of 2 feet below grade, or with rod top terminated in a gravel filled ground well. If extensive rock formation is encountered, inform the Design Professional and relocate ground rods, or provide supplemental ground rods as directed by the Design Professional.

G. A No. 6 AWG minimum stranded copper wire shall be furnished and exothermically welded to all of the ground rods.

H. Protect ground conductors from physical and environmental damage. Wherever possible, and where indicated, grounding electrode and bonding conductors shall be enclosed in a non-metallic raceway. Where ground conductors are subject to physical damage, install in galvanized rigid steel conduit with grounding bushings on each end. Locate exposed conductors which must extend from a concrete surface as close as possible to a corner. Where conductors are required to be exposed, as in the connection to the main ground bus, support ground conductors by corrosion resistant metallic hardware at 4-foot intervals or less.

I. Exothermic Welding
1. Clean and dry the surface to be welded. Wire brush or file the point of contact to a clean bare metal surface.
2. Use welding cartridges and molds for the type of weld recommended by the manufacturer and perform welding in accordance with the manufacturer's recommendations. Worn or damaged molds not to be used.
3. Test all welds by striking with a 2 pound steel hammer. Replace any defective welds.
4. Where exothermic welds are made to a galvanized surface, remove the galvanizing using a grinding wheel to expose a clean surface. After welding, touch up the steel surface with zinc rich primer.

J. Provide separate green ground conductor throughout entire electrical system sized as required by the NEC.

K. Conduit Grounding
   1. Bond all metallic conduit systems together to provide a continuous electrical ground path. Bond metallic conduits to other conduit components using insulated ground bushings when required. Connect ground bushings to the grounding system using conductors sized in compliance with NEC.
   2. Provide ground conductors in non-metallic conduits in accordance with the NEC.

L. All portions of the metal building structure that are not electrically continuous shall be bonded to the service entrance grounding electrode system.

M. Isolated Grounding (IG) conductors shall be green colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

N. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

O. Ground Ring: Install a grounding conductor, electrically connected to each building structure ground rod and to each steel column, extending around the perimeter of building.
   1. Install tinned-copper conductor not less than No. 3/0 AWG or larger for ground ring and for taps to building steel.
   2. Install ground rods with spacing not exceeding 24’.
   3. Bury ground ring not less than 48 inches from building foundation and 30” deep.
   4. Connections to ground ring to be exothermic welds.

P. Bond natural gas piping to the grounding system in accordance with the NEC and International Fuel Gas Code with a #6 AWG conductor to the main ground bar.

Q. Complete pool bonding in accordance with NEC article 680 and State Codes.

3.02 FIELD QUALITY CONTROL

A. Upon completion of installation of electrical grounding system, test ground resistance with earth test megger. Results shall be submitted to the Design Professional on a report form similar to that which follows:

EARTH RESISTANCE
FIELD REPORT

PROJECT:_____

JOB NUMBER: _____ PAGE _____

OWNER:_____

DATE OF TEST: _____ CONDITIONS: _____

TEST LOCATION: _____

TEST METHODS: _____

TEST INSTRUMENT: _____

SOIL RESISTIVITY/TYPE: _____
COMMENTS (If applicable):

TESTING RESULTS:

Earth Resistance Testing: Resistance
Description of systems tested to earth

Test No.

A)

B)

C)

D)

E)

COMPLETED BY: _____ COPY TO: _____

COMPANY: _____

B. Where tests show resistance to ground is over 3 ohms, take appropriate action to reduce resistance to 3 ohms or less by driving additional ground rods or by chemically treating soil encircling ground rod.
   1. Retest to demonstrate compliance.

END OF SECTION 26 0526

SECTION 26 0529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. Provide materials, labor and supervision as necessary to provide hangers and supports for conduit, fixtures and equipment.

1.03 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical supporting devices.

B. ANSI/NEMA Compliance: Comply with applicable requirements of ANSI/NEMA Std. Pub. No. FB 1, "Fittings and Supports for Conduit and Cable Assemblies".

C. NECA Compliance: Comply with National Electrical Contractors Association's "Standard of Installation" pertaining to anchors, fasteners, hangers, supports, and equipment mounting.

D. UL Compliance: Provide electrical components which are UL listed and labeled.

PART 2 - PRODUCTS

2.01 MANUFACTURED SUPPORTING DEVICES

A. Manufacturer: Subject to compliance with requirements, provide channel systems of one of the following:
   1. B Line Systems, Inc.
   2. Thomas & Betts, Superstrut
   3. Unistrut Div.; Tyco International
   4. Globestrut

B. General: Provide supporting devices; complying with manufacturer's standard materials, design and construction in accordance with published product information, and as required for a complete installation; and as herein specified. Where more than one type of device meets indicated requirements, selection is Installer's option.

C. Conduit Cable Supports: Provide cable supports with insulating wedging plug for non armored type electrical cables in risers; construct for rigid metal conduit; type wire as indicated; construct body of malleable iron casting with hot dip galvanized finish.

D. U Channel Strut Systems: Provide U channel strut system for supporting electrical equipment, 16 guage hot dip galvanized steel, of types and sizes indicated; construct with 9/16" dia. holes, 8" o.c. on top surface, with standard green finish, and with the following fittings which mate and match with U channel:
   1. Fixture hangers.
   2. Channel hangers.
   3. End caps.
   4. Beam clamps.
   5. Wiring stud.
   6. Thinwall conduit clamps.
   7. Rigid conduit clamps.
   8. Conduit hangers.
   9. U bolts

E. U Channel Strut Systems in Corrosive Environments: Provide U channel strut system for supporting electrical equipment, 12 guage 304 stainless steel, of types and sizes indicated; construct with 9/16" dia. holes, 1 7/8" o.c..
   1. All hardware, hangers, and clamps shall be stainless steel.
   2. All support of NEMA4x equipment shall be stainless steel.

PART 3 - EXECUTION

3.01 INSTALLATION OF SUPPORTING DEVICES

A. Install hangers, anchors, sleeves and seals as indicated, in accordance with manufacturer's written instructions and with recognized industry practices to ensure supporting devices comply with requirements.

B. Coordinate with other electrical work, including raceway and wiring work, as necessary to interface installation of supporting devices with other work.

C. Conduit hangers and support devices shall be approved type for the method of supporting required. Size supports as necessary per manufacturer's recommendations for the weight being supported. All hangers and supports shall have galvanized finish or other approved corrosion resistance finish. In general, hangers and supports shall be as follows:
   1. Where single or multiple run of conduit is routed on surface of structure; use conduit clamps mounted on U channel strut so as to maintain not less than 1" clearance between conduit and structure.
   2. Where single run of conduit is suspended from overhead; use split ring conduit clamp suspended by 3/8" steel drop rod.
   3. Where multiple parallel runs of conduit are suspended from overhead; use split ring conduit clamps uniformly spaced and supported on trapeze hangers fabricated of U channel strut, suspended by not less than two steel drop rods.
   4. Where circuit voltage is above 600 volts, conduit clamps shall be provided with insulating bushings of dielectric strength as required.
   5. Where conduit is buried in concrete floor topping; anchor conduit to structural floor with one-hole jiffy clamps.
   6. Maximum hanger and support spacing shall be in accordance with NEC.

D. Hangers and supports shall be anchored to structure as follows:
   1. Hangers and supports anchored to poured concrete, use malleable iron or steel concrete inserts attached to concrete forms.
   2. Hangers or supports anchored to precast concrete, use self drilling expansion shields. Expansion shields may be used where concrete inserts have been missed or additional support is required in poured concrete.
   3. Hanger or supports anchored to structural steel, use beam clamps and/or steel channels as required by structural system.
   4. Hangers or supports anchored to metal deck, use spring clips or approved welding pins. Maximum permissible load on each hanger shall not exceed 50 pounds.
   5. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls.
   6. Use sheet metal screws in sheet metal studs and wood screws in wood construction.

E. The following is not permitted:
   1. Attaching supports and hangers to piping, ductwork, mechanical equipment, or conduit.
   2. Use of powder-actuated anchors.
   3. Drilling of structural steel members.

F. Fixtures on plastered or acoustical ceilings shall not be supported directly on ceiling tile. Provide metal bar hangers or U channel strut attached to ceiling supports.

G. Where disconnect switches and panels cannot be mounted on wall, provide support racks fabricated of structural steel or U channel strut.

H. Where disconnects or equipment is designated as NEMA 4X, provide stainless steel support and hardware.

I. Provide concrete bases and pads for transformers, switchgear, free standing panels, generators, outdoor lighting poles and other equipment requiring bases, except where drawings indicate that such bases and pads are to be furnished by the General Contractor. Pads shall be 3.5" tall and extend 4" beyond footprint of equipment. Furnish all equipment anchor bolts and installation for their proper and accurate location. All concrete work and reinforcing shall comply with General Specifications.

END OF SECTION 26 0529

SECTION 26 0533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. Contractor shall furnish all materials, tools labor and supervision necessary to fabricate and install complete conduit systems.

B. Conduit systems shall be provided for all wiring, except where the drawings or other sections of the specifications indicate that certain wiring may be installed in cable trays, surface raceway, underfloor raceway, wireways and/or auxiliary gutters.

C. Types of raceways in this section include the following:
   1. Rigid metal conduit.
   2. Intermediate metal conduit.
   3. Electrical metallic tubing.
   4. Flexible metal conduit.
   5. Liquid tight flexible metal conduit.
   6. Rigid non metallic conduit.
   7. MC cable.
   8. Surface metal raceways.

D. Provide factory painted red conduit for fire alarm system.

E. Contractor shall furnish all material, tools, labor and supervision necessary to install electrical boxes and fittings as required by drawings and specifications.

F. Types of electrical boxes and fittings in this section include the following:
   1. Outlet boxes.
   2. Junction boxes.
   3. Pull boxes.
   4. Wireways
   5. Activation boxes.
   6. Handholes

G. Telecommunications Raceway Requirements:
   1. The term “telecommunications” includes all low voltage technology systems including voice and data, access control, video surveillance, intrusion detection, audio video, induction loop, paging, intercom, nurse call, school bell and/or clock systems. The term does not include fire alarm system, which is addressed separately in the plans and specifications.
   2. Contractor shall provide and install telecommunications boxes and conduits, including wall sleeves unless otherwise noted.
   3. Below grade building entrance conduits within the building footprint shall be schedule 40 electrical PVC unless otherwise noted. Long sweep ninety degree elbows for under building footprint conduits shall be fiberglass sweeps with PVC schedule 40 conduit connectors built into the ends of the sweeps. Sweeps of 4” diameter shall be 36” minimum radius.
   4. Below grade conduits for low voltage system cabling are not acceptable unless specifically directed. Below grade entrance conduits and floor boxes in slab on grade are exceptions to this rule.
   5. Underground conduits outside the building footprint shall be continuous orange HDPE (high density polyethylene) with 1250 pound braided mule tape used as pull string unless otherwise noted. Round pull string or other rope is not acceptable for pulling due to risk of raceway damage. HDPE manufacturer approved water proof couplers shall be used for conduit type transition. HDPE to HDPE connection shall be hot fusion splice.
   6. HDPE shall be minimum SDR 17 wall thickness for 2” diameter and smaller. The wall thickness shall be minimum SDR 11 for sizes larger than 2” diameter.
   7. All below grade conduits shall be plugged at each end during construction to keep water, mud, rodents, etc., out.

8. All below grade entrance conduits shall be plugged on each end with removable mechanical plugs to keep water from entering the building for the life of the building. These plugs shall be installed inside the building above slab, and also at the first hand-hole outside the building (or where the conduits terminate underground). These plugs shall also seal around the utility entrance cables, including in and around all sub-ducts for a complete water tight seal. These mechanical plugs shall be as found on www.innerduct.com or engineer approved equivalent. Coordinate with the utility to determine size of cables for the plug inserts required. This work shall be completed before the Owner occupies the building.
9. All below grade exterior conduits shall have a tracer wire with adequate slack loop at each end for owner to conveniently connect and trace. All tracer wires shall protrude from closed hand holes so tracing may be accomplished without lifting the hand hole lid.
10. Interior building, above grade conduits and sleeves shall be EMT unless otherwise noted. PVC is never acceptable above grade.
11. All interior conduits shall have bushings installed during conduit installation. Completed individual installations shall have bushings installed same business day.
12. All interior conduits shall have pull strings, except sleeves which are less than 4' long. EMT conduits shall receive standard round cable pull string (multi-strand plastic twine type).
13. Minimum interior conduit size for all information jacks (voice data cabling) shall be 1" unless otherwise noted.
14. Minimum interior conduit size for audiovisual shall be 1" unless otherwise noted. Junction (pull) boxes shall be added at a maximum of 100' of raceway distance, and also for a maximum of 180 degrees of bend radius.
15. Minimum interior conduit size for video surveillance, intrusion detection, paging, intercom, nurse call, school bells and/or clock systems shall be 3/4" unless otherwise noted.
16. Access control system conduit sizes at the door location shall be per the access control detail found on the drawings. The conduit from the door location to the access control head end which contains all conductors needed for all access control functions at that door (may be individual conductors but is often one large composite cable) shall be minimum 3/4".
17. Boxes for all low voltage systems in stud walls shall be metallic 5"x5"x2.875" with single gang mud ring unless otherwise noted.
18. Boxes in masonry walls shall be minimum 3.5" deep. single gang, unless otherwise noted.
19. Wiremold surface raceway for all low voltage systems shall be minimum V2400 unless noted otherwise.
20. Wiremold surface boxes for all low voltage shall be minimum 2.5" deep single gang, unless otherwise noted.
21. Conduits inside walls which feed the low voltage side of dual compartment Wiremold shall be minimum 1.25"
22. Contractor shall provide and install hand holes for cable pulling in buried raceway at a maximum interval of 500'.

1.03 QUALITY ASSURANCE

A. NEMA Compliance: Comply with applicable requirements of NEMA standards pertaining to raceways.

B. UL Compliance and Labeling: Comply with provisions of UL safety standards pertaining to electrical raceway systems; and provide products and components which have been UL listed and labeled.

C. NEC Compliance: Comply with requirements as applicable to construction and installation of raceway systems.

D. The materials used in the fabrication of the raceway system shall be products of a manufacturer regularly engaged in the manufacturing of the specified material.

E. NEC compliance: Comply with NEC as applicable to construction and installation of electrical wiring boxes and fittings.

F. UL Compliance: Provide electrical boxes and fittings which have been UL listed and labeled.

G. ANSI/NEMA Standards Compliance: Comply with ANSI C 134.1 (NEMA Standards Pub No. OS 1) as applicable to sheet steel outlet boxes, covers and box supports.

1.04 SUBMITTALS

A. Raceway Product Data: Submit manufacturer's data including specifications, installation instructions and general recommendations, for each type of raceway listed below. Include data substantiating that materials comply with requirements for the following:
   1. Raceway
   2. Surface Metal Raceway

B. Activation Box Product Data: Submit manufacturer's data including specifications, installation instructions and general recommendations for each type of activation box required. Include data substantiating that units comply with requirements.

C. In-Ground Handhole Product Data: Submit manufacturer's data including specifications, installation instructions and general recommendations for each type of handhole required. Include data substantiating that units comply with requirements.

PART 2 - PRODUCTS

2.01 RACEWAYS

A. Provide metal conduit, tubing and fittings of types, grades, sizes and weights (wall thicknesses) for each service indicated. Where types and grades are not indicated, provide proper selection determined by Installer to fulfill wiring requirements, and comply with applicable portions of NEC for raceways.

B. Rigid Conduit: Full weight, threaded, rigid steel conduit, galvanized inside and out by hot dip or electro galvanized process. Additional protection by electrostatically applied baked coating. Thread protective caps and couplings. Use for all exterior exposed locations, interior process rooms (blower room), and all locations where conduit is subject to damage.

C. Rigid Aluminum Conduit: Full weight, threaded, rigid aluminum conduit. Thread protective caps and couplings. May be used above grade at exterior aeration structure where not in contact with concrete or earth. Use above grade at secondary treatment/aeration structure.

D. PVC Coated Rigid Conduit: Full weight, threaded, rigid steel conduit, galvanized inside and out by hot dip or electro galvanized process with 40 mil PVC coating. Thread protective caps and couplings. Use for interior and exterior penetrations through concrete slab up to 12” above the floor (minimum), hazardous (classified) locations, and where specifically noted.

E. Electrical Metallic Tubing: Thin wall, electrically welded cold rolled steel conduit, galvanized inside and out by electro galvanized process. Baked clear elastic enamel coating in and out. Use for installations in stud walls, masonry walls, above suspended ceilings and where exposed, but not subject to physical damage. In office, lab, and control room areas only.

F. Flexible Metal Conduit: Formed of one continuous length of spirally wound electro galvanized steel strip. Use for final connections to all motor operated equipment such as unit heaters, fans, air handling units, generators, generator enclosures and connections to dry type transformer.

G. Liquidtight Flexible Metal Conduit: Formed of one continuous length of spirally wound steel strip, with water and oil tight neoprene jacket. Use for final connection to pumps and equipment listed in paragraph "E" above when located in all process areas.

H. Explosion-proof Flexible Metal Condit: Listed for use in Class I, Division 1 areas, stainless steel braded construction. Copper is not acceptable due to corrosive environment.

I. PVC Conduit: Conduit shall be Schedule 40, 90 deg.C. Conduit shall be composed of Polyvinyl Chloride and shall conform to NEMA Standards. Conduit, fittings and cement shall be produced by the same manufacturer. May be used where installed in earth fill or under concrete slab and corrosive environments above 12” AFF where specifically indicated on the drawings.

J. MC and AC cable will not be allowed.

2.02 CONDUIT FITTINGS

A. Rigid Conduit Fittings:
   1. Fittings shall be standard threaded couplings, locknuts, bushings, and elbows. Material shall be malleable iron, steel or aluminum alloy. Iron or steel fittings shall be zinc or cadmium plated. Aluminum fittings shall not contain more than 0.4 percent copper. Aluminum fittings shall be used with aluminum conduit only. Provide PVC coated fittings in class 1, division 1 and 2 locations.

2. Locknuts shall be of the bonding type with sharp edges for digging into the metal wall of an enclosure.
3. Bushings shall be of the metallic insulating type and consist of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.
4. Sealing fittings shall be of the threaded cast iron type. Sealing fittings used to prevent passage of water vapor shall be of the continuous drain type.
5. Set screw fittings are not allowed.

B. Metallic Tubing Fittings: Compression type galvanized or zinc coated malleable iron or steel, water and concrete tight. Die-cast fittings are not allowed.

C. Flexible Metal Conduit Fittings: External squeeze or set screw type galvanized or zinc coated malleable iron or steel with nylon insulated throats. Internal screw type fittings are not allowed.

D. Explosion Proof Flexible Metal Condit: Stainless steel, class 1, division1. Brass or copper construction is not acceptable.

E. Liquidtight Flexible Conduit Fittings: Galvanized malleable iron or steel, with watertight gaskets, "O" ring and retainer, and nylon insulated throats.

F. Condulet Fittings: Exposed conduit fittings shall be condulet type for all sharp turns, tees, etc.

G. Surface Metal Raceway Fittings: Provide types that match and mate to raceways provided.

H. Provide insulated bushings for all conduits terminations.

2.03 WALL OUTLET BOXES

A. General: Boxes shall be Raco, Steel City, Appleton or equal, catalog numbers based on Raco, unless otherwise indicated. In general, the type of boxes shall be as follows:
1. In Stud Walls: For single outlet use 4" square by 2-1/8" deep box. Boxes to be provided with raised covers of depth as required for thickness of wall materials.
2. In Masonry and Poured Concrete Walls: Use 3 3/4" high by 2 1/2" and/or 3 1/2" deep masonry boxes #691 through #694 and/or #695 through #699.
3. Surface Mounted Wall Outlets for conduit: Use 4" square by 1 1/2" deep box #192 with raised cover.
4. Surface Mounted Wall Outlets for surface metal raceway: Use single gang boxes 1-1/2" deep Wiremold #V57xx series.
5. Suspended Ceiling: Use octagon boxes, depth as required for application, securely fastened to structure.
6. Poured Concrete Ceiling Slabs: Use octagon concrete rings with back plates.
7. Outlets Installed Outdoors or in Wet Locations: Use Bell Product 53XX Series outlet box.

B. Process Areas: Use type cast metal FD water tight cast boxes in areas where rigid steel conduit is specified.

C. Corrosive Process Areas: Use non-metallic type FD water tight cast boxes in areas where PVC conduit is specified.

2.04 PULL BOXES, AND JUNCTION BOXES

A. Construction, sizes and installation of pull boxes and junction boxes shall comply with NEC, Article 314.

B. Pull and junction boxes not specifically described in NEC, Article 314, shall be fabricated of heavy gauge galvanized steel with screw or hinged covers, and equipped with corrosion resistant screws and hardware.

C. Pull and junction boxes for installation in poured concrete floors shall be flush type, cast iron, with watertight gasketed covers. Boxes for installation in floors with tile or carpet floor covering shall have recessed covers to accommodate the floor covering.

D. Pull boxes and junction boxes for outdoor installation shall be raintight.

E. Pull boxes, and junction boxes designated '4X' shall be NEMA 4X water tight and corrosion resistant.

2.05 METAL WIREWAYS

A. Construction, sizes and installation metal wireways shall comply with NEC, Article 376.

B. General: Provide electrical raceways of types, grades, sizes and weights (wall thicknesses), number of channels, for each type of gutter indicated. Provide complete assembly of raceway including, but not necessarily limited to, couplings, offsets, elbows, expansion joints, adapters, hold down straps, end caps, and other components and accessories as needed for complete system. Where types and grades are not indicated, provide proper selection as determined by Installer to fulfill wiring requirements, and comply with applicable provisions of NEC for electrical raceways.

C. Wireways shall be constructed as a complete assembly of raceway including, but not necessarily limited to, couplings, offsets, elbows, expansion joints, adapters, hold down straps, end caps, and other components and accessories as needed for complete system. Gutters shall have hinged covers. Where types and grades are not indicated, provide proper selection as determined by Installer to fulfill wiring requirements.

D. Wireways shall have hinged covers unless noted otherwise.

E. Wireways for outdoor installation shall be raintight.

F. Wireways designated '4X' shall be NEMA 4X watertight and corrosion resistant.

2.06 IN-GROUND HANDHOLES

A. UL or ETL Listed, polymer concrete construction, open bottom stackable. Quazite PG style or equal.
   1. Manufacturer: Subject to compliance with requirements, the following manufacturers are acceptable:
      a. Quazite
      b. HiLine
      c. Armorcast
      d. New Basis

B. All stainless steel hardware with minimum two fasteners per lid.

C. Extra heavy duty covers with non-skid surface, tier 22, 22,500 lb. vertical and 800 lbs/sq. ft. lateral design loads, unless noted otherwise.

D. Minimum size to be 11”x18”, unless noted otherwise. Larger handholes may be required at select locations.

PART 3 - EXECUTION

3.01 INSTALLATION OF RACEWAY

A. In general, all horizontal runs of branch circuit conduit shall be installed in ceiling plenum. Raceway for convenience outlets, wall mounted fixtures and other wall outlets shall be routed overhead and dropped through wall to the outlet.

B. Branch circuit raceway shall not be installed in or below concrete floor slabs except where conditions will not permit the raceway to be installed overhead. Conduit shall be used where concealed in permanent wall construction or in ceiling plenums.

C. Surface raceway shall be used where exposed in finished regularly occupied areas where walls are existing.

D. Feeder conduits to panelboards, motor control centers and other major loads may be installed in fill below concrete slabs on grade.

E. Conduits that are run in fill below concrete slabs on grade shall be installed so as not to interfere with welded wire mesh (wwm), vapor barrier, or concrete placement.

F. Generally, all conduit shall be concealed, except in crawl spaces, tunnels, shafts, mechanical equipment rooms, and at connection to surface panels and free standing equipment, and as otherwise noted.

G. Exposed conduit and conduit concealed in ceiling space shall be routed in lines parallel to building construction.

H. All conduit runs above suspended acoustical ceilings shall be routed so as not to interfere with tile panel removals with 4'0" to 6'0" flexible conduit drops from an independent junction box, accessible from below the ceiling, to ceiling mounted equipment.

I. Minimum size conduit shall be 3/4" trade size. Minimum size surface raceway shall be V700. Where specified size is not called for on drawings or in the specifications, conduit shall be sized per NEC.

J. Utilize approved thread lubricant for rigid steel and aluminum conduits to ensure equipment grounding paths.

K. Utilize approved thread sealant for all underground and wet locations threaded conduit joints.

L. Install the conduit system mechanically and electrically continuous from outlet to outlet and to all cabinets, junction or pull boxes. Conduit shall enter and be secured to all cabinets and boxes in such a manner that all parts of the system will have electrical continuity.

M. All conduit penetrations to the exterior of the building including the service entrance, telecommunications, site feeds, grounding electrode and spare conduits shall be sealed at one or both ends against the intrusion of water and gasses. The seal shall be identified for use with the cable insulation installed. All seals shall be removable.

N. Installation of PVC conduit shall comply with the NEC with regard to grounding and expansion fittings.

O. PVC conduit shall not be installed above grade unless noted otherwise.

P. Support conduit raceway systems in accordance with requirements as set forth in the National Electric Code.

Q. All connections to NEMA 3R enclosures shall maintain the enclosure listing regardless of the equipment location.

3.02 INSTALLATION OF BOXES AND FITTINGS

A. Install electrical boxes and fittings where indicated, complying with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

B. Coordinate installation of electrical boxes and fittings with wire/cable and raceway installation work.

3.03 OUTLET BOX INSTALLATION

A. Outlet boxes shall be installed for all fixtures, switches, receptacles and other devices.

B. Approximate locations of outlets are shown on the plans, but each outlet location as shown shall be checked by Contractor before installing the outlet box.

C. Wall boxes installed flush in common wall shall not be back to back or through wall type. Boxes located on opposite sides of a common wall that are closely connected by conduit shall have the conduit openings plugged with duct seal.

D. Install boxes and conduit bodies in those locations to ensure ready accessibility of electrical wiring.

E. Outlet boxes shall be installed plumb and square with wall face and with front of box or cover located within 1/8" of face of finish wall. Boxes in masonry shall be set with bottom or top of the box tight to the masonry unit.

3.04 PULL BOX, JUNCTION BOX & WIREWAY INSTALLATION

A. Install pull boxes, junction boxes and auxiliary wiring gutters where indicated on drawings and where required to facilitate installation of the wiring.

B. For concealed conduit, install boxes flush with ceiling or wall, with covers accessible and easily removable. Where flush boxes are installed in finish ceilings or walls, provide cover which shall exceed the box face dimensions by a sufficient amount to allow no gap between box and finished material.

C. Boxes shall not be located in finished, occupied rooms, without prior approval of Design Professional.

3.05 IN-GROUND HANDHOLE INSTALLATION

A. Install all handholes flush with surrounding grade. Adjust handholes as required for finished grade.

B. Do not install handholes at low grade points. Install at locations to allow drainage away from box.

C. Provide 1” clean compacted fill beneath handholes for drainage. Clean fill shall extend 8” beyond the sides of the handhole enclosure, and a minimum of 12” deep.

END OF SECTION 26 0533

SECTION 26 0553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED WORK

A. The requirements of Division 00 – Procurement, Contracting and Warranty Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. Contractor shall provide identification for wiring systems and equipment as called for in this section.

B. Types of electrical identification specified in this section include the following:
   1. Conduit color banding.
   2. Buried cable warnings.
   3. Cable conductor identification.
   4. Operational instructions and warnings.
   5. Danger signs.
   6. Equipment/system identification signs.

1.03 QUALITY ASSURANCE

A. UL Compliance: Comply with applicable portions of UL safety standards pertaining to electrical marking and labeling identification systems.

B. NEC Compliance: Comply with NEC as applicable to installation of identifying labels and markers for wiring and equipment.

PART 2 - PRODUCTS

2.01 ELECTRICAL IDENTIFICATION MATERIALS

A. General: Except as otherwise indicated, provide manufacturer's standard products of categories and types required for each application. Where more than single type is specified for an application, selection is Installer's option, but provide single selection for each application.

B. Color Coded Conduit System
   1. General: Provide manufacturer's standard colored conduit for EMT installations as noted below. For rigid aluminum, rigid steel, and IMC conduit, use colored electrical tape to band conduits within 6" of termination at each switchboard, panelboard, distribution board, pull box and junction box. Where conduit is exposed and painted to match adjacent surfaces, band with colored electrical tape.
   2. Colors:
      a. Normal Power: gray/silver (uncolored)
      b. Fire alarm: red*
      c. Division 27 systems: purple**
      d. Division 28 systems excluding fire alarm: purple**

         * Factory colored conduit required for EMT conduit
         ** Field applied electrical tape banding at conduit terminations required. Factory colored conduit optional for EMT conduit.
   3. For exposed conduits in finished spaces, refer to architectural for paint to match room finish.
   4. For branch circuits, mark panel name and circuit numbers on all junction/pull boxes.

C. Underground Type Plastic Line Marker
   1. General: Manufacturer's standard permanent, bright colored, continuous printed plastic tape; not less than 6" wide x 4 mils thick intended for underground service. Provide tape with printing which most accurately indicates type of service of buried cable/conduit.

D. Cable/Conductor Identification Bands
   1. General: Provide manufacturer's standard vinyl cloth self-adhesive cable/conductor markers of wrap around type; either pre numbered plastic-coated type or write on type with clear plastic self-adhesive cover flap; numbered to show circuit identification.

E. Self-Adhesive Tape for Receptacle Circuit Identification
   1. General: Provide clear self-adhesive or pressure sensitive, preprinted, flexible vinyl tape for panel name and circuit number.

F. Engraved Plastic Laminate Signs
   1. General: Provide engraving stock melamine plastic laminate, in sizes and thickness indicated, engraved with engraver's standard letter style of sizes and wording indicated, black and white core (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
      a. Thickness: 1/16", for units up to 20 sq. in. or 8" lengths; 1/8" for larger units.
      b. Fasteners: Self tapping stainless steel screws, except contact type permanent adhesive where screws cannot or should not penetrate substrate.

PART 3 - EXECUTION

3.01 APPLICATION AND INSTALLATION

A. General Installation Requirements
   1. Coordination: Where identification is to be applied to surfaces which require finish, install identification after completion of painting.

B. Conduit Identification
   1. Conduit above accessible ceiling spaces shall be identified per 2.01 B.
   2. Where electrical conduit is exposed in spaces with exposed mechanical piping which is identified by a color coded method, apply color coded identification on electrical conduit in a manner similar to piping identification.
   3. Identify junction and pullboxes of systems with stencil lettering for panel and circuit numbers or system type.

C. Underground Cable/Conduit Identification
   1. General: During back filling/top/soiling of each exterior underground electrical, signal or communication cable or conduit, install continuous underground type plastic line marker, located directly over buried line at 6" to 8" below finished grade. Where multiple small lines are buried in a common trench and do not exceed an overall width of 16", install a single line marker.

D. Cable/Conductor Identification
   1. General: Apply cable/conductor identification on each cable and conductor in each box/enclosure/cabinet where wires of more than one circuit or communication/signal system are present, except where another form of identification (such as color-coded conductors) is provided. Match identification with marking system used in panelboards, shop drawings, contract documents and similar previously established identification for project electrical work.

E. Operational Identification and Warnings
   1. General: Wherever reasonably required to ensure safe and efficient operation and maintenance of electrical systems, and electrically connected mechanical systems and general systems and equipment, including prevention of misuse of electrical facilities by unauthorized personnel, install self-adhesive plastic signs or similar equivalent identification, instruction or warnings on switches, outlets and other controls, devices and covers of electrical enclosures. Where detailed instructions or explanations are needed, provide plasticized tags with clearly written messages adequate for intended purposes.

F. Equipment/System Identification
   1. General: Install engraved plastic laminate sign on each major unit of electrical equipment in building; including central or master unit of each electrical system, unless unit is specified with its own self-explanatory identification. Except as otherwise indicated, provide single line of text, 1/2" high lettering on 1 1/2" high sign (2" high where 2 lines are required), white lettering in black field. Provide text matching terminology and numbering of the contract documents and shop drawings. Provide signs for each unit of the following categories of electrical work.
      a. Panelboards, electrical cabinets and enclosures.
      b. Access panel/doors to electrical facilities.
      c. Major electrical switchgear.
      d. Motor control centers, disconnects & starters.

e. Power transfer equipment.
f. Transformers.
g. Inverters.
h. Generators.

2. Install signs at locations indicated or, where not otherwise indicated, at location for best convenience of viewing without interference with operation and maintenance of equipment. Secure to substrate with fasteners, except use adhesive where fasteners should not or cannot penetrate the substrate.
3. Provide labeling of Enclosed Circuit Breakers, Switchboards, Panelboards and Disconnects per NEC Articles 110, 700 and 702 for multiple services and essential electrical system.
4. All receptacles and light fixtures shall be labeled with panel and circuit number. Final location of label shall be field coordinated. If labeling is to be on outside of cover, Contractor shall use clear dyno-tape with black lettering that matches other tags.
5. All panelboards shall be labeled with panel ID, conduit size, feeder wire size, origin and size of overcurrent protection device serving panelboard and phase schedule. Format shall be as follows:
   "Panel XX, 1.25"C, 4#3, 1#8, Fed from Dist. Bd. XX by 100A/3P
   Phase A: Black, Phase B: Red, Phase C: Blue"
6. All new switchboards and panelboards shall be labeled (5/32" or larger) with the following: "Caution – This equipment has a minimum short circuit design requirement of ___KA. All devices installed must have a rating equal or higher than the design requirement."
7. All safety switches shall have a permanent label attached to inside of cover describing the fuse size, type, current limiting ability and devices controlled.

END OF SECTION 26 0553

SECTION 26 2816 – ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 RELATED WORK

A. The requirements of Division 00 - Procurement and Contracting Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. In general, disconnect switches and circuit breakers are indicated on the drawings, and it shall be the Electrical Contractor's responsibility to furnish and install all disconnect switches for equipment and motors furnished by them, and for equipment and motors furnished by others.

B. Contractor shall furnish all equipment, materials, tools, labor and supervision necessary to install equipment as specified in this section and as called for on the drawings. All components necessary for a complete installation including, but not limited to fuses, fuse clips, channel strut support, lugs, etc. are to be included by the contractor.

C. Types of switches and circuit breakers in this section include the following:
   1. Fusible and non-fusible disconnect switches.
   2. Motor rated toggle disconnect switches
   3. Plug fuse disconnect switches
   4. Enclosed circuit breakers
   5. Fuses

1.03 QUALITY ASSURANCE

A. NEC Compliance: Comply with NEC as applicable to construction and installation of electrical motor and circuit disconnect switches.

B. UL Compliance and Labeling: Provide motor and circuit disconnect switches which have been UL listed and labeled.

C. NEMA Compliance: Comply with applicable requirements of NEMA Stds. Pub. No. KS 1.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's data including specifications, installation instructions and general recommendations, for each type of motor and circuit disconnect switch required.

PART 2 - PRODUCTS

2.01 FUSIBLE AND NON-FUSIBLE DISCONNECT SWITCHES

A. Manufacturers:
   1. Schneider Electric/Square D (Basis of Design)
   2. ABB/GE Industrial Solutions
   3. Eaton
   4. Siemens

B. Fusible Switch: NEMA KS 1, Heavy Duty, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Non-fusible Switch: NEMA KS 1, Heavy Duty, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

D. Accessories:
   1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
   2. Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper and aluminum neutral conductors. Provide for all 4-wire feeds.
   3. Auxiliary Contact Kit: Auxiliary set of contacts arranged to open before switch blades open. Provide for all switches on the load side of a VFD and elevator disconnects.

E. Disconnects installed indoors shall have NEMA 1 enclosures, disconnects installed outdoors or in wet locations shall have raintight NEMA 3R enclosures. Disconnects specifically identified by '4X' shall have a stainless steel NEMA 4X enclosure.

F. Disconnects used for service entrance equipment shall be labeled for such use.

G. Disconnects that are part of a photovoltaic system shall be listed for such use.

H. Disconnect switches for elevators served from the emergency power system shall be furnished with a 50kA surge protective device.

I. All disconnects shall be of the fuse type, except where drawings indicate non fuse type (NF).

2.02 MOTOR RATED TOGGLE DISCONNECT SWITCHES

A. Manufacturers:
   1. Schneider Electric/Square D (Basis of Design)
   2. ABB/GE Industrial Solutions
   3. Eaton
   4. Siemens
   5. Hubbell
   6. Pass & Seymour

B. Description: Motor rated non-fused switch for ON-OFF control of single or three-phase motors and equipment where overload protection is not required. Square D class 2510, type K or equal.
   1. Compact construction.
   2. NEMA 1 enclosure or as noted with handle guard provision able to be locked in the open position.
   3. Two or three pole configurations, 600V rated.

2.03 PLUG FUSE DISCONNECT SWITCHES

A. Manufacturers:
   1. Bussmann

B. Description: Box cover switch and fuse holder for Fustat plug fuses.
   1. Bussmann type SSY, handy box mounted.
   2. 120V, single pole, 15A rated
   3. Plug fused sized for individual motor.

2.04 ENCLOSED CIRCUIT BREAKERS

A. General: Except as otherwise indicated, provide circuit breakers and ancillary components, of types, sizes, ratings and electrical characteristics indicated, which comply with manufacturer's standard design, materials, components, and construction in accordance with published product information, and as required for a complete installation.

B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with fully connected rating to meet available fault currents.
   1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A to 600A.
   2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
   3. Electronic trip circuit breakers for breakers 800A frame and larger and for select emergency system circuit breakers. Circuit breakers to be provided with rms sensing and following field-adjustable settings:
      a. Instantaneous trip pickup levels.
      b. Instantaneous trip delay
      c. Long- and short-time pickup levels.
      d. Long- and short-time time adjustments.
      e. Ground-fault pickup level, time delay, and I2t response where indicated. All circuit breakers on 4-wire systems indicated to have ground-fault sensing shall include neutral current transformers.
      f. Provide an Arc-Flash Reduction Maintenance switch for all circuit breakers 1200A and larger.
   4. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
   5. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).

6. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
    a. Standard frame sizes, trip ratings, and number of poles.
    b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.
    c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
    d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    e. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.
    f. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
    g. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.

C. Breakers shall have removable lugs. Lugs shall be UL listed for copper/aluminum conductors. Breakers shall be UL listed for installation of mechanical screw type lugs.

D. Enclosed circuit breakers installed indoors shall have NEMA 1 enclosures, enclosed circuit breakers installed outdoors or in wet locations shall have raintight NEMA 3R enclosures.

E. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper and aluminum neutral conductors. Provide for all 4-wire feeds.
3. Permanent provision for locking in the open position,

F. Enclosed circuit breakers used for service entrance equipment shall be labeled for such use.

PART 3 - EXECUTION

3.01 INSTALLATION OF ENCLOSED SWITCHES AND CIRCUIT BREAKERS

A. Install motor and circuit disconnect switches where indicated, complying with manufacturer's written instructions, applicable requirements of NEC, NEMA, and NECA's "Standard of Installation", and in accordance with recognized industry practices to ensure that products fulfill requirements.

B. Install disconnect switches as follows:
1. Heavy Duty Switches. All applications including motors, feeders, service entrance, and equipment.
2. Motor Rated Toggle Disconnect Switch. May be used for motors and equipment 30 Amps or less where fuse protection is not required. Applications include heat pumps, pumps and fans, where not downstream of a VFD,
3. Plug Fuse Disconnect Switch. May be used for 120 Volt motors, 1/2hp or less including furnaces, circulation pumps, and exhaust fans.
4. Enclosed Circuit Breakers: Where specifically indicated.

C. Install disconnect switches used with motor driven appliances, and motors and controllers within sight of controller position unless otherwise indicated.

D. Install fuses in switches protecting equipment rated in accordance with nameplate maximum overcurrent protection noted on the equipment.

E. Where a disconnect switch is installed downstream of a VFD, the disconnect switch shall be provided with make-before-break auxiliary contacts with control wires to the VFD to signal the VFD.

F. Maintain all clearances required the by the National Electrical Code.

G. Where NEMA 3R equipment is specified for use in interior locations, installation shall maintain the weatherproof listing of the equipment.

END OF SECTION 26 2816

SECTION 26 2923 - VARIABLE-FREQUENCY MOTOR CONTROLLERS

PART 1 - GENERAL

1.01 RELATED WORK

A. The requirements of Division 00 - Procurement and Contracting Requirements, Division 01 - General Requirements and Section 26 0010 - Electrical General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. VFD ratings shall be as required to reliably operate the pump throughout its range in ambient air temperatures of 104 degrees F. Minimum VFD ratings shall not be less than that shown on the drawings.

B. Variable speed AC motor controllers and all power wiring. Refer to 26 60 00 for control wiring and system control components.

C. Variable speed AC motor controllers shall be of the "Variable/Adjustable Frequency" or "Inverter" type drives based on solid state electronics. The adjustable frequency AC drive shall convert 3 phase, 60 Hertz input power to an adjustable AC frequency and voltage 3 phase output for controlling the speed of any NEMA MG 1 Design B squirrel cage induction motor. The adjustable frequency drive shall have the following basic design:

1. Converter - Converter shall consist of a modular assembly consisting of a diode rectifier and capacitor assembly which will first convert, then filter and maintain a fixed DC voltage source from the fixed voltage and frequency input.
2. Inverter - Inverter shall consist of a modular assembly consisting of power semiconductors for generation of a sine-coded pulse width modulated (PWM) output waveform.
3. Regulator - Regulator shall consist of a modular assembly. The regulator shall be fully digital and incorporate a microprocessor to control all inverter, converter, and external interface functions.
4. Interface - Interface shall consist of terminal strips for all input and output signals.

D. All control instrument components shall be electronic and of industrial control quality and furnished with variable speed motor controllers complete as outlined in these specifications and drawings.

E. The variable speed motor controller supplier shall provide all necessary factory and/or field labor for complete calibration and adjustment of the adjustable frequency drives and control components, and shall be responsible for setting all control set points, operating sequences, and alarming systems within the specified control systems to produce the overall system performance as specified.

F. All variable speed motor controllers at all project locations shall be by the same manufacturer.

1.03 SUBMITTALS

A. Submittal data shall include but not be limited to drawings and/or catalog cuts giving physical dimensions, wiring diagrams (control and power diagrams), construction materials, capacities, ratings, control sequencing, manufacturers recommended installation instructions, and any other pertinent information.

B. Provide operating and maintenance manuals.

C. Provide recommended spare parts list and prices. Also, the address of the manufacturer's closest parts stocking location shall be provided.

D. Include manufacturer’s standard product warranty (for not less than a one year period) for replacement of materials and equipment.

1.04 START-UP SERVICE

A. The supplier of the variable speed motor controller shall have a factory trained service representative provide start up service and commissioning.

B. Contractor shall coordinate controller parameters with other contractors.

1.05 TRAINING

A. The supplier of the variable speed motor controller shall have a factory trained service representative provide eight (8) hours of on-site training for the Owner's personnel advising of the proper methods of maintenance and operation of the controller. Separate training sessions shall be provided at each station.

B. Additional training time as deemed necessary by the Owner's authorized representative may be obtained from the supplier on a negotiated basis with the Owner.

C. The electrical contractor shall be present for all start-up and training.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. The variable speed AC motor controllers shall meet all requirements of this section. Subject to compliance with requirements, acceptable manufacturers are as follows:
   1. Square D/Schneider

2.02 VARIABLE FREQUENCY DRIVE UNIT

A. Features
   1. Certifications``
      a. Listed to UL508C
   2. Hardware
      a. Utilize diode bridge or SCR bridge on the input rectifier.
      b. Utilize DC bus inductor on all six-pulse VFDs only.
      c. Utilize switching logic power supply operating from the DC bus.
      d. Incorporate phase to phase and phase to ground MOV protection on the AC input line.
      e. Microprocessor based inverter logic shall be isolated from power circuits.
      f. Utilize latest generation IGBT inverter section.
      g. Battery receptacle for Lithium battery power to the Real Time Clock.
      h. Additional DPI port for handheld and remote HIM options.
      i. Dedicated Digital Input for hardware enable.
      j. Conformal coated printed circuit boards.
      k. Optional onboard 24V DC Auxiliary Control Power Supply.
   3. Control Logic
      a. Ability to operate with motor disconnected.
      b. Provide a controlled shut down, when properly protected, with no component failure in the event of an output phase to phase or phase to ground short circuit. Provide annunciation of the fault condition.
      c. Provide multiple programmable stop modes including Ramp, Coast, DC-Brake, Ramp-to-Hold, Fast Braking, and Current Limit Stop.
      d. Provide multiple acceleration and deceleration rates.
      e. Adjustable output frequency up to 650Hz.
   4. Motor Control Modes
      a. Selectable Sensorless Vector, Flux Vector, V/Hz, and Adjustable Voltage. Control modes selectable through programming.
      b. The drive shall be supplied with a Start-up and Auto-tune mode.
      c. The V/Hz mode shall be programmable for fan curve or full custom patterns.
      d. Capable of Open Loop V/Hz.
   5. Current Limit
      a. Programmable current limit from 20 to 160% of rated output current.
      b. Current limit shall be active for all drive states: accelerating, constant speed and decelerating.
      c. The drive shall employ PI regulation with an adjustable gain for smooth transition in and out of current limit.
   6. Acceleration / Deceleration
      a. Accel/Decel settings shall provide separate adjustments to allow either setting to be adjusted from 0 to 3600 seconds.
      b. A second set of remotely selectable accel/decel settings shall be accessible through digital inputs.

7. Speed Profiles
    a. Programming capability shall allow the user to produce speed profiles with linear acceleration/deceleration or "S Curve" profiles that provide changing accel/decel rates.
    b. S Curve profiles shall be adjustable.
8. Adjustments
    a. A digital interface can be used for all set-up, operation and adjustment settings.
    b. All adjustments shall be stored in nonvolatile memory (EEPROM).
    c. No potentiometer adjustments shall be required.
    d. EEPROM memory for factory default values shall be provided.
    e. Software must be available for trending and diagnostics, as well as online and offline programming functionality.
9. Process PID Control
    a. The drive shall incorporate an internal process PI regulator with proportional and integral gain adjustments as well as error inversion and output clamping functions.
    b. The feedback shall be configurable for normal or square root functions. If the feedback indicates that the process is moving away from the set-point, the regulator shall adjust the drive output until the feedback equals the reference.
    c. Process control shall be capable of being enabled or disabled with a hardwire input. Transitioning in and out of process control shall be capable of being tuned for faster response by preloading the integrator.
    d. Protection shall be provided for a loss of feedback or reference signal.
10. Skip Frequencies
    a. Three adjustable set points that lock out continuous operation at frequencies which may produce mechanical resonance shall be provided.
    b. The set points shall have a bandwidth adjustable from Maximum Reverse Speed to Maximum Forward Speed.
11. Fault Reset / Run
    a. The drive shall provide up to nine automatic fault reset and restarts following a fault condition before locking out and requiring manual restart.
    b. The automatic mode shall not be applicable to a ground fault, shorted output faults and other internal microprocessor faults.
    c. The time between restarts shall be adjustable from 0.5 seconds to 30 seconds.
12. Run on Power Up
    a. A user programmable restart function shall be provided to allow restart of the equipment after restoration of power after long duration power outages. Restart time dependent on presence of incoming signal.
13. Fault Memory
    a. The last 32 fault codes shall be stored and time stamped in a fault buffer.
    b. Information about the drive’s condition at the time of the last fault such as operating frequency, output current, dc bus voltage and twenty-seven other status conditions shall be stored.
    c. A power-up marker shall be provided at each power-up time to aid in analyzing fault data.
    d. The last 32 alarm codes shall be stored and time stamped for additional troubleshooting reference.
14. Overload Protection
    a. The drive shall provide internal class 10 adjustable overload protection.
    b. Overload protection shall be speed sensitive and adjustable.
    c. A viewable parameter shall store the overload usage.
15. Auto Economizer
    a. An auto economizer feature shall be available to automatically reduce the output voltage when the drive is operating in an idle mode (drive output current less than programmed motor FLA). The voltage shall be reduced to minimize flux current in a lightly loaded motor thus reducing kW usage.
    b. When the load increases, the drive shall automatically return to normal operation.
16. Terminal Blocks
    a. Separate terminal blocks shall be provided for control and power wiring.
    b. I/O terminal blocks shall be removable with wiring in place.

17. Flying Start
    a. The drive shall be capable of determining the speed and direction of a spinning motor and adjust its output to "pick-up" the motor at the rotating speed. This feature is disabled by default.
18. Inputs and Outputs
    a. The Input / Output option modules shall consist of both analog and digital I/O.
    b. No jumpers or switches shall be required to configure digital inputs and outputs.
    c. All digital input and output functions shall be fully programmable.
    d. The control terminal blocks shall be rated for 115V AC.
    e. Inputs shall be optically isolated from the drive control logic.
    f. The control interface card shall provide input terminals for access to fixed drive functions that include start, stop, external fault, speed, and enable.
    g. The VFD shall be capable of supporting up to 7 analog inputs, 7 analog outputs, 21 digital inputs, 7 relay outputs, 7 transistor outputs, and 3 positive temperature coefficient (PTC) inputs.
    h. The Input / Output option modules shall have the following features:
        1) Analog Inputs:
            a) Quantity two (2) differentially isolated, ±10V (bi-polar), 88k ohm input impedance, 11 bit plus sign.
            b) Analog inputs shall be user programmable for a variety of uses including frequency command and process loop input. Analog inputs shall be user programmable for function scaling (including invert), offset, signal loss detect and square root.
        2) Analog Outputs:
            a) Quantity two (2) ±10V (bi-polar) / 11 bit & sign, 2 kΩ minimum load, 4-20 mA, 11 bit plus sign, 400 Ω maximum load.
            b) The analog output shall be user programmable to be proportional to one of fourteen process parameters including output frequency, output current, encoder feedback, output power.
            c) Programming shall be available to select either absolute or signed values of these parameters.
        3) Digital Inputs:
            a) Quantity of six (6) digital inputs rated 24V DC/115V AC.
            b) All inputs shall be individually programmable for multiple functions including: Start, Run, Stop, Auxiliary Fault, Speed Select, Jog and Process PI functions.
        4) Digital Outputs:
            a) At least one (1) relay output (N.O. or N.C.).
            b) For 240V AC or 24V DC, N.O. contact output ratings shall be 2 amp max., general purpose (inductive)/resistive. N.C. contact output ratings shall be 2 amp max., resistive only.
            c) Relays shall be programmable to multiple conditions including: Fault, Alarm, At Speed, Drive Ready and PI Excess Error.
            d) Timers shall be available for each output to control the amount of time, after the occurring event, that the output relay actually changes state.
            e) At least one (1) transistor output.
            f) For 24V DC, transistor output rating shall be 1 amp max, Resistive.
19. Reference Signals
    a. The drive shall be capable of using the following input reference signals:
        1) Analog inputs
        2) Preset speeds
        3) Remote potentiometer
        4) Digital MOP
        5) Human Interface Module
        6) Communication modules
20. Loss of Reference
    a. The drive shall be capable of sensing reference loss conditions.

b. In the event of loss of the reference signal, the drive shall be user programmable to the following:
    1) Fault the drive and coast to stop.
    2) Issue a minor fault - allows the drive to continue running while some types of faults are present.
    3) Alarm and maintain last reference.
c. When using a communications network to control the drive, the communications adapter shall have these configurable responses to network disruptions and controller idle (fault or program) conditions:
    1) Fault
    2) Stop
    3) Zero Data
    4) Hold Last State
    5) Send Fault Configuration

21. Metering
    a. At a minimum, the following parameters shall be accessible through the Human Interface Module, if installed:
        1) Output Current in Amps
        2) Output Voltage in Volts
        3) Output Power in kW
        4) Elapsed MWh
        5) DC Bus Voltage
        6) Frequency
        7) Heatsink Temperature
        8) Last Eight (8) faults
        9) Elapsed Run Time
        10) IGBT Temperature
22. Faults
    a. At a minimum, the following faults shall be accessible through the Human Interface Module:
        1) Power Loss
        2) Undervoltage
        3) Overvoltage
        4) Motor Overload
        5) Heat Sink Over-temperature
        6) Maximum Retries
        7) Phase to Phase and Phase to Ground Faults
23. Predictive Diagnostics
    a. At a minimum, the following predictive diagnostic features shall be provided:
        1) Relay Output Life Cycles based on load type and amps.
        2) Hours of Fan Life based on load and ambient temperature.
        3) Motor Bearing life based on expected hours of use.
        4) Motor Lubrication schedule based on hours of use.
        5) Machine Bearing life based on expected hours of use.
24. Real-Time Clock
    a. Shall be capable of providing time stamped events.
    b. Shall have the ability to be set locally or via a remote controller.
    c. Shall provide the ability to be programmable for month, day, year and local time zones in HH:MM:SS.

2.03 VFD PACKAGED SYSTEM

A. Features
1. Ratings
    a. Voltage
        1) Capable of accepting nominal power of 480V AC at 60Hz.
        2) The supply input voltage tolerance shall be ± 10% of nominal line voltage.

b. Displacement Power Factor
    1) Six-pulse VFD shall be capable of maintaining a minimum true power factor (Displacement P.F. X Distortion P.F.) of 0.95 or better at rated load and nominal line voltage, over the entire speed range.
c. Efficiency
    1) A minimum of 96.5% (+/- 1%) at 100% speed and 100% motor load at nominal line voltage.
    2) Control power supplies, control circuits, and cooling fans shall be included in all loss calculations.
d. Operating ambient temperature range without derating: 0 °C to 40 °C (32 °F to 122 °F). Refer to schedule for units mounted in exterior locations.
e. Operating relative humidity range shall be 5% to 95% non-condensing.
f. Operating elevation shall be up to 1000 Meters (3,300 ft) without derating.

2. Sizing
    a. Systems rated at Normal Duty (variable torque) loads shall provide 110% overload capability for up to one minute and 150% for up to 3 seconds.
    b. Systems rated at Heavy Duty (constant torque) loads shall provide 150% overload capability for up to one minute and 180% for up to 3 seconds.
3. Auto Reset/Run
    a. For faults other than those caused by a loss of power or any other non-critical fault, the drive system shall provide a means to automatically clear the fault and resume operation.
4. Ride-Through
    a. The VFD system shall attempt to ride through power dips up to 20% of nominal. The duration of ride-through shall be inversely proportional to load. For outages greater than 20%, the drive shall stop the motor and issue a power loss alarm signal to a process controller, which may be forwarded to an external alarm signaling device.
5. Run on Power Up
    a. The VFD system shall provide circuitry to allow for remote restart of equipment after a power outage. Unless indicated in the contact drawings, faults due to power outages shall be remotely resettable. The VFD system shall indicate a loss of power to a process controller, which may be forwarded to an external alarm signaling device. Upon indication of power restoration the process controller will attempt to clear any faults and issue a run command, if desired.
6. Communications
    a. VFD shall be capable of communicating on multiple networks.
    b. VFD shall be capable of supporting the following network options:
        1) DeviceNet
        2) EtherNet/IP
        3) ControlNet Coax
        4) ControlNet Fiber
        5) Interbus
        6) CANopen
        7) Modbus/TCP
        8) Modbus RTU
        9) Profibus DP
        10) RS-485 DF1
        11) RS-485 HVAC
        12) Remote I/O
7. Enclosure Door Mounted Human Interface Module (HIM)
    a. VFD shall provide a HIM with integral LCD display, operating keys and programming keys.
    b. An enclosure door-mounted HIM, rated NEMA/UL Type 1.
    c. The HIM shall have the following features:
        1) Backlit LCD display with graphics capability.
        2) Shall indicate drive operating conditions, adjustments and fault indications.

3) Shall be configured to display in the following three distinct zones:
   a) The top zone shall display the status of direction, drive condition, fault /alarm conditions and Auto / Manual mode.
   b) The middle zone shall display drive output frequency.
   c) The bottom zone shall be configurable as a display for either programming menus / information or as a two-line user display for two additional values utilizing scaled units.
4) Shall provide digital speed control.
5) The keypad shall include programming keys, drive operating keys (Start, Stop, Direction, Jog and Speed Control), and numeric keys for direct entry.

B. Enclosure
1. Shall be rated NEMA/UL Type 1, 12, or 3R as indicated on the VFD schedule.
2. Shall be painted per the manufacturer's standard.
3. Shall provide entry and exit locations for power cables.
4. Shall contain a label for UL508.
5. The drive system nameplate shall be marked with system Short Circuit Current Rating (SCCR).
6. Where noted, enclosures shall include a thermostatically controlled electric heater to inhibit condensation and maintain operating temperatures. Power for heater shall come from the control power transformer.

C. Drive Enclosure Input Disconnect
1. Provide an enclosure door interlocked motor circuit protector.
2. Operator Handles
   a. Provide externally operated main disconnect handle.
   b. Handles shall be lockable with up to three lockout / tagout padlock positions.

D. Branch Circuit Protection
1. Motor circuit protector (MCP).

E. Control Power Transformer
1. Provide a control power transformer mounted and wired inside of the drive system enclosure.
2. The transformer shall be rated for the VFD power requirements plus accessories.

F. Harmonic Mitigation Techniques
1. Drive Input Line Reactor
   a. Provide a drive input line reactor mounted within the drive system enclosure.
   b. The line reactor shall meet the following specifications:
      1) The construction shall be iron core with an impedance of 3 or 5 percent as scheduled.
      2) The winding shall be copper or aluminum wound.
      3) The insulation shall be Class H with a 115 °C rise over 50 °C ambient.
      4) The unit shall be rated for system voltage, ampacity, and frequency.

G. Output Waveform Correction
1. Provide a drive output reactor mounted within the drive system enclosure where indicated on the VFD schedule for long lead length applications.
2. The output reactor shall meet the following specifications:
   a. The construction shall be iron core with an impedance of 3 percent.
   b. The winding shall be copper or aluminum wound.
   c. The insulation shall be Class H with a 115 °C rise over 50 °C ambient.
   d. The unit shall be rated for system voltage, ampacity, and frequency

H. Auxiliary Relays
1. Provide relays for Drive Alarm, Drive Fault, Drive Run, and System Status Faults (as required).
2. The relays shall be Allen-Bradley 700-HC (2 N.O. & 2 N.C.). The relay contacts shall be rated for 115V AC/30V DC, 5.0 amp resistive, 2.5 amp inductive.

I. Control Interface
1. The control terminals shall be rated for 115V AC.

2. The control interface shall provide input terminals for access to VFD functions that include start, stop, external fault, speed select, and enable, as required.

J. Hand/Off/Auto Selector Switch
1. Provide a "Hand/Off/Auto" selector switch, mounted on the enclosure door.
2. The "Hand/Off/Auto" selector switch shall start the drive in the “Hand” mode and stop the drive in the “Off” mode.
3. In the “Auto” mode the drive shall be started and stopped from a remote “RUN” contact.
4. In all modes, Auxiliary and Enable inputs to the drive control interface board must be present before the drive will start.
5. When a HIM is present, the stop function shall always be available to stop the drive regardless of the selected mode (“Hand” or “Auto”). The HIM will be non-functional (except for the display and programming) when the switch is in “Off” mode. The HIM shall stop the drive if the switch is in the “Auto” mode with the remote start contact initiated.
6. The drive speed reference shall be controlled from the HIM, unless a separate door-mounted potentiometer is provided, when in “Hand” mode (factory default setting).
7. The drive speed reference shall be controlled by a remote 4…20 mA input when in “Auto” mode.

K. Drive Disable Mushroom Push Button
1. Provide a maintained mushroom style push button, mounted on the enclosure door that when pushed, will open the drive enable input.

L. Pilot Lights
1. Provide LED pilot lights, mounted on the enclosure door, for indication of the following status:
   a. Run
   b. Drive Fault
   c. Control Power On
   d. Motor Fault

M. Motor Run Time Meter
1. Provide a digital, non-resettable, door-mounted elapsed time meter.
2. The meter shall be electrically interlocked with the Drive Run relay to indicate actual motor operating hours.

PART 3 - EXECUTION

3.01 INSTALLATION OF CONTROLLERS

A. Install controllers as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC, NEMA standards, and NECA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

B. Contractor shall coordinate drive layout within the control room. Layout indicated on the drawings is based on one manufacturer. Enclosure and spacing criteria may vary by manufacturer.

C. Coordinate with other work including motor and HVAC controls work, as necessary to interface installation of controllers with other work.

D. The controllers shall be mounted and installed on the mechanical equipment room walls whenever possible. When the controllers cannot be wall mounted, the controllers shall be installed on four inch housekeeping pads. Installation of units directly on the floor will not be acceptable.

E. Each controller shall have a dedicated raceway for the input power feeder, output power feeder and controls. Raceway shall be separated by at least 6” from other controller feeders and controls raceway.

3.02 OPERATION

A. Manual/Auto System Operation
1. Selector switch in MANUAL mode - operation shall be from the door mounted potentiometer and the system shall be operable from 0-100% on the potentiometer operating between the minimum and maximum speeds as set in the inverter.

2. Selector switch in AUTO mode - operation shall be from the input follower signal, with output speed being proportional to the input signal. A remote set of Form C start/stop contacts (furnished by the Systems Integrator) shall control the inverter.

B. Start/Stop
1. Switch used to initiate command to start or stop the drive; operates in manual mode.

C. Inverter/Line
1. Selector switch in the LINE mode shall disconnect the adjustable frequency system and bypass for direct across-the-line motor operation to the 3 phase, 60 Hertz supply.
2. Selector switch in the INVERTER mode shall disconnect the 3 phase, 60 Hertz supply and the system shall operate in the mode as established by the inverter Manual/Auto switch.

D. Automatic Restart
1. In the event of a loss of supply line power, or an overvoltage/undervoltage condition of more than 5%, or in the event of a shutdown signal from the temperature control or fire detection system, the system shall shut down. When line power is restored, the system shall automatically restart after a time delay, providing the start contact is a maintained contact in the closed position and all external interlocks are satisfied.
2. For motors started frequently, the system shall provide start at almost zero RPM and gradually increase to required speed.

3.03 ADJUST AND CLEAN

A. Inspect operating mechanisms for malfunctioning and, where necessary, adjust units for free mechanical movement.

B. Touch up scratched or marred surfaces to match original finish.

3.04 START-UP SERVICE

A. At a minimum, the start-up service by a factory certified technician shall include:
1. Perform pre-Power Check
2. Megger Motor Resistances: Phase-to-Phase and Phase-to-Ground
3. Verify system grounding per manufacturer’s specifications
4. Verify power and signal grounds
5. Check connections
6. Check environment

B. Drive Power-up and Commissioning:
1. Measure Incoming Power Phase-to-Phase and Phase-to-Ground
2. Measure DC Bus Voltage
3. Measure AC Current Unloaded and Loaded
4. Measure Output Voltage Phase-to-Phase and Phase-to-Ground
5. Verify input reference signal

C. All measurements shall be recorded.

D. Drive shall be tuned for system operation.

E. Drive parameter listing shall be provided.

F. A VFD factory certified technician shall be on site during initial start-up and programming of the station control system to assist in trouble shooting and technical issues.

END OF SECTION 26 2923

SECTION 26 60 00
CONTROLS SYSTEM

Part 1 GENERAL

1.1 - DESCRIPTION OF WORK

A. This Section includes all work for furnishing, installing, and testing the control system for the flow equalization basin pumps station, connecting to the plants existing supervisory control system and modifying the existing system to be able to control the flow equalization pump station.

1.2 – REQUIREMENTS

A. Provide integrated control system for the proposed flow equalization basin and pump station to control submersible, meter flow rates, coordinate with equipment provided controls, coordinate with back-up generated power and activate alarms.

B. Material should be supplied by one supplier who assumes overall responsibility for coordination, engineering, preparation of shop drawings or submittals showing detailed wiring diagrams (including point-to-point connections between all components of control equipment and other equipment) and for performance of all equipment specified/required for this project.

C. All hardware and software pertaining to and used for this project, as described herein after shall be non-proprietary, heavy duty, industrial grade and commercially available. Proprietary components, subassemblies, and devices will be unacceptable.

D. Installation requirements:

1. Provide materials and labor for any temporary and permanent connections required to keep existing control / alarm systems in service.

2. Seek Owner's permission prior to disconnecting or relocating any equipment.

E. Control System Integrator qualifications/requirements:

1. Must have been supplying similar types/quantities of control systems in industry for a minimum of 5 years; submit list of installations for which integrator has provided similar type/quantity of equipment, including name and telephone number of person responsible for operation and maintenance of each installation.

2. Must stock parts for equipment supplied.

a. Field engineers/technicians shall be on staff and be available within 8 hours of verbal notice on all days of week.

F. Related Work Specified Elsewhere:
1. Section 40 71 13 – Magnetic Flow Meters
2. Section 43 25 00 – Submersible Centrifugal Pumps
3. Section 46 00 00 – General Equipment Requirements
4. Section 46 21 39 – Spiral Screen

D. SUBSTITUTIONS AND PREQUALIFICATION OF ALTERNATE EQUIPMENT

G. The contractor may submit other manufacturer's equipment for consideration as an alternative to the equipment specified. To qualify alternate equipment, the contractor shall provide the following information to the Engineer at least 4 days prior to the bid

date:

1. Drawings, specifications, and product literature with adequate detail to determine that what is proposed will meet the requirements of the plans and specifications. This design pre-submittal shall be complete and shall include as a minimum, the following:

    a. Detailed Layout Drawings.

    b. Detailed component specifications and catalog cut sheets.

    c. Process P&ID Drawing.

    d. Detailed list of variations required from original design, referencing appropriate sections of the specifications and locations on the drawings.

    e. History of the process offered, including pilot data and experience.

    f. Installation list including actual scale-up data from pilot testing to full scale plant operation, also including plant contact names and telephone numbers.

    g. A detailed System Performance Guarantee.

2. Evidence of manufacturing capability including a description of facilities, the number and professional qualifications of personnel, and quality control practices. The alternate equipment supplier shall identify major outside fabricators for the purpose of determining experience.

3. Evidence of technical capability to design and check out the complete alternate system, including modifications which will be required in structures, foundations, and equipment provided by others.

4. Evidence of financial responsibility adequate to complete the project and assure viability of equipment warranty.

5. A complete listing of changes which will be required in the contract plans and specifications to accommodate the alternate equipment.

H. Alternate bidders shall guarantee, in writing and signed by a company officer, that the equipment offered will provide comparable or superior features, performance quality, and materials of construction as the equipment specified. Prior approval of the alternate equipment shall **not** constitute final approval of specific equipment, but rather constitute only approval of the respective equipment manufacturers to provide price quotations based on equipment meeting the specifications. Alternative equipment manufacturers shall modify their standard products as necessary to meet all provisions of the specifications without exception.

I. A photocopy of the alternate equipment manufacturer's quotation must be attached to the bid documents, to assure that the alternate equipment bid is in accordance with the equipment which has been prequalified.

J. The cost of any change’s incidental to installation of the alternate equipment such as electrical wiring, relocation of piping, engineering supervision, as-built drawings, etc., shall be borne by the contractor with no additional expense to the Owner.

K. If after installation the alternate equipment does not perform in accordance with the specifications or other deficiencies are noted, the owner will require the

modification or replacement of such equipment to meet the specifications at no additional expense.

L. Form of Acceptance: Addendum prior to bid. Substitutions and alternate equipment not prequalified will not be accepted.

1.3 - SUBMITTALS

A. Approval Drawings: Submit a pdf copy of the following:

1. Approval drawings showing dimensions, construction and installation details, materials used, external power requirements and shipping and operating weights.

2. Manufacturer's literature and catalog cuts of purchased items.

3. In lieu of hard copies one pdf copy may be submitted for approval.

B. Installation, Operation & Maintenance Manuals: Submit One copy in electronic format and three copies in hard copy format, each including the following:

1. Complete manufacturer's installation instructions with detailed installation drawings.

2. Complete manufacturer's operational instructions.

3. Complete manufacturer's maintenance instructions with complete catalog information, electric motor information, parts list, recommended spare parts list and instructions for periodic maintenance, hardware, software, schematic diagrams, user manuals and troubleshooting procedures of the equipment and controls.

4. All printed in black and white, bound in white three-ring binders.

C. This information shall be provided to the Contractor and Engineer at least six (6) weeks prior to the shipment of the equipment.

1.2 - PRODUCT DELIVERY STORAGE AND HANDLING

A. Comply with the pertinent provisions of the delivery schedule.

B. Equipment and materials to be shipped F.O.B. shipping points, with freight prepaid to the jobsite. Fabricated parts when delivered to the site shall be stored off the ground and protected from weather and damage. Control and electrical devices shall be stored indoors. The supplier shall be responsible for ensuring that no hardware associated with the system is subject to any detrimental temperature or humidity conditions during transit to the job site.

C. The supplier shall be responsible for any and all damage to, or losses of, materials, equipment occurring during delivery of the system to the job site. Should equipment be damaged during shipment, the supplier shall repair or replace any damaged equipment or materials immediately. The supplier shall pay all additional shipping costs incurred to assure arrival of the replacement components in the quickest time possible.

D. Ship fabricated assemblies in largest sections permitted by carrier regulations. Match-mark all sections for ease of field installation. The supplier shall check all transportation limitations such as height, width, or load limits to meet requirements in all areas through which materials will pass to the job site. The supplier shall have sole responsibility for the proper shipment of all materials and equipment.

E. Handle so as to prevent damage to equipment during handling and transportation.

F. Equipment supplied under this section shall not be delivered to the site until construction has progressed to the point where installation may properly commence. Owner and Owner's representative shall be advised of the scheduled shipping date at least two weeks in advance.

1.3 - QUALITY ASSURANCE

A. The manufacturer shall provide evidence of satisfactory performance on a minimum of twenty (20) similar projects of equal service conditions with a minimum total number of units installed not less than 100 for experience purposes. Submit past projects list with Owner contact name/phone number data.

1.4 - WARRANTY

A. A warranty shall be provided covering all materials and workmanship for two (2) years from the project acceptance.

B. The Warranty shall include all supervision, labor, materials and equipment, installation, and travel to the site to correct any defects in any component due to faulty materials (including maintenance services of programmable controllers and modules), equipment, installation methods, or workmanship and consequent damage resulting from such defects. Warranty work shall be scheduled on-site during normal working hours at the Owner's convenience.

Part 2 PRODUCTS

2.1 – SUPERVISORY CONTROL SYSTEM

A. Flow equalization lift station pump controls, flow meter and ultrasonic level transducer shall connect to the existing supervisory controls and instruments.

B. The manufacturer shall have shown a high commitment to product, manufacturing and design process quality. It shall be a UL 508A-certified control panel fabrication facility.

2.2 - Design and Manufacture

A. The programmable controller and all of the corresponding components within the family of controller products shall be offered by a company who regularly manufactures and services this type of equipment.

B. All panel products shall be designed, manufactured, and tested in accordance with recognized CE, UL, CSA, FM, TUV and IEC industrial standards.

C. The manufacturer shall have a fully operational ISO quality assurance and quality control program in place.

D. Complete ISO documentation describing the quality assurance and quality plan shall be available.

E. Complete product documentation describing installation and basic field maintenance shall be available.

2.3 – MAJOR PROCESS EQUIPMENT

A. The Contractor shall provide a system that will monitor and/or control as specified the following major process equipment items:

1. Submersible pumps
2. Ultrasonic level transducer
3. Magnetic Flow meter

B. Flow Equalization Basin Lift Station

1. The control panel lift station functions (OMI) shall include:

   a. Receiving and sending alarms to an NCC-1400 alarm dialer.

   b. Audio / visual alarm with silence button on control panel, and exterior mounted amber strobe on the wall of the building.

   c. Local identification of alarm(s).

   d. Field selection of lead – lag pumps and sequence for three pumps.

   e. Automatic alternation of selected sequence.

   f. HOA switches, ETM's, run lights, and seal leak and thermal overload for each pump.

   g. Switch to allow selection of primary or back-up level controls.

   h. HMI – Panel shall have an Allen Bradley 12" PanelView A-B 2711 or Pre-approved Equal

   i. PLC – Lift Station Control Panel shall be an Allen Bradley Compact L3 CPU or Pre-Approved Equal.

      1) Spare IO will be no less than 20%.

C. Flow Equalization Basin Liquid Level

1. Basin shall contain a corded submersible level transducer in a perforated PVC stilling well, attached to the structure wall with SS hardware. Transducer shall provide liquid water level to the supervisory control panel. Supervisory control panel shall provide a high-water alarm when the water level has reached the overflow piping within the tank.

   a. Submersible transducer shall be an APG PT-500 Submersible Transducer or Pre-Approved Equal.

2. If water level within basin has reached the high water level the flow equalization basin lift station will not be able to run.

D. Wet Well Liquid Level

1. Wet well shall contain a corded submersible level transducer in a perforated PVC stilling well, attached to the structure wall with SS hardware. Transducer to control 3 proposed pumps and high and low level alarms. Also provide adjustable float switches for low level and high level alarms plus on and off control of each of the 3 pumps.
   a. Submersible transducer shall be an APG PT-500 Submersible Transducer or Pre-Approved Equal.

2. Alarms shall be wired to the control panel alarm system, which in turn, shall be connected to an NCC-1400 autodialer call-out system.

3. Wet Well Float Switches shall be monitored for redundant alarm and control in case of transducer failure.

4. Backup Floats:
   a. Comprised of four float switches and cord holding bracket.
   b. Installed to automatically run pumps if the level transducers malfunction.
   c. The float system is designed to start a pump on an increase in liquid level as sensed by Float Switch FS2. The pump continues to run until it is no longer needed, as sensed by float Switch FS1. If the liquid level increases to a level as sensed by Float Switch FS3, the lag pump is activated. Float Switch FS4 is for high level indicator alarm circuit to be energized.
   d. The floats will be connected to intrinsic safe barriers in accordance to NEC Class 1 Div 1 group D classification.
   e. Backup floats shall meet the following requirements:
      1) Direct-acting float
      2) Suitable for raw sewage wet wells
      3) Non-mercury float
      4) Cable mounted
      5) Acceptable manufacturers: APG KA-AH Kari Float Switch or Preapproved Equal

E. Flow Equalization Basin Submersible Pumps

1. The control panel shall display and allow field adjustable liquid levels for 2 proposed pumps and high and low level alarms, utilizing the transducer signal.

2. Automatic alternation of lead / lag pumps shall be by a field adjustable time clock, initially to be set for alternation every 24 hours, with the time of alternation to be 10:00 AM. If pumps are operating at changeover time, changeover shall occur by ramping respective pumps up and down, in order to maintain flow rate as uniformly as reasonably possible. Normally, only one pump shall run at one time. However, both pumps could be in operation simultaneously if needed. The automatic alternation shall be done via an Allen Bradley PanelView or Pre-approved equal touch screen.

3. Refer to initial pump sequencing table below. Adjustable set point shall be provided to sequence the pumps and the pump speed shall be based upon the wet well level. Pump VFD speed shall be adjusted to maintain the target level set point. Refer to pump manufacturer provided pump curves for pump speed at each level. The following set points shall be provided:

   a. Low Level Alarm Set Point: EL=762.00
   b. Pump Off: EL=762.25
   c. Lead Pump On: EL=763.00 – 700 gpm @ TDH = 66 FT
   d. Lead Pump Ramp Up: EL=766.00 – 1025 gpm @ TDH = 72 FT
   e. High Level Alarm: EL=771.00

4. Confirmation of pump flow, when pump is called for, shall be made by monitoring the respective pump VFD. VFD shall contain a current sensing relay or current program output for signaling to control panel. Upon a call for pump to start, but absent of start confirmation, the succeeding pump shall be called for in sequence, including the standby pump. If in AUTO mode, all VFD's shall be controlled via EIP communication. Failure to confirm a start shall result in an alarm.
   a. VFD's for the raw sewage pumps shall be Schneider ATV630xx VFD's or Pre-Approved Equal.

5. Elevations shall be field adjustable.

6. Connect seal leakage and over-temperature motor sensors for 3 pumps to control panel alarm system.

7. Each pump (3 proposed) shall have an elapsed time meter (ETM).

8. Each pump shall have an HOA switch in the control panel. Pumps shall run in HAND independent of the PLC and OMI. In the OFF position, pumps shall not run; and in AUTO pumps shall be controlled by the PLC.

9. Pumps shall not be able to operate if the flow equalization basin has reached its high-water level.

F. Flow Equalization Basin

1. The proposed flow equalization basin shall have an ultrasonic-level transducer to monitor the water level within the tank. The level transducer shall be a Vegapuls C23 Radar Level Transducer or Pre-Approved Equal. This transducer shall monitor the water level within the equalization basin and control the flow equalization pumps in the event the basin is at its high water mark.

2. The level transducer shall not allow the flow equalization basin pumps to start if the water level within the basin is at an elevation of 45' above the finished floor of the tank. If the water level is below this high water level then the lift station can operate normally.

G. Flow Meters

1. There is one new flow meter within the plant.
   a. To Flow Equalization Basin – Magnetic Flow Meter – The flow meter shall be an Endress House Promag W 400

2. Refer to the plans for layout and site location.

3. Signal from flow meters shall be transmitted to the Plant supervisory control panel via 4-20 mA & pulse signal.

4. Meters shall have instantaneous flow rate readout and 24-hour totalization in the lift station control panel. Totalization values shall be stored for up to 45 days.

H. PROGRAMMABLE LOGIC CONTROLLER (PLC)

1. PLC General

   a. Solid-state programmable controller designed to provide high reliability in electrical control applications. The internal Awiring@ of the controller is to be fixed, with the logic functions it must perform in a given application to be programmed into its memory. The control system shall be supplied with the Packaged Controller (CPU, inputs, outputs, memory, and power supply), and all power and interface cables necessary to function as a complete and operable controller system. PLC shall be Allen – Bradley (or engineer pre-approved equal) with a 12" PanelView A-B 2711P.

   b. A major consideration of the packaged controller system shall be its all in one (packaged) design, allowing the user to quickly and easily install, service, and replace the controller if necessary. The supplier must have a number of models of the packaged controller that include:

      1) Power: 120-volt AC, 24-volt DC
      2) Inputs: 120-volt AC, 24-volt DC, 4-20 mA and plus/minus 10-volt Analog

3) Outputs: Relay, 12-volt AC solid state, 24-volt DC solid state, 4-20 and 0 B10-volt Analog outputs.
4) The packaged design must be part of a larger family of modular DIN rail based programmable controllers that provide program transport (ability to move a customer's program between the packaged and module platforms in both directions), and also share programming tools and a common instruction set.
5) 12" PanelView A-B
6) CPU shall be from the Compact L3 Family or Preapproved Equal
7) Spare digital and analog IO will not be less than 20% of total IO

c. All hardware of the packaged controller shall operate at an ambient temperature of 0 degrees to 55 degrees C (32 degrees to 131 degrees F), with an ambient temperature rating for storage of minus 40 degrees to plus 85 degrees C (minus 40 degrees to plus 185 degrees F).

d. The packaged controller shall use multiple independent scans designated for processing of input and output information, program logic, and background processing of other processor tasks. Discrete inputs, outputs and internal processor overhead should be scanned in under 210 microseconds. The processing of a typical logic program should not exceed 1.5 milliseconds including throughput.

e. The Packaged Controller shall have at least one dedicated serial port which supports RS-232-C signals. This port must be capable of local and remote (via modem) programming, troubleshooting and data manipulation.

f. The CPU shall be a self-contained unit, and will be capable of displaying Ladder Rung program execution through its communication port. The CPU will also control all I/O scanning and communications servicing.

g. All components of the packaged controller control system shall be housed in a single chassis. (Power supply, I/O circuitry, CPU, Memory and communications shall be resident in one enclosure.)

I. Programming Techniques

1. The programming format shall incorporate a traditional relay ladder diagram. The capability shall exist to change a contact from normally open to normally closed, add instructions, change addresses, etc. without deleting or re-programming the entire rung. It shall be possible to insert relay ladder diagram rungs anywhere in the program, even between existing rungs, insofar as there is sufficient memory to accommodate these additions. A single program command or instruction shall suffice to delete an individual ladder diagram rung from memory. It shall be necessary to issue a two-part command in order to delete all relay ladder rungs from memory.

Part 3 EXECUTION

3.1 - GENERAL REQUIREMENTS

A. Provide for equipment installation check, calibrations, control adjustments, and other services in field by qualified service representative to produce complete working installation in compliance with drawings and specifications, satisfactory to owner and engineer. This field service is to cover both the separate mounted instrumentation involved in the system and the Autosensory/VFD Control System components. Provide a minimum of five 8-hour days of field start-up service at the project site.

B. In addition to the above field services, arrange for owner training in the use and

maintenance of all Autosensory Control System equipment supplied to be performed by the manufacturer.

3.2 INSTALLATION AND START-UP

A. Supplier shall provide a skilled programmer/ instrumentation engineer or technician who shall complete troubleshooting and startup to place the entire system into satisfactory operation. The engineer or technician shall make the necessary inspection of the completed installation, make the necessary final field adjustments, and make program revisions as required for start-up. This work shall be coordinated with the Owner and any other integrator working on the project.

B. The existing wastewater lift station, and existing process controls shall be kept in continuous operation during construction and changeover. Provide all required equipment and temporary wiring to maintain continuous operation during construction and changeover.

C. Coordinate installation and start-up scheduling with Owner.

3.3 ON-SITE & CALLBACK SERVICES

A. In addition to other services specified, provide a competent programmer/ instrumentation engineer or technician to perform the following services:

1. Software revisions - One 8-hour day on-site to make software revisions per Owner direction.

2. Training - One 8-hour day on-site to train Owner's personnel on operation and maintenance of all equipment furnished.

3. Callback services shall be included by manufacturer to assist in operational adjustments, check calibrations, and provide further operator training.

4. Callback time is based upon the start of the warranty period, and callback work is to be performed as part of the warranty.

3.4 SUPPLIES AND SPARE PARTS

A. At final completion, Systems Integrator shall furnish the following expendable items.

1. 1. (1) Submersible Level Transducer
2. 2. (1) Control Panel DC Power Supply.
3. 3. (1) Control Panel Ethernet Switch/Fiber Optic Converter
4. 4. (1) PLC I/O modules of each type utilized in the system.
5. 5. (1) PLC Power Supply.
6. 6. (5) Relays and Bases.
7. 7. (1) Float Switch
8. Twenty percent spare fuses of each type furnished, but not less than six of each type.

END OF SECTION 26 00 00

SECTION 27 0010 - TELECOMMUNICATIONS GENERAL PROVISIONS

PART 1 - GENERAL

1.01 GENERAL

A. Refer to Bidding Information, conditions of the Contract and Division I, General Requirements, which all apply to work under this section.

1.02 DESCRIPTION OF WORK

A. This section applies to all work under the telecommunications contract. This shall include, but not necessarily be limited to, the following:
   1. Pre-Register Project with structured cabling plant manufacturer if applicable.
   2. Furnish and install a complete voice and data-wiring infrastructure.
   3. Furnish, install, and terminate all UTP cable and fiber as applicable and per drawings.
   4. Furnish and install all wall plates, jacks, patch panels, and patch cords as required and as indicated.
   5. Furnish and install any cabinets, racks and ladder rack as required and as indicated.
   6. Furnish any other material required to form a complete system.
   7. Perform permanent link testing (100% of links) and certification of all components.
   8. Furnish test results of all cabling to the owner on disk and paper format, listed by each closet, then by workstation ID.
   9. Provide Owner As-builts in the form of one electronic copy and two hard copies of a labeled map of the building(s) showing the structured cabling plant.
   10. Adhere and comply with all requirements of the Contractor Agreement for the structured cabling plant manufacturer to be used.
   11. Provide Owner training and testing documentation.

B. The work shall include all materials, equipment and labor required for complete and properly functioning telecommunications systems.

C. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.

D. All work shall be performed in a neat, workmanlike manner in keeping with the highest standards of the craft.

1.03 CODES AND STANDARDS

A. All work shall be done in accordance with the applicable portion of the following codes and standards:
   1. National Electrical Code
   2. Local Electrical Code
   3. National Fire Protection Association
   4. National Electrical Manufacturers Association
   5. Standards of Institute of Electrical and Electronic Engineers
   6. Applicable Building Codes
   7. Occupational Safety and Health Act
   8. Iowa Administrative Codes
   9. TIA/EIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
   10. TIA/EIA-526-14 Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
   11. TIA/EIA-568-B.1 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements
   12. TIA/EIA-568-B.2 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components
   13. TIA/EIA-568-B.3 Optical Fiber Cabling Components Standard
   14. TIA/EIA-569 Commercial Building Standard for Telecommunications Pathways and Spaces
   15. TIA/EIA-570 Residential Telecommunications Wiring Standard
   16. TIA/EIA-598 Optical Fiber Cable Color Coding
   17. TIA/EIA-606 The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings

18. TIA/EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications
19. TIA/EIA-758 Customer-Owned Outside Plant Telecommunications Cabling Standard
20. BICSI - TDMM, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM)
21. National Fire Protection Agency (NFPA - 70), National Electrical Code (NEC)

B. All Contractors shall familiarize themselves with all codes and standards applicable to their work. No extra compensation will be allowed for corrections or changes in the work required due to failure to comply with the applicable codes and standards. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Design Professional for final decision.

1.04 REQUIREMENTS & FEES OF REGULATORY AGENCIES

A. Contractor shall comply with the rules and regulations of the local serving utility companies and shall check with each utility company providing service to this project and determine or verify their requirements regarding incoming services.

B. Secure and pay for all permits, licenses, fees and inspections.

1.05 DRAWINGS

A. Drawings for the work are in part diagrammatic, and are intended to convey the scope of the work and to indicate in general the location of equipment.

B. Contractor shall layout his own work and shall be responsible for determining the exact quantities and locations for equipment.

C. Contractor shall take own field measurements for verifying locations and dimensions; scaling of the drawings will not be sufficient for laying out the work.

D. Because of the scale of the drawings, certain basic items for a complete installation are not shown, but where such items are required by code (or referenced standards) where they are required for proper installation and operation of the work, such items shall be furnished and installed.

1.06 ACTIVE SERVICES

A. Contractor shall be responsible for verifying exact locations of all existing services prior to beginning work in that area.

B. When active services are encountered which require relocation, Contractor shall make request to authorities with jurisdiction for determination of procedures.

C. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the authorities having jurisdiction.

1.07 SITE INSPECTION

A. Contractor shall inspect the site prior to submitting bid for work to become familiar with the conditions of the site which will affect the work and shall verify points of connection with utilities and/or existing system wiring.

B. Extra payment will not be allowed for changes in the work required because of Contractor's failure to make this inspection.

1.08 COORDINATION AND COOPERATION

A. It shall be Contractor's responsibility to schedule and coordinate work with the schedule of General Contractor so as to progress the work expeditiously, and to avoid unnecessary delays.

B. Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of his work with the work of the other contractors. Contractor shall consult and cooperate with the other contractors for determining space requirements and for determining that adequate clearance is allowed with respect to his equipment, other equipment and the building. The Design Professional reserves the right to determine space priority of the contractors in the event of interference between piping, conduit, ducts and equipment of the various contractors.

C. Drawings and specifications are intended to be complimentary. Any work shown in either of them, whether in the other or not, shall be executed according to the true intent and meaning thereof, the same as if set forth in all. Conflicts between the drawings and the specifications, or between the requirements set forth for the various contractors, shall be called to the attention of the Design Professional. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, such clarification will be made by Design Professional and his/her decision will be final.

D. Special care shall be taken for protection for all equipment. All equipment and material shall be completely protected from weather elements, painting, plaster, etc., until the project is substantially completed. Damage from rust, paint, scratches, etc., shall be repaired as required to restore equipment to original condition.

E. Protection of all equipment during the painting of the building shall be the responsibility of the Painting Contractor, but this shall not relieve Contractor of the responsibility for checking to assure that adequate protection is being provided.

F. Where the final installation or connection of equipment in the building requires Contractor to work in areas previously finished by Owner, the Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. Contractor shall be responsible for patching and refinishing of such areas which may be damaged in this respect.

G. Where two or more specified items/systems in the specifications and/or the drawings are in conflict, that requiring the highest order of workmanship and the most financially expensive products shall take precedence. Such questions shall be referred to the Design Professional for final decision.

H. Communications systems may be used by the systems integrator. Coordinate specific telecommunications requirements.

1.09 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be the standard product of a reputable manufacturer regularly engaged in the manufacture of the specified item unless authorized in writing by Design Professional. Where more than one unit is required of the same items, they shall be furnished by the same manufacturer except where specified otherwise.

B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items when required shall be furnished as part of the equipment, whether or not specifically called for.

1.10 SUBMITTALS

A. Contractor shall furnish, to the Design Professional, complete sets of submittals. Contractor shall review and sign submittals before submitting.

B. Submittals shall be bound into sets per specification section (not division). The content of the submittal shall cover related items for a complete system as much as practical and items shall be identified with symbols or "plan marks" used on drawings whenever possible. Incomplete, piecemeal or unbound submittals will be rejected.

C. Each submittal shall include a cover sheet providing the Approved Contractors company name, address, phone number and contact person (person to contact if there are questions about the submittal). The cover sheet shall also have adequate white space for the design professional review stamp as well as up-stream contractor stamps. The company providing the submittal shall be the same as that which meets the APPROVED CONTRACTOR requirements paragraph found later in this specification section (submittals without this identifying contractor information on the cover page will be rejected to ensure the Approved Contractor process is being followed).

D. Design Professional will review submittals solely to assist contractors in correctly interpreting the plans and specifications.

E. Contract requirements cannot be changed by submittals. Contract documents remain in force even if equipment is submitted which differs from contract drawings and specifications and that submittal is stamped as reviewed (or any other stamp verbiage).

F. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.

G. After award of contract, the contractor shall provide a completed submittal schedule including dates that the submittals will be to the Design Professional for review.

H. Submit required information on all items in the project for the following systems (see table). Submittals shall be sorted and separately identified per specification section listed below.

SPEC SECTION	EQUIPMENT	DETAIL DWGS	PROD DATA	SAMPLES	INSTALL METHODS	O & M MANUAL	CERTIFICATE OF SYSTEM DEMON-STRATION	OTHER (SEE NOTES)
27 0010	Contractor Certifications					X		Note 1
27 0010	Manufacturer Certification					X		Note 2
27 0010	UTP No-Paint Notification					X		Note 7
27 1100	UTP Cabling/Equipment		X			X	X	Note 6
27 1100	IDC		X			X	X	Note 6
27 1100	Data Racks		X			X	X	Note 6
27 1100	Cable Management		X			X	X	Note 6
27 1100	As-Builts at Closeout							Note 3
27 1200	Tester, UTP		X			X		Note 4
27 1200	Test Report at Closeout					X		Note 5

Notes:

1. Division 27 Contractor shall submit copies of the Contractor Certifications under section 27 00 10 (BICSI or IBEW/NECA Certifications) showing compliance with the specification. See Approved Contractors paragraph for details.
2. Division 27 Contractor shall submit Manufacturer Certification under section 27 00 10. See Approved Contractors paragraph in this section for details, and further requirements listed in Cabling and Equipment specification section.
3. Division 27 Contractor shall submit As-Builts as specified in Cabling and Equipment section.
4. Division 27 Contractor shall submit product information on UTP Tester. See testers specified in Testing and Documentation section.
5. Division 27 Contractor shall submit Test Report as specified in Testing and Documentation section.
6. Grounding and Bonding or Cabling and Equipment section submittals will not be opened or reviewed by the Design Professional until the Division 27 00 10 Contractor Certifications (see Note 1) and Division 27 Manufacturer Certifications (see Note 2) have been received and found to be acceptable by the Design Professional.
7. Division 27 Contractor shall submit the "Do Not Paint The UTP" written notification (addressed to the General Contractor) for review by the Design Professional. This written notification is specified in the Telecommunications Cabling and Equipment section. The submittal process may be used as the vehicle to inform the General Contractor of the "Do Not Paint The UTP" requirement (and the mandatory corrections required if this were to happen, outlined in the Telecommunications Cabling and Equipment section) if the General Contractor acknowledges receipt of the written notification.

1.11 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall be submitted to the Design Professional in duplicate upon completion of the job. Manuals shall be bound in a three ring hard-backed binder. Front cover and spine of each binder shall have the following lettering done:

OPERATION
AND
MAINTENANCE
MANUAL
FOR
TELECOMMUNICATIONS SYSTEMS

(PROJECT NAME)
(LOCATION)
(DATE)

SUBMITTED BY
(NAME, ADDRESS AND PHONE NUMBER OF CONTRACTOR)

B. Provide a master index at the beginning of manual showing items included. Each section shall contain the following information for equipment furnished under this contract:
   1. Equipment and system warranties and guarantees.
   2. Installation instructions.
   3. Operating instructions.
   4. Maintenance instructions.
   5. Spare parts identification and ordering list.
   6. Local service organization, address, contact and phone number.
   7. Submittals with reviewed stamp of Design Professional and Contractor shall be included, if applicable, along with the items listed above.

1.12 TESTS AND DEMONSTRATIONS

A. All systems shall be tested by Contractor and placed in proper working order prior to demonstrating systems to Owner.

1.13 TRAINING AND DEMONSTRATIONS

A. Prior to acceptance of the telecommunications installation, the Contractor shall provide to Owner, or his designated representatives, all comprehensive training on essential features and functions of all systems installed, and shall instruct Owner in the proper operation and maintenance of such systems.
   1. Provide adequate notice to Owner as to when instruction will be conducted so appropriate personnel can be present.
   2. Prepare the instruction format for a minimum of four Owner Representatives.

B. Equipment training:
   1. Manufacturer's representatives shall provide instruction on each major piece of equipment. Contractor shall provide instruction on all other equipment.
   2. Training sessions shall use the printed installation, operation and maintenance instruction materials included in the O&M manuals and emphasize preventative maintenance and safe operating procedures.
   3. Training shall be performed by qualified factory trained technicians.
   4. Contractor shall attend all sessions performed by the manufacturer's representative and shall add to each session any special information relating to the details of installation of the equipment as it might impact the operation and maintenance.
   5. Equipment training shall occur as soon as possible after start up of the equipment and shall include hands-on operation. Training shall be provided for equipment listed in the table below.

C. System training:
   1. Training sessions shall include hands-on demonstrations of system wide start-up, operation in all possible modes, shut-down and emergency procedures.

D. The following are minimum requirements for Owner instruction:

Section	Description	Hrs. on Site	Hrs. off Site	Presented By	Others Present	Remarks
27 11 00	Cabling and Equipment	2		Contractor		

E. Each Contractor shall submit a certificate (in the project closeout submittals), signed by Owner stating the date, time and persons instructed and that the instruction has been completed to Owner's satisfaction. An example of a certificate form is as follows:

CERTIFICATE OF SYSTEM DEMONSTRATION

This document is to certify that the contractor has demonstrated the hereafter listed systems to Owner's representatives in accordance with the Contract documents and that the instruction has been completed to the Owner's satisfaction.

A. Project:

B. System(s):

C. Contractor's representatives giving instruction and demonstration:

Contractor: _____

NAMES	DATE	HOURS

D. Owner's representatives receiving instruction:

Owner: _____

NAMES	DATE	HOURS

Acknowledgement of demonstration:

E. Contractor's Representative: _____
signature

_____
date

Owner's Representative: _____
signature

_____
date

1.14 PERMITS, FEES, ETC.

A. Secure all required permits and pay for all inspections required in connection with the telecommunication systems work. Contractor shall post all bonds and obtain all licenses required by the State, City, County, and Federal Agencies.

1.15 SUBSTITUTIONS

A. To obtain approval to use unspecified equipment, Bidding Contractors (not equipment supplier, manufacturers, etc.) shall submit written requests to Design Professional at least 10 days prior to bid due date. Requests shall clearly describe the equipment for which approval is being requested. Include all data necessary to demonstrate that equipment's capacities, features and performance are equivalent to include a cost comparison between specified equipment and equipment for which approval is being requested. If the equipment is acceptable, Design Professional will approve it in an addenda. The Design Professional will, under no circumstances, be required to prove that an item proposed for substitution is or is not of equal quality to the specified item.

B. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

1.16 APPROVED CONTRACTORS

A. MANUFACTURER CERTIFICATION: Contractor shall be a manufacturer certified installer for the structured cabling plant. A copy of the current annual manufacturer certification shall be provided with 27 0010 submittals. Contractor is responsible for workmanship and installation practices in accordance with the manufacturer requirements and shall be authorized to provide an extended Manufacturer's Product Warranty with his installation. The specific warranty program that is acceptable for each solution is listed with the connectivity solution in specification section 27 1100 TELECOMMUNICATIONS SYSTEMS CABLING AND EQUIPMENT. Contractors shall provide proof upon request that they have maintained the Manufacturers Certification in good standing for at least six months prior to the overall project bid. Temporary or short term certifications (less than the standard 12 month annual certification described above) or case-by-case certifications are not acceptable.

B. CONTRACTOR CERTIFICATION: Contractor shall meet one of the following two paragraphs and provide appropriate documentation in the 27 00 10 submittals:

1. Contractor shall have BICSI Registered Installers and Technicians on staff and assign them to this project. The project shall be staffed at all times by Installers and Technicians who, in the role of lead craft-persons, will be able to provide leadership and technical resources for the remaining craft-persons on the project. A minimum of 30 percent of personnel shall be BICSI registered telecommunications installers. Of that number 15 percent shall be registered at the Technician Level, at least 40 percent shall be registered at the Installer Level 2, and the balance shall be registered at the Installer Level 1. Contractor shall provide BICSI certifications showing employee name, level, and expiration date. BICSI certificate for the highest level attained shall be submitted.
2. Contractor shall have employees on staff and assigned to the project that are currently indentured in or have successfully completed the IBEW/NECA three-year Telecommunications Installer/Technician registered apprenticeship program. Contractor shall maintain a ratio of 1 Technician to 1 indentured Apprentice. Contractor shall provide documentation verifying the indentured status of Apprentices, and the Department of Labor Certificates of Completion for the Installer/Technicians.

C. Contractor pulling the telecommunications cabling (if different from the prime Telecommunications Contractor) shall meet all the same BICSI or IBEW/NECA requirements, and requirements of this specification, as the prime Telecommunications Contractor.

D. Contractor shall be located within 125 miles of the construction site to establish a potential two hour response time for ongoing customer needs after construction completion.

1.17 ACCEPTABLE MANUFACTURERS

A. In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the drawing schedules, are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to Design Professional at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.

B. Manufacturers, who do not submit prior to bidding, run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of Contractor and/or the manufacturer.

C. If Contractor chooses to use a manufacturer listed as an equal, it shall be his responsibility to assure that the manufacturer has complied with the requirements in 'A' above. Contractor shall assume all responsibility for physical dimensions, operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.

D. Where a model or catalog number is provided, it may not be inclusive of all product requirements. Refer to additional requirements provided on the plans or in the specifications as required. Similarly, there may be additional requirements included in the model or catalog number that are not specifically stated. These requirements shall also be met.

1.18 QUALITY ASSURANCE

A. Contractor shall be a company specializing in telecommunication cable and/or accessories with a minimum of five years documented experience in installation of cable and/or accessories similar to those specified below.

1.19 WARRANTY AND SERVICES

A. The entire telecommunications system including all sub-systems shall be guaranteed against defect in materials and installation for a minimum of one year. Any malfunctions which occur within the guarantee period shall be promptly corrected without cost to Owner. This guarantee shall not limit or void any manufacturer's express or implied warranties.

B. A Manufacturer Product Warranty shall be provided which warrants functionality of all components used in the system for 20 years from the date of registration. The Manufacturers Product Warranty shall warrant the installed horizontal and/or backbone copper, and both the horizontal and the backbone optical fiber portions of the cabling system.

C. Continuing Maintenance: The contractor shall furnish an hourly rate with the proposal submittal, which shall be valid for a period of one year from the date of acceptance. This rate will be used when cabling support is required to affect moves, adds, and changes to the system (MACs). MACs performed by an approved Contractor shall be added to the warranty.

D. Final Acceptance & System Certification: Completion of the installation, in-progress and final inspections, receipt of the test and as-built documentation, and successful performance of the cabling system for a two week period will constitute acceptance of the system. Upon successful completion of the installation and subsequent inspection, the end user shall be provided with a numbered certificate registering the installation.

1.20 CHANGES IN THE WORK

A. A Contract Change Order is a written order to Contractor signed by Owner and Contractor, issued after the execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Contract Change Order.

B. Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, with the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Contract Change Order and shall be performed under the applicable conditions of the Contract Documents.

C. The cost or credit to Owner resulting from a change in the Work shall be determined by mutual acceptance of a lump sum properly itemized and supported by sufficient substantial data to permit evaluation. Change Orders shall be submitted with each item listed individually with a material cost and labor unit extension. Overhead and profit, as mutually agreed upon between Owner and Contractor shall be added to material and labor cost figures.

D. It shall be the responsibility of Contractor before proceeding with any change to satisfy himself that the change has been properly authorized on behalf of Owner.

1.21 GROUNDING AND BONDING OF SYSTEMS

A. All low voltage systems shall be grounded and bonded by the electrical contractor. For those systems which may require a specialized sub-contractor, the sub-contractor providing and installing systems shall also be responsible for grounding and bonding per this specification.

1.22 COMPLETION

A. Systems, at time of completion, shall be complete, efficiently operating, non-hazardous and ready for normal use by Owner.

B. When all the work is complete Contractor shall thoroughly clean all material and equipment installed as a part of this contract and leave all equipment and material in new condition.

C. Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

END OF SECTION 27 0010

SECTION 27 1100 - TELECOMMUNICATIONS CABLING AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of Division 00 - Procurement and Contracting Requirements, Division 01 - General Requirements and Section 27 0010 – Telecommunications General Provisions are applicable to work required of this section.

1.02 DESCRIPTION OF WORK

A. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this structured cabling system in compliance with the specifications and drawings. Contractor will provide and install all of the required material to form a complete system whether specifically addressed in the technical specifications or not.

1.03 SUBMITTALS

A. Manufacturer and Contractor Certifications are required submittals in the division 27 General Provisions specifications section. The Manufacturer Certification is based on the material information listed below in the Acceptable Manufacturers paragraph.

B. Submittal data for cabling and components shall consist of catalog cuts showing technical data necessary to evaluate the materials.

1.04 WORK BY OTHERS

A. In general, the following is provided or is of note:
   1. Electrical Contractor will provide field device back boxes and conduit paths for use by the Telecom or other division 27 Contractor.
   2. The project painter may not be aware that ANY paint overspray (or direct application) of paint of any type (latex, oil based and ALL other paint types) to the UTP (unshielded twisted pair, generally called data cabling) voids the manufacturer's warranty and violates this specification. Paint may not be chemically or physically removed in any way once applied to the data cabling. Any cabling with paint overspray shall be fully replaced (no splicing therefore the entire run).

1.05 FIRESTOPPING

A. Contractor shall be responsible for fire stopping all conduit sleeves (internally only) and cable tray where required to maintain integrity of fire and/or smoke walls. The Contractor shall review architectural drawings to determine which walls have a fire and/or smoke rating. Any rating other than “non-rated” shall constitute a wall that requires fire stopping in all penetrations/openings.

PART 2 - PRODUCTS

2.01 COPPER UTP CABLE AND CONNECTIVITY PRODUCTS

A. Cabling and connectivity products (devices, cover plates, patch panels, insulation displacement connectors, etc.) must be part of a matched solution, provided by manufacturers that have been tested together and provide a fully certified end to end system.

B. Acceptable Manufacturers:
   1. Belden Cat6 UTP connectivity (angled, modular patch panels) w/ Belden 3600 Series Cat6 cable with 25 year Belden IBDN Component Warranty and Application Assurance Program provided by a Belden Certified System Vendor (CSV).
   2. CommScope Uniprise Cat6 UTP connectivity (angled, modular patch panels) w/ CommScope Uniprise UltraMedia 7504 series Cat6 cable, with Uniprise 20 year product and performance warranty.
   3. Leviton Cat6 Extreme UTP connectivity (angled, modular patch panels) w/ Berk-Tek LANmark 1000 Cat6 cable with BLT limited lifetime warranty provided by Leviton Preferred Network Installers (PNI).
   4. Ortronics TracJack Cat6 UTP connectivity (angled, modular patch panels) w/ Superior Essex Data Gain Cat6 cable, with the 25 year "nCompass" system warranty provided by an Ortronics CIP (Certified Installer Plus.

C. Cable Jacket Rating:
   1. Non-Plenum

D. Additional Cabling and Connectivity Requirements:
   1. Furnish and install cable between telecommunications room and field device locations as noted on the drawings.
   2. Each field jack shall have a dedicated cable.
   3. Provide cable terminations at telecommunications room.
   4. Provide terminations at all field locations with an 8 pin, 8 conductor (RJ45 type) modular jack and flush wall plate per drawings.
   5. Terminate using T568B wiring schematic unless noted otherwise.
   6. Provide **stainless steel** wall faceplates from the same connectivity manufacturer per location requirements for all field devices. Faceplate shall match electrical receptacle faceplates (if stainless steel, then match with stainless steel, if thermoplastic, then match with same color thermoplastic). Verify color/material before submittal time with Design Professional and include faceplate color/material choice in submittals.
   7. Removable snap on colored icons shall be used to distinguish jacks meant for voice service and data service. For thermoplastic faceplate projects, all jacks shall be the same color as the thermoplastic faceplate unless specifically instructed otherwise (ask Design Professional about jack color for stainless steel faceplate projects – all jacks shall be the same color [only one color] unless specifically instructed otherwise by the Design Professional). Provide at least 50 extra snap-on voice icons and at least 50 extra snap-on data icons to Owner. Contractor shall ask the Owner what two colors they want for voice and data icons respectively.
   8. Configure faceplates as required for individual field locations per drawings.
   9. Blanks shall be installed in all empty jack locations.
   10. Provide terminations onto insulation displacement connectors for high pair count copper cables.
   11. All patch panels shall be high density 24 port in 1RU (One EIA rack unit (1RU) = 1.75”).
   12. If multiple floors are being fed from one telecom room, the Contractor shall provide patch panels for each floor (do not continue from one floor to another on the same patch panel). Each floors patch panels shall be separated in the rack such that each floor may be expanded by 20% by putting the new patch panels in the original line up).

2.02 SINGLEMODE FIBER AND CONNECTIVITY PRODUCTS

A. Single-mode fiber shall be fusion spliced to pre-connectorized pigtails containing SC connectors. Do not use cable ties to bundle pigtails within enclosures. Use manufacturer furnished nylon cable wrap to bundle pigtails.

B. Cable and fiber protection, installation, and termination shall be according to the connector manufacturer’s recommended practices and shall use the manufacturers’ kits, processes, cleaners, solvents, fasteners, and other mechanisms necessary for a complete termination unless otherwise indicated herein.

C. Unless otherwise indicated, all cable routing, management, preparation, protection, installation, and storage shall be according to the hardware manufacturer’s recommended practices and shall use the manufacturers’ kits, processes, cable and fiber management hardware, fasteners, and other mechanisms necessary for a complete installation.

D. Single-mode fibers shall be terminated with a connector that is blue in color and inserted into the adapter that is blue in color.

E. Acceptable Manufacturers:
   1. The acceptable fiber solution shall be Corning Cable Systems hardware with Corning Brand Optical Fiber Cable.

F. Additional Fiber and Connectivity Requirements:
   1. Install the Closet Connector Housing (CCH), acceptable manufacturer:
      a. Corning Cable Systems, part number CCH-03U.
      b. Corning Cable Systems, part number CCH-01U.

2. Fiber backbone cabling which connects one building to another building, shall be single mode optical fiber cable which shall be fusion spliced to pre-connectorized pigtails containing LC connectors. The splice shall be mounted using the manufacturer's splice trays within the Corning Cable Systems.
   a. Corning Cable Systems, part number CCH-CS12-AP-P00RE cassettes.
3. All routing of fibers, buffer tubes, and jumpers shall utilize the manufacturer's built-in routing paths.

2.03 MOUNTING PRODUCTS

A. Provide fire retardant 3/4" AC plywood (A side visible after installation) to be painted. Each sheet of plywood shall have one fire rating stamp masked off such that after painting this stamp is visible to the Authority Having Jurisdiction (AHJ). The Division 27 Contractor shall review the architectural drawings and be prepared to mount equipment to masonry, gypsum, or other wall types if the plywood was omitted from the architectural design.

PART 3 - EXECUTION

3.01 UTP NO-PAINT WRITTEN NOTIFICATION REQUIREMENT

A. Many painters do not know that paint overspray of any quantity on voice/data UTP cabling (called UTP from here on) voids the manufacturer's extended warranty required by the specification. The Telecom Contractor shall notify the General Contractor in writing that the UTP cannot be painted (not even the slightest bit of overspray) and inform him or her that mechanical or chemical removal of paint is not allowed but rather full replacement of any cable that has received any amount of paint or paint overspray shall be fully replaced (no splicing allowed). This notification shall occur at least 30 days prior to any UTP being installed in the facility or brought on-site for storage.

3.02 INSTALLATION AND LABELING

A. Install telecommunication systems cables and auxiliary materials as indicated in accordance with manufacturer's written instructions, and recognized industry practices.
   1. In general, all interior cables are installed in conduit.
   2. D rings are allowed in telecommunications room as needed.
   3. Contractor shall use hook and loop type fasteners on all UTP telecommunications cable. Tie wraps may be temporarily used loosely for dressing UTP cables during installation if they are removed before final inspection. Any tie wrap found in place around UTP cable tight enough that a 0.5" wooden dowel cannot be inserted into the bundle at the tie wrap location shall therefore obligate the Contractor to replace those potentially damaged UTP cables at the Design Professionals discretion, whether they pass electronic testing or not.
   4. Tie wraps may be used carefully on OSP and armored cabling at light tension levels which do not result in any visible cable jacket deformation.
   5. If unarmored fiber is specified without innerduct for any reason, tie wraps are forbidden on that cabling.
   6. Any and all tie wraps used in the project shall be trimmed flush at the locking device using a fully flush cutter tool for safety. Any tie wrap found with a sharp point shall be removed by the Contractor and replaced without additional compensation.

B. Identify all fiber, copper, and coaxial cables that terminate in the telecommunication room as to field location.
   1. Provide manufacturer's standard vinyl-cloth self-adhesive cable/conductor markers of wrap-around type; either pre-numbered plastic coated type, or write-on type with clear plastic self-adhesive cover flap; numbered to show cable identification. Install within 6" of cable end.
   2. Contractor shall not distinguish between UTP that is initially intended for voice or data use. The structured cabling plant is designed to be flexible and shall be numbered sequentially throughout the building. Room numbers shall not be used in the numbering scheme. For buildings with multiple Telecom Rooms (and/or per floor), an alphanumeric identifier shall identify the telecom room, followed by the sequentially numbered jack. For example, a jack labeled 2A-97 would terminate in the "A" Telecom Room on the second floor, and be connected to jack #97 on the patch panels.
   3. All field device labeling shall match the telecom room labeling for the corresponding cable.

4. Jacks shall be numbered sequentially on the patch panel field, beginning at the top left, working across the row to the right, then down to the next row, etc. This will require Contractor to plan the installation and terminate sequentially on both ends through the building rather than terminate randomly which results in confusion for Owner.

C. After completion, all cables shall be thoroughly tested in accordance with the division 27 Testing and Documentation section.
   1. Contractor shall provide all instruments for testing the cables.
   2. Contractor shall demonstrate in the presence of Owner's representative that the telecommunications system is complete and operational.
   3. Contractor shall complete and submit the Certificate of System Demonstration.

D. After completion, comprehensive As-Builts will be created and posted in each Telecom Room within 3 days.
   1. Two hard copies shall be created for each Telecom Room detailing the entire structured cabling plant and labeling scheme after installation. One hard copy shall consist of (at a minimum) the Telecom plans marked with permanent ink to show the labeling used at each field location, and a table or spreadsheet (for example, an 8 ½" x 11" printed Excel file) that lists all the patch panel jacks in a column sequentially, followed by a cross reference column identifying the room name/number that the corresponding jack is in. This is the only part of the labeling process in which room name/numbers are acceptable. The second hard copy shall be identical to the first one. One copy shall be posted in each corresponding Telecom Room, and the other copy shall be submitted to the Design Professional for review according to the submittal process identified in the shop drawing paragraph of Specification Section 27 0010. This second copy will then be forwarded to Owner.

END OF SECTION 27 1100

SECTION 27 1200 - TELECOMMUNICATIONS TESTING AND DOCUMENTATION

PART 1 - GENERAL

1.01 PURPOSE

A. The purpose of the testing is to ensure proper installation of the telecommunications cabling system.

1.02 SUBMITTALS

A. Submit product data under provisions of Division 1.

B. Submit product data for the following:
   1. Hand-held testing equipment manufacturer, model, last calibration date/calibration due date and software version.
   2. Injector equipment manufacturer, model, and software version.

1.03 REFERENCES

A. The following Performance Standards shall be followed. Unless otherwise stated, where Performance Standards conflict with manufacturer's recommendations, the more restrictive shall be applied:

1.	TIA/EIA - 568-1	Commercial Building Telecommunications Cabling Standard Part 1: General Requirements.
2.	TIA/EIA - 568-2	Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted - Pair Cabling Components.

1.04 TEST EQUIPMENT

A. Test Equipment: JDSU Certififer40G, Fluke DSX-5000, Fluke DTX-1800 or TIA & Connectivity Manufacturer approved Level IV (or better) Certifier.

B. The software version for the testers shall be the latest version available.

C. The tester must have been calibrated within the last 12 months with calibration date noted on all test results.

1.05 LINK DEFINITION FOR THE PROJECT

A. A link consists of up to 90 meters (295 feet) of horizontal cabling, a connection at each end, up to 2 meters of test equipment lead from the main unit of the hand-held tester to the local connection, and up to 2 meters of test equipment lead from the remote unit to the remote connection. A total length of up to 94 meters (308 feet).

B. The connection to the equipment at each end of the link is not included in the link definition.

1.06 CHANNEL DEFINITION FOR THE PROJECT

A. A channel consists of up to 90 meters (295 feet) of horizontal cabling, a connection at each end, up to 7 meters for the cross-connect and equipment cable, and up to 3 meters for the work area equipment cable. A total length of up to 100 meters (328 feet).

B. The connection to equipment at each end of the channel is not included in the channel definition.

PART 2 - COPPER CABLING ACCEPTANCE TESTING

2.01 ACCEPTANCE TESTS

A. The following field acceptance tests shall be performed for twisted - pair cabling:
   1. Wire Map (continuity).
   2. Length.
   3. Attenuation.
   4. NEXT.
   5. ACR-F
   6. Delay and delay skew.
   7. Return loss.
   8. Power sum crosstalk (PSNEXT and PSACR-F).

2.02 TEST EQUIPMENT SET-UP AND TEST PARAMETERS

A. Autotest: Use the Autotests to perform the required tests. Customize the Autotest as necessary to satisfy testing requirements and parameters.

B. Cable Type: Select the cable type being tested. Cable Type may vary. Always change the NVP for the type of cable being tested.

C. Frequency Range: The frequency range for category 6 tests shall be 1 MHz to 250 MHz.

D. Cable Pairs: Test all cable pairs. Select all pairs for TEST and all pairs for Pass/Fail criteria for Autotest.

E. Length Units: Cable length test results shall be in feet.

F. Date Style. The date style shall show month, day, and year. Date shall be the date the test is conducted.

G. Language: The language shall be English.

2.03 TEST PROCEDURE

A. Testing shall be performed with the tester at the distribution frame and the remote unit at the Work Area Outlet.

B. A Channel OR Permanent Link certification test will be performed as outlined in the specific job description.

C. Test leads and test hardware have limited life-cycles. Inspect and replace the test leads as necessary.

D. Use only test leads specified by the test equipment manufacturer.

E. Strictly follow the test equipment manufacturer's instructions for equipment setup, initialization, and calibration.

PART 3 - TESTING DOCUMENTATION

3.01 DOCUMENTATION

A. The Test Documentation requirements are the minimum requirements. Other details of presentation and recording methods will be discussed with Owner and Design Professional. Gain approval from Owner and Design Professional of the test documentation format and content prior to full-scale testing. Coordinate with Owner and Design Professional to get representative sample of the documentation format and content for review.

B. Provide Owner with a printed copy of ONLY the summary report of all tests, the electronic file of the test results for each test on CD or USB, and the electronic copy of the summary report on CD or USB. Do not print out each report.

3.02 TEST REPORT

A. The following header fields on each test report shall contain the appropriate information. These are minimum requirements.
   1. Circuit ID
   2. Test Result
   3. Owner
   4. Test Equipment Serial Number
   5. Software Version
   6. Calibration Date
   7. Date
   8. Cable Type
   9. NVP
   10. Building
   11. Closet

B. The information in each user definable header field on each test report shall contain the information as follows.
   1. Circuit ID: Indicate the outlet location number and jack number under test
   2. Owner: Indicate the owner of the test equipment
   3. Date: Indicate the date of the test
   4. Cable Type: Indicate the cable type being tested

5. NVP: Indicate the field measured NVP
6. Building: Indicate the building where the cable is being tested
7. Closet: Indicate the closet identifier where the cable is terminated

C. The minimum test result information on each report shall include the data for the tests identified in the Acceptance Tests paragraph of each applicable testing part.

D. Contractor shall provide the test data in a complete and consistent format. Printed test results shall be printed from a laser printer.

E. The contractor shall verify that a report for each jack in the Project is contained in the file list.

F. Two weeks (14 days) prior to scheduled telecommunications systems start-up date Design Professional shall receive from Contractor complete printed cable performance test results via the submittal process (see 27 00 10). Start-up shall not commence unless test results are submitted.

3.03 ELECTRONIC COPY

A. The electronic copy of the test results shall be on CD or USB.

B. The electronic copy shall be labeled. The label shall read:

Project Name

building name (BLDG. No. x)

"Copper/Fiber Test Results"

“CD No." X of X

date (month and year)

C. The files shall be in the original file format of the test equipment.

END OF SECTION 27 1200

SECTION 40 71 13
MAGNETIC FLOW METERS

Part 1 GENERAL

1.01 - DESCRIPTION OF WORK

A. This Section includes all work for furnishing, installing and testing Flow meters located in metering manholes as designated on the Drawings. Ultrasonic Level Sensor flow meters are specified in Section 46 91 23. **Meters to be provided by System Integrator under Section 26 60 00.**

B. Furnish materials, labor and equipment necessary to complete all work specified in this section.

C. Related work specified elsewhere:

1. Section 26 – Electrical.

2. Section 26 60 00 – Control System.

3. Section 40 20 00 – Liquid Process Piping

4. Section 46 00 00 – General Equipment Requirements

5. Section 46 66 00 – Ultraviolet Disinfection Equipment

1.02 - SUBMITTALS

A. Shop Drawings:

1. Manufacturer’s specifications, dimensions, and cut sheet data.

2. Performance Data and operating instructions.

a. Manufacturer’s certification of testing and flow calibration (three point) at the factory site after fabrication.

3. Electrical Schematic Diagrams.

B. Submit manufacturer's installation instructions for meter and all electrical components.

C. Maintenance Instructions:

D. Submit six (6) copies of manufacturer's maintenance and operation instructions, including parts list.

1.03 - PRODUCT DELIVERY STORAGE AND HANDLING

A. Deliver equipment in manufacturer's original, unopened protective packaging or skids.

B. Cover and store equipment above ground so as to keep free from water or other deteriorating elements.

C. Handle so as to prevent damage to equipment during installation and storage.

1.04 - QUALITY ASSURANCE

A. The manufacturer shall provide evidence of satisfactory performance on a minimum of ten (10) similar projects of equal service conditions for a minimum period of five (5) years in the United States. Submit past projects list with Owner contact name/phone number data.

1.05 - WARRANTY

A. The Contractor and System Supplier shall provide a written warranty in the name of the Owner and submit Warranty to the Engineer for review.

B. The Warranty shall guarantee the flow metering system and all of its components to be free of defects for a period of two (2) years from the date of final acceptance of the project.

C. The Warranty shall include all supervision, labor, materials and equipment, installation, and travel to the site to correct any defects in any component due to faulty materials, equipment, installation methods, or workmanship and consequent damage resulting from such defects. Warranty work shall be scheduled on-site during normal working hours at the Owner's convenience.

Part 2 PRODUCTS

2.01 - GENERAL

A. The meters shall be of the innovative design as to deliver repeatable accuracy under the most difficult of flow conditions. Magnetic flow meter systems shall include a magnetic flow tube and a microprocessor-based "smart" transmitter that is capable of converting and transmitting a signal from the flow tube. Magnetic flow meters shall utilize the characterized field principle of electromagnetic induction, and shall produce DC signals directly proportional to the liquid flow rate.

2.02 - MANUFACTURERS

A. Meter Schedule:

DESIGNATION	SIZE	FLOW RANGE	SERVICE
FM-1	12"	14 – 13,878 GPM	Effluent Prior to UV Disinfection
FM-2	8"	6 – 6138 GPM	Lagoon Overflow Basin to Influent Lift Station

B. FM-1 and FM-2 shall be Model 8750W as manufactured by Rosemount or engineer pre-approved substitute. FM-1 and FM-2 shall factory potted flow tube with required length of factory signal cable. Transmitter shall be remote mounted and housed in Nema 4X SS Heated Enclosure. Enclosure shall be mounted on SS uni-strut stand outside of meter pit. 120vac shall be required for power Transmitter and enclosure heater.

2.03 - CONSTRUCTION

A. Body

1. FM-1 and FM-2 meter tube shall be fusion-bonded epoxy coated stainless steel for nominal line diameters of 6-inch and larger. The flowmeter shall be capable of operating pressures of up to 150 PSI and suitable for submersion. The metering tube shall come with the recommended 316 stainless steel grounding ring.

2. FM-1 and FM-2 end connections shall be flanged carbon steel flanges to mate with ANSI flanges.

B. Remote-Mounted Flow Indicator/Totalizer

1. Meters shall include a transmitter that is capable of sending a linear 4-20 mAdc signal to the remote-mounted flow indicator/totalizer.

2. The flow indicator/totalizers shall be remote mounted and shall have an enclosure that has a NEMA 4X, (IP66) rating.

3. The flow indicator/totalizers shall be capable of indicating flowrate and total flow. The units of measurement for the flowrate indicator shall be GPM, and the flow totalizer shall be gallons.

4. A linear 4-20 mAdc output and a Flow Totalizer Pulse Output shall be available from the flow indicator/totalizers.

5. All flow meters shall be provided with factory cable as necessary to location the indicator/totalizer at remote locations.

2.04 - PERFORMANCE

A. The transmitter shall provide an automatic low flow cutoff below a user configurable low flow condition (0-10%). The transmitter's outputs shall also be capable of being forced to zero by an external contact operation.

B. Each flow tube shall be factory calibrated and assigned a calibration constant or factor to be entered into the associated transmitter as part of the meter configuration parameters. Manual calibration of the flow meter shall not be required. Meter configuration parameters shall be stored in non-volatile memory in the transmitter. An output hold feature shall be provided to maintain a constant output during configuration changes.

C. Accuracy shall be 0.50% of rate over the flow velocity range of 1 to 30ft/sec. Optional .25% of rate accuracy available. Repeatability shall be 0.1% of rate; minimum turndown shall be 100:1. Minimum required liquid conductivity shall not be greater than 5 uS/cm. Maximum response time shall be adjustable between 1 and 100 seconds as a minimum. Transmitter ambient temperature operating limits shall be -10 to +50°C. Power supply shall be 115 VAC, 60 Hz.

Part 3 EXECUTION

3.01 - INSTALLATION

A. All items incorporated into the work shall be installed in accordance with the Contract Documents. All items shall be installed in accordance with the manufacturer’s written recommendations and where applicable, conform to the specific requirements of the NEC Code and best practices of the trade involved.

1. Installation shall include all accessories and finishing required to provide a complete system ready for proper and continuous operation.

B. Install meters and electrical circuitry per manufacturer's instructions.

1. Maintain suitable inlet and outlet layout clearances to fittings and valves per ASME standards.

3.02 - TEST AND ADJUST

A. Furnish services of a competent manufacturer's representative for each type of meter to check equipment, place it into operation and instruct Owner in operation and maintenance.

B. Check and verify proper calibration of all meters.

3.03 - MANUFACTURER’S FIELD SERVICES

A. Furnish services of flow meter factory/field engineer for each type of equipment for a total of one 8-hour working day at site to perform certification testing of all system components and to instruct Owner’s personnel in hands-on operations and equipment maintenance and operation requirements. These services will take place only after contractor’s installation and equipment start-up is complete and the system is functioning properly.

END OF SECTION 40 71 13

SECTION 43 25 00
SUBMERSIBLE CENTRIFUGAL PUMPS

PART 1. GENERAL

1.1. SCOPE OF WORK

A. The work in this section shall include furnishing and placing into operation submersible pump(s) complete with submersible motor, carriage, rails and cable, as specified herein and as indicated on the drawings.

B. This section describes **FOUR (4)** new submersible pumps and appurtenances as specified hereinafter and shown on plans.

1.2. RELATED SECTIONS

A. Division 26 00 00 – Electrical

B. Division 26 60 00 – Controls

C. Division 26 29 23 – Variable-Frequency Motor Controllers

1.3. REFERENCES

A. American Society for testing and material (ASTM) International
1. A 48: Standard Specification for Gray Iron Castings.
2. A743: Standard Specification Iron-Chromium Nickel, Corrosion Resistant,

B: American National Standards Institute (ANSI):
1. B16.1: Standard for Cast Iron Pipe Flanges and Flanged Fittings, 125 lb.

C. Hydraulic Institute: Current Standards.
1. HI 14.6: Hydrodynamic Pumps for Hydraulic Performance Acceptance Tests.
2. HI 11.6: Submersible Pump Tests

1.4. SUBMITTALS

A. Submittal data shall be provided to show compliance with these specifications, plans or other specifications that will influence the proper operation of the pump(s).

B. Standard submittal data for approval must consist of:

1. Pump Performance Curves.
2. Pump Outline Drawing.
3. Station Drawing for Accessories.
4. Electrical Motor Data.
5. Typical Installation Guides.
6. Technical Manuals and Parts List.
8. Printed Warranty.
9. Management system certificate ISO 9001.
10. Manufacturer's Equipment Storage Recommendations.
11. Manufacturer's Standard Recommended Start-Up Report Form.

C. Lack of the above requested submittal data is cause for rejection.

1.5. QUALIFICATION REQUIREMENTS

A. The manufacturer shall provide data on equipment manufacturer's experience. Only Manufacturers with 20 or more years of experience who have furnished at least 5 similar lift stations shall be considered.

B. Furnish and install specified pump systems, complete with all pump discharge elbows, discharge pipes, guide rails, all piping and vales, hatches, electrical connections, and appurtenances. Fully test and make operational all systems. These items are to be provided for all of the new pumps and the relocated pump.

C. The specifications and drawings identify specific required features, but do not attempt to cover all details. Equipment shall be complete to function continuous and properly for the entire range of design conditions.

1.5.C.1. Provide all instrumentation wiring and power supply wiring necessary for proper function and operation whether or not wiring is shown on the Drawings, at no additional cost to the owner.

D. Electrical construction shall comply with the National Electrical Code, Uniform Fire Code, and specific requirements of this Section

E. Manufacturer and System Supplier shall furnish services of factory/field service engineer for not less than one four (4) hour working day at the site to perform start-up testing and one four (4) hour day at the site to instruct Owner’s personnel concerning equipment operation and maintenance requirements.

F. Submit to Engineer a written report covering manufacturer’s factory/field service, Engineer’s findings, and installation approval. Cover all inspections and outline in detail any deficiencies noted.

1.6. DELIVERY, STORAGE AND HANDLING

A. Deliver equipment in manufacturer’s original unopened protective packaging or skids.

B. Cover and store equipment above ground so as to keep free from water or other deteriorating elements.

C. Handle carefully to prevent equipment damage during installation

1.7. OPERATIONAL REQUIREMENTS AND WARRANTY

A. The pumps shall be provided with prorated 60 months (5 years) warranty against defects in materials and or workmanship. The warranty shall be in printed form and previously published as the manufacturer's standard warranty for all similar units manufactured, latest revision. Upon warranty occurrence, the manufacturer's authorized service center shall remove the pump, repair, reinstall and provide start up on the repaired pump. A detailed failure analysis shall be submitted to the Owner for their records summarizing corrective action taken.

B. The pump shall be capable to operate without any limitation between 50% and 125% of the Best efficiency point (B.E.P) of the performance curve.

PART 2. PRODUCTS / PUMPS

2.1. SUBMERSIBLE PUMPS

A. PUMP DESIGN CONFIGURATION

1. Wet Pit Installation
   a. The pump shall be supplied with a mating cast iron discharge connection. The pump(s) shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet-well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor. Each pump shall be fitted with lifting chain or stainless steel cable as required for removal of the pumping unit. The working load of the lifting system shall be sufficient for the unit weight.

B. PUMP CONSTRUCTION

1. Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be of stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.

2. Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.

3. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

C. COOLING SYSTEM

1. Flygt (N/F-3153 and Larger)

   a. Each unit shall be provided with an integral motor cooling system. A stainless steel motor cooling jacket shall encircle the stator housing, providing for dissipation of motor heat regardless of the type of pump installation. An impeller, integral to the cooling system and driven by the pump shaft, shall provide the necessary circulation of the cooling liquid through the jacket. The cooling liquid shall pass about the stator housing in the closed loop system in turbulent flow providing for superior heat transfer. The cooling system shall have one fill port and one drain port integral to the cooling jacket. The cooling system shall provide for continuous pump operation in liquid or ambient temperatures of up to 104°F (40°C). Operational restrictions at temperatures below 104°F are not acceptable. Fans, blowers or auxiliary cooling systems that are mounted external to the pump motor are not acceptable.

D. CABLE ENTRY SEAL

1. The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered equal.

E. POWER CABLE

1. The motor shall be equipped with cable suitable for submersible pump applications. The power cable shall be sized according to NEC and ICEA standards. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet.

F. MOTOR

1. The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class H insulation rated for 180°C (356°F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31.The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of pins, bolts, screws or other fastening devices used to locate or hold the stator and that penetrate the stator housing are not acceptable. The motor shall be designed for continuous duty while handling pumped media of up to 104°F. The motor shall be capable of no less than 30 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of aluminum. Three thermal switches shall be embedded in the stator end coils, one per phase winding, to monitor the stator temperature. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the motor control panel.

2. The junction chamber shall be sealed off from the stator housing and shall contain a terminal board for connection of power and pilot sensor cables using threaded compression type terminals. The use of wire nuts or crimp-type connectors is not acceptable. The motor and the pump shall be produced by the same manufacturer.

3. The motor service factor (combined effect of voltage, frequency and specific gravity) shall be 1.15. The motor shall have a voltage tolerance of +/- 10%. The motor shall be designed for continuous operation in up to a 40°C ambient and shall have a NEMA Class B maximum operating temperature rise of 80°C. A motor performance chart shall be provided upon request exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. The chart shall also include data on motor starting and no-load characteristics.

4. Motor horsepower shall be sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.

G. BEARINGS

1. The integral pump/motor shaft shall rotate on two bearings. The motor bearings shall be sealed and permanently grease lubricated with high temperature grease. The upper motor bearing shall be a two row angular contact ball bearing. The lower bearing shall be a two row angular contact ball bearing to handle the thrust and radial forces. The minimum L10 bearing life shall be 50,000 hours at any usable portion of the pump curve.

H. MECHANICAL SEALS

1. Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide ring. The upper secondary seal, located between the seal chamber and the seal inspection chamber shall be a leakage-free seal. The upper seal shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide seal ring. The rotating seal ring shall have small back-swept grooves laser inscribed upon its face to act as a pump as it rotates, returning any fluid that should enter the dry motor chamber back into the lubricant chamber. All seal rings shall be individual solid sintered rings. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces are not acceptable. The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.

2. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion. The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit. The seal system shall not rely upon the pumped media for lubrication.

3. The area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove. This groove shall protect the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.

4. A separate seal leakage chamber shall be provided so that any leakage that may occur past the upper, secondary mechanical seal will be captured prior to entry into the motor stator housing. Such seal leakage shall not contaminate the motor lower bearing. The leakage chamber shall be equipped with a float type switch that will signal if the chamber should reach 50% capacity.

5. Seal lubricant shall be non-hazardous.

I. PUMP SHAFT

1. The pump and motor shaft shall be a single piece unit. The pump shaft is an extension of the motor shaft. Shafts using mechanical couplings shall not be acceptable. The shaft shall be stainless steel – ASTM A479 S43100-T. Shaft sleeves will not be acceptable.

J. IMPELLER

1. (NON-CLOG) Where non-clog pumps are specified, the impeller shall be of Hard-Iron (ASTM A-532 (Alloy III A) 25% chrome cast iron), dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The leading edges of the impeller shall be hardened to Rc 60 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impeller shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.

2. (CHOPPERS) Where chopper pumps are specified, the impeller shall be of nodular Cast Iron (EN GJS-400-18LT). The impeller be S-shaped and fitted with a cutting device. Chopper design shall be suitable for liquid manure, contaminated sewage & sludge.

K. VOLUTE / SUCTION COVER

1. The pump volute shall be a single piece grey cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be cast of Hard-Iron (ASTM A-532 (Alloy III A) 25% chrome cast iron) and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

L. SUMP MIXING VALVE

1. One pump unit in the pump station shall be equipped with an automatically operating Flygt Mix-flush valve mounted directly to a machined boss located on the exterior of the pump volute casting that will provide mixing action within the sump at the start of the pumping cycle. The valve shall redirect a portion of the pumped liquid into the sump to re-suspend solids and grease by the turbulent action of its discharge.

2. The valve shall be equipped with an adjustable, wear-resistant discharge nozzle that can be used to direct flow within the sump. The valve shall operate by differential pressure across the valve and shall not required any electric or pneumatic power source to operate. The valve shall be suitable for use in Class 1, Division 1 hazardous locations.

3. The valve shall open at the beginning of each pumping cycle and shall automatically close during the pump operation after a pre-set time. A method of adjusting the valve operating time shall be provided.

M. CONSTRUCTION:

1. The Materials of construction shall be as follows:

   a. Pump housing: ASTM A-48, Class 35B
   b. Cooling jacket *(Where applicable)*: Stainless steel AISI 316

c. Non-Clog Impeller and insert ring: A 532 ALLOY III A (25% chrome)
d. Chopper Impeller: Cast Iron, nodular GJS-400-18-LT
e. Stator housing: ASTM A-48, Class 35B
f. Shaft: ASTM A479 S43100-T.
g. Shaft seal: Pump side: - Corrosion resistant Tungsten carbide WCCR
h. Shaft seal Motor side: - Corrosion resistant Tungsten carbide WCCR

2. All castings must be blasted before coating. All wet surfaces are to be coated with two-pack oxyrane ester Duasolid 50. The total layer thickness should be at least 120 microns. Zink dust primer shall not be used.

N. STANDARD PROTECTION

1. Each pump motor stator shall incorporate three thermal switches, one per stator phase winding and be connected in series, to monitor the temperature of the motor. Should the thermal switches open, the motor shall stop and activate an alarm. A float switch shall be installed in the seal leakage chamber and will activate if leakage into the chamber reaches 50% chamber capacity, signaling the need to schedule an inspection.

2. The thermal switches and float switch shall be connected to a Mini CAS control and status monitoring unit. The Mini CAS unit shall be designed to be mounted in the pump control panel.

3. The hydraulic of the pump shall be capable of handling raw domestic wastewater with fibrous materials like wet wipes.

O. TESTING

1. Each completed and assembled pump/motor unit shall undergo the following factory tests at the manufacturer's plant prior to shipment. The Manufacturer shall provide on demand a copy of his quality control plan for these tests and an ISO 9001 factory certificate.

a. Minimum 5-point hydraulic performance test according HI 11.6:2012 Grade 2B

b. No-Leak seal integrity test

c. Electrical integrity test

P. Design Criteria:

Location	EXISTING LIFT STATION	PROPOSED FLOW EQ LIFT STATION
Quantity:	2	2
Primary Design Condition & # of Pumps Running:	1 Pump @ 479 gpm at 49' TDH 2 Pumps @ 868 gpm at 49' TDH 3 Pumps @ 1563 gpm at 52' TDH 3 Pumps @ 1972 gpm at 56' TDH	1 Pump @ 1025 GPM at 72 TDH
Pump HP (Maximum):	20 HP	34 HP
Speed (RPM):	1760 RPM	1760 RPM

Power:	460 volt Three-Phase	460 V Three-Phase
Variable Frequency Drive:	Yes	Yes
Pump Model Basis of Design:	FLYGT FP 3153 HT 3 463	FLYGT NP 3171 HT 3 454
Explosion-Proof:	Yes	Yes
Installation & Type:	SUBMERSIBLE CHOPPER	SUBMERSIBLE NON-CLOG
# of Pumps with a Sump Mixing Valve	0	1

PART 3. EXECUTION

3.1. GENERAL

A. Perform installation in accordance with Contract Documents and manufacturers specifications.

B. Test pumps as specified

C. Manufacturer's representative to inspect installation and witness pump and VFD tests as specified.

3.2. EXAMINATION

A. A factory trained technician shall examine the work area prior to beginning work and check the following:

1. The environment is safe to begin working in
2. All surfaces are ready to receive work
3. All tools are in the proper location and are in good condition
4. Grounding of the system

3.3. FIELD QUALITY CONTROL

A. After installation, a pump station start-up shall be performed by the installing contractor under the supervision of the manufacturer's authorized representative. 16 hours of field service shall be provided by an authorized, factory trained representative of the pump manufacturer. Services shall include, but not be limited to, inspection of the completed pump station installation to ensure that it has been performed in accordance with the manufacturer's instructions and recommendations, supervision of all field-testing and activation of the Pump Manufacturer's Warranty. The test shall demonstrate to the satisfaction of the Owner that the equipment meets all specified performance criteria, is properly installed and anchored, and operates smoothly without exceeding the full load amperage rating of the motor. The Contractor shall be responsible for coordinating the required field services with the Pump Manufacturer.

B. Preparation: install each pump in operating position; check for proper service voltage and impeller rotation.

C. Dry pumping test: operate each pump with maximum 2 foot of water above centerline of pump volute for 60 minutes continuously with pump connected to discharge piping.

D. No external liquid or air source permitted for cooling pump or motor.

E. Manufacturer's representative and Engineer must be present during dry pumping test.

F. Pumps subject to rejection by Engineer for excessive noise, vibration, heat or seizing; replace rejected pump and repeat tests until pump is accepted.

3.4. START-UP AND ADJUSTMENT

A. Contractor shall be responsible for start-up and check-out of control system with control system supplier as required to fine tune system in order to assure that a complete and efficiently working system is turned over to the Owner.

B. System check-out shall be in presence of Engineer to verify proper operation of system.

C. Furnish services of manufacturer's field service engineer after all start-up and system check out and adjustments have been completed, to instruct Owner's personnel concerning maintenance and operation of the equipment.

3.5. CERTIFICATION OF TESTING

A. Manufacturer's technician shall provide a complete start-up report for each pump.

3.6. TRAINING

A. Training shall be a minimum of four 4 hours and cover the complete Pumping System and related controls.

B. Instruction material shall be provided for 4 trainees.

END OF SECTION 43 25 00

SECTION 43 41 64
PRESTRESSED CONCRETE TANK

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Included

1. This section specifies the design qualifications for the Tank Contractor and requirements for the construction of a tank with an AWWA D110 Type III wire wound, prestressed, concrete circular core wall; including all site work, concrete base, excavation, reinforcing, concrete work, appurtenances, disinfection, testing, and backfill directly related to the tank unless otherwise specified.

2. In the event of discrepancy between this section of the Specifications and any other section of the Specifications, this section shall govern.

3. The Tank Contractor shall furnish all labor, materials, tools, and equipment necessary to construct, disinfect and test the wire or strand wound, prestressed concrete tank and appurtenances as indicated on the drawings, and as specified.

B. Description of System

The tank shall consist of a cast-in-place reinforced concrete floor, a wire wound precast prestressed concrete wall, metal walkway and stair case, washdown cannons, pipe penetrations and associated items as shown on the plans.

1.02 QUALITY ASSURANCE

A. Qualifications and Experience

1. Singular Responsibility: It is the intent of this specification to require single party responsibility for the design and the construction of the tank. The tank design and construction shall be performed by an established Tank Contractor of recognized ability, having in its own name at least ten years of experience and a minimum of at least twenty AWWA D110 Type III wire wound prestressed concrete core wall as specified herein. The design and construction of all aspects of the foundation, floor slab, wall, prestressing, shotcrete along with the wire wound circular prestressed tank shall be performed by the Tank Contractor. The Tank Contractor may

subcontract labor for reinforcing steel installation and for concrete slab placement under the Tank Contractor's direct supervision.

2. All tank work shall be performed by a company that specializes in the design and construction of wire or strand wound prestressed concrete tanks using the method of circumferential prestress reinforcing and with proven capability of meeting all the requirements of these specifications. No company is considered qualified unless it has designed and built in its own name or under one of its divisions at least twenty AWWA D110 prestressed concrete tanks with a Type III core wall in the last ten years. Experience in the design and construction of tanks with a Type I, II or IV core wall is not acceptable.

3. The Tank Contractor shall have in its employ a design professional engineer with a minimum of ten years experience, registered in the state the tank is to be constructed. The design engineer shall have been the engineer of record for a minimum of ten tanks with an AWWA D110 Type III core wall.

4. The Tank Contractor shall have in its employ for this project a team consisting of a tank superintendent, project manager, certified shotcrete foreman, prestressing foreman, and precast erection foreman, each of whom shall have constructed a minimum of 3 tanks with an AWWA D110 Type III core wall and a capacity of 5.0 MG or greater.

5. Experience in the design and construction of tanks with an AWWA D110 Type I, Type II or Type IV core wall, tanks having a fixed wall base, mild-steel reinforced tank core wall or tank core wall incorporating internal stressing systems is not acceptable.

6. The Tank Contractor shall submit with the bid, experience lists confirming compliance with the above qualification and equipment criteria. Failure to submit any of the above requirements with the bid will cause the bid to be considered non-responsive and the bid will be rejected.

B. Codes & Standards

All Codes shall be considered the most current version of that code unless noted otherwise.

1. ACI 301 Specifications for Structural Concrete

2. ACI 305 Hot Weather Concreting

3. ACI 306 Cold Weather Concreting

4. ACI 309R Guide for Consolidation of Concrete

5. ACI 318 Building Code Requirements for Reinforced Concrete and Commentary

6. ACI 350 Code Requirements for Environmental Engineering Concrete Structures and Commentary

7. ACI 350.3 Seismic Design of Liquid Containing Concrete Structures and Commentary

8. ACI 372R Design and Construction of Circular Wire- and Strand Wrapped Prestressed Concrete Structures

9. ACI 506R Guide to Shotcrete

10. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

11. ASTM A185 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

12. ASTM A416 Standard Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete

13. ASTM A421/A421M Standard Specification for Uncoated Stress-Relieved Steel Wire for Prestressed Concrete

14. ASTM A475 Standard Specification for Zinc-Coated Steel Wire Strand

15. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

16. ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

17. ASTM A722/A722M Standard Specification for Uncoated High-Strength Steel Bar for Prestressing Concrete

18. ASTM A1064/A1064M Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

19. ASTM A706/A706M Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

20. ASTM A821 Standard Specification for Steel Wire, Hard Drawn for Prestressing Concrete Tanks

21. ASTM A1008/A1008M Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

22. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field

23. ASTM C33 Standard Specification for Concrete Aggregates

24. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

25. ASTM C231 Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

26. ASTM C618, Type F Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

27. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 Ft. – lbf/ft3) 600 KN-M/M3)

28. ASTM C920 Specification for Elastomeric Joint Sealants

29. ASTM D1056 Standard Specification for Flexible Cellular Materials – Sponge or Expanded Rubber

30. ASTM C1116/C1116M Standard Specification for Fiber-Reinforced Concrete and Shotcrete

31. ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

32. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 Ft. – lbf/ft^3) 2700 KN-M/M^3)

33. ASTM D2000 Classification System for Rubber Products in Automotive Applications

34. ASCE Standard 7 Minimum Design Loads for Buildings and Other Structures

35. AWWA C652 Standard for Disinfection of Water-Storage Facilities

36. AWWA D110 Wire and Strand Wound, Circular, Prestressed Concrete Water Tanks

37. TID-7024, Dynamic Pressure on Fluid Containers of Nuclear Reactors and Earthquakes

38. US Army Corps of Engineers Specification CRD-C-572, Specification for PVC Waterstop

C. Design Criteria

1. The prestressed concrete tank shall be designed and constructed in accordance with the provisions of AWWA D110 Standard for Wire or Strand Wound Circular Prestressed-Concrete Water Tanks, Type III core wall, ACI 350, ACI 350.3, ASCE 7 and IBC.

2. Horizontal prestressing shall be continuous. Discontinuous prestressing tendons or strands will not be allowed.

3. The Tank Contractor shall use the following loadings and requirements in the design calculation:

   a. Capacity: 3.2 million gallons.

   b. Dimensions: 110' inside diameter x 43' water depth.

   c. Dead Load: shall be the estimated weight of all permanent imposed loads. Unit weight of concrete 150 pounds per cubic foot; steel 490 pounds per cubic foot.

   d. Live Load: shall be the weight of all the liquid when the reservoir is filled to overflowing. Unit weight of liquid 62.4 pounds per cubic foot.

   e. Wind Loads: shall be as required by ASCE 7

   f. Geotechnical Information: Lateral earth pressure, backfill density, bearing pressures, anticipated settlements, subbase coefficient of friction, ground water elevation and seismic site class per Geotechnical Report

   g. Vent Capacity Requirements:

i. Maximum Fill Rate: 1,109 gpm.

ii. Maximum Draw Down Rate: 1,090 gpm.

h. Overflow Design Capacity: 1.60 MGD.

4. The Type III tank core wall is based on the following design criteria and requirements:

a. The prestressed tank wall shall be considered as a cylindrical shell with partial edge restraint and rest on a rubber bearing pad allowing free radial movement. A fixed base wall will not be allowed.

b. Core wall to be composite precast concrete with steel diaphragm and vertical mild steel reinforcement. Steel wall slot plates shall be utilized between precast panels on the exterior face of the wall along with a ½ inch thick shotcrete cover over the diaphragm and plates.

c. Minimum precast wall panel thickness shall be 4 inches.

d. Circumferential prestressing to be continuous except at wall penetrations.

e. Diaphragm steel may be considered as contributing to the vertical reinforcement of the wall.

f. The core wall is that area of the wall interior to all circumferential prestressing.

g. Shotcrete thickness shall provide a clear cover over the circumferential prestressing of at least 1/4 inch on intermediate layers. The minimum final shotcrete cover over the circumferential prestressing wire shall be 1 inch.

h. For wire wound tanks, a stress plate shall be required at all above grade locations where prestress wires are displaced 24 inches or greater. The stress plate shall be designed to transfer stress across the opening.

i. No reduction in ring compression or tension in the tank core wall will be taken due to restraint at the bottom.

j. Tank wall systems based on jack-operated cable or rod type tendons, involving the circumferential movement of prestressing steel relative to the wall surface shall not be consid¬ered. Circumferential systems relying on strand cables placed inside of ducts (cast in the core wall or manually around the exterior) will not be accepted.

k. Shotcrete, cast in place or other alternative core walls are not permitted.

5. Floor Slab

a. The floor slab shall be designed as a membrane floor not less than 4 inches thick. Construction joints will only be allowed as shown on the shop drawings and as approved by the Engineer. Construction joints shall incorporate a continuous 6 inch horizontal PVC ribbed flatstrip waterstop with a floor thickened section as necessary for proper placement.

b. Membrane slab to have a minimum cross-sectional area ratio of reinforcement to concrete in accordance with the following when no SRA is utilized:

i. For tanks with diameters 100 to 150 feet, provide 0.6%.

c. For tanks with diameters larger than 100 feet, when the concrete shrinkage is less than 0.035% per ASTM C157 regardless of SRA, provide 0.5%.

d. Polypropylene or cellulose fibers may be used at the Tank Contractor's discretion.

6. Wall Base

a. Wall to foundation connection to utilize a continuous 9" minimum vertical PVC ribbed centerbulb waterstop.

1.03 SUBMITTALS

A. Prequalification Submittals Ten Days Prior to Bid Date

1. Tank Contractors not previously prequalified shall submit preliminary design drawings and calculations showing the dimensions of the tank, details of the type of construction, wire or strand wound prestressing methods, and sizes of principal members. The drawings and calculations shall be of sufficient detail to show compliance with the specification and all required standards and shall be signed and sealed by an Engineer registered in the state the tank is to be constructed. The registered Engineer shall certify the design is in conformance with AWWA D110, having a Type III core wall.

2. Tank Contractors not previously prequalified shall submit a complete experience record for the tanks they have designed and built in their own name. The record shall include the Tank Contractor's experience in the design and construction of wire or strand wound, prestressed concrete tanks conforming to AWWA D110, having a Type III core wall. The record shall also indicate the size of the tank, the name and address of the Owner, the year of construction, and the name of the Engineer for each project.

3. Tank Contractors not previously prequalified shall submit the name of the tank designer, currently in its employ, and his/her experience as the designer of record for tanks with an AWWA D110 Type III core wall, meeting the requirements of Section 1.02.A.3, including the size of the tank, seismic zone, the name and address of the Owner, the year of construction and the name of the Engineer.

4. Tank Contractors not previously prequalified shall submit the resumes for each member of the project team including the tank superintendent, project manager, shotcrete foreman, wire or strand winding foreman, and precast erection foreman that will be used for this project, meeting the requirements of Section 1.02.A.4.

5. Experience in the design and construction of tanks with an AWWA D110 Type I, Type II, or Type IV core wall, tanks having a fixed wall base, mild-steel reinforced tank core wall or tank core wall incorporating internal stressing systems is not acceptable.

B. Design Submittal after Execution of Contract

1. Design calculations and drawings in quadruplicate, showing details and procedures of construction, shall be submitted to the Engineer for approval after execution of the Contract. After approval by the Engineer, one set of the drawings and calculations will be returned to the Tank Contractor, and any changes found necessary by the Engineer shall be made by the Tank Contractor.

2. Approval by the Engineer of the drawings and calculations submitted by the Tank Contractor will not in any way relieve the Tank Contractor of full responsibility for the accuracy and completeness of the drawings and calculations.

3. Design calculations and drawings shall be stamped by a professional engineer experienced in the design of AWWA D110, Type III wire or strand wound prestressed concrete tanks and registered in the state the tank is to be constructed.

C. Construction Submittals for Review Prior to Use

1. Design proportions for all concrete and shotcrete. Concrete strengths of trial mixes.

2. Admixtures to be used in the concrete or shotcrete and their purpose.

3. Reinforcing steel shop drawings showing fabrication and placement.

4. Catalog cuts or shop drawings of all appurtenances, i.e. hatch, vent, ladders, waterstops.

1.04 GUARANTEE

The Tank Contractor shall guarantee the structure against defective materials or workmanship for a period of two years from the date of completion. If any materials or workmanship prove to be defective within one year, they shall be replaced or repaired by the Tank Contractor at the Tank Contractor's expense.

PART 2 – MATERIAL

2.01 CONCRETE AND SHOTCRETE

A. Concrete and shotcrete shall conform to and be proportioned in accordance with ACI 301 and 506 respectively, except as modified herein.

B. Cement shall be Portland cement Type I, Type IL, Type II or Type I/II.

C. Admixtures, other than air-entraining, superplasticizers, hydration stabilizers, shrinkage reducing and water reducing admixtures will not be permitted unless approved by the Engineer.

D. If air entrainment is utilized, the total volumetric air content of the concrete or shotcrete before placement shall not exceed 8% (±1.5%) as determined by ASTM C173 or ASTM C231.

E. Curing compound to be membrane forming and in accordance with ASTM C309.

F. Concrete for tank wall construction shall have a minimum compressive strength of 4,000 psi at twenty-eight days and a maximum water to cementitious ratio of 0.42.

G. Concrete for the tank floor, footings, pipe encasement and all other work shall have a minimum compressive strength of 4,000 psi at twenty-eight days, does not require air-entrainment and shall have a maximum water to cementitious ratio of 0.42. The coarse and fine aggregate shall meet the requirements of ASTM C33. Superplasticizers, water-reducing, and shrinkage reducing (if applicable) admixtures shall be incorporated into the floor concrete. If fibers are used, they shall be virgin polypropylene or cellulose fibers, Microfiber by Grace, Fibermesh 150-e3 by Propex, UltraFiber 500 by Buckeye, or equal. Fiber lengths shall be a maximum of ¾ inches. The amount of fibers added to the concrete mix shall conform to the Manufacturer's recommendations.

H. Shotcrete used for core wall and prestressing wire cover shall consist of not more than three parts sand to one part Portland cement by weight. Final covercoat of

shotcrete shall consist of not more than four parts sand to one part Portland cement by weight. Polypropylene fibers shall be included in the shotcrete used for the finish cover coat. Fibers shall be Fibercast 500 by Propex, Fibermesh or equal. Fibers shall be virgin polypropylene and comply with ASTM C1116 performance level I. Fiber length shall be ¼ inch. The amount of the fibers added to the shotcrete used for the finish cover coat shall conform to the Manufacturer's recommendations. Fly ash may be incorporated into the finish cover coat. If Fly ash is used, it shall conform to ASTM C618, Type F (or C). Shotcrete shall have a minimum strength of 4,500 psi at twenty-eight days and have a maximum water to cementitious ratio of 0.42.

I. Shotcrete Fine Aggregates:
   i. The fineness modulus shall be between 2.7 and 3.4. A well-graded coarse sand shall be used for all shotcrete applications.
   ii. The gradation for the fine aggregates shall adhere to the "Grading No. 1" requirements listed in "Table 1.1 – Grading Limits for Combined Aggregates" of ACI 506.

J. All concrete and shotcrete for the tank wall and dome ring shall have a maximum water soluble chloride ion concentration of 0.06% by weight of cementitious. All other concrete which has encased uncoated steel shall have a maximum water soluble chloride ion concentration of 0.1% by weight of cementitious.

K. If utilizing hydration stabilizing admixture, the admixture may be applied after 90 minutes provided the w/c ratio is not exceeded and the slump and temperature remain consistent.

L. The wet mix process shall be utilized for shotcreting.

M. Rebound material shall not be reused in any form for shotcrete.

2.02 MORTAR FILL AND NON-SHRINK GROUT

A. Mortar fill and non-shrink grout shall have a minimum compressive strength of 4,000 psi at twenty-eight days, have a maximum water to cementitious ratio of 0.42 and meet all requirements for concrete contained in this specification.

B. Portland cement grout will not be accepted.

2.03 REINFORCING STEEL

A. Reinforcing steel shall be new billet steel Grade 60, as shown on the Drawings, meeting the requirements of ASTM A615. Welded wire fabric and weldable reinforcing steel shall conform to ASTM A185 and ASTM A706, respectively.

B. Reinforcing steel shall be accurately fabricated and shall be free from loose rust, scale, and contaminants, which reduce bond.

C. Reinforcing steel shall be accurately positioned on supports, spacers, hangers, or other reinforcements and shall be secured in place with wire ties or suitable clips. Rebar chair supports may be either steel with plastic tips, turned up legs or plastic.

D. Continuous reinforcing is required through floor construction joints, where applicable.

2.04 BASE RESTRAINT CABLES

A. Where required by design, the tank designer shall use base restraint cables to resist earthquake and/or wind loads. Base restraint cables shall be hot-dipped galvanized seven-wire strand and shall be manufactured in accordance with ASTM A416 prior to galvanizing, and ASTM A475 after galvanizing. Only seven-wire strand will be allowed.

B. Hot-dipped galvanized seven-wire strand shall have a nominal strand diameter of 0.375 in, 0.50 in or 0.60 in. 0.375 inch diameter strand shall have an MUS after galvanization of 21.36 kips and a min. yield at 1% extension of 15.60 ksi. 0.50 inch diameter strand shall have an MUS after galvanization of 38.25 kips and a min. yield at 1% extension of 28.00 ksi. 0.60 inch diameter strand shall have an MUS after galvanization of 54.20 kips and a min. yield at 1% extension of 40.70 ksi. All strands shall have a minimum of weight of Zinc Coating of 0.85 oz/sq-ft.

C. Neoprene sleeves for base restraint cables shall be closed-cell conforming to ASTM D1056, Type 2, Class A, and Grade 3. The sleeves shall have a compression deflection limited to 25% at 9 to 13 psi, hardness of 60 to 80 durometer, a minimum tensile strength of 175 psi, a minimum elongation of 180%, and a maximum compressive set of 35%.

2.05 STEEL DIAPHRAGM

A. The steel diaphragm shall conform to ASTM A1008 and shall be a minimum thickness of 0.017 inches. It shall be vertically ribbed with reentrant angles. The back of the channels shall be wider than the front, providing a mechanical keyway anchorage with the concrete and shotcrete encasement.

B. The steel diaphragm shall extend to within 1 inch of the full height of the wall panel with no horizontal joints. Vertical joints within a wall panel shall be roll seamed or otherwise fastened in a fashion that results in a firm mechanical lock. Joints between wall panels that are not roll seamed shall be edge sealed with polysulfide or polyurethane sealant.

C. No punctures will be permitted in the diaphragm except those required for pipe sleeves, temporary construction openings, or special appurtenances. The Engineer shall approve details of the openings. All openings shall be completely edge sealed with polysulfide or polyurethane sealant.

D. Diaphragm steel may be considered as contributing to the vertical reinforcement of the wall.

E. Steel closure plates shall be used at wall slots between precast wall panels on the exterior face to create a continuous steel diaphragm.

F. Wall slot steel to be 10 gauge low carbon steel conforming to ASTM A569. Plate shall not be pickled or oiled.

2.06 CIRCUMFERENTIAL PRESTRESSING STEEL

A. Steel for prestressing shall either be cold drawn, high carbon wire or galvanized seven wire strand.

B. The wire shall meet the requirements of ASTM A821 and have a minimum ultimate tensile strength of 210,000 psi.

C. Splices for horizontal prestressed reinforcement shall be ferrous material compatible with the reinforcement and shall develop the full strength of the wire or strand. Wire or strand splice and anchorage accessories shall not nick or otherwise damage the prestressing.

2.07 ELASTOMERIC MATERIALS

A. Floor to wall connection shall utilitze a ribbed waterstop with centerbulb. A 9 inch minimum waterstop with centerbulb shall be polyvinyl chloride meeting the requirements of the Corps of Engineers Specification CRD-C 572. Splices shall be made in accordance with the Manufacturer's recommendations subject to the approval of the Engineer. Waterstop shall be manufactured by Greenstreak Plastic Products Company, Inc., or equal.

B. Bearing pads shall be natural rubber or neoprene.

1. Natural rubber bearing pads shall contain only virgin natural polyisoprene as the raw polymer and the physical properties shall comply with ASTM D2000 Line Call-Out M 4 AA 414 A1 3.

2. Neoprene bearing pads shall have a hardness of 40 to 50 durometer, a minimum tensile strength of 1,500 psi, a minimum elongation of 500%, and a maximum compressive set of 50%. Pads shall meet the

requirements of ASTM D2000 Line Call-Out M 2 BC 410 A1 4 B14 or M 2 BC 414 A14 C12 F17 for 40 durometer material.

C. Sponge filler shall be closed-cell neoprene or rubber conforming to ASTM D1056, Type 2, Class A, and Grade 1 or 3. Compression deflection limited to 25% at 2 to 5 psi.

D. Polysulfide or polyurethane sealant will be a two or three component elastomeric compound meeting the requirements of ASTM C920. Sealants shall have permanent characteristics of bond to metal surfaces, flexibility, and resistance to extrusion due to hydrostatic pressure. Air cured sealants shall not be used.

2.08 SEALANTS

A. Polysulfide or polyurethane sealant will be a two or three component elastomeric compound meeting the requirements of ASTM C920. Sealants shall have permanent characteristics of bond to metal surfaces, flexibility, and resistance to extrusion due to hydrostatic pressure. Air cured sealants shall not be used.

B. Polyurethane filler and sealant shall conform to ASTM C290 Type S.

2.09 EXTERIOR COATINGS

A. Above grade exterior wall surfaces shall receive two coats of a non-cementitious high build, 100% 100% acrylic resin polymer such as “Tammscoat Smooth” textured protective coating, “Tnemec Envirocrete 156”, “Sherwin Williams Loxon XP WP” or equal.

2.10 APPURTENANCES

A. The Tank Contractor shall provide and install all appurtenances as shown on the drawings. Appurtenances shall include the following:

1. Floor Piping per plans.

2. Overflow Piping and Weir.

5. Interior Ladder: The ladder shall extend from the floor to the hatch. The ladder shall be made out of 6061-T6 Aluminum and have an OSHA-approved Stainless Steel fall prevention device (if required) consisting of a sliding, locking mechanism and safety belt. Location as shown on the drawings.

3. Exterior Ladder: The ladder shall extend from 8 feet above the final grade to the tank roof. The ladder shall be made out of 6061-T6 Aluminum and have an OSHA-approved Stainless Steel fall prevention device (if

required) consisting of a sliding, locking mechanism and safety belt. Location as shown on the drawings.

4. Access Manway: A circular 31 inch diameter Type 304 stainless steel wall manway with a hinged cover. A Type 304 stainless steel grab bar and an aluminum ladder shall be installed at the manway location. Locate access manway as shown on drawings.

5. Floor Sump: If shown on drawings, a minimum of one 2 feet square x 6 inch deep sump shall be provided in the tank floor. The sump may be at a drain pipe, outlet pipe or separate from the floor piping. Location of the sump as shown on the drawings.

PART 3 – CONSTRUCTION

3.01 SAFETY

A. Tank Contractor to conform and enforce all Local and Federal OSHA safety rules and regulations.

3.02 CON

A. All trees, shrubs, brush, stumps, roots, and other unsuitable material shall be removed to a minimum distance of 12 feet outside the edge of the tank foundation, plus additional areas necessary for the tank construction. The limits of clearing shall be as shown on the drawings and/or as approved by the Engineer.

B. No burning will be allowed unless approved by the Engineer and local authorities. All trees and vegetation shall be disposed of off-site, unless approved otherwise by the Engineer.

C. All topsoil shall be stripped from the proposed construction work area and stockpiled on site.

3.03 EXCAVATION AND BACKFILL

A. The Tank Contractor shall excavate to such depths and widths to provide adequate room for tank construction. A minimum working area of 10 feet beyond the circumference of the tank foundation at an elevation 6 inches below the top of the tank foundation shall be provided. Excavated material may be used as suitable backfill material and stockpiled on site as required.

B. The excavation shall be dewatered as required during construction. The dewatering method used shall prevent disturbance of the tank foundation soils.

C. The Tank Contractor shall excavate rock, if encountered, to the lines and grades indicated on the drawings, or as directed by the Engineer. Rock excavation shall be measured separately and paid for by the unit price item for rock excavation indicated in the bid. The pay limit for rock in the area of the tank shall be carried out to ten feet beyond the circumference of the tank foundation and at an elevation of 12 inches below the tank foundation.

D. In the event the subgrade material is disturbed or over excavated by the Tank Contractor during excavation, it shall be removed and replaced with compacted select fill, at the Tank Contractor's expense.

E. If, in the opinion of the Engineer, the subgrade is unsuitable for the foundation, the Engineer shall direct that it be remove and replaced with compacted select fill. Removal of unsuitable material and replacement with compacted select fill, if required, shall be measured separately and paid for by an amendment to the contract.

F. After excavation is complete, the bottom of the excavation shall be proof rolled and leveled as directed by the Engineer before the compacted select fill is placed. The Engineer shall inspect the subgrade for conformance with the original geotechnical report and its suitability for the tank foundation. Before any select fill is to be placed against rock surfaces, the rock shall be relatively free of all vegetation, dirt, clay, boulders, scale, excessively cracked rock, loose fragments, ice, snow, and other objectionable substances. All free water left on the surface of the rock shall be removed.

G. A leveling base material consisting of a minimum 6 inch thick layer of compacted select fill shall be placed beneath the entire tank foundation. A non-woven geotextile fabric such as Mirafi 1100N, Propex 4545, or equal, shall be placed between the subgrade and leveling base material as shown on the drawings or directed by the tank builder. Select fill shall consist of a clean, well graded angular or subangular material having not more than 8% by weight passing the No. 200 sieve. The maximum size stone shall be 1½ inch. Select fill shall be placed in layers not exceeding 12 inches and compacted to a minimum density equal to 95% of the maximum laboratory density in accordance with ASTM D1557. Field testing for density achieved shall be in accordance with ASTM D1556 or D2922. If directed by the tank builder, a uniformly graded ¾ inch minus crushed stone shall be used as the leveling base material. The crushed stone shall be ¾ inch sieve size with 100% passing the 1 inch. If uniformly graded crushed stone is used for the leveling base material, compaction performance criteria shall be used to gauge the degree of compaction. Crushed stone shall be placed in layers not exceeding 9 inches and compacted with at least two passes in each direction with vibratory roller compaction equipment. Compaction shall be inspected and verification of compaction effort shall be documented by an approved testing laboratory.

H. The surface elevation of the leveling base shall be fine graded to a tolerance of plus zero inches to minus ½ inch over the entire foundation areas. Fine grading tolerances for floor pipe encasements shall be plus zero inches to minus 6 inches.

I. The tank shall be backfilled and rough graded to the contours shown on the drawings. Unless other material is specified by the Engineer, materials used for backfilling shall be suitable on site material.

J. Frozen material shall not be used for backfill nor shall fill material be placed on snow, ice, or frozen material. Rock or concrete spoils (greater than 6 inches) shall not be used in backfill within 2 feet of the tank wall.

K. Crushed stone material shall consist of clean, hard, durable, crushed particles or fragments of stone or ledge rock of uniform quality reasonably free of thin or elongated pieces. The materials shall be free from ice, snow, rubbish, sods, roots, and other deleterious or organic materials and shall conform to the following gradation requirements meeting ASTM C 33 stone size No. 67.

SIEVE SIZE	PERCENT PASSING BY WEIGHT
1 inch	100%
3/4 inch	90% - 100%
3/8 inch	20% - 55%
No. 4	0% - 10%
No. 8	0% - 5%

L. Compacted granular fill should consist of sandy gravel or gravelly sand free of ice, snow, rubbish, sods, roots and other deleterious or organic materials and should be well graded within the following limits.

SIEVE SIZE	PERCENT FINER BY WEIGHT
1.5 inch	100%
No. 4	30% - 90%
No. 40	10% - 50%
No. 200	0% - 8%

3.04 FLOOR

A. The floor and wall footings shall be constructed to the dimensions shown on the Approved Shop Drawings.

B. Prior to placement of the floor reinforcing, a 6 mil polyethylene moisture barrier shall be placed over the leveling base material. Joints in the polyethylene shall be overlapped a minimum of 6 inches.

C. Prior to placement of the floor concrete, all piping that penetrates the floor shall be set and encased in concrete.

D. The vertical waterstop shall be placed and supported so that the bottom of the center bulb is at the elevation of the top of the footing. The waterstop shall be supported without puncturing any portion of the waterstop other than pre-manufactured holes, grommets or hog rings for tying at 12 inches o.c. The waterstop shall be spliced using a thermostatically controlled sealing iron and each splice shall be successfully spark tested prior to encasement in concrete.

E. Floors over 20,000 sq. ft. in surface area, at the option of the Tank Contractor, may have one or more construction joints. Such construction joints shall be approved by the Engineer prior to placement and shall include a continuous waterstop and reinforcement through the joint.

F. The floor shall be cured by applying one coat of curing compound, curing blankets and/or flooding with water, and shall remain saturated for a minimum of seven days.

3.05 PRECAST WALL PANEL CONSTRUCTION AND ERECTION

A. The precast wall panel shall be constructed with a continuous waterproof steel diaphragm embedded in the exterior of the precast panel. Horizontal joints in the diaphragm will not be allowed.

B. No holes for form ties, nails, or other punctures will be permitted in the wall.

C. Temporary wall openings may be provided for access and removal of construction materials from the tank interior subject to the approval of the Engineer.

D. Wall beds shall be constructed to provide finished panels with the proper curvature of the tank.

E. Polyethylene sheeting shall be placed between successive pours to provide a high moisture environment and a long slow cure for the concrete.

F. The erecting crane and lifting equipment shall be capable of lifting and placing the precast panels to their proper location without causing damage to the panel.

G. The precast panels shall be erected to the correct vertical and circumferential alignment. The edges of adjoining panels shall not vary inwardly or outwardly by more than 3/8 inch and shall be placed to the tank radius within ± 3/8 inch.

H. Joints between precast wall panels shall be bridged with a 10 gauge steel plate edge sealed with polysulfide or polyurethane and filled with mortar as shown on the drawings. No through-wall ties will be permitted.

3.08 CONCRETE

A. All concrete shall be conveyed, placed, finished, and cured as required by pertinent ACI standards.

B. Weather Limitations

1. Unless specifically authorized in writing by the Engineer, concrete shall not be placed without special protection during cold weather when the ambient temperature is below 35 degrees Fahrenheit and when the concrete is likely to be subjected to freezing temperatures before initial set has occurred and the concrete strength has reached 500 psi. Concrete shall be protected in accordance with ACI 306. The temperature of the concrete shall be maintained in accordance with the requirements of ACI 301 and ACI 306. All methods and equipment for heating and for protecting concrete in place shall be subject to the approval of the Engineer.

2. During hot weather, concreting shall be in accordance with the requirements of ACI 305.

3. Placement of concrete during periods of low humidity (below 50%) shall be avoided when feasible and economically possible, particularly when large surface areas are to be finished. In any event, surfaces exposed to drying wind shall be covered with polyethylene sheets immediately after finishing, or flooded with water, or shall be water cured continuously from the time the concrete has taken initial set. Curing compounds may be used in conjunction with water curing, provided they are compatible with coatings that may later be applied, or they are degradable.

C. Finishes

The tank shall be given the following finishes:

1. The floor slab shall receive a bull float finish or Fresno finish. The top of the wall footing, exterior to the waterstop, shall receive a steel trowel or magnesium trowel finish.

2. The interior of the precast wall panels shall receive a light broom finish.

3. The exterior of the dome shall receive a light broom finish. The interior of the dome shall receive a form finish.

4. Exterior shotcrete shall receive a natural gun / nozzle finish.

D. Curing

Concrete shall be cured using water methods, sealing materials, or curing compounds. Curing compounds shall not be used on surfaces to which decorative coatings, mortar, or shotcrete is to be applied. Curing compounds used within the tank shall be suitable for use with potable water.

E. Testing

1. For concrete placed in precast panels or wall slots, a set of three cylinders shall be made for each truck load of concrete placed. For concrete placed in the floor, dome ring, or dome slots, two sets of five cylinders for the first 50 cubic yards, and one set of five cylinders for every 100 cubic yards thereafter placed in the same day. Two cylinders shall be tested at seven days, two at twenty-eight days, and one held as a spare.

2. Slump, air content and temperature testing shall be performed on each truck where cylinders are taken.

3. All concrete testing shall be in accordance with ASTM C31 and C39, at the expense of the Tank Contractor, and shall be conducted by an independent testing agency approved by the Engineer.

3.09 SHOTCRETING

A. Weather Limitations

1. Shotcrete shall not be placed in freezing weather without provisions for protection against freezing. Shotcrete placement can start without special protection when the temperature is 35 degrees Fahrenheit and rising, and shall be suspended when the temperature is 40 degrees Fahrenheit and falling. The surface to which the shotcrete is applied shall be free from frost. Cold weather shotcreting shall be in accordance with ACI 506, ACI 301 and ACI 306.

2. Hot weather shotcreting shall be in accordance with the requirements of ACI 506, ACI 301 and ACI 305.

B. Coating of Steel Diaphragm

1. The steel diaphragm shall be covered with a layer of shotcrete at least ½ inch thick prior to prestressing.

2. Total minimum coating over the steel diaphragm shall be 1½ inches including diaphragm cover, wire or strand cover, and finish cover coat.

C. Coating Over Prestressing Wire or Strand

1. Each prestress wire or strand shall be individually encased in shotcrete. Shotcrete thickness shall be sufficient to provide a clear cover over the wire and strand of at least ¼ inch and 3/8 inch, respectively.

2. Finish cover coat shotcrete shall be applied as soon as practical after the last application of wire or strand coat.

3. The minimum final shotcrete cover over the outermost prestressing wire or strand layer shall be 1 inch.

D. Placement of Shotcrete

1. Shotcrete shall be applied by an ACI 506 certified nozzleman.

2. Manually applied shotcrete shall be applied with the nozzle held at a small upward angle not exceeding five degrees and constantly moving during application in a smooth motion with the nozzle pointing in a radial direction toward the center of the tank. The nozzle distance from the prestressing shall be such that shotcrete does not build up or cover the front face of the wire or strand until the spaces behind and between the prestressing elements are filled.

3. Unless applied by an automated shotcrete process, total cover coat thickness shall be controlled by shooting guide wires. Vertical wires shall be installed under tension and spaced no more than two feet apart to establish uniform and correct coating thickness. Monofilament line (100 lb. test) or 18 or 20 gauge high tensile strength steel wire shall be used. Guide wires shall be removed after placement of the cover coat.

4. Shotcrete applied by an automated shotcrete process shall be applied using the wet mix only. Nozzles shall be kept mounted on power driven machinery enabling the nozzle to travel parallel to the surface to be sprayed at a uniform linear or bi-directional speed. The nozzle shall be kept at a uniform constant distance from the surface, always insuring a right angle spray of the material to the surface. The high velocity impact

shall be developed pneumatically by injecting compressed air at the nozzle.

E. Curing

1. Shotcrete shall be cured using water curing methods, sealing materials or curing compounds at the option of the Tank Contractor. Curing compounds shall not be used on surfaces to which decorative coatings, mortar or shotcrete is to be applied. Curing compounds used within the tank wall shall be suitable for use with potable water. Intermediate layers of shotcrete shall be kept damp by water curing or other means no sooner than twelve hours after the shotcrete has been applied.

2. Water curing is not required should additional shotcrete be applied on the entire wall surface within the following twelve hours.

3. Indiscriminate use of continuous water cure for intermediate layers shall be avoided.

4. Complete shotcrete surfaces, which do not receive any additional coatings, may be water cured for a period of at least seven days by encapsulating the shotcrete inside of plastic sheeting.

F. Testing

1. Testing of shotcrete shall be in accordance with ACI 506, except as specified herein. One test panel shall be made for each of the following operations: core wall, wire or strand cover, and cover coat. Test panels shall be made from the shotcrete as it is being placed, and shall, as nearly as possible, represent the material being applied. The method of making a test sample shall be as follows: A frame of wire fabric (1 foot square, 3 inches in depth) shall be secured to a plywood panel and hung or placed in the location where shotcrete is being placed. This form shall be filled in layers simultaneously with the nearby application. After twenty-four hours, the fabric and plywood backup shall be removed and the sample slab placed in a safe location at the site.

2. The sample slab shall be moist cured in a manner identical with the regular surface application. The sample slab shall be sent to the testing laboratory. Nine 3 inch cubes shall be cut from the sample slab and subjected to compression tests in accordance with current ASTM Standards. Three cubes shall be tested at the age of seven days, three shall be tested at the age of twenty-eight days, and three shall be retained as spares. Testing shall be by an independent testing laboratory, approved by the Engineer and at the Tank Contractor’s expense.

3. At the Tank Contractor's option testing of shotcrete applied with an automated process shall be in accordance with ACI 301 and conform to Section 3.07.E "Concrete Testing" of these specifications in lieu of that indicated in Section 3.09.F.1.

3.10 CIRCUMFERENTIAL PRESTRESSING

A. Prestressing shall be performed utilizing continuous wire or strand. Prestressing wire/strand will be placed on the wall with a machine capable of consistently producing a stress in the wire/strand within a range of minus 7% to plus 7% of the stress required by the design. No circumferential movement of the prestressing along the tank wall will be permitted during or after stressing. Stressing may be accomplished by drawing the wire through a die or by another process that results in uninterrupted elongation, thus assuring uniform stress throughout its length and over the periphery of the tank.

B. Each coil of prestressing shall be temporarily anchored at sufficient intervals to minimize the loss of prestress in case a wire/strand breaks during wrapping.

C. Minimum clear space between prestressing wires is 5/16 inch or 1.5 wire diameters, whichever is greater. Minimum clear distance between prestressing strands is 3/8 inch or 1.5 strand diameters, whichever is greater. Any wires or strands not meeting the spacing requirements shall be respaced. Prestressing shall be placed no closer than 2 inches from the top of the wall, edges of openings, or inserts, nor closer than 3 inches from the base of walls or floors where radial movement may occur.

D. The band of prestressing normally required over the height of an opening shall be displaced into circumferential bands immediately above and below the opening to maintain the required prestressing force. Bundling of the prestressing steel shall be prohibited.

E. For wire wound tanks, a stress plate shall be used at all permanent wall penetrations above grade that results in displacement of wire/strand equal to or greater than 24 inches in height. The stress plate shall accommodate a portion of the prestressing normally required for the height of the opening. The remaining prestressing normally required shall be displaced into circumferential bands immediately above and below the penetration. The effect of banded prestressing shall be taken into account in the design.

F. Ends of individual coils shall be joined by suitable steel splicing devices capable of developing the full strength of the prestressing wire/strand.

G. The Tank Contractor shall furnish a calibrated stress recording device, which can be recalibrated, to be used in determining wire/strand stress levels on the wall

during and after the prestressing process. At least one stress reading per vertical foot or one stress reading for every roll of prestressing, whichever is greater, shall be taken immediately after the wire or strand has been applied on the wall. Readings shall be recorded and shall refer to the applicable height and layer of the prestressing for which the stress is being taken. The Tank Contractor shall keep a written record of stress readings. All stress readings shall be made on straight lengths of wire/strand. If applied stresses fall below the design stress in the steel, additional wire or strand will be provided to bring the force on the core wall up to the required design force. If the stress in the steel is more than 7% over the required design stress, the wrapping operation should be discontinued, and satisfactory adjustment made to the stressing equipment before proceeding.

H. When a mechanical stressing system is utilized a continuous electronically (or substantial equivalent) monitored permanent recording of the applied force shall be made during the entire circumferential prestressing application. All such recordings shall be based on a continuous sensing of the applied force on the wire/strand between the tensioning system and the wall when, and as, the strand is being wrapped and laid on the wall.

3.11 EXTERIOR COATINGS

A. All work shall be performed by workmen skilled in the application of these types of products. The Manufacturer's application instructions shall be submitted to the Engineer for approval. The Contractor shall confer with the Manufacturer's representatives regarding application techniques and shall follow the Manufacturer's instructions implicitly.

B. The concrete surface to be coated shall be clean, free of all laitance, dirt, grease, or other foreign materials. All defective surfaces shall be filled and/or repaired. Application shall be in full accordance with the Manufacturer's instructions or as amended by the Engineer.

3.12 DISINFECTION

A. The Tank Contractor shall, at the completion of tank construction, thoroughly clean the interior of the tank.

B. The Tank Contractor shall notify the Engineer prior to disinfecting the tank. Disinfection shall meet with the approval of the Engineer, AWWA C652, and the appropriate state agency.

C. The tank floor and interior of the wall shall be disinfected by using a solution of chlorine and water per Method 3 of AWWA C652.

D. Prior to placing the tank in service, a bacteriological test shall be taken, and successful results received. Testing shall be by an independent testing laboratory at the expense of the owner.

3.13 WATERTIGHTNESS TEST

A. Upon completion, the tank shall be tested to determine watertightness. The tank shall be filled with potable water to the maximum level. Water will be furnished to the tank by the owner. The test shall consist of measuring the liquid level over the next twenty-four hours to determine if any change has occurred. If a change is observed and exceeds the maximum allowance, the test shall be extended to a total of five days. If at the end of five days the average daily change has not exceeded the maximum allowance, the test shall be considered satisfactory.

B. The liquid volume loss for a period of twenty-four hours shall not exceed $1/20^{th}$ of 1% of the tank capacity, 0.0005 x tank volume. If the liquid volume loss exceeds this amount, it shall be considered excessive, and the tank shall be repaired and retested.

C. Damp spots will not be permitted at any location on the tank wall. Damp spots are defined as spots where moisture can be picked up on a dry hand. All such areas shall be repaired as necessary.

D. Damp spots or standing water on the footing may occur upon tank filling and are permissible within the allowable volume loss. Measurable flow in this area is not permissible and shall be corrected.

3.14 CLEAN-UP

The premises shall be kept clean and orderly at all times during the work. Upon completion of construction, the Tank Contractor shall remove or otherwise dispose of all rubbish and other materials caused by the construction operation. The Tank Contractor shall leave the premises in as good a condition as it was found.

END OF SECTION

SECTION 46 00 00
GENERAL EQUIPMENT REQUIREMENTS

Part 1 GENERAL

1.01 - GENERAL

A. This section sets requirements for all equipment supplied with project and are applicable without reference.

B. Individual equipment specification sections supersede these general requirements where differences exist.

C. Coordinate all dimensions, structural loads, support requirements, shop painting and electrical requirements.

D. Design equipment to fit in space provided; measure and check all dimensions and clearances in field before fabricating equipment to fit in existing structures.

E. Submit all equipment weights, loads, operating weights, vibration loads and foundation requirements to Engineer with shop drawings or upon request of Engineer.

F. Equipment and materials are subject to rejection by Engineer due to failure, structural collapse, non-performance, seizing, overheating, fire, binding, deflection in excess of specified limits, leakage, spray, splashing out of unit, uncorrected malfunction, misalignment, damage to structures and other defects observed during installation, testing, startup, or initial operation. Repair or replace equipment as directed by Engineer at no cost to Owner.

1.02 - Design equipment for specific application, considering duty cycle, operating conditions and corrosion resistance requirements.

1.03 - EQUIPMENT WARRANTY

A. The Contractor shall provide manufacturer's warranty written in the name of the Owner and submit Warranty to the Engineer for review.

B. The Manufacturer's Warranty shall guarantee the equipment, materials, workmanship and hardware to be free of defects for a period of two (2) years from the date of Contract completion.

C. Contractor shall pay all costs and provide labor for removal and installation of equipment requiring repair or replacement under the Manufacturer’s warranty.

Part 2 PRODUCTS

2.01 - GUARDS

A. Guard all shafts, belts, gears, and other moving parts.

B. Maximum 1/4" opening in guard.

C. Comply with all OSHA and local safety requirements.

D. Removable by unbolting; do not weld to equipment.

2.02 - ANCHORAGE

A. Indicate anchor bolt, anchorage and foundation requirements.

B. Stainless steel anchor bolts unless specified otherwise.

C. Conform to manufacturer's anchor template and anchor sizing.

Part 3 EXECUTION

3.01 - WORK INCLUDED

A. Installation and erection of all equipment and control systems specified.

B. Receiving, transporting, unloading and storing of all equipment.

C. Adjustments, lubrication and initial operation.

D. Foundations for all equipment.

E. Anchor bolts, fasteners and sleeves for all equipment.

F. Specific requirements for equipment installation is included with individual equipment specification and manufacturer's drawings and instructions.

3.02 - RECEIVING, TRANSPORTING AND STORING

A. Receive all shipments of equipment at job site or local freight terminal.

B. Transport as required and unload at job site.

C. Store equipment in manner and location which will ensure complete fitness for operation; protect from rust, corrosion, weathering and vandalism.

D. Pay all demurrage or storage charges.

3.03 - ASSEMBLY AND ERECTION

A. Completely assemble all equipment shipped knocked down; furnish minor items such as nuts, bolts, washers, pins and pipe fittings necessary for assembly and operation; use materials compatible with equipment.

B. Erect and install ready for operation.

C. Manufacturer of equipment to design, detail and specify steel fasteners and supports unless specified otherwise.

D. Contractor to supply stainless steel fasteners and supports not supplied with equipment; comply with manufacturer's specifications.

3.04 - SUPPORTS AND FOUNDATIONS

A. Provide devices for supporting all equipment in accordance with recommendations of manufacturer and as shown on plans.

1. Concrete pads for floor mounted equipment.

2. Fabricated supports of steel sections, plates or rods for all hung equipment and bearing supports; prevent transmission of excessive forces to building structures or any piece of equipment or piping.

B. Align and level all equipment; use shims as needed.

C. Grout under all equipment on concrete foundations with non-shrink grout specified in Section 03 30 00 - Cast-In-Place Concrete.

D. Manufacturer of equipment to design, detail and specify Series 300 stainless steel anchor bolts, expansion anchors, nuts and washers and templates unless specified otherwise.

E. Supply Series 300 stainless steel anchor bolts, expansion anchors, nuts and washers not supplied with equipment; comply with manufacturer's specifications.

1. Provide embedment necessary to develop full rated strength of each anchor.

F. Separate aluminum from contact with concrete or grout by coating aluminum with epoxy polyamide paint after fabrication and prior to installation.

3.05 - PROTECTION

A. Structures:

1. Use cribbing, shoring or planking to protect structures from moving-in damage.

2. Repair any damage to structures or equipment after equipment is in place.

B. Equipment:

1. Protect against falling objects and construction operations which might damage equipment installed before construction is completed.

2. Provide pump and pipe openings with temporary hardware cloth screens or solid plugs; remove at direction of Engineer.

3. All equipment to receive shop paint before shipment; see Section 09 90 00 - Painting.

3.06 - CLEANING

A. Clean equipment of all temporary protective coatings.

B. Remove all oil, grease and dirt from external surfaces prior to painting; see Section 09 90 00 - Painting.

C. Remove all paint from equipment nameplates; terminate paint in straight, neat lines along edges of nameplates.

3.07 - LUBRICATION

A. Lubricate all moving equipment in accordance with manufacturer's recommendations.

B. Furnish lubricants for initial lubrication. Replace and clean up any spillage during testing or repairs.

3.08 - ADJUSTMENTS

A. Make any adjustments to equipment necessary to improve operation.

B. Check equipment clearances and adjust in accordance with recommendations of manufacturers.

C. Add or replace equipment packing, seals and similar items as required.

3.09 - INITIAL OPERATION

A. Supervise initial start-up and operation of all equipment.

B. Maintain all equipment until acceptance by Owner.

3.10 - LONG-TERM STORAGE

A. Supply manufacturer's long-term storage instructions for equipment and motors.

B. Oil ferrous metal shafts, gears and bearing surfaces of equipment and motors stored for over two weeks.

C. Rotate equipment and motor shafts monthly until installed and operational.

3.11 - MANUFACTURER′S FIELD ENGINEER

A. Schedule manufacturers′ field engineers services at site with Owner and Engineer; schedule subject to Owner′s and Engineer′s approval.

B. Do not schedule more than one (1) manufacturer's′ field engineer to be at project site at a time.

END OF SECTION 46 00 00

SECTION 46 21 39
SPIRAL SCREENS

A. GENERAL

A.1. This section includes furnishing one (1) model HLS400M35 Helisieve spiral screening unit, as manufactured by Parkson, Vernon Hills, IL. The Helisieve unit will consist of: a spiral assembly, screen basket, transport tube, press zone assembly, drive system, pivot stand, and controls.

A.2. The influent stream to be screened will be introduced to the internal surface of the screen basket with the solids being retained on the surface of the basket until transported up the spiral. The solids will then be dewatered and discharged. The Helisieve unit will be installed at 35 degrees in a 20 inch wide channel, and will have a channel depth of 42 inches. The Helisieve unit will have a clearance of 60 inches between top of the channel and the chute/guard.

A.3. PERFORMANCE. The screen will have a capacity of 2.25 MGD peak flow at an influent suspended solids concentration of 200 mg/l. The influent to the screen will be raw municipal sewage.

A.4. Specifications and equipment arrangement are based on the Model HLS400M35 by Parkson, and changes to this arrangement will be at the expense of the installing contractor. The screen manufacturer will have a minimum of 5 years of design and manufacturing experience with shaftless spiral screening units, with not less than 100 similar units installed as screening devices in similar applications. Manufacturer will include U.S. installation list with the equipment submittal.

A.5. Related work specified elsewhere:

A.5.1. Section 46 05 00 – General Equipment Requirements
A.5.2. Division 26 – Electrical
A.5.3. 26 60 00 - Controls

B. CONSTRUCTION AND MATERIALS

B.1.1. SPIRAL ASSEMBLY. The spiral assembly will consist of the spiral, brush and drive shaft.

B.1.1.1. SPIRAL. The spiral will be shaftless except in the press zone and discharge section and will be constructed of high-strength carbon steel. The spiral will be constructed of two concentric flights formed continuously from bar stock and welded together to form a spiral. The outer spiral will have a thickness of 0.59 inches and the inner spiral will have a thickness of 0.39 inch. The spiral will have a constant inner diameter through the entire length. The spiral outer diameter shall be 7.68 inches in the transport section and will transition to 13.26 inches in the basket with additional flight welded to the outer spiral.

B.1.1.2. BRUSH. The spiral in the screen basket will be fitted with a water-resistant brush, which will clean the screen basket openings and be fastened to the trailing side of the spiral edge in the screen basket. Each brush section will be molded into a plastic core and cover a 180 degree section of the spiral. Brush sections will be mounted to form a continuous brush and clean the entire basket area during operation. The brush sections will have stainless steel nuts pressed into the core and can be attached to the spiral with stainless steel fasteners.

B.1.1.3. SHAFT. The spiral shaft will be constructed of carbon steel and welded to the spiral. The shaft will include a flange with a bolted connection to the drive shaft stub flange for ease of disassembly for maintenance.

B.1.2. SCREEN BASKET. The screen basket will be constructed of 11 gauge perforated type 304 stainless steel. The screen basket will be fitted with rubber flaps to provide a seal between the channel walls and the screen basket. The screen openings will be 1/4 inch diameter.

B.1.3. TRANSPORT TUBE. The transport tube is constructed of 11 gauge type 304 stainless steel and includes a tapered transition section to convey screenings from the screenings basket, through the straight transport section, and then to the press zone. The transport tube will be fitted with four (4) wear bars in the transition section and four (4) wear bars in the straight section to prevent the spiral from wearing on the surface of the tube. The wear bars will be constructed of .38” thick stainless steel. The wear bars will be fixed to the taper and straight sections of the tube by cap screws inserted through the tube and threaded into tapped holes in the wear bars. This construction will allow for ease of replacement and monitoring of wear rate on the bars by periodic removal and length measurement of the cap screws.

B.1.4. PRESS ZONE ASSEMBLY. The press zone assembly will consist of a press zone enclosure, a retractable spool compaction tube, a spray flush system, and a discharge chute. A fully hinged top cover allows for easy access.

B.1.4.1.1. PRESS ZONE ENCLOSURE. The press zone enclosure will be mounted to the end flange of the transport tube, and be constructed of minimum 1/4” type 304 stainless steel. The enclosure will include provision to mount the gear reducer, compaction tube and discharge chute. The enclosure shall have a top mounted hinged lid for full access to the press zone and discharge sections. The lid shall be secured with latches for easy access and have an interlock switch to stop the screen when the lid is open.

B.1.4.1.2. COMPACTION TUBE. The compaction tube will be flange mounted to the inside of the press zone enclosure. The bottom half of the tube will have 1/8” perforations to drain the screenings pressate.

B.1.4.1.2.1. An adjustable retractable spool compaction tube is set according to the quantity of wipes in the influent flow. In EZ-Wipe™ retracted length mode, wipes, rags and screenings exit earlier to reduce clogging. In Standard length Mode, screenings compact for a full length. Designs without this feature are specially excluded.

B.1.4.1.3. SPRAY FLUSH SYSTEM. The spray flush system will have one spray header mounted to the enclosure, which will flush the pressate into a discharge hose to be returned to the downstream side of the screen. The spray system will have an output of approximately 8 GPM at 40-60 psi and can use non-potable water. Pipe and fittings will be 1/2 " NPT Schedule 40 stainless steel.

B.1.4.1.4. DISCHARGE CHUTE. The discharge chute will be bolted to the bottom of the press zone enclosure. It will include a drain under the compaction tube, and have a discharge opening under the discharge section. The pressate and flush water will be directed into a discharge hose to be returned to the downstream side of the screen. The discharge opening will direct screenings to the solids receptacle or solids handling equipment.

B.1.5. EXPLOSION-PROOF MOTOR AND REDUCER. The spiral drive system will be fitted with a single speed, dual voltage, Class I, Division 1, Group D explosion-proof rated motor direct coupled via an AM143 C-face adapter, to a SEW-Eurodrive FAF type helical gear reducer. The electric motor will be 1.0 HP, 1800 RPM, 230/460 volt, 3 Phase, 60 Hz, FCXP. The gear reducer will be AGMA Class II service based on the horsepower required to operate the screen and will have an output speed of 11 RPM.

B.1.6. PIVOT STAND. The Helisieve unit will have a support stand with integral pivot. The stand's structural members will be constructed of stainless steel with a minimum thickness of 0.13 inch. The integral pivot will allow rotation of the unit out of the channel and lateral pivoting above the channel for ease of maintenance.

B.1.7. SURFACE FINISH

B.1.7.1.1. SURFACE TREATMENT OF STAINLESS STEEL COMPONENTS. All stainless steel subassemblies will be acid passivated after welding for corrosion resistance and to provide a superior surface finish. This will be done by full dipping of weldments; or by using an acid passivation paste in the weld and heat affected areas and spray-on acid solutions elsewhere. After passivation, the weldments will be thoroughly rinsed with clean water and allowed to air dry. Sandblasting, bead blasting or grit blasting of stainless steel surfaces will not be allowed in lieu of acid passivation.

B.1.7.1.2. The spiral will be prime coated for protection during shipment.

B.1.7.1.3. The motor and gear reducer, and all unit-mounted electrical devices, will have the standard manufacturer's finish.

C. 3.0 ELECTRICAL DEVICES AND CONTROLS

C.1.1. ELECTRICAL DEVICES. Interconnecting conduit and wiring will be the responsibility of the installing contractor. In addition to the drive motor, the following electrical devices will be furnished with each unit:

C.1.1.1.1. EXPLOSION-PROOF SOLENOID VALVE. The 120 volt, single phase, 60 Hz solenoid valve housed in NEMA 7 enclosure will have 18-inch-long integral leads.

C.1.1.1.2. EXPLOSION-PROOF INTERLOCK SWITCH. The NEMA 7 access door interlock switch will indicate when the press zone cover is opened.

C.1.1.1.3. INTRINSICALLY SAFE FLOAT SWITCH. The mercury free float switch will be of polypropylene construction, and will have a type 316 stainless steel pipe mounting bracket, and a float mounting clamp. The pipe mounting bracket and float mounting clamp require a suitable length of 1 inch pipe to suspend the float in the channel, by others. The float will have a 20-foot-long integral cable. An intrinsically safe barrier relay will be mounted in the main control panel.

C.1.1.1.4. EXPLOSION-PROOF EMERGENCY STOP LOCAL PUSH BUTTON STATION. A NEMA 7 emergency stop push button station will be mounted to the support stand.

C.1.2. CONTROLS. The following controls will be provided:

C.1.2.1. A 480 volt primary U.L. listed and labeled control panel in a remotely located NEMA 4X type 304 stainless steel enclosure suitable for wall-mounting. It will contain the following logic devices for proper operation of the equipment:

C.1.2.2. Programmable relay to monitor equipment mounted electrical devices to perform necessary logic functions.
C.1.2.3. Emergency Stop push button.
C.1.2.4. Hand-Off-Auto selector switches for the drive and spray wash.
C.1.2.5. Forward-Off-Reverse selector switch for the spiral drive.
C.1.2.6. Control power and spiral run incandescent indicating lights.
C.1.2.7. Spiral motor current monitor and hour meter.
C.1.2.8. Fault and fault reset push button incandescent light.
C.1.2.9. Run and fault auxiliary output contacts for customer use.

C.1.2.9.1. A step-down control transformer, IEC rated reversing motor starter and fused main disconnect will be provided.

C.1.3. 3SEQUENCE OF OPERATION

C.1.3.1.1. HAND OPERATION. The spiral motor and spray wash will run continuously.

C.1.3.1.2. AUTOMATIC OPERATION. The level sensor will start the unit in the forward direction. After the upstream level has been lowered, the unit will continue to run for the length of time set per the off delay timer, typically set at 30 seconds.

C.1.3.1.2.1. Brush Saver Feature: After forward operation is complete, the unit will stop and then operate in reverse for a short duration. This momentary reversal extends brush life by preventing bristles from being laid down in only one direction. Designs without this feature are specifically excluded.

C.1.3.1.2.2. The press zone spray wash will provide a periodic flush based on the settings of an independent repeat cycle timer.

C.1.3.1.3. EMERGENCY STOP. The unit can be deactivated at any time by pressing either the control panel mounted or unit mounted Emergency Stop push button.

C.1.3.1.4. FAULT CONDITIONS. Motor overload or high current will stop the drive motor and illuminate the fault light.

D. ANCHOR BOLTS

D.1.1. The installing contractor will furnish 1/2”-13UNC by 7 ½ inches long to anchor the screen unit and 3/8”-16UNC by 3-3/4 inches long stainless steel expansion anchors to secure the level sensor mounting bracket.

E. FACTORY SERVICE

E.1.1. Helisieve unit manufacturer will provide factory service during one (1) trip, for one (1) day, for inspection of installation, equipment start up and operator training.

F. FACTORY ASSEMBLY, TESTING AND INSPECTION

F.1.1. The unit will be factory operated and inspected prior to shipment. The Engineer and/or Owner may, at their option and own expense, witness the factory test.

G. INSTALLATION, OPERATION AND MAINTENANCE MANUAL

G.1.1. In addition to the normal Installation, Operation and Maintenance Manuals required by contract, a spare manual will be shipped with the unit in order to allow for proper operation of equipment prior to release of all final Installation, Operation and Maintenance Manuals to the end user.

Exhibit 11A

Iowa Department of Natural Resources

Wastewater Section

Construction Permit Application

SCHEDULE A, Construction Permit Application

APPLICANT	ENGINEER
Owner: City of Anamosa	Firm: Snyder & Associates, Inc.
Address: 107 South Ford Street, Anamosa, IA	Address: 900 Bell Dr. SW Cedar Rapids, IA
Representative: Steve Agnitsch, Utilities Superintendent	Project Officer: Nick Eisenbacher
Phone Number: (319) 462-6055	Phone Number: (319) 362-9394
Email: steve.agnitsch@anamosa-ia.org	Email: neisenbacher@snyder-associates.com

Project Identification: WWTP Flow Equalization Basin

Estimated Start Date*: Summer 2024 Estimated Completion Date: Fall 2025

PLEASE RESPOND TO ALL QUESTIONS	Yes	No
1. Has an engineering report, facilities plan or other information previously been submitted for this project?	☒	☐
If Yes: Project Identity: WWTP Flow Equalization Basin Date Submitted: 6/18/2020		
2. Does the project and construction permit application, as submitted, follow the recommendations, design loadings, construction schedule, permit limits, and conclusions of the approved engineering report or facilities plan?	☒	☐
If No: Provide the design basis and technical information justifying all changes.		
3. Are there three complete sets of plans and specifications accompanying this application?	☒	☐
For a minor gravity sewer extension within the meaning of 455B.183.3 Code of Iowa and Design Standard 11.1, two complete sets will be adequate for expeditious approval. For more complex projects, three sets of plans and specifications may be requested.		
4. Are approved standard specifications a part of this application?	☒	☐
If Yes: Approved Standard Specifications of (municipality or firm): SUDAS 2023 Date Approved:		
5. Does each set of plans and specifications or engineering report accompanying this application contain a "professional engineering seal" executed in conformance with 542B.16, Code of Iowa?	☒	☐
If No: Processing will be delayed pending receipt of applicable design schedules and certified plans, specifications or engineering report.		
6. Is this a joint wastewater and water supply project?	☐	☒
If Yes: A construction permit application for the water supply project should be submitted separately to the Water Supply Section. A Water Supply permit fee may be required.		
7. Is the applicant to provide treatment of effluent resulting from this construction?	☒	☐
If No: A Sewage Treatment Agreement executed by the authority providing treatment must accompany this form.		
8. Is a new or amended operation permit necessary to use the facilities described in this application?	☐	☒
If Yes: A new or amended permit to operate may be requested prior to the receipt of a construction permit.		
9. Is any waterline located within 10 feet; or any private or public well, lake, or public recreation area located within 400 feet of the proposed construction?	☒	☐
If Yes: Identify and locate the facility(ies) relative to the proposed construction.		
10. Will construction inspection be conducted by a licensed engineer employed by the applicant?	☒	☐
If No: Name of Engineering Firm Conducting Inspection: Snyder & Associates, Inc.		
11. Will this project utilize CWSRF loan funds?	☒	☐

CERTIFICATION

APPLICANT	ENGINEER
I certify that I am the authorized representative of the owner and state that the project identified above is approved by the owner.	I certify that all aspects of the design included in this application conform to applicable standards contained in Chapter 567 IAC 64, or that an explanation and justification for any proposed variations from such standards is attached. I am familiar with the information contained in this application and, to the best of my knowledge, such information is complete and accurate.
Signature _____ Date _____	Signature _____ Date _____

*Estimated Construction Start Date: Complete applications must be submitted at least 120 days in advance of the date for starting construction in accordance with Rules 567 IAC 60.4 and 64.2

Please complete the Schedule Checklist on the following page of this form.

Please complete the Schedule Checklist on the following page of this form.

DOCUMENT CHECKLIST

Identify all categories included in this project. Also, identify schedules attached to this application.

Schedule	Title	Attached	Included in Project	Submittal Date
B	Collection System	☐	☐	
C	Lateral Sewer Extension	☐	☐	
D	Trunk & Interceptor Sewer	☐	☐	
E	Wastewater Pump Station	☒	☒	8/17/2023
F	Treatment Project Site Selection	☒	☒	6/22/2020
G	Treatment Project Design Data	☒	☒	6/22/2020
H1	Schematic Flow Diagram	☒	☒	8/17/2023
H2	Treatment Process Loading and Removal Efficiency	☐	☐	
H3	Mechanical Plant Reliability	☐	☐	
I	Screening, Grit Removal and Flow Measurement	☒	☒	8/17/2023
J	Septic Tank System	☐	☐	
K1	Controlled Discharge Pond	☐	☐	
K2	Aerated Pond	☐	☐	
K3	Anaerobic Lagoon	☐	☐	
L	Setting Tanks	☐	☐	
M	Fixed Film Reactor-Stationary Media	☐	☐	
N	Rotating Biological Contactor	☐	☐	
O	Aeration Tanks or Basins	☐	☐	
P	Gas Chlorination	☐	☐	
Q	Sludge Digestion and Holding	☐	☐	
R1	Sludge Dewatering and Disposal	☐	☐	
R2 (A&B)	Low Rate Land Application of Sludge	☐	☐	
R3	Land Application of Sewage Sludge (To be developed)	☐	☐	
S	Land Application of Wastewater (To be developed)	☐	☐	
	Sewage Treatment Agreement	☐	☐	

Identify any categories included in this project which are not provided in the above list of schedules.

Iowa Department of Natural Resources
Wastewater Section
Construction Permit Application
SCHEDULE E, Wastewater Pump Station

DNR USE ONLY
Project No. _____
Permit No. _____

Date Prepared 8/15/2023
Date Revised _____

Project Identity
WWTP Flow Equalization Basin

1. Design Basis

	Initial		Design Year (2030)	
Residential Service Area		Acres		Acres
Population		Persons		Persons
PHDW Flow		MGD		MGD
Industrial Service Area		Acres		Acres
PHDW Flow		MGD		MGD
Other _____		Acres		Acres
PHDW Flow		MGD		MGD
Peak Hourly Infiltration		MGD		MGD
Peak Hourly inflow		MGD		MGD
Total PHDW Flow		MGD		MGD
Total PHWW Flow		MGD		MGD

2. Provide pump information

Pump No.	Type	Opening (in)	HP	Capacity (GPM)	TDH (ft.)		Operating Level	
					Computed	Rated	On	Off
1	Chopper	4	20	479		49'		
2	Chopper	4	20	479		49'		
3	Non-Clog	4	34	1025		72'	763	762.25
4	Non-Clog	4	34	1025		72'	763	762.25
5								
Sump								

Are pumps specified as being capable of passing three-inch diameter spheres? ☒ Yes ☐ No
Can remaining pumps handle PHWW flow with largest pump out of service? ☒ Yes ☐ No

3. Wet-well effective volume 2932 gallons Maximum retention time Initial flow _____ minutes
Design flow _____ minutes

4. Is forced air ventilation specified? ☐ Yes ☒ No
Continuous: Wet-well _____ Dry-well _____ Intermittent: Wet-well _____ Dry-well _____
Dry-well _____ Air changes/hour Dry-well _____ Air changes/hour
Are spark-proof materials specified? ☒ Yes ☐ No

5. Force main: Is profile of force main provided? ☒ Yes ☐ No
Size 8" in Length 77 ft Detention time at ADW design flow _____ hours
Pipe material SUDAS 4010-2.02-ABC Joint SUDAS 5010-201-A2 & B4, SUDAS 5011-301-A1
Minimum cover 5 ft Minimum velocity 3 fps Number of high points 0
Are air relief valves provided? ☐ Yes ☒ No Number of thrust blocks provided _____
At location(s) All restrained joints and fittings along force main
Is pressure test specified? ☒ Yes ☐ No Does installation conform to AWWA C600? ☒ Yes ☐ No
If no, explain _____

6. Are valves provided on the suction & discharge lines? ☒ Yes ☐ No
Type: Discharge Plug Suction _____

7. Is an alarm system provided? ☒ Yes ☐ No Type Dialer, Audio/Visual
Indicate where audio/visual warning signals will be located Lift Station Control Panel

8. Method of pump control Float System

9. Are the pumps protected from clogging? ☒ Yes ☐ No Method of cleaning _____
Method of pump removal Guide Rails, Hook and Chain Are lifting hook/arms provided? ☐ Yes ☒ No

10. Are permanent emergency piping bypass connections provided? ☐ Yes ☐ No
Is an emergency power supply available? ☒ Yes ☐ No
Describe station operation in an emergency (equipment, piping, bypass, etc.) Shut off flow to Flow EQ with valves

11. Is the wastewater pump station located in a floodplain? ☒ Yes ☐ No
Elevation of 100 year flood (MSL) 788.89 Elevation of 25 year flood(MSL) _____

Iowa Department of Natural Resources
Wastewater Section
Construction Permit Application
SCHEDULE H1, Schematic Flow Diagram

DNR USE ONLY
Project No. _____
Permit No. _____

Date Prepared	Project Identity
8/14/2023	WWTP Flow Equalization
Date Revised	
_____	

Se plan sheet PR0.02

Iowa Department of Natural Resources
Wastewater Section
Construction Permit Application
SCHEDULE I, Screening, Grit Removal, & Flow Measurement

DNR USE ONLY
Project No. _____
Permit No. _____

Date Prepared	Project Identity
8/15/23	WWTP Flow Equalization
Date Revised	

Screening Facilities

1. Location of Unit: Headworks Building
2. Type of screen: ☐ Manually cleaned ☒ Mechanically cleaned ☐ Comminution

Unit	Area		Opening Size (inches)	Slope (degrees)	Velocity (fps)	Head Loss (ft)	Capacity (MGD)
	Total (ft^2)	Effective (ft^2)					
Mechanical	4.38	2.61	0.25	35	1-3	5.33in	2.25

3. Have the following been provided for? Describe.

Yes	No		
☒	☐	a. Lighting	Existing
☒	☐	b. Ventilation	Existing
☒	☐	c. Means for removing screenings	Screw conveyor with brush
☒	☐	d. Entrances	Exterior door to headworks

4. Screen channel invert is _____ inches below incoming sewer
5. Is auxiliary screen provided? ☐ Yes ☒ No Describe _____
6. Method of screening disposal: Compactor/Bager/Portable Container
7. Is a service bypass provided? ☒ Yes ☐ No Discharge to: Aeromod

Grit Removal Facilities

1. Location of Unit: Existing Vortex Grit Removal Equipment
2. Type _____ Number of Units _____
3. Dimensions _____ Volume _____ gal. Detention time _____ Minutes
4. Type of velocity control _____
5. Linear velocity (fps) Average _____ Maximum _____ Minimum _____
6. Method of dewatering _____
7. Is a service bypass provided? ☐ Yes ☐ No Discharge to _____
8. Method of grit removal _____
9. Location of grit removal _____

Flow Measurement Facilities

1. Location of Unit: Existing Parshall Flume with Ultrasonic Sensor
2. Type of measurement _____ Maximum capacity _____ MGD
3. Type of recording _____ Maximum capacity _____ MGD
4. Is service bypass provided? ☐ Yes ☐ No Discharge to _____

RESOLUTION NO. 2023-56

APPROVING A GRANT APPLICATION FOR THE WASTEWATER FLOW EQUALIZATION IMPROVEMENT PROJECT THROUGH THE COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM OF THE IOWA ECONOMIC DEVELOPMENT AUTHORITY, SELECTING SNYDER & ASSOCIATES AS THE ENGINEERING FIRM, AND COMMITTING A LOCAL MATCH FROM THE CITY OF ANAMOSA.

WHEREAS, the City of Anamosa, Iowa, (hereinafter referred to as "City") has been notified by the Iowa Department of Natural Resources (DNR) of the need to construct wastewater flow equalization improvements to avoid a notification of intent to impose a consent order pertaining to this matter; and,

WHEREAS, the City desires to adhere to the DNR's recommendations and proceed with a wastewater flow equalization improvement project at 1205 Walworth Avenue; and

WHEREAS, the City is eligible to apply for Water & Sewer Fund Community Development Block Grant ("CDBG") Program of the Iowa Economic Development Authority ("IEDA"); and

WHEREAS, an application has been prepared to request funding from the CDBG Program to construct wastewater flow equalization improvements; and

WHEREAS, the estimated cost of the Wastewater Flow Equalization Improvement project is $3,902,000.00 and the City is planning to fund the local match portion of the project with SRF loans; and

WHEREAS, a public hearing regarding the grant application for the Wastewater Flow Equalization Project was held on Monday, September 11, 2023.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa City Council does hereby:

1) Approve the grant application for the Wastewater Flow Equalization Improvement Project, through the CDBG program of the Iowa Economic Development Authority; and
2) Authorize Snyder & Associates as the engineering firm for this project; and
3) Agree to commit SRF Loan funds, as a local match to this project.

Councilmember _____ introduced this Resolution and moved for its adoption.
Councilmember _____ seconded the motion to adopt.
The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
SMITH				
TUETKEN				
ZUMBACH				
STOUT				
GOMBERT				

PASSED AND APPROVED this 11th day of September 2023.

_____
ROD SMITH, MAYOR

ATTEST:

_____
JEREMIAH HOYT, CITY ADMINISTRATOR

HRGreen

8710 Earhart Lane SW
Cedar Rapids, IA 52404
Main 319.841.4000 + Fax 713.965.0044

HRGREEN.COM

August 29, 2023

Steve Agnitsch, Utilities Superintendent
City of Anamosa
1210 Walworth Ave.
Anamosa, IA 52205

Re: Recommendation of Award – WWTF Tank Demolition

Dear Steve,

HR Green sent out a Request for Proposals to seven contractors on July 28, 2023 for the proposed tank demolition and bypass piping project at the Wastewater Treatment Facility. Two proposals were received by the deadline of August 24, 2023 at 10 AM CST. The quotes are summarized below:

Contractor	Total Quote
Boomerang Corporation	$76,000.00
King Construction	$106,750.00

The lowest quote is by Boomerang Corporation out of Anamosa, IA. The quote of $76,000 appears to be reasonable given the scope of the project and materials needed for the bypass piping. The final completion date included in the Request for Proposals is December 31, 2023. A Notice to Proceed should be issued in September to ensure that the project can be completed this year. A new quote(s) will need to be requested if construction is delayed to next year.

Sincerely,

HR GREEN, INC.

Haley Jindrich

Haley Jindrich, PE
Project Engineer

\\hrgreen.com\HRG\Data\2023\2302976\Design\Bid\ltr-20230828-Letter_of_Rec_Anamosa_WWTF_Tank_Demo.docx

NOTICE OF AWARD

TO: Boomerang Corporation
13225 Circle Dr. Suite A
PO Box 227
Anamosa, IA 52205

The extent of Work on this project is the furnishing of all labor, equipment, and materials for the construction of the WWTF Tank Demolition project for the City of Anamosa (Owner), generally described as follows:

> Demolition of three concrete tanks at the wastewater treatment facility and the construction of permanent sanitary sewer bypass piping, together with related subsidiary and incidental work in accordance with the plans and specifications.

The Owner has considered the quote submitted by you for the above-described Work.

You are hereby notified that your quote has been accepted for items in the amount of Seventy-Six Thousand dollars, ($76,000.00).

You are required to provide the necessary certificates of insurance in accordance with Statewide Urban Design and Specifications (SUDAS) Section 1070 before a Notice to Proceed will be issued.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the Owner.

Dated this _____ day of_____, 2023

City of Anamosa

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

Boomerang Corporation, this the ____ day of _____, 2023

By_____
Bryce Ricklefs, President

RESOLUTION NO. 2023-57

AWARDING THE CONTRACT FOR THE WASTEWATER TREATMENT FACILITY TANK DEMOLITION PROJECT AND AUTHORIZING THE CITY ADMINISTRATOR TO EXECUTE THE APPRORIATE DOCUMENTS

***WHEREAS*,** a Request for Proposals was sent out, by HR Green, on July 28, 2023; and

***WHEREAS*,** Two proposals were received by the deadline of August 24, 2023; and

***WHEREAS*,** HR Green has determined that the lowest quote submitted by Boomerang Corporation, in Anamosa, Iowa appears reasonable and has recommended that the contract be awarded accordingly.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa City Council does hereby award the contract for the Wastewater Treatment Facility Tank Demolition Project to Boomerang Corporation, in the amount of $76,000.00, and authorize the City Administrator to execute the appropriate documents pertaining to this award.

Councilmember _____ introduced this Resolution and moved for its adoption.
Councilmember _____ seconded the motion to adopt.
The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
SMITH				
TUETKEN				
ZUMBACH				
STOUT				
GOMBERT				

PASSED AND APPROVED this 11th day of September 2023.

_____
ROD SMITH, MAYOR

ATTEST:

_____
JEREMIAH HOYT, CITY ADMINISTRATOR

MEMORANDUM

TO: City of Anamosa

FROM: Kevin Graves

DATE: September 6, 2023

RE: UPDATE on WWTP Design

Items Completed

1) WHKS – Topo survey of WWTF site and structures
2) WHKS – Review of original construction drawings for WWTP
3) WHKS and City Staff – Project Initiation Meeting with IDNR Staff
4) WHKS – Submission of Anti-degradation Alternatives Analysis to IDNR for approval
    - IDNR – Approved Anti-degradation Alternatives Analysis on 05/16/23
5) WHKS – Submission of IUP Application including IDNR Schedules on 06/01/23
    - IDNR SRF – Accepted Application for FY 2024 Q2 on 08/01/23
6) WHKS – Submission of Facility Plan to IDNR for approval
    - IDNR – Approved Facility Plan on 06/26/23
7) Improving Biological Removal:
    - WHKS and City Staff – City Staff took Oxidation Reduction Potential (ORP) and DO readings in fermenter and selector tanks. WHKS evaluated readings and worked with City on cycle adjustments to the system. City Staff installed temporary solids pump in selector tank to send biomass to fermenter.
8) WHKS – Solids, chemical addition, polymer, and hydraulics calculations completed for sizing.
9) WHKS – Preliminary layout for new piping, equipment, and structures completed for City review.

Items Ongoing

10) Improving Biological Removal:
    - WHKS – Work with equipment manufacturer, AeroMod, on optimizing system for improving biological phosphorus removal.
11) WHKS and City Staff – Continue evaluating improved biological phosphorus removal. City Staff continue taking ORP and DO readings.
12) WHKS – Finalize draft plan sheets for City Staff review and feedback.
13) WHKS – Develop construction sequencing outline
14) WHKS – Coordinate with suppliers on proposed treatment equipment needs.
15) WHKS – Continue work on final design (60-90%)
16) City Staff – Publish Notice for 30 day comment period and hold Public Hearing for SRF Environmental Review process.

Items Upcoming

17) WHKS – Review draft plan sheets with Wastewater Plant Staff
18) WHKS – Equipment specifications
19) City Staff – Submit one year of weekly total phosphorus sampling data on October 1, 2023 per NPDES Permit.
20) WHKS – Submit final plans (90%) to City Staff for feedback (October 2023)

SRF Public Notice

PUBLIC HEARING NOTICE

The City of Anamosa will be holding a Public Hearing to review an application for a State Revolving Fund (SRF) loan and to make available to the public the contents of an environmental information document and the City's project plan. These documents include design and environmental information related to the proposed improvements to the City's biosolids handling system at the wastewater treatment plant.

The proposed project includes the addition of chemical phosphorus infrastructure to consistently achieve the strategy limit for total phosphorus. The project also includes rehabilitating a sludge holding tank ahead of the new solids handling equipment to replace the belt filter press. Structural, electrical, and HVAC modifications are also included. No changes were made to the design flows and loads of the facility.

The purpose of this Public Hearing is to inform area residents of the community of Anamosa of this proposed action, discuss the actual cost and user fees associated with this project, and to address citizen's concerns, if any, with the plan.

The Public Hearing location and time are as follows:

October 23, 2023 – 6:00 p.m.
Anamosa City Hall
107 S Ford St
Anamosa, IA 52205

All interested persons are encouraged to attend this hearing. Written comments on this proposal may also be submitted prior to the hearing. Questions regarding this hearing or the availability of documentation may be directed to the City Clerk's Office at (319) 462-6055.

AMENDMENT NO. 1

TO PROFESSIONAL SERVICES AGREEMENT

WHEREAS, **City of Anamosa** (Client) and WHKS & Co. (WHKS) executed a Professional Services Agreement dated **November 17, 2022** for certain engineering services for **Anamosa Wastewater Treatment Facility Improvement – Final Design Phase** (Project), and

WHEREAS, the Agreement described a scope of services and was based on completion of certain services, and

WHEREAS, the Client has requested **Design Engineering,** services for the **Anamosa Wastewater Treatment Facility Improvement – Final Design Phase** as described in more detail in attached Exhibit A, and

NOW THEREFORE, the Client and WHKS hereby agree the amended compensation for services shall be increased by the following:

Basis of Compensation

For the services described above, the Client shall remunerate WHKS as follows:

Item 5 - Billed Hourly with an Estimated Fee of $25,000. Expenses billed at actual cost and mileage at the current published IRS rate per mile. External expenses include an administrative charge of 10 percent.

Executed this _____ day of September, 2023

City of Anamosa		***WHKS** & co.*	
By:	_____	By:	_____
Printed Name:	_____	Printed Name:	William Angerman, P.E.
Title:	_____	Title:	C.O.O

Exhibit A to Amendment No. 1

A. Project Description

The project, as defined for this agreement, is to perform improvements at the City of Anamosa wastewater treatment facility (WWTF) as described in the Wastewater Improvements Report dated October 20, 2022. The improvements include the following:

- construction of a new chemical feed system for phosphorus removal
- replacing the existing gravity belt press for dewatering with a new screw press
- replacing the existing electrical and HVAC equipment in the dewatering building
- repurposing an abandoned clarifier tank and installation of gravity sludge thickener equipment
- installation of yard piping and process piping to connect the new gravity sludge thickener to the existing biosolids handling system
- walkway and railing upgrades for the biosolids handing system at 'The Pit'
- associated sitework

This Amendment includes design engineering services as described in Items A and B below:

A. WHKS will provide structural design services for a timber framed building addition to an existing structure (see plan below). Proposed work does not include analysis or design for the removal or modification to any adjacent tanks or structures other than those specified herein. Scope of services are as detailed in Section B.

   Proposed building details (See attached map):
   - Approximately 50 ft x 60 ft with 20 ft eave height
   - Insulated
   - Connected to existing building shown below
   - Three (3) - 14 ft wide by 16 ft tall overhead doors
   - 5" reinforced slab on grade with floor drains
   - Electrical, Lighting, and Mechanical
   - No washrooms/water service

   Structural design services will be in accordance with the 2018 International Building Code (IBC) unless other applicable building codes are specified by the Client. WHKS structural design services include:
   - Loading on structure per IBC.
   - Design of foundation elements including building anchorage to concrete.
   - Design of concrete slabs and walls.
   - Design of wood wall and roof framing

B. WHKS will provide consultation engineering services to improve the City's biological phosphorus removal in their existing activated sludge system. Scope of services are as detailed in Section B.

B. **Scope of Services Provided Under This Agreement:**

Note: Items 01-04 were previously defined in the AGREEMENT. The following scope will be added to Item 04 in the AGREEMENT.

4. Final Design (Additional)

a. Structural Design – Garage Building Expansion

- Design the structural building components in accordance with the 2018 International Building Code. The structural building components are primary and secondary structural members as defined by WHKS including:
  - Foundation, footings, slab, basement walls, etc.
  - Exterior wall
  - Interior load bearing walls, columns, and shear walls including sheathing.
  - Related connections, including connections to existing building.
- Client will be responsible for providing WHKS with all pertinent loading information and support requirements related to equipment (e.g. generators, HVAC equipment, crane systems, etc.), storage areas or systems, vehicle use, or other special use areas.
- Prepare structural plans and specifications to show the character and scope of work to be performed by contractors on the Project.
- Foundation design to be based on presumptive soil bearing values listed in the IBC.
- Prepare opinion of probable construction cost based on completed plans and specifications.
- Answer contractor's questions during the bidding phase.
- Prepare structural addendums to the contract documents prior to bid letting, if necessary.
- Plan development from BIM model using Revit 2023.
- Changes to the proposed structural system (e.g. shear walls to moment frames) or materials (e.g. concrete to CMU) or any redesign due to material availability may require additional fees. Changes necessitating additional fees will be discussed with the Client prior to proceeding with design.

b. Biological Phosphorus Removal Consultation Services

- Review the City's monthly operating report (MOR) data before and during operational changes.
- Coordinate/review oxidation reduction potential (ORP) and dissolved oxygen (DO) readings at the fermenter and selector tanks.
- Coordinate with treatment system supplier, AeroMod, on potential strategies to optimize biological phosphorus removal with their system.
- Review, coordinate, and implement temporary and/or permanent operational strategies as discussed with AeroMod.
- Create a biological model in BioWin® Software to evaluate efficacy of operational changes.
- Compile and submit to the City an electronic memorandum summarizing review of data (i.e. MOR, DO, and ORP), operational changes, BioWin® model simulations, and provide an overall recommendation for existing system optimization pertaining to biological phosphorus removal.

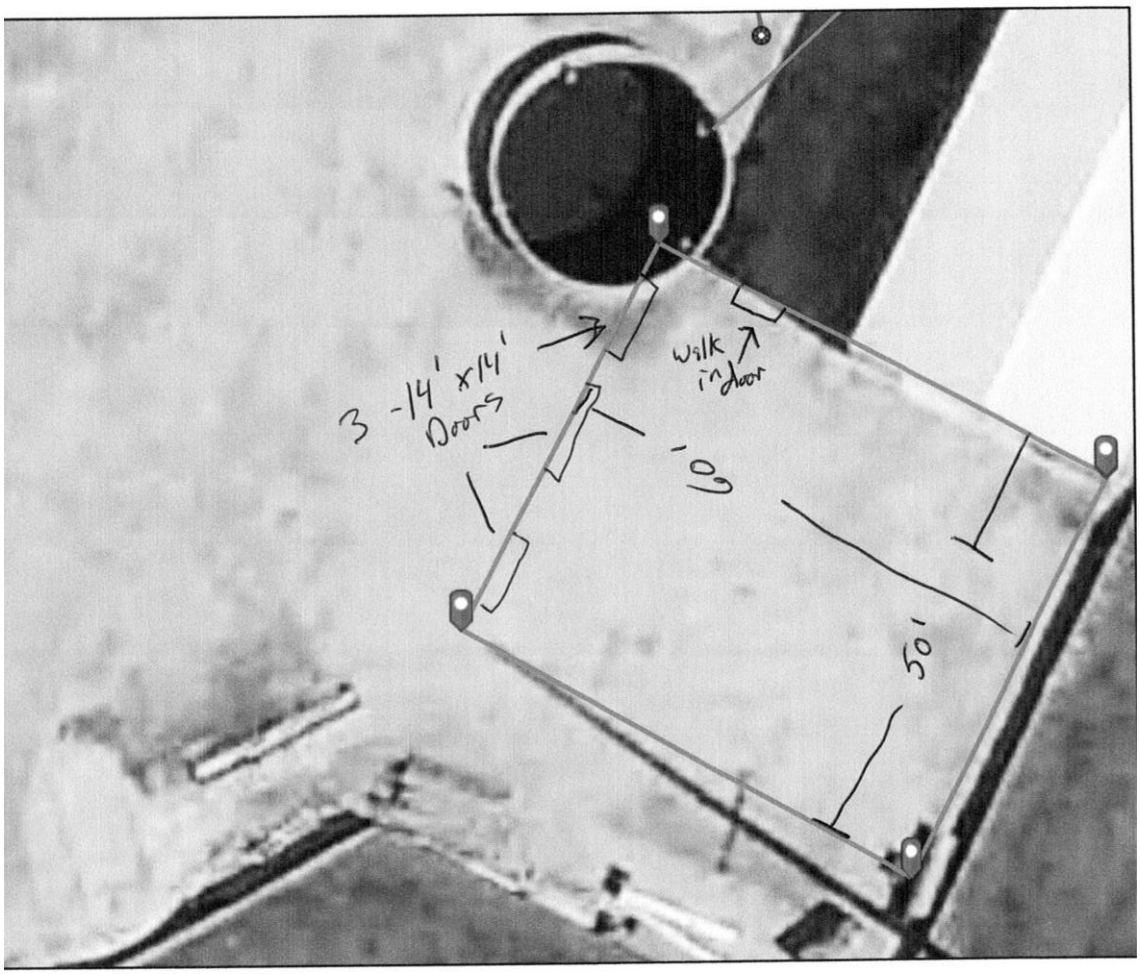
C. Special Engineering Services

Special Engineering Services are those services not listed above, but which may be required or advisable to accomplish the Project. Special Engineering Services shall be performed when authorized by the Client for additional fees, to be determined at the time authorized.

Special Engineering Services include:

1. Geotechnical design/recommendations
2. Design of deep foundations
3. Design of specialized shallow foundations due to the presence of expansive or collapsible soils
4. Special inspections (as defined by IBC)
5. Design of additional components, cladding, supports, or connections that are not part of the main structural system
6. Thermal evaluation of structural systems
7. Design of earth retaining structures
8. Design of secondary containment structures
9. Design of storm shelters to the requirements of ICC 500
10. Calculation package for submittal

Anamosa Utilities



Proposed garage addition plan – Provided by City

RESOLUTION NO. 2023-59

AMENDING THE PROFESSIONAL SERVICES AGREEMENT PERTAINING TO THE WASTEWATER TREATMENT FACILITY IMPROVEMENT PROJECT

WHEREAS, City of Anamosa and WHKS executed a Professional Services Agreement dated November 17, 2022 for certain engineering services pertaining to the Anamosa Wastewater Treatment Facility Improvement Project; and

WHEREAS, the Agreement described a scope of services and was based on completion of certain services; and

WHEREAS, the City has requested Design Engineering services for the Anamosa Wastewater Treatment Facility Improvement – Final Design Phase as described in more detail.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa City Council does hereby agree to Amendment No. 1 To Professional Services Agreement

Councilmember _____ introduced this Resolution and moved for its adoption.
Councilmember _____ seconded the motion to adopt.
The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
SMITH				
TUETKEN				
ZUMBACH				
STOUT				
GOMBERT				

PASSED AND APPROVED this 11th day of September, 2023.

_____
ROD SMITH, MAYOR

ATTEST:

_____
JEREMIAH HOYT, CITY ADMINISTRATOR

RESOLUTION NO. 2023-60

RESOLUTION SETTING THE DATE FOR THE STATUS OF FUNDED ACTIVITIES FOR THE DOWNTOWN REVITALIZATION PROJECT OF THE CITY OF ANAMOSA, IOWA

WHEREAS, the City of Anamosa has committed to participation in a community development block grant for a Downtown Revitalization Project; and

WHEREAS, the funded activities process requires a public hearing to update the public on the status of the project funds; and

WHEREAS, a public notice of said public hearing is required to be published in the designated local paper no less than four and no more than 20 days prior to the public hearing;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF ANAMOSA, IOWA, that the City of Anamosa City Council does hereby set September 25, 2023 at 6:00 p.m. as the date and time for the public hearing to be held in the Anamosa Library and in Anamosa, Iowa.

FURTHERMORE, that publication of said public notice shall be made in accordance with the State Code of Iowa.

Councilmember _____ introduced this Resolution and moved for its adoption.
Councilmember _____ seconded the motion to adopt.
The roll was called and the following indicates the result of the vote.

COUNCIL MEMBER	AYES	NAYS	ABSENT	ABSTAIN
CRUMP				
SMITH				
TUETKEN				
ZUMBACH				
STOUT				
GOMBERT				

PASSED AND APPROVED this 11th day of September, 2023.

_____
ROD SMITH, MAYOR

ATTEST:

_____
JEREMIAH HOYT, CITY ADMINISTRATOR

SWPPP LIABILITY AND RESPONSIBILITY AGREEMENT

This SWPPP Liability and Responsibility Agreement (the "Agreement") is entered into on this 7th of September, 2023, (the "Effective Date"), by and between:

Party A: Boomerang Corp., 13225 Circle Dr Ste A, Anamosa, IA 52205 ("Contractor")

Party B: City of Anamosa, 107 S Ford St., Anamosa, IA 52205 ("Contracting Authority")

Collectively referred to as the "Parties."

RECITALS

WHEREAS, Contracting Authority is responsible for the completion and acceptance of the project identified as Old Dubuque Rd, contract #53-0165-606 (the "Project"), located at Old Dubuque Rd, Anamosa, and has entered into an agreement with Contractor for Contractor to assume certain responsibilities related to the Stormwater Pollution Prevention Plan ("SWPPP") measures required for the Project; and

WHEREAS, the Iowa Department of Transportation ("IDOT") requires the completion and acceptance of IDOT Form 435 (the "Form 435") as part of the Project acceptance process, which includes compliance with SWPPP measures; and

WHEREAS, Contractor is willing to assume liability and responsibility for SWPPP measures on the Project in exchange for Contracting Authority granting acceptance of the Project upon completion of Form 435;

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the Parties agree as follows:

1. SWPPP RESPONSIBILITY

1.1. Contractor agrees to assume full responsibility for the development, implementation, and maintenance of the SWPPP for the Project, as required by applicable federal, state, and local laws and regulations.

1.2. Contractor shall ensure that all SWPPP measures are implemented effectively and in accordance with the approved SWPPP and any updates or revisions thereof.

2. LIABILITY ASSUMPTION

2.1. Contractor hereby assumes all liability for any environmental violations, penalties, fines, or damages arising from the failure to comply with SWPPP requirements associated with the Project.

2.2. In the event of any environmental violations or incidents related to SWPPP measures, Contractor shall promptly take corrective actions, at Contractor's expense, to remedy the situation and mitigate any adverse impacts.

3. INSURANCE

3.1. Contractor shall maintain adequate insurance coverage to protect against any liabilities, damages, or losses arising from SWPPP-related incidents on the Project.

4. PROJECT ACCEPTANCE TERMS

4.1. This Agreement shall become effective upon Contracting Authority's grant of acceptance of the Project and Contracting Authority's signing of Iowa DOT Form 435.

5. INDEMNIFICATION

5.1. Contractor shall indemnify and hold harmless Contracting Authority, its officers, agents, and employees, from any claims, losses, damages, liabilities, or expenses (including attorney's fees) arising out of or related to Contractor's performance or non-performance of SWPPP measures on the Project.

6. TERM AND TERMINATION

6.1. This Agreement shall remain in effect until the Contracting Authority determines that the conditions for which a discontinuation of the NPDES General Permit #2 have been met and discontinuation of the NPDES General Permit #2 has been filed.

7. GOVERNING LAW

7.1. This Agreement shall be governed by and construed in accordance with the laws of the State of Iowa.

IN WITNESS WHEREOF, the Parties hereto have executed this SWPPP Liability and Responsibility Agreement as of the Effective Date.

Party A: Boomerang Corp , an Iowa Corporation

Signature: _____
Name: Bryce Ricklefs
Title: President
Date: _____

STATE OF IOWA, COUNTY OF _____) ss:

This instrument was acknowledged before me on _____, 2023, by Bryce Ricklefs as President of Boomerang Corp., an Iowa corporation.

_____
Notary Public in and for the State of Iowa

Party B: City of Anamosa

Signature: _____
Name: Jeremiah Hoyt
Title: City Administrator
Date: _____

STATE OF IOWA, COUNTY OF _____) ss:

This instrument was acknowledged before me on _____, 2023, by Jeremiah Hoyt, city administrator.

_____
Notary Public in and for the State of Iowa

SNYDER & ASSOCIATES

IOWA | MISSOURI | NEBRASKA | SOUTH DAKOTA | WISCONSIN

INVOICE FOR PROFESSIONAL SERVICES

August 22, 2023

City of Anamosa
107 South Ford Street
Anamosa, IA 52205

Invoice No: 120.0620.08 - 24

Project **120.0620.08** **US 151 Grade Separation and Roundabout**

Professional Services through July 31, 2023

Basic Services
Lump Sum Fees

Total Lump Sum Fees	439,700.00			
Percent Complete	64.50	Total Earned	283,606.50	
		Previous Fee Billing	283,606.50	
		Current Fee Billing	0.00	
		Total Lump Sum Fees		**0.00**

	Total	Prior	Current
Billings to Date	**283,606.50**	**283,606.50**	**0.00**

Construction Services
Lump Sum Fees

Total Lump Sum Fees	260,300.00			
Percent Complete	86.00	Total Earned	223,858.00	
		Previous Fee Billing	190,019.00	
		Current Fee Billing	33,839.00	
		Total Lump Sum Fees		**33,839.00**

	Total	Prior	Current
Billings to Date	**223,858.00**	**190,019.00**	**33,839.00**

Amount Due this Invoice **$33,839.00**

	Total	Prior	Current
Billings to Date	**507,464.50**	**473,625.50**	**33,839.00**

Thank you. We appreciate the opportunity to serve you.

Accounts Receivable Inquiry: ar@snyder-associates.com

Project Manager: Lindsay Beaman

PROPOSAL

KLUESNER CONSTRUCTION, INC
1-800-ASPHALT
1007 1st Ave. NW • PO Box 355
Farley, IA 52046
(563) 744-3422 Fax (563) 744-3146
Fed ID # 42-1463491
office@kluesnerconstruction.com

DATE	ESTIMATE #
7/11/2023	23225

NAME / ADDRESS	CELL NUMBER	FAX NUMBER	PHONE NUMBER
CITY OF ANAMOSA 107 S FORD ST ANAMOSA, IA 52205-1841		319-462-6081	319-462-6055
	LOCATION		

DESCRIPTION	TOTAL
JOB LOCATION: LAWRENCE COMMUNITY CENTER	
ASPHALT REPAIR OF PARKING LOT	6,402.00
• APPROXIMATELY 1,911 SQ FT	
• SAW EDGES	
• REMOVE OLD MATERIAL AND HAUL AWAY TO AN AREA PROVIDED BY THE CITY	
• PREP AND COMPACT BASE	
• FURNISH AND PLACE 3" OF ASPHALT	
NOTE: IF ANY BASE STONE IS NEEDED IT WILL BE FURNISHED BY THE CITY. CITY WILL SUPPLY TAX EXEMPT CERTIFICATE FOR CONSTRUCTION MATERIALS.	

WE PROPOSE TO FURNISH MATERIAL AND LABOR - COMPLETE IN ACCORDANCE WITH ABOVE SPECIFICATIONS. SIGN: Brad Brownell

TOTAL $6,402.00

PAYMENT DUE UPON COMPLETION OF THE WORK.
PROPOSAL MAY BE WITHDRAWN BY US IF NOT ACCEPTED WITHIN 30 DAYS.

SIGNATURE _____

Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
1-800-728-7805

City of Anamosa, IA
1124 N. Williams
Anamosa, IA 52205-1841

August 25, 2023
Project No: 191791
Invoice No: 166303

Invoice Total: $964.00

Project 191791 Anamosa, IA - GIS Services

Email invoices to: Jeremiah.Hoyt@anamosa-ia.org

Water = robert.young@anamosa-ia.org
Wastewater Department=steve.agnitsch@anamosa-ia.org
Streets Department= shane.brown@anamosa-ia.org

Professional Services Through August 18, 2023

Phase 2021 GIS Services Annual Renewal

Task 01 AGOL Admin: GIS Updates & Maintenance

Fee

Total Fee	3,000.00				
Percent Complete	100.00	Total Earned	3,000.00		
		Previous Fee Billing	2,500.00		
		Current Fee Billing	500.00		
		Total Fee			**500.00**
			Total this Task		**$500.00**
			Total this Phase		**$500.00**

Phase 2022 GIS Services Annual Renewal

Task 09 Cemetary Project Phase 3

Professional Personnel

	Hours	**Amount**	
Field Personnel	4.00	440.00	
Totals	4.00	440.00	
Total Labor			**440.00**

Unit Charges

Technology & Communication Charge	24.00	
Total Unit Charges	**24.00**	**24.00**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	464.00	12,958.50	13,422.50
Limit			59,000.00
Remaining			45,577.50

Payment is due within 30 days unless prior arrangements are made. Interest of 1.5% per month will be levied on overdue balances.

Project	191791	Anamosa, IA - GIS Services		Invoice	166303
			Total this Task	**$464.00**	
			Total this Phase	**$464.00**	
			Total this Invoice	**$964.00**	

Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
1-800-728-7805

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

September 01, 2023
Project No: 220409.01
Invoice No: 166444

Invoice Total: $500.00

Project 220409.01 Anamosa, IA - WTP Disinfection System CPS
Water Treatment Plant
Hypochlorite Improvements - CPS

Professional Services Through August 11, 2023

Fee

Total Fee	19,100.00			
Percent Complete	20.9424	Total Earned	4,000.00	
		Previous Fee Billing	3,500.00	
		Current Fee Billing	500.00	
		Total Fee		**500.00**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	500.00	3,500.00	4,000.00
Limit			19,100.00
Remaining			15,100.00

Total this Invoice **$500.00**

Payment is due within 30 days unless prior arrangements are made. Interest of 1.5% per month will be levied on overdue balances.

Please Remit To:
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PO Box 8213
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1-800-728-7805

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

September 01, 2023
Project No: 190261.02
Invoice No: 166443

Invoice Total: $3,118.31

Project 190261.02 Anamosa, IA - Well 6 Construction Phase

Amendment No. 2 - New Jordan Well No. 6 Construction Phase Services

Professional Services Through August 25, 2023

Fee

Total Fee	135,320.00			
Percent Complete	100.00	Total Earned	135,320.00	
		Previous Fee Billing	132,201.69	
		Current Fee Billing	3,118.31	
		Total Fee		**3,118.31**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	3,118.31	132,201.69	135,320.00
Limit			135,320.00

Total this Invoice **$3,118.31**

Payment is due within 30 days unless prior arrangements are made. Interest of 1.5% per month will be levied on overdue balances.

Please Remit To:
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Des Moines, IA 50301-8213
1-800-728-7805

Jeremiah Hoyt
City of Anamosa, IA
1124 N. Williams
Anamosa, IA 52205-1841

September 06, 2023
Project No: 201647
Invoice No: 166508

Invoice Total: $210.00

Project 201647 Anamosa, IA - Sycamore St. Resurfacing & ADA Ramps

Includes Amendment No. 1, 2

Professional Services Through August 18, 2023

Phase B Construction Phase Services

Professional Personnel

	Hours	Amount	
Professional	1.50	201.00	
Totals	1.50	201.00	
Total Labor			**201.00**

Unit Charges

Technology & Communication Charge	9.00	
Total Unit Charges	**9.00**	**9.00**

Total this Phase **$210.00**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	210.00	69,231.65	69,441.65
Limit			79,700.00
Remaining			10,258.35

Total this Invoice **$210.00**

Payment is due within 30 days unless prior arrangements are made. Interest of 1.5% per month will be levied on overdue balances.

Please Remit To:
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Des Moines, IA 50301-8213
1-800-728-7805

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

September 06, 2023
Project No: 220390
Invoice No: 166510

Invoice Total: $341.00

Project 220390 Anamosa, IA - 3rd St Sidewalk Extension

Anamosa 3rd St Sidewalk Extension
Schematic Design & Funding Assistance
Shaw Road to Deerwood Dr

Professional Services Through August 18, 2023

Phase B Stakeholder Coordination/Public Engagement

Professional Personnel

	Hours	Amount	
Professional	2.50	335.00	
Totals	2.50	335.00	
Total Labor			**335.00**

Unit Charges

Technology & Communication Charge	6.00	
Total Unit Charges	**6.00**	**6.00**

Total this Phase **$341.00**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	341.00	17,241.25	17,582.25
Limit			19,900.00
Remaining			2,317.75

Total this Invoice **$341.00**

Payment is due within 30 days unless prior arrangements are made. Interest of 1.5% per month will be levied on overdue balances.

HRGreen®

Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
1-800-728-7805

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

September 06, 2023
Project No: 220501
Invoice No: 166511

Invoice Total: $490.00

Project 220501 Anamosa, IA - Sidewalk Program

Anamosa - 2022 Sidewalk Program

Professional Services Through August 18, 2023

Phase 1 Program Management and Administration

Professional Personnel

	Hours	Amount	
Professional	.50	67.00	
Totals	.50	67.00	
Total Labor			**67.00**

Unit Charges

Technology & Communication Charge		3.00	
Total Unit Charges		**3.00**	**3.00**
	Total this Phase		**$70.00**

Phase 3 Implementation Plan

Professional Personnel

	Hours	Amount	
Professional	3.00	402.00	
Totals	3.00	402.00	
Total Labor			**402.00**

Unit Charges

Technology & Communication Charge		18.00	
Total Unit Charges		**18.00**	**18.00**
	Total this Phase		**$420.00**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	490.00	12,735.00	13,225.00
Limit			31,800.00
Remaining			18,575.00

Total this Invoice **$490.00**

Payment is due within 30 days unless prior arrangements are made. Interest of 1.5% per month will be levied on overdue balances.

Please Remit To:
HR Green, Inc.
PO Box 8213
Des Moines, IA 50301-8213
1-800-728-7805

Jeremiah Hoyt
City of Anamosa, IA
107 S Ford Street
Anamosa, IA 52205-1841

September 06, 2023
Project No: 2302786-0000
Invoice No: 166515

Invoice Total: $210.00

Project 2302786-0000 Anamosa, IA - Civil Plan Review
Anamosa Site Plan and Subdivision Plat Review

Professional Services Through August 18, 2023

Phase 0001 The Northlands Subdivision Review

Professional Personnel

	Hours	Amount	
Professional	1.50	201.00	
Totals	1.50	201.00	
Total Labor			**201.00**

Unit Charges

Technology & Communication Charge		9.00	
Total Unit Charges		**9.00**	**9.00**
	Total this Phase		**$210.00**
	Total this Invoice		**$210.00**

Payment is due within 30 days unless prior arrangements are made. Interest of 1.5% per month will be levied on overdue balances.