

**PUBLIC WORKS DEPARTMENT MEMORANDUM
#15-2020**

DATE: June 22, 2020
TO: Honorable Mayor Meredith Leighty and City Council Members
THROUGH: Heather Geyer, City Manager *HMG*
FROM: Kent Kisselman, PE – Director of Public Works *FAK*
SUBJECT: CR-80 – Bunker Hill Lift Station Replacement GMP

PURPOSE

Staff is seeking approval of an amendment to the current, executed contract with Integrated Water Services (IWS) for the construction of the Bunker Hill Lift Station Replacement project. This addendum will accept the Guaranteed Maximum Price (GMP) for the lift station in the amount of \$3,134,625. Staff also requests a 5% owner's contingency be added to the project. The GMP is summarized below.

Guaranteed Maximum Price including contractor's contingency	\$ 3,134,625
5% Owner's Contingency	\$ 156,731
Total Cost	\$ 3,291,356

BACKGROUND

The Bunker Hill Lift Station, near the Maintenance and Operations facility on Claude Court requires replacement due to additional sewage flows from the development of the Karl's Farm project. This lift station replacement is critical to the Karl's Farm development and no certificates of occupancy (CO's) can be issued for any buildings in Karl's Farm until the new lift station is operational.

Northglenn has previously entered into a cost sharing agreement with Centre Group, the developer for Karl's Farm, and the agreement states that the overall cost of the new lift station will be shared in accordance with the proportion of total flow generated by Karl's Farm and the existing sewage flows. Therefore, Centre Group will pay for 72% of the total cost and Northglenn will be responsible for 28%. The shared costs for this project, including all contingencies, are shown below.

Total Cost	\$ 3,291,356
Centre Group responsibility (72%)	\$ 2,369,776
Northglenn responsibility (28%)	\$ 921,580

The contract with IWS to provide Construction Manager at Risk (CMAR) services was envisioned in two parts. Part one, which was issued in February 2020, provided for pre-construction services in the amount of \$10,484.90. This allowed IWS to work with City staff and our consultant to develop this requested GMP. The GMP is the second part and will provide for the complete construction of the lift station, which will allow the Karl's Farm project to proceed without delay.

STAFF RECOMMENDATION

Staff requests a 5% owner’s contingency be added to the project. Attached to this memorandum is CR-80, a resolution that, if approved, would authorize the Mayor to execute Amendment No. 1 to the contract between the City and Integrated Water Services, Inc. for the Guaranteed Maximum Price for the Bunker Hill Lift Station Replacement in an amount not to exceed \$3,134,625, and authorizes the City Manager, on behalf of the City, to approve changes in scope of services and execute relevant change orders up to the approved expenditure limit of \$3,291,356. Staff recommends approval of CR-80.

BUDGET/TIME IMPLICATIONS

The total approved budget for this project (from 2019) is \$1,939,482, as outlined below:

2020 Adopted Budget	\$1,939,482.00
2020 Expenditures to date	(\$81,681.81)
Remaining Budget	\$1,857,800.19
Total Cost (this request)	\$3,291,356.00
Supplemental Budget Needed	(\$1,433,555.81)

At this time, the GMP exceeds the original estimate that was used for budgetary purposes. This is due to refinement of the design and changes in construction costs over time, as well as the initial uncertainty when the first estimate was performed. However, the chart above shows that the City will not be in a negative financial position once the reimbursement is completed.

STAFF REFERENCE

If Council members have any comments or questions they may contact Kent Kisselman, Director of Public Works, at 303.450.4005, kkisselman@northglenn.org.

SPONSORED BY: MAYOR LEIGHTY

COUNCILMAN'S RESOLUTION

RESOLUTION NO.

No. CR-80
Series of 2020

Series of 2020

A RESOLUTION APPROVING AMENDMENT NO. 1 TO THE CONSTRUCTION MANAGER CONTRACT BETWEEN THE CITY OF NORTHGLENN AND INTEGRATED WATER SERVICES, INC. FOR CONSTRUCTION OF THE BUNKER HILL LIFT STATION

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF NORTHGLENN, COLORADO, THAT:

Section 1. Amendment No. 1 to the Construction Manager Contract between the City of Northglenn and Integrated Water Services, Inc., attached hereto, in the amount of \$3,134,625.00, with a five percent (5%) owner's contingency of \$156,731.00, for a total amount not to exceed \$3,291,356.00 for the Guaranteed Maximum Price for the construction of the Bunker Hill Lift Station is hereby approved and the Mayor is authorized to execute same on behalf of the City of Northglenn.

DATED, at Northglenn, Colorado, this _____ day of _____, 2020.

MEREDITH LEIGHTY
Mayor

ATTEST:

JOHANNA SMALL, CMC
City Clerk

APPROVED AS TO FORM:

COREY Y. HOFFMANN
City Attorney

CONTRACT AMENDMENT NO 1
Guaranteed Maximum Price Proposal
Bunker Hill Lift Station Replacement – Project 2019-032

The Contract Amendment No. 1 (Amendment) is made and entered into on the _____ day of _____, 20____, by and between the City of Northglenn (hereafter referred to as the OWNER) and Integrated Water Services, Inc. (hereafter referred to as the CONSTRUCTION MANAGER). This is an Amendment to the original contract between the same entities date the 16th day of December, 2019. All provisions of the original contract are included by reference as part of the Amendment. The paragraphs below are the adjustments, revisions or updates to the original Contract.

ARTICLE 6. CONTRACT PRICE

The following Sections of Article 6 of the original contract are amended to read as follows:

6.6 The guaranteed Maximum Price (“GMP”). (Amended Sections)

6.6.1 GMP Established after Execution of the Original Contract.

6.6.1.1.4 In this section amend the Cost Contingency amount to be 5% of the Cost of the Work.

6.6.1.3 Acceptance of GMO Proposal. If the Owner accepts the GMP Proposal, as may be amended by Construction Manager, in writing on or before the GMP Proposal Deadline, the GMP and its basis shall be set forth in an amendment to this Contract.

The GMP proposal accepted by the Owner for this project is for the amount of three million one hundred thirty four thousand six hundred twenty five dollars (\$3,134,625). A summary of the GMP proposal, including Cover Letter, Table of contents and the Contract Price Summary is included as Exhibit 1A and the supporting documents of the entire GMP proposal by OWNER, dated April 19, 2020 become part of the Contract Documents are included to this Amendment by reference. (The Cover Sheet and Table of Contents for the drawings and specifications prepared by Allan Plummer and Associates, Inc., dated _____ for the project are included in Exhibit 1B) The complete set of drawings and specifications prepared by Allan Plummer and Associates, Inc., dated _____, which define the scope of the project and become part of the Contract Documents are hereby included to this Amendment No 1 by reference.



City of Northglenn
Attn: Mike Roman
12301 Claude Court
Northglenn, CO 80241

May 5, 2020

RE: 90% Guaranteed Maximum Price Proposal for the Bunker Hill Lift Station CMAR Project

Dear Mr. Roman,

Integrated Water Services, Inc. (IWS) is pleased to present this proposal for a Guaranteed Maximum Price (GMP) for construction of the Bunker Hill Lift Station CMAR Project. This proposal is based on 90% drawings dated February 2020.

Scope of Work - Provide all equipment, labor and materials to complete the following scope of work:

Mobilization and Pre-Construction: Mobilization of equipment and crew, temporary facilities, insurance, bonding, submittals, purchase materials.

Earthwork, Demo, Yard Piping, Slab Prep, Backfill

Sitework: Erosion Control, Fencing, Asphalt, Lighting, sidewalk repair

Concrete Basins

Building: Permit, Steel Building Supply and Erection, HVAC, Misc. Metals, Coatings.

Process Equipment and Piping: Install pump and grinder equipment and all process piping.

Sanitary Sewer and Force Main: Install Force Main to tie-in to existing force main at bridge adjacent to Claude Ct. Sanitary Sewer and Force Main installation by open cut.

Electrical: Provide and install electrical, instrumentation and controls.

Start-up: Provide testing, start-up, training

Project Close-out: Provide as-builts, documentation, clean-up, site restoration, demobilization

90% Guaranteed Maximum Price Estimate:

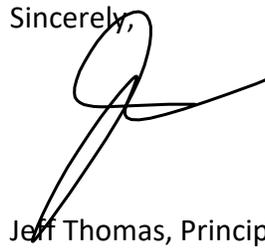
\$3,134,625

Assumptions and Conditions:

- This Proposal is based on 90% completion drawings and currently available information. Changes to scope, materials, methods, schedule, or unforeseen conditions. may require an adjustment in price.
- No sales taxes included.
- Concrete coatings to include wet well and submerged portion of grinder vault only.
- Estimate Detail is provided following this letter.
- Guaranteed Maximum Price includes 5% Contingency on cost of \$2,541,041 (\$129,117).

We look forward to working with you on this project!

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Thomas", with a long horizontal flourish extending to the right.

Jeff Thomas, Principal

Tel: 720-221-4366

Bid Item	Phase	Description	Takeoff Quantity	Crew	Labor Count	Labor Productivity	Labor Hours	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Hours	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total Amount	
001-Gen Conditions																						
		IWS Resources-Labor																				
1000.001	PM		60.00 days	01 IWS PM	1	8,000 hour / days	480	110.30 /hour	52,942	-	-	-	-	-	-	-	-	-	52,942	8,657	61,599	
1000.001	Asst PM	Project Engineer	60.00 days	01 IWS Asst PM	1	8,000 hour / days	480	51.30 /hour	24,624	-	-	-	-	-	-	-	-	-	24,624	4,026	28,650	
1000.001	Superintendent		120.00 days	01 IWS Sup	1	9,000 hour / days	1,080	71.25 /hour	76,950	-	-	-	-	-	-	-	-	-	76,950	12,682	89,632	
		IWS Resources-Labor	6.00																154,516	25,265	179,781	
		IWS Resources-Equipment																				
1000.003	Forklift	10,000 lb Telescopic	5.00 mo					-	-	-	-	-	-	900	125.00 /day	12,500	-	-	12,500	2,044	14,544	
1000.003	Truck	Pickup	120.00 day	01 IWS Truck				-	-	-	-	-	-	960	65.00 /day	7,800	-	-	7,800	1,276	9,076	
1000.003	Fuel - Truck		120.00 days					-	-	/days				-	25.00 /days	3,000	-	-	3,000	491	3,491	
1000.003	Equipment Mob - IWS Tractor Trailer and Diner		24.00 ea	IWS Tractor Trailer	1	2,000 mh / ea	48	46.28 /mh	2,221	-	-	-	-	96	97.00 /ch	4,656	-	-	6,877	1,126	8,003	
		IWS Resources-Equipment	6.00					48	2,221					1,966		27,966			30,177	4,934	35,112	
		Surveys																				
01-1120.510	Survey & Layouts		1.00 ls					13,920.00 /ls	13,920	2,500.00 /ls	2,500	5,500.00 /ls	5,500						21,920	3,584	25,504	
	Surveys		1.00 ls						13,920		2,500		5,500						21,920	3,584	25,504	
	Documents																					
01-1120.710	Prints & Records/Layout Expense		1.00 ls					-	-	2,500.00 /ls	2,500	-	-	-	-	-	-	-	2,500	409	2,909	
01-1120.710	As Built Drawings & Records		1.00 ls					20.00 /ls	20	500.00 /ls	500	-	-	-	-	-	-	-	520	85	605	
	Documents		2.00 ls						20		3,000								3,020	494	3,514	
	Offices & Job Trailers																					
01-1130.110	Office Trailer		6.00 mo					-	-	-	-	-	-	1,404	1,292.00 /mo	7,752	-	-	7,752	1,268	9,020	
01-1130.110	Storage Container		6.00 mo					-	-	-	-	-	-	1,404	130.00 /mo	780	-	-	780	128	908	
	Offices & Job Trailers		6.00											2,808		8,532			8,532	1,396	9,927	
	Job Trailer Misc.																					
01-1130.210	Office Trailer - Mob & Demob		2.00 ea					-	-	-	-	-	-	-	750.00 /ea	1,500	-	-	1,500	245	1,745	
	Job Trailer Misc.		6.00													1,500			1,500	245	1,745	
	Signs																					
01-1130.410	Project Signs 4x8		2.00 ea			1,000 mh / ea	2	150.00 /mh	300	1,900.00 /ea	3,800	-	-	-	-	-	-	-	4,100	670	4,770	
	Signs		2.00 ea				2		300		3,800								4,100	670	4,770	
	Utilities																					
01-1130.510	Electric Power/Generator		4.00 mo					-	-	4,200.00 /mo	16,800	-	-	-	-	-	-	-	16,800	2,747	19,547	
01-1130.510	Electrician - Temp Power		1.00 ea					-	-	/ea	2,500	2,500.00 /ea	2,500	-	-	-	-	-	2,500	409	2,909	
01-1130.510	Temporary Toilets		6.00 mo					-	-	480.00 /mo	2,760	-	-	-	-	-	-	-	2,760	451	3,211	
	Utilities		6.00								19,560		2,500						22,060	3,607	25,667	
	Project Close Out																					
01-1160.210	Owners Manuals		1.00 ls					-	-	500.00 /ls	500	-	-	-	-	-	-	-	500	82	582	
	Project Close Out		1.00 ls								500								500	82	582	
	Project Clean Up																					
01-1160.410	Dumpster Rental/Pick up		2.00 ea					-	-	207.00 /ea	414	-	-	-	-	-	-	-	414	68	482	
01-1160.410	Dump Fees LS		6.00 ea					-	-	700.00 /ea	4,200	-	-	-	-	-	-	-	4,200	687	4,887	
	Project Clean Up		6.00								4,614								4,614	754	5,368	
	Safety Protection																					
01-1180.110	Temporary Fences		1.00 ls					-	-	750.00 /ls	750	/ls		-	-	-	-	-	750	123	873	
	Safety Protection		6.00								750								750	123	873	
	Security																					
01-1180.410	Construction Fence		2,400.00 lf					-	-	3.25 /lf	7,800	-	-	-	-	-	-	-	7,800	1,276	9,076	
	Security		6.00								7,800								7,800	1,276	9,076	
	001-Gen Conditions		0.00								42,524		8,000	4,764		37,988			299,489	42,429	301,918	
002-Sitework																						
		IWS Resources-Labor																				
1000.001	Demo		1.00 ea					6,173.00 /ea	6,173	10,400.00 /ea	10,400	3,850.00 /ea	3,850			5,947.00 /ea	5,947	/ea	26,370	5,828	32,198	
1000.001	Relocate Water Line		1.00 ea					4,858.00 /ea	4,858	14,416.00 /ea	14,416	347.00 /ea	347			3,797.00 /ea	3,797	2,349.00 /ea	2,349	25,767	5,512	31,279
	IWS Resources-Labor		6.00						11,031		24,816		4,197			9,744			2,349	92,137	11,337	63,474
	IWS Resources-Material																					
1000.002	SWPPP Permit		1.00 ea	01 IWS Asst PM				/ea		/ea		/ea				/ea	1,200.00 /ea	1,200	1,200	214	1,414	
1000.002	Dewatering Permit		1.00 ea	01 IWS Asst PM				/ea		/ea		/ea				/ea	1,200.00 /ea	1,200	1,200	214	1,414	
1000.002	Asphalt Permit		1.00 ea	01 IWS Asst PM				/ea		/ea		/ea				/ea	1,170.00 /ea	1,170	1,170	208	1,378	
	IWS Resources-Material		6.00																3,570	3,570	636	4,206
	IWS Resources-Equipment																					
1000.003	Trucking		270.00 cy					/cy		/cy		6.00 /cy	1,620			/cy		/cy		1,620	305	1,925
	IWS Resources-Equipment		6.00										1,620							1,620	305	1,925
	Site Clearing																					
31-1100.100	Clear and Grub Site -Medium		1.00 acre	02 Site Clearing 1	4	9,000 day / acre	36	326.97 /day	2,943	-	-	-	-	72	156.88 /day	1,412	-	-	4,355	2,160	6,514	
	Site Clearing		6.00						2,943					72		1,412			4,355	2,160	6,514	
	Grading																					

Bid Item	Phase	Description	Takeoff Quantity	Crew	Labor Count	Labor Productivity	Labor Hours	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Hours	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total Amount
		Grading																			
	31-2213.110	Fine Grade	##### sf	02 Site Fine	3	##### sf / ch	68	103.09 /ch	2,216	-	-	-	-	172	161.88 /ch	3,480	-	-	5,697	2,096	7,793
				Grade1			68		2,216					172		3,480			5,697	2,096	7,793
		EROSION CONTROL & SEDIMENTATION																			
	31-2500.000	Tracking Pads	2.00 ea					/ea		/ea		2,500.00 /ea	5,000			/ea		/ea	5,000	940	5,940
	31-2500.000	Sediment and Control Logs	80.00 lf					/lf		/lf		12.50 /lf	1,000			/lf		/lf	1,000	188	1,188
	31-2500.000	Straw Bales	160.00 lf					/lf		/lf		12.50 /lf	2,000			/lf		/lf	2,000	376	2,376
		EROSION CONTROL & SEDIMENTATION	0.00										8,000						8,000	1,604	9,604
		Temp Erosion Control																			
	31-2500.110	Silt Fence	1,500.00 lf	06 Laborer	1	40.00 lf / ch	40	29.04 /ch	1,089	2.50 /lf	3,750	-	-						4,839	1,496	6,335
	31-2500.110	Sub by SF - Temporary Seeding & Mulch	6,970.00 sf					-	-	-	-	1.50 /sf	10,455						10,455	1,966	12,421
	31-2500.110	Concrete Washout	1.00 ea					/ea		800.00 /ea	800	/ea				/ea		/ea	800	150	950
		Temp Erosion Control	6,970.00 sf				40		1,089				10,455						16,094	3,612	19,706
		Asphalt Paving - SY																			
	32-1216.120	Sub - Asphalt Paving	6,230.00 sf					/sf		/sf		6.65 /sf	41,430			/sf		/sf	41,430	7,790	49,219
		Asphalt Paving - SY	0.00										41,430						41,430	7,790	49,219
		Other Fencing																			
	32-3113.210	Sub - Fence	1.00 ea					/ea		/ea		12,675.00 /ea	12,675			/ea		/ea	12,675	2,383	15,058
		Other Fencing	0.00										12,675						12,675	2,383	15,058
		002-Sitework	0.00				194		17,279		29,366		78,377	244		14,636		5,919	145,577	31,822	177,399
		IWS Resources-Labor																			
003-Concrete Basins	1000.001	Site Foreman-Daily	20.00 day	01 IWS Site Foreman	1		191	393.75 /day	7,875	-	-	-	-						7,875	4,892	12,967
	1000.001	Equipment Operator	20.00 day	01 IWS Equip Op	1		191	405.11 /day	8,102	-	-	-	-						8,102	4,769	12,871
	1000.001	Equipment Operator	20.00 day	01 IWS Equip Op	1		191	405.11 /day	8,102	-	-	-	-						8,102	4,769	12,871
	1000.001	Crane Operator	100.00 day	01 IWS Equip Op	1		954	405.11 /day	40,511	-	-	-	-						40,511	23,845	64,356
	1000.001	Laborer	20.00 days	01 IWS Laborer	1	9,000 hour / days	191	29.04 /hour	5,227	-	-	-	-						5,227	3,797	9,025
	1000.001	Laborer	20.00 days	01 IWS Laborer	1	9,000 hour / days	191	29.04 /hour	5,227	-	-	-	-						5,227	3,797	9,024
		IWS Resources-Labor	0.00				1,908		75,045										75,045	45,671	120,715
		IWS Resources-Material																			
	1000.002	Gravel	165.93 ton					-	-	35.00 /ton	5,808	-	-						5,808	1,092	6,900
	1000.002	Geotextile Fabric	2.00 roll					/roll		500.00 /roll	1,000	/roll				/roll		/roll	1,000	188	1,188
	1000.002	Purchase Rebar	32.00 Tons					/Tons		1,192.00 /Tons	38,144	/Ton				/Tons		/Tons	38,144	7,172	45,316
	1000.002	Purchase - Concrete Mud	317.00 CY					/CY		178.56 /CY	56,604	/CY				/CY		/CY	56,604	10,643	67,246
	1000.002	Misc. Concrete work adder	1.00 ea					/ea		20,000.00 /ea	20,000	/ea				/ea		/ea	20,000	3,760	23,760
		IWS Resources-Material	0.00								121,555								121,555	22,855	144,410
		IWS Resources-Equipment																			
	1000.003	Loader 3 cy	20.00 day	01 IWS Loader 3 CY				-	-	-	-	-	-	160	200.00 /day	4,000	-	-	4,000	712	4,712
	1000.003	Dump Truck	20.00 day	01 IWS Loader 3 CY				-	-	-	-	-	-	160	160.00 /day	3,200	-	-	3,200	870	3,770
	1000.003	Fuel - Truck	20.00 days					-	-	250.00 /days	5,000	-	-						5,000	940	5,940
	1000.003	Crane - Vicario	5.00 ea					/ea		/ea		/ea			8,700.00 /ea	43,500		/ea	43,500	7,744	51,244
		IWS Resources-Equipment	0.00								5,000			320		50,700			55,700	9,966	65,666
		Concrete Sub																			
	03-0020.010	Concrete Sub Complete	317.00 cy					-	-	-	-	559.47 /cy	177,352						177,352	33,346	210,698
		Concrete Sub	0.00										177,352						177,352	33,346	210,698
		Misc. Steel																			
	05-5820.120	Bulkheads	4.00 ea	05 IW Misc	3	1,000 mh / ea	4	36.35 /mh	145	600.00 /ea	2,400	-	-						2,545	546	3,091
		Misc. Steel	0.00				4		145										2,545	546	3,091
		Painting-Interior																			
	09-9123.200	Sub by LS	1.00 ea					-	-	-	-	86,000.00 /ea	86,000						86,000	16,170	102,170
		Painting-Interior	0.00										86,000						86,000	16,170	102,170
		Concrete Sub																			
		Grading																			
	31-0010.110	Driller for shoring	1/s					/s		/s		12,500.00 /s				/s		/s			
		Sitework Sub	0.00																		
		Grading																			

Bid Item	Phase	Description	Takeoff Quantity	Crew	Labor Count	Labor Productivity	Labor Hours	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Hours	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total Amount	
		<u>Grading</u>																				
	31-2213.110	Fine Grade	3,250.00 sf	02 Site Fine	3	### sf / ch	10	103.09 /ch	338	-	-	-	-	26	161.88 /ch	526	-	-	861	317	1,178	
			0.00	Grade1			10		335					26		526			861	317	1,178	
		<u>Structure Excavation</u>																				
	31-2316.210	Structure Excavation - Moderate Soils to Onsite	4,941.00 cy	02 Site Structure	4	70.000 cy / ch	262	143.13 /ch	10,103	-	-	-	-	565	238.13 /ch	16,808	-	-	26,911	9,194	36,105	
		Stockpile		X1			262		10,103					565		16,808			26,911	9,194	36,105	
		<u>Structure Excavation</u>	4,941.00 cy				262		10,103					565		16,808			26,911	9,194	36,105	
		<u>Dewatering</u>																				
	31-2319.120	Dewatering - Drill, Case, Pumps - operated	6.00 ea			hour / ea		hour		9,700.00 /ea			58,200						58,200	10,843	69,143	
		<u>Dewatering</u>	6.00										58,200						58,200	10,843	69,143	
		<u>Structure Backfill</u>																				
	31-2323.215	Structure Backfill - Re-Use Existing - From	3,537.00 cy	02 Site Structure	3	30.000 cy / ch	375	119.06 /ch	14,038	-	-	-	-	825	145.00 /ch	17,096	-	-	31,133	11,778	42,911	
		Onsite Stockpile		B1			375		14,038					825		17,096			31,133	11,778	42,911	
		<u>Structure Backfill</u>	3,537.00 cy				375		14,038					825		17,096			31,133	11,778	42,911	
		<u>Import Fill</u>																				
	31-2323.255	Import Fill - Rock beneath structures	107.00 cy	02 Site Import 1T1	4	30.000 cy / ch	13	135.14 /ch	482	47.60 /cy	5,093	-	-	36	165.63 /ch	591	-	-	6,166	1,367	7,533	
		<u>Import Fill</u>	107.00 cy				13		482		5,093			36		591			6,166	1,367	7,533	
		<u>Haul Material</u>																				
	31-2323.260	Haul Material Offsite 30 Minutes Round Trip	1,404.00 cy									6.00 /cy	8,424						8,424	1,684	10,008	
		<u>Haul Material</u>	1,404.00 cy									6.00 /cy	8,424						8,424	1,684	10,008	
		<u>Sheetpiling</u>																				
	31-4116.118	Sub by LS - Shoring System Design Engineer	1/s									2,500.00 /fs										
	31-4116.118	Slide Rail Shoring Mob, beam, installer	1/s					/fs		/fs		17,250.00 /fs			/fs		/fs					
	31-4116.118	Shoring Rental	1/s					/fs		/fs					24,000.00 /fs		/fs					
		<u>Sheetpiling</u>	0.00																			
		003-Concrete Basins	0.00				2,573		100,147		134,048		329,976	1,772		85,721			649,892	163,734	813,626	
004-Proc																						
		<u>Pipe/Equip</u>																				
		<u>IWS Resources-Labor</u>																				
	1000.001	Site Foreman-Daily	10.00 day	01 IWS Site	1		95	393.75 /day	3,938	-	-	-	-						3,938	2,346	6,284	
				Foreman																		
	1000.001	Site Foreman-Daily - Start-up / Testing	10.00 day	01 IWS Site	1		95	393.75 /day	3,938	-	-	-	-						3,938	2,346	6,284	
				Foreman																		
	1000.001	Pipefitter	10.00 day	01 IWS Pipefitter	1		95	405.11 /day	4,051	-	-	-	-						4,051	2,385	6,436	
	1000.001	Pipefitter	10.00 day	01 IWS Pipefitter	1		95	405.11 /day	4,051	-	-	-	-						4,051	2,385	6,436	
	1000.001	Laborer	10.00 days	01 IWS Laborer	1	9,000 hour / days	95	29.04 /hour	2,614	-	-	-	-						2,614	1,899	4,512	
	1000.001	Laborer	10.00 days	01 IWS Laborer	1	9,000 hour / days	95	29.04 /hour	2,614	-	-	-	-						2,614	1,899	4,512	
		<u>IWS Resources-Labor</u>	6.00				572		21,204										21,204	13,269	34,483	
		<u>IWS Resources-Material</u>																				
	1000.002	Misc Material	1.00 ea					ea	2,500.00	ea	2,500	ea			ea		ea		2,500	470	2,970	
	1000.002	Pipe Purchase - Core & Main	1.10 ea					ea	53,951.00	ea	59,390	ea			ea		ea		59,390	11,167	70,557	
	1000.002	David Crane	2.00 ea					ea	2,500.00	ea	5,000	ea			ea		ea		5,000	940	5,940	
	1000.002	Purchase JWC Muffin Monster	1.00 ea					ea	52,200.00	ea	52,200	ea			ea		ea		52,200	9,815	62,015	
	1000.002	Scaffolding / Manlift	1.00 ea					ea		ea		ea			2,500.00	ea	2,500	ea	2,500	445	2,945	
	1000.002	Stpp Plate	2.00 ea					ea	800.00	ea	1,600	ea			2,500.00	ea	5,000	ea	6,600	1,191	7,791	
		<u>IWS Resources-Material</u>	6.00						120,690										128,190	24,027	152,217	
		<u>Fiberglass Ladders</u>																				
	06-7120.120	SS Ships Ladder Wall Mount	3.00 ea	06 Carp Rough	5	12,000 mh / ea	38	35.23 /mh	1,268	9,000.00 /ea	27,000	-	-						28,268	5,911	34,180	
		<u>Fiberglass Ladders</u>	0.00				38		1,268		27,000									28,268	5,911	34,180
		<u>Roof Accessories</u>																				
	07-7200.100	Access Hatches	7.00 ea					ea	1,646.00	ea	11,522	ea			ea		ea		11,522	2,166	13,688	
		<u>Roof Accessories</u>	7.00 ea								11,522								11,522	2,166	13,688	
		<u>Painting-Interior</u>																				
	09-9123.200	Sub by LS - Painting Interior - Pipe	1.00 ls									15,000.00 /fs	15,000							15,000	2,820	17,820
		<u>Painting-Interior</u>	0.00										15,000							15,000	2,820	17,820
		<u>Pumping Stations</u>																				
	33-3200.010	Purchase Pumps, guide rails, controls	1.00 ea					ea	123,104.00	ea	123,104	ea			ea		ea		123,104	23,146	146,250	
		<u>Pumping Stations</u>	1.00 ea						123,104		123,104									123,104	23,146	146,250
		004-Proc Pipe/Equip	0.00				611		22,473		282,316		15,000			7,500			327,289	71,330	398,619	
005-Building																						
		<u>IWS Resources-Labor</u>																				
	1000.001	Site Foreman Daily	5.00 day	01 IWS Site	1		48	393.75 /day	1,969	-	-	-	-						1,969	1,173	3,142	
				Foreman																		
	1000.001	Laborer	10.00 days	01 IWS Laborer	1	9,000 hour / days	95	29.04 /hour	2,614	-	-	-	-						2,614	1,899	4,512	

Bid Item	Phase	Description	Takeoff Quantity	Crew	Labor Count	Labor Productivity	Labor Hours	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Hours	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total Amount	
		IWS Resources-Labor	6.00				143		4,882										4,882	3,072	7,654	
		IWS Resources-Material																				
	1000.002	Pre-fabricated FRP Building 10x10 - Complete	1.00 ea					./ea	33,997.00	./ea	33,997	./ea			./ea		./ea		33,997	6,392	40,389	
	1000.002	Roll-up door	1.00 ea					./ea	6,600.00	./ea	6,600	./ea			./ea		./ea		6,600	1,241	7,841	
	1000.002	Man Doors	1.00 ea					./ea	1,800.00	./ea	1,800	./ea			./ea		./ea		1,800	338	2,138	
	1000.002	HVAC/Vents	1.00 ea					./ea	16,930.00	./ea	16,930	./ea			./ea		./ea		16,930	3,183	20,113	
	1000.002	Specialties	1.00 ea					./ea	910.00	./ea	910	./ea			./ea		./ea		910	171	1,081	
		IWS Resources-Material	6.00								60,237								60,237	11,326	71,563	
		005-Building	0.00				143		4,882											64,819	14,397	79,217
006-Electrical		Concrete Budget- Slab @ Grade																				
	03-0010.130	Sub by CY - Mat Foundation Slab - 2 slabs for etc	6.37 cy					-	-	-	-	600.00	./cy	3,822	-	-	-	-	3,822	719	4,541	
		Concrete Budget- Slab @ Grade	6.37 cy											3,822					3,822	719	4,541	
26-0000.001		Generator - 150KW	ea					-	-	-	-	-	-		58,000.00	./ea	-	-				
26-0000.001		Electrical Equipment																				
	26-0000.001	IBC	1.00 ea					-	-	49,700.00	./ea	49,700	-	-	./ea		-	-	49,700	9,345	59,045	
		Electrical Equipment	0.00								49,700								49,700	9,345	59,045	
		Electrical Sub																				
	26-0000.100	Sub by LS - Electrical Subcontract	1.00 ls					-	-	-	-	196,980	./ls	196,980	-	-	-	-	196,980	37,036	234,016	
		Electrical Sub	1.00 ls									196,980							196,980	37,036	234,016	
		Ditch-Trench Excavation																				
	31-2333.110	Electrical Excavation and Backfill	125.00 lf					./lf		./lf		100.00	./lf	12,500			./lf		12,500	2,350	14,850	
		Ditch-Trench Excavation	0.00											12,500					12,500	2,350	14,850	
		006-Electrical	0.00								49,700			213,302					263,002	49,450	312,452	
007A-SS & FM to Fenc		IWS Resources-Labor																				
	1000.001	Site Foreman-Daily	3.00 day	01 IWS Site Foreman	1		29	363.75	./day	1,181	-	-	-	-	-	-	-	-	1,181	704	1,885	
	1000.001	Equipment Operator	3.00 day	01 IWS Equip Op	1		29	405.11	./day	1,216	-	-	-	-	-	-	-	-	1,216	716	1,931	
	1000.001	Pipefitter	3.00 day	01 IWS Pipefitter	1		29	405.11	./day	1,216	-	-	-	-	-	-	-	-	1,216	716	1,931	
	1000.001	Laborer	3.00 days	01 IWS Laborer	1	9,000	hour / days	29	29.04	./hour	784	-	-	-	-	-	-	-	784	570	1,354	
	1000.001	Laborer	3.00 days	01 IWS Laborer	1	9,000	hour / days	29	29.04	./hour	784	-	-	-	-	-	-	-	784	570	1,354	
		IWS Resources-Labor	6.00				143		5,180										5,180	3,274	8,454	
		IWS Resources-Material																				
	1000.002	Pipe Purchase - Core & Main	1.10 ea					./ea	4,128.00	./ea	4,541	./ea			./ea		./ea		4,541	854	5,395	
		IWS Resources-Material	6.00								4,541								4,541	854	5,395	
		Dewatering																				
	31-2319.120	Dewatering	3.00 day			2,000	hour / day	6	./hour	./day		-	-	27	85.00	./day	255	-	-	255	113	368
	31-2319.120	Dewatering - Fuel	3.00 day			2,000	hour / day	6	./hour	75.00	./day	225	-	-	27	./day		-	-	225	110	335
		Dewatering	6.00					13			225			54		255			480	223	703	
		Haul Material																				
	31-2323.260	Haul Material Offsite 30 Minutes Round Trip	80.00 cy					-	-	-	-	6.00	./cy	480		./cy		-	-	480	90	570
		Haul Material	80.00 cy											480					480	90	570	
		UTILITY TRENCHING																				
	33-0550.000	Manhole Excavation/Backfill	1.00 ea	02 Site Trench	6	38,000	mh / ea	40	36.56	./mh	1,390	./ea		38	21.39	./mh	813	./ea		2,203	1,043	3,246
		Box1																				
		UTILITY TRENCHING	6.00				40		1,390					38		813			2,203	1,043	3,246	
		Pipe Trenching																				
	33-0550.010	Trench Excise & Backfill Only 16' +	30.00 lf	02 Site Trench	6	4,500	lf / ch	39	201.21	./ch	1,341	7.58	./lf	227	-	-	63	203.75	./ch	1,358	-	2,927
		Box1																				
		Pipe Trenching	30.00 lf				39		1,341		227			63		1,358			2,927	1,152	4,079	
		Concrete Thrust Blocks																				
	33-0550.020	Thrust Block Concrete	1.00 cy					-	-	140.00	./cy	140	-	-	-	-	-	-	140	26	166	
		Concrete Thrust Blocks	1.00 cy								140								140	26	166	
		Flushing & Test of Water Lines																				
	33-1002.010	Line Testing	1.00 ea	02 Site Water	3	16,000	mh / ea	17	32.86	./mh	826	162.00	./ea	162	-	-	-	-	688	389	1,076	
		Test1																				
		Flushing & Test of Water Lines	1.00 ea				17		826		162								688	389	1,076	
		PRECAST STRUCTURES																				
	33-3000.000	Purchase Precast manhole and Invert - 48" x 22' H	1.00 ea					./ea	5,760.00	./ea	5,760	./ea			./ea		./ea		5,760	1,083	6,843	
		PRECAST STRUCTURES	6.00								5,760								5,760	1,083	6,843	
		007A-SS & FM to Fenc	0.00				252		8,437		11,856			480	165		2,426		22,399	8,134	30,532	
007B-FM to Fence		IWS Resources-Labor																				

Bid Item	Phase	Description	Takeoff Quantity	Crew	Labor Count	Labor Productivity	Labor Hours	Labor Price	Labor Amount	Material Price	Material Amount	Sub Price	Sub Amount	Equip Hours	Equip Price	Equip Amount	Other Price	Other Amount	Total Amount	Addon Amount	Grand Total Amount
		IWS Resources-Labor																			
	1000.001	Site Foreman Daily	5.00 day	01 IWS Site Foreman	1		48	393.75 /day	1,969	-	-	-	-		-	-	-	-	1,969	1,173	3,142
	1000.001	Equipment Operator	5.00 day	01 IWS Equip Op	1		48	405.11 /day	2,026	-	-	-	-		-	-	-	-	2,026	1,192	3,218
	1000.001	Pipelitter	5.00 day	01 IWS Pipelitter	1		48	405.11 /day	2,026	-	-	-	-		-	-	-	-	2,026	1,192	3,218
	1000.001	Laborer	5.00 days	01 IWS Laborer	1	9,000 hour / days	48	29.04 /hour	1,307	-	-	-	-		-	-	-	-	1,307	949	2,256
	1000.001	Laborer	5.00 days	01 IWS Laborer	1	9,000 hour / days	48	29.04 /hour	1,307	-	-	-	-		-	-	-	-	1,307	949	2,256
		IWS Resources-Labor	6.00				239		8,633										8,633	5,456	14,090
		IWS Resources-Material																			
	1000.002	Pipe Purchase - Core & Main	1.10 ea					/ea		38,066.00 /ea	41,873	/ea			/ea		/ea		41,873	7,873	49,746
		IWS Resources-Material	6.00							41,873									41,873	7,873	49,746
		Dewatering																			
	31-2319.120	Dewatering	3.00 day			2,000 hour / day	6	/hour		/day		-	-	27	85.00 /day	255	-	-	255	113	368
	31-2319.120	Dewatering - Fuel	3.00 day			2,000 hour / day	6	/hour		75.00 /day	225	-	-	27	/day		-	-	225	110	335
		Dewatering	6.00				13			225				54		255			480	223	703
		Haul Material																			
	31-2323.260	Haul Material Offsite 30 Minutes Round Trip	75.00 cy					-	-	-	-	6.00 /cy	450		/cy		-	-	450	85	535
		Haul Material	75.00 cy										450						450	85	535
		UTILITY TRENCHING																			
	33-0550.000	Manhole Excavation/Backfill	1.00 ea	02 Site Trench	6	30,000 mh / ea	32	36.56 /mh	1,097	/ea		/ea		30	21.39 /mh	642	/ea		1,739	824	2,563
		Box1					32		1,097					30		642			1,739	824	2,563
		UTILITY TRENCHING	6.00																		
		Pipe Trenching																			
	33-0550.010	Trench Excavate & Backfill Only 8'	150.00 lf	02 Site Trench	6	9,000 lf / ch	97	201.21 /ch	3,363	7.59 /lf	1,139	-	-	168	203.75 /ch	3,396	-	-	7,888	2,886	10,874
		Box1					97		3,363		1,139			168		3,396			7,888	2,886	10,874
		Pipe Trenching	150.00 lf								1,139					3,396			7,888	2,886	10,874
		Concrete Thrust Blocks																			
	33-0550.020	Thrust Block Concrete	10.00 cy					-	-	140.00 /cy	1,400	-	-		-	-	-	-	1,400	263	1,663
		Concrete Thrust Blocks	10.00 cy							1,400									1,400	263	1,663
		Flushing & Test of Water Lines																			
	33-1002.010	Line Testing	1.00 ea	02 Site Water	3	16,000 mh / ea	17	32.86 /mh	826	162.00 /ea	162	-	-		-	-	-	-	688	389	1,076
		Test1					17		826		162								688	389	1,076
		Flushing & Test of Water Lines	1.00 ea																		
		PRECAST STRUCTURES																			
	33-3000.000	Purchase Precast Airvac manhole - 60" x 8' H	1.00 ea					/ea		2,880.00 /ea	2,880	/ea			/ea		/ea		2,880	542	3,422
		PRECAST STRUCTURES	6.00							2,880									2,880	542	3,422
		007B-FM to Fence	0.00				397		13,610		47,676		450	242		4,293			66,031	16,640	84,671
007C-Open Cu SS & FM																					
		Ditch-Trench Excavation																			
	31-2333.110	SS and Force Main - Open Trench Complete	1.00 ea					##### /ea	110,162	95,099.40 /ea	95,099	196,782.30 /ea	196,782		182,119.50 /ea	182,120	##### /ea	81,223	665,386	120,420	785,806
		Ditch-Trench Excavation	6.00						110,162		95,099		196,782			182,120			81,223	665,386	120,420
		007C-Open Cu SS & FM	0.00						110,162		95,099		196,782			182,120			81,223	665,386	120,420

Description	Amount	Totals	Hours	Rate	Cost Basis	Cost per Unit	Percent of Total
Labor	447,668		6,023.317 hrs			0.060 /	14.28%
Material	752,024					0.100 /	23.99%
Subcontract	842,367					0.112 /	26.87%
Equipment	334,683		7,177.319 hrs			0.045 /	10.68%
Other	87,142					0.012 /	2.78%
From the Spreadsheet	2,463,884	2,463,884				0.329 /	78.60%
Sales Tax					C		
Small Tools & Safety Equip	26,645			16.000 %	C	0.004 /	0.85%
Misc Materials	6,144			1.000 %	C	0.001 /	0.20%
Trucks - Crew	17,031			4.330 \$/hr	H	0.002 /	0.54%
Fuel for Trucks	8,732			2.220 \$/hr	H	0.001 /	0.28%
Per Diem	10,935			2.780 \$/hr	H	0.001 /	0.35%
Misc Extra Expense	69,487	2,533,371				0.338 /	2.22%
Labor Overtime by % of Hours	7,670		235.999 hrs	6.000 % @ ###	A	0.001 /	0.24%
Supervision & OT Expense	7,670	2,541,041				0.339 /	0.24%
Performance & Payment Bond	24,712				B	0.003 /	0.79%
Bond on Subcontractors	8,344			1.000 %	C	0.001 /	0.27%
Builders Risk Insurance	8,237			0.320 %	T	0.001 /	0.26%
	41,293	2,582,334				0.344 /	1.32%
Contingency	129,117			5.000 %	T	0.017 /	4.12%
Profit Margin on Total Project	423,174			13.500 %	T	0.056 /	13.50%
Total		3,134,625				0.418 /	

CITY OF NORTHGLENN

CONSTRUCTION SET FOR BUNKER HILL LIFT STATION

MAY 2020

PREPARED BY:



1221 AURARIA PKWY | DENVER, COLORADO 80204
303.300.3464 | TBPE REGISTERED FIRM NUMBER F-13

XXX, P.E., PRINCIPAL
PLUMMER

NATHAN W. MARTINSON P.E., PROJECT MANAGER
PLUMMER



Sheet List Table

Sheet Number	Sheet Title
GENERAL	
G-000	COVER SHEET
G-001	LOCATION MAP & SHEET LIST
G-002	GENERAL ABBREVIATIONS, LEGENDS & SYMBOLS
G-003	DESIGN CRITERIA & PROCESS FLOW DIAGRAM
G-004	HYDRAULIC PROFILE
INSTRUMENTATION	
I-001	PROCESS & INSTRUMENTATION DIAGRAM LEGEND & SYMBOLS
I-002	PROCESS & INSTRUMENTATION DIAGRAM
CIVIL	
C-001	OVERALL SITE PLAN
C-002	LIFT STATION HORIZONTAL CONTROL & SITE PIPING PLAN
C-003	SITE GRADING PLAN
C-004	NOT USED
C-005	GRAVITY SEWER PLAN & PROFILE STA 0+00 TO STA 5+00
C-006	GRAVITY SEWER PLAN & PROFILE STA 5+00 TO END STA
C-007	FORCE MAIN PLAN & PROFILE STA 0+00 TO STA 5+00
C-008	FORCE MAIN PLAN & PROFILE STA 5+00 TO END STA
C-009	INITIAL EROSION CONTROL PLAN
C-010	INTERIM EROSION CONTROL PLAN
C-011	FINAL EROSION CONTROL PLAN
C-101	EXISTING LIFT STATION DEMOLITION & ABANDONMENT PLAN
C-901	CIVIL DETAILS I
C-902	CIVIL DETAILS II
C-903	CIVIL DETAILS III
C-904	EROSION CONTROL DETAILS I
C-905	EROSION CONTROL DETAILS II
C-906	EROSION CONTROL DETAILS III
C-907	DEMOLITION DETAILS
C-908	C-908 - CIVIL DETAILS IV
Structural Sheets	
S-001	STRUCTURAL GENERAL NOTES AND TYPICAL DETAILS
S-002	STRUCTURAL FOUNDATION AND GROUND LEVEL PLANS
S-003	STRUCTURAL SECTIONS
Architectural Sheets	
A-001	OPERATIONS BUILDING PLAN AND NOTES
A-002	OPERATIONS BUILDING EXTERIOR ELEVATIONS
A-003	ARCHITECTURAL NOTES AND SCHEDULES
LIFT STATION	
M-001	PLANS
M-002	SECTIONS
M-003	MECHANICAL PLAN
M-004	MECHANICAL SECTIONS
M-005	GRINDER VAULT PLAN & SECTION
M-006	PLUMBING SCHEMATICS
M-901	DETAILS I
M-902	DETAILS II
M-903	DETAILS III
ELECTRICAL	
E-001	ELECTRICAL ABBREVIATIONS, SYMBOLS AND LEGENDS
E-002	ELECTRICAL SITE PLAN & DUCT BANK DETAILS
E-003	POWER ONE-LINE DIAGRAM & LOAD SCHEDULE
E-004	CONTROL PANELS ONE-LINE DIAGRAM
E-005	LIFT STATION ELECTRICAL & LIGHTING PLAN
E-006	LUMINARIES, LIGHTING PANEL & CABLE & CONDUIT SCHEDULES
E-007	INSTRUMENT LOCATION PLAN
E-008	INSTRUMENT LOCATION SECTIONS
E-009	COMMUNICATION AND PUMP SCHEMATIC
E-010	LIFT STATION GROUNDING PLAN
E-011	LIFT STATION LOCAL CONTROL PANEL LAYOUT
E-901	ELECTRICAL DETAILS I



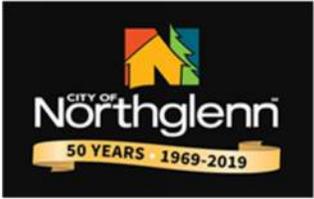
NO.	DATE	REVISION	BY

CITY OF NORTHGLENN
BUNKER HILL LIFT STATION
GENERAL
LOCATION MAP & SHEET LIST

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED A. GUDAL
DRAWN K. RINDT
CHECKED N. MARTINSON
REVIEWED

Seq. of
Dwg. No. **G-001**
4032-002-01



City of Northglenn
Bunker Hill Lift Station

Construction Set Technical Specifications

April 2020

Project #: 4032-002-01



PLUMMER

Prepared by:

PLUMMER | 1221 Auraria Parkway | Denver, Colorado 80204

THIS PAGE INTENTIONALLY BLANK.

TABLE OF CONTENTS

DIVISION 01 – SUMMARY OF WORK

01 10 00	Summary
01 20 00	Price and Payment procedures
01 31 00	Project Management and Coordination
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 41 00	Regulatory Requirements
01 42 00	References
01 43 00	Quality Assurance
01 45 00	Quality Control
01 50 00	Temporary Facilities and Controls
01 60 00	Product Requirements
01 70 00	Execution and Closeout Requirements
01 79 00	Starting Demonstration and Testing of Process Systems

DIVISION 03 - CONCRETE

03 11 00	Concrete Forming
03 15 00	Concrete Accessories
03 15 13	Waterstops
03 20 00	Concrete Reinforcing
03 30 00	Cast-in-Place Concrete
03 41 00	Precast Structural Concrete
03 60 00	Grouting

DIVISION 05 - METALS

05 05 19	Post-Installed Concrete Anchors
05 59 00	Metal Specialties

DIVISION 08 - OPENINGS

08 31 13	Access Doors and Frames
----------	-------------------------

DIVISION 09 - FINISHES

09 97 00	Coatings for Water and Wastewater Facilities
----------	----------------------------------------------

DIVISION 10 - SPECIALTIES

10 50 00	Miscellaneous Specialties
----------	---------------------------

DIVISION 13 – SPECIAL CONSTRUCTION

13 34 19	Metal Building Systems
----------	------------------------

DIVISION 22 – PLUMBING

22 14 29.16	Submersible Sump Pumps
-------------	------------------------

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

23 05 00	Common Work Results for HVAC
23 05 10	Basic HVAC Materials and Methods
23 05 53	Identification for HVAC Piping and Equipment

TABLE OF CONTENTS

23 05 93	Testing, Adjusting, and Balancing for HVAC
23 31 13	Metal Ducts
23 34 00	HVAC Fans
23 37 13	Diffusers, Grilles, Registers
23 82 33	Duct Heaters
23 82 39	Unit Heaters

DIVISION 26 – ELECTRICAL

26 02 00	Electrical Testing
26 05 00	Common Work Results for Electrical
26 05 19	Low-Voltage Electrical Power Conductors and Cables
26 05 26	Grounding and Bonding
26 05 33	Raceway and Boxes for Electrical Systems
26 05 43	Underground Ducts and Raceways for Electrical Systems
26 05 53	Identification for Electrical Systems
26 05 73.19	Arc-Flash Hazard Analysis
26 08 00	Commissioning of Electrical Systems
26 22 00	Low-Voltage Transformers
26 24 13	Switchboards
26 24 16	Panelboards
26 27 26	Wiring Devices
26 28 16.16	Enclosed Switches
26 29 00	Low-Voltage Controllers
26 32 00	Packaged Generator Assemblies
26 36 23	Automatic Transfer Switches
26 43 13	Surge Protective Devices for Low Voltage
26 51 10	Interior Lighting

DIVISION 31 – EARTHWORK

31 12 00	Selective Clearing and Grubbing
31 23 00	Excavation and Fill
31 23 19	Dewatering
31 23 33	Trenching and Backfilling

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 12 16	Asphalt Paving
32 92 19	Seeding

DIVISION 33 – UTILITIES

33 01 10.58	Disinfection of Water Utility Piping Systems
33 05 05	Buried Piping Installation
33 05 07.24	Casing Pipe for Utility Jacketing
33 05 09	Piping Specials for Utilities
33 05 23.13	Utility Horizontal Directional Drilling
33 05 31.11	Polyvinyl Chloride Gravity Sewer Pipe
33 05 31.13	Polyvinyl Chloride Pressure Pipe
33 05 33	Polyethylene Utility Pipe (HDPE Pressure Pipe)

TABLE OF CONTENTS

33 05 61	Concrete Manholes
33 14 11	Water Utility Transmission Piping
33 14 19	Valves and Hydrants for Utility Service

DIVISION 40 – PROCESS INTERCONNECTIONS

40 05 05	Exposed Piping Installation and Testing
40 05 06	Couplings, Adapters, and Specials for Process Piping
40 05 07	Hangers and Supports for Process Piping
40 05 19	Ductile Iron Process Pipe
40 05 57	Actuators for Process Valves and Gates
40 05 59.13	Stop Plates
40 05 62	Plug Valves
40 05 63	Ball Valves
40 05 65.23	Swing Check Valves
40 05 78.13	Air Vacuum Valves for Wastewater Service
40 05 97	Identification for Process Equipment
40 06 00	Schedules for Process Interconnections
40 61 00	Process Control and Instrumentation Systems General Provisions
40 61 96	Process Control Descriptions
40 62 63	Operator Interface Terminal
40 63 43	Programmable Logic Controllers
40 66 00	Network and Communication Equipment
40 70 00	Instrumentation for Process Systems
40 71 00	Flow Measurement
40 72 00	Level Measurement
40 73 00	Pressure, Strain, and Force Measurement
40 78 00	Panel Mounted Instruments

DIVISION 43 – PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT

43 25 13	Overhung Submersible Centrifugal Pumps
----------	----------------------------------------

DIVISION 46 – WATER AND WASTEWATER EQUIPMENT

46 24 33	In-Channel Sewage Grinder
----------	---------------------------

ATTACHMENT A – GEOTECHNICAL INVESTIGATION

Report dated January 21, 2020 ; prepared by Kumar & Associates ; Titled: “Geotechnical Engineering Study and Pavement Thickness Design, Bunker Hill Lift Station Replacement; Northglenn, Colorado” , Project No. 19-1-413 .