AMENDMENT NO 1

CONTRACT NO. 37293

FOR

CBWTP DIGESTER EXPANSION PROJECT

Pursuant to Ordinance No. _____

This Contract was made and entered into on the 1st day of May, 2007, by and between Brown and Caldwell, hereinafter called Contractor, and the City of Portland, a municipal corporation of the State of Oregon, by and through its duly authorized representatives, hereinafter called City.

1. This contract is hereby extended through April 30, 2012.

2. Additional work is necessary to complete detailed design and to provide construction and startup phase professional services for the CBWTP Digester Expansion Project (Project) as described in the detailed Scope of Work in Attachment A.

3. Additional compensation is necessary and shall not exceed $4,747,506. Interim payments shall be made to Contractor according to the schedule identified in Attachment B.

All other terms and conditions shall remain unchanged and in full force and effect.

Brown and Caldwell

By: Phyllis A Brunner 1/2/2008
Date
Phyllis A. Brunner, SVP
(Name and Title) Northwest Regional Manager

Address: 6500 SW Macadam Ave, Suite 200
Portland, OR 97239

Telephone: (503) 244-7005

Approved as to Form:

APPROVED AS TO FORM
1/4/08
City Attorney Date
CITY ATTORNEY

CITY OF PORTLAND

By: _____
Auditor Date

By: _____
Mayor/Elected Official Date

CBWTP Digester Expansion Project 8106, Contract 37293
Amendment 1- Final Design, Construction, and Startup Phase Services, Estimated Level of Effort by Task

			Subconsultant Contracts									Outside Services						
Phase / Phase Name / Task / Task Name	Cascade Design	Majid Engineering	Shannon & Wilson	SuperElevation	Gary Struthers	Burgee Arch	Ch2mhill	Confined Space	Heritage Research	Total Subs	Reproduction	Total Outside Services	Other Travel	Total Other Direct Costs	Total Expense Cost	Expense Cost Plus 5% Markup	Total Task Effort
001 Project Management	$0	$0	$0	$0	$36,000	$0	$0	$0	$0	$36,000	$10,000	$10,000	$20,000	$20,000	$66,000	$69,300	$432,993
015 Detail Design of New Digesters	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
151 Civil Design	$88,320	$0	$0	$0	$0	$0	$0	$0	$0	$88,320	$0	$0	$0	$0	$88,320	$92,736	$177,236
152 Architectural	$0	$0	$0	$0	$0	$159,360	$0	$0	$0	$159,360	$0	$0	$0	$0	$159,360	$167,328	$176,723
153 Mechanical / Process	$0	$0	$0	$144,000	$0	$0	$0	$0	$0	$144,000	$0	$0	$0	$0	$144,000	$151,200	$631,502
154 Structural	$112,800	$0	$12,000	$0	$0	$0	$0	$0	$0	$124,800	$0	$0	$0	$0	$124,800	$131,040	$289,889
155 Electrical	$0	$317,280	$0	$0	$0	$0	$0	$0	$0	$317,280	$0	$0	$0	$0	$317,280	$333,144	$748,235
156 Instrumentation and Control	$0	$0	$0	$120,000	$0	$0	$0	$0	$0	$120,000	$0	$0	$0	$0	$120,000	$126,000	$571,257
157 Specifications	$4,800	$2,400	$0	$0	$0	$12,000	$0	$0	$0	$19,200	$0	$0	$0	$0	$19,200	$20,160	$132,269
158 QA/QC	$8,040	$8,040	$0	$0	$0	$7,920	$0	$0	$0	$24,000	$0	$0	$0	$0	$24,000	$25,200	$183,858
159 Cost Estimates	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$63,364
016 Detail of Mods to Exist Heating Sys	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
161 Exisiting Condition Assessment	$0	$0	$0	$0	$0	$0	$0	$10,000	$0	$10,000	$0	$0	$0	$0	$10,000	$10,500	$22,594
162 Safety Audit and Permit Analysis	$0	$0	$0	$0	$0	$4,800	$0	$0	$0	$4,800	$0	$0	$0	$0	$4,800	$5,040	$30,182
163 Modify Existing Digester Heating	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$87,812
164 Design Mixing Upgrades	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$103,366
165 Design Modification Allowance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$24,358
017 Support Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
171 Permitting Support	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$19,254
172 Special Studies	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$20,361
018 Services During Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
181 Bid Phase Design Clarifications	$0	$0	$624	$0	$0	$0	$0	$0	$0	$624	$0	$0	$0	$0	$624	$655	$41,631
182 Prepare Conformed Documents	$0	$0	$0	$9,984	$0	$0	$0	$0	$0	$9,984	$0	$0	$0	$0	$9,984	$10,483	$32,921
183 Submittal Reviews	$6,240	$6,240	$0	$0	$0	$6,240	$0	$0	$0	$18,720	$0	$0	$0	$0	$18,720	$19,656	$206,917
184 Field Visits / Site Inspections	$10,400	$2,288	$44,720	$0	$0	$2,288	$0	$0	$1,040	$60,736	$0	$0	$0	$0	$60,736	$63,773	$96,667
185 Design Clarification Services	$9,984	$7,488	$0	$0	$0	$7,488	$0	$0	$0	$24,960	$0	$0	$0	$0	$24,960	$26,208	$238,959
186 Design Modification Allowance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$128,390
019 Startup and Closeout Phase Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
191 Prepare Web Based O&M	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$136,095
192 COD Services	$0	$0	$0	$0	$0	$0	$12,960	$0	$0	$12,960	$0	$0	$0	$0	$12,960	$13,608	$13,608
193 Training	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$17,196
194 Process Startup Support Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$91,802
195 Record Drawings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
195 Tech Support for Year One Ops	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$28,067
Total	**$240,584**	**$343,736**	**$57,344**	**$273,984**	**$36,000**	**$200,096**	**$12,960**	**$10,000**	**$1,040**	**$1,175,744**	**$10,000**	**$10,000**	**$20,000**	**$20,000**	**$1,205,744**	**$1,266,031**	**$4,747,506**

CBWTP Digester Expansion Project 8106, Contract 37293
Amendment 1- Final Design, Construction, and Startup Phase Services, Estimated Level of Effort by Task

Phase / Phase Name / Task / Task Name	Brown and Caldwell Labor																					
	Krugel, Steven J	Gadoury White, Nicole R	Laffitte, Dan E	Falken, Eric J	Mills, Timothy A	Maisonville, Philip M	Oeth, Laurence B	Hopkins, Kenneth J	Chapman, Thomas M	Persson, Douglas R	Huyck, Karen J	Smith, Alan R	Meloy, Bill	Kumataka, Gregory K	Bos, Randal J	Matthews, James L	Engineer I	Senior Drafter	Word Processor IV	Total Hours	Total Labor Cost	Total Labor Effort
001 Project Management	500	300	1300	0	0	50	50	0	0	0	0	0	0	0	0	0	0	0	100	2300	$117,320	$363,693
015 Detail Design of New Digesters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0
151 Civil Design	10	0	98	0	228	0	0	0	0	420	0	0	0	0	0	0	0	0	0	756	$27,258	$84,500
152 Architectural	0	0	12	24	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	60	$3,031	$9,395
153 Mechanical / Process	200	0	252	0	702	0	0	664	750	988	0	0	0	0	0	0	0	600	0	4156	$154,936	$480,302
154 Structural	0	0	0	0	0	0	600	0	0	0	624	0	0	0	0	0	0	0	0	1224	$51,242	$158,849
155 Electrical	0	0	0	0	0	1480	0	0	0	712	0	0	0	0	0	0	0	200	0	3092	$133,900	$415,091
156 Instrumentation and Control	0	0	0	0	0	1020	0	0	0	1296	0	0	0	0	1160	0	0	0	0	3476	$143,631	$445,257
157 Specifications	40	0	60	0	100	140	100	100	100	0	0	0	0	0	0	0	100	0	100	840	$36,164	$112,109
158 QA/QC	92	0	100	0	50	50	200	50	50	0	0	0	150	150	0	0	0	0	0	892	$51,180	$158,658
159 Cost Estimates	16	0	24	0	0	0	0	0	40	0	0	0	0	0	0	325	0	0	0	405	$20,440	$63,364
016 Detail of Mods to Exist Heating Sys	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0
161 Exisiting Condition Assessment	10	0	0	0	20	0	40	0	0	0	0	0	0	0	0	0	0	0	0	70	$3,901	$12,094
162 Safety Audit and Permit Analysis	0	0	0	0	40	40	40	40	0	0	0	0	0	0	0	0	0	0	0	160	$8,110	$25,142
163 Modify Existing Digester Heating	4	0	20	0	0	192	0	56	80	352	0	0	0	0	0	0	0	0	0	704	$28,326	$87,812
164 Design Mixing Upgrades	10	0	10	0	0	116	200	0	80	276	100	0	0	0	0	0	0	0	0	792	$33,344	$103,366
165 Design Modification Allowance	8	0	8	0	20	20	20	20	20	40	40	0	0	0	0	0	0	0	0	196	$7,857	$24,358
017 Support Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0
171 Permitting Support	8	0	72	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	110	$6,211	$19,254
172 Special Studies	24	0	10	0	40	20	20	0	0	0	0	0	0	0	0	0	0	0	16	130	$6,568	$20,361
018 Services During Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0
181 Bid Phase Design Clarifications	10	0	10	0	40	40	40	40	40	40	40	0	0	0	0	0	0	0	0	300	$13,218	$40,976
182 Prepare Conformed Documents	8	0	8	8	8	8	8	8	0	72	72	0	0	0	0	0	0	0	0	200	$7,238	$22,438
183 Submittal Reviews	30	0	100	0	250	240	120	140	250	0	0	0	0	0	0	0	300	0	0	1430	$60,407	$187,261
184 Field Visits / Site Inspections	32	0	12	0	24	40	50	10	24	0	0	0	0	0	0	0	0	0	0	192	$10,611	$32,894
185 Design Clarification Services	40	0	60	0	350	350	200	200	0	200	0	0	0	0	0	0	0	0	0	1400	$68,629	$212,751
186 Design Modification Allowance	80	0	80	0	100	120	100	100	120	150	150	0	0	0	0	0	0	0	0	1000	$41,416	$128,390
019 Startup and Closeout Phase Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0
191 Prepare Web Based O&M	8	0	16	0	0	0	0	0	16	120	0	840	0	0	0	0	0	0	0	1000	$43,902	$136,095
192 COD Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0
193 Training	10	0	10	0	0	0	0	0	0	30	0	70	0	0	0	0	0	0	0	120	$5,547	$17,196
194 Process Startup Support Services	30	0	30	0	80	80	0	80	0	0	0	300	0	0	0	0	0	0	0	600	$29,614	$91,802
195 Record Drawings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0
195 Tech Support for Year One Ops	16	0	16	0	16	16	0	16	0	0	0	100	0	0	0	0	0	0	0	180	$9,054	$28,067
Total	**1186**	**300**	**2308**	**32**	**2068**	**4022**	**1842**	**1524**	**1570**	**4696**	**1026**	**1310**	**150**	**150**	**1860**	**325**	**400**	**800**	**216**	**25785**	**$1,123,056**	**$3,481,475**

ATTACHMENT B
PAYMENT SCHEDULE

Amendment No. 1 to Contract 37293

CBWTP DIGESTER EXPANSION PROJECT
DETAILED DESIGN, SERVICES DURING CONSTRUCTION, AND STARTUP PHASE SERVICES

Phase/Task	Task Not-To-Exceed Limit		
	Original Contract	Change in Amendment 1	Revised Total
001 Management	$ 83,113	$ 432,993	$ 516,106
002 Existing Digester Evaluation	$ 28,118	$ -	$ 28,118
003 Compile Project Data	$ 10,883	$ -	$ 10,883
004 Establish Design Criteria	$ 7,168	$ -	$ 7,168
005 Establish Design Standards	$ 2,404	$ -	$ 2,404
006 Perform Evaluations	$ 129,614	$ -	$ 129,614
007 Conduct Predesign Workshops	$ 12,294	$ -	$ 12,294
008 Geotechnical Evaluations	$ 25,436	$ -	$ 25,436
009 Predesign Drawings	$ 48,096	$ -	$ 48,096
010 Construction Cost Estimate	$ 17,412	$ -	$ 17,412
011 Predesign Review Meeting	$ 11,918	$ -	$ 11,918
012 Value Engineering	$ 9,756	$ -	$ 9,756
013 Value Engineering Response	$ 22,199	$ -	$ 22,199
014 Final Predesign Report	$ 24,930	$ -	$ 24,930
015 Detailed Design of New Digesters	$ -	$ 2,974,333	$ 2,974,333
016 Detailed Design of Modifications to Existing Digesters	$ -	$ 268,312	$ 268,312
017 Permitting Support Services	$ -	$ 39,615	$ 39,615
018 Services During Construction			
Task 181 Bid Phase Design Clarification	$ -	$ 41,631	$ 41,631
Task 182 Prepare Conformed Drawings	$ -	$ 32,921	$ 32,921
Task 183 Submittal Reviews	$ -	$ 206,917	$ 206,917
Task 184 Field Visits/ Site Inspection	$ -	$ 96,667	$ 96,667
Task 185 Design Clarification Services	$ -	$ 238,959	$ 238,959
Task 186 Owner Requested Design Modifications Allowance	$ -	$ 128,390	$ 128,390
019 Startup/Closeout Services			
Task 191 Prepare Browser Based Operations and Maintenance Manual	$ -	$ 136,095	$ 136,095
Task 192 Configuration Offline Database Services	$ -	$ 13,608	$ 13,608
Task 193 Training	$ -	$ 17,196	$ 17,196
Task 194 Process Startup Support Services	$ -	$ 91,802	$ 91,802
Task 195 Tech Support for Year One Operations		$ 28,067	$ 28,067
Total	**$ 433,341**	**$ 4,747,506**	**$ 5,180,847**

ATTACHMENT A
SCOPE OF WORK

AMENDMENT NO. 1
TO
CONTRACT 37293

CBWTP DIGESTER EXPANSION PROJECT
DETAILED DESIGN, SERVICES DURING CONSTRUCTION, AND STARTUP PHASE SERVICES

The following scope of work provides detailed design and construction and startup phase services for the CBWTP Digester Expansion Project (Project).

PHASE 015 – DETAILED DESIGN OF NEW DIGESTERS

Final plans and specifications will be prepared for the new digesters for soliciting bids for construction and for obtaining the necessary site and building permits. Sixty percent, ninety percent and final drawings and specifications along with structural calculations will be prepared as part of this phase. The Contractor shall schedule and coordinate a design review meeting after City staff has had a chance to review each deliverable.

To complete this phase of work, the Contractor will perform the following tasks:

Task 151 - Civil Design

This task includes work necessary for completion of site and civil design drawings, up to and including final drawings, suitable for inclusion in the contract documents for public bidding of the project. Civil drawings will be based on existing as-built drawings of the existing facilities and buried utilities, engineering calculations, applicable code and regulations governing site development and stormwater management, and existing geotechnical information collected and generated as part of this agreement. This subtask also includes design of roads immediately surrounding the digester site, grading design as necessary, design of an erosion control plan, storm water management, and yard piping. This subtask also includes preparation of standard civil details and drafting of applicable survey information provided by the City.

Task 152 - Architectural Design

This task includes work necessary for completion of architectural design drawings, up to and including final drawings, suitable for inclusion in the contract documents for public bidding of the project. This subtask includes working with City staff to evaluate architectural and site design themes and space requirements for each room of the facility, coordination with other disciplines as needed to determine space and equipment access requirements, development of an overall architectural plan and floor plans, evaluation of code requirements, and selection of finishes. Additionally, all architectural details will be prepared for the project.

Task 153 - Mechanical and Process Design

This task includes work necessary for completion of mechanical and process design drawings, up to and including final drawings, suitable for inclusion in the contract documents for public bidding of the project. Mechanical drawings will include P&IDs, plan views, sections, and details of areas where mechanical equipment, piping, and plumbing are installed.

Task 154 - Structural Design

This task includes work necessary for completion of structural design drawings, up to and including final drawings, suitable for inclusion in the contract documents for public bidding of the project. Structural drawings will be based on structural calculations and existing and new geotechnical information collected as part of this agreement. The controlling code will be the 2007 Oregon Structural Specialty Code (Based on 2006 IBC). Structural drawings will be prepared for walls, footings, beams slabs, structural steel, concrete reinforcement, anchor bolts, bracing, miscellaneous metals and other structural aspects of any new facilities associated with the project.

Task 155 - Electrical Design

This task includes all work necessary for completion of electrical design drawings up to and including final drawings, suitable for inclusion in the contract documents for public bidding for the project. The task includes preparation of electrical diagrams, schematics, plans, sections, and details of areas where new equipment instruments, wiring, control centers, panels, and appurtenances are to be installed. Electrical design drawings shall include electrical plans, one-line diagrams, lighting and receptacles, and electrical construction details. Specific activities include the following:

1. Interconnections and revisions to existing medium voltage distribution system including provision of new unit substation
2. Layout of new electrical room, including line-up for motor control centers
3. Identification of electrical loads on the plan drawings
4. Preparation of one-line schematics and panel schedules
5. Preparation of Conduit and Cable Schedule
6. Preparation of individual index number based Control Schematic and Wiring Diagrams for all electrically powered or controlled equipment.
7. Short circuit analysis
8. Protective device coordination study
9. Arc flash hazard study

The electrical short circuit analysis, protective device coordination study, and the arc flash hazard study will be conducted using SKM PowerTools. The City has a completed model of the entire plant using this software and will provide the model and software to the Contractor for analysis of the new digester facilities.

Task 156 - Instrumentation and Controls Design

This task includes work necessary for completion of instrumentation and control design drawings up to and including final drawings suitable for inclusion in the contract documents for public bidding. The design shall include instrumentation system diagrams, control diagrams, loop diagrams, fire alarm and gas monitoring systems, and I/O cabinets. This approach assumes that the general contractor will furnish and install all instrumentation and control equipment and wiring and the City will be the PLC and SCADA programmer for the facility during the Construction phase of the project. Instrumentation and Control design will be designed in accordance with the requirements of the BES Control System Standards. Specific activities are as follows:

1. Development of control and instrumentation interlock notes.

2. Preparation of narrative descriptions of control strategies and sequences.

3. Specification of sensors and instruments to be used (under Task 157).

4. Investigation of requirements and performance specification for design and installation of the fire and security alarm systems.

5. Complete drafting of instrumentation and control system drawings, including symbol and detail sheets.

6. Preparation of instrumentation loop wiring diagrams

7. Preparation of instrumentation and control specifications, including control system hardware requirements (under Task 157).

8. Assistance to process discipline in development of the P&IDs.

Task 157 – Specifications

This task includes work necessary for completion of final design specifications, suitable for inclusion in the contract documents for public bidding of the project. Front End specifications Divisions 0 and 1 will be provided by the City and modified by the Contractor to accommodate the specific requirements of this project. The Contractor will prepare all Division 2 through 17 specifications, encompassing all written requirements, coordinated with the design drawings for Civil, Architectural, Mechanical, Structural, Electrical, and Instrumentation and Control completion of the project. The Contractor will modify their standard Division 2 through 17 specifications to be consistent with the requirements of the Project and the City-provided Divisions 0 and 1.

Task 158 – QA/QC

This task includes QA/QC functions of the design team. These include the following:

1. Preparation for, attendance at, and response to comments from design reviews with the City.

2. Preparation for, attendance at, and response to comments from internal design reviews.

3. Formal calculation checks and assembly of final calculations for submission to the City.

4. Final coordinating cross check

5. Discipline checks

Task 159 – Cost Estimates

This task includes detailed cost estimates for the sixty percent, ninety percent and final deliverables.

City's Role for Phase 015:

City Staff will provide review comments for each deliverable in an electronic form that will be developed during the early phases of detail design. Additionally, City staff will participate in deliverable review meetings and will meet as necessary on site with design team members to address detailed design issues. The City Surveyor will establish project controls and benchmarks. The City will furnish topographical surveys and surveys to locate key features as requested by the Contractor.

Phase 015 Deliverables:

1. 60 percent Plans, Specifications and Estimate (One ½-size set to be provided to the City) Plans to be included in the 60 percent deliverable are noted on the List of Drawings.
2. Responses to 60 percent review comments
3. 90 percent Plans, Specifications and Estimate (One ½-size set to be provided to the City) Plans to be included in the 90 percent deliverable are noted in the List of Drawings.
4. Responses to 90 percent review comments
5. Sealed Final Plans, Specifications and Estimate (One full-size reproducible set to be provided to the City)
6. Stamped Structural Calculations – (3 copies)

Phase 015 Assumptions:

1. Design review submittals and final design drawings will be prepared in 2D AutoCAD drawing format using standard Brown and Caldwell design drafting standards.

2. Specifications will be prepared by the Contractor in Word format using Brown and Caldwell standard specifications, tailored to the specific requirements of this project.

3. Division 0 and 1 specifications will be provided by the City and modified by the Contractor to tailor them for the Project.

4. The design will be based on the recommended facilities and systems documented in the Draft Predesign Report for the Project submitted to the City by the Contractor in November, 2007. The design will include two new anaerobic digesters of comparable size to the existing four 1980s vintage digesters. They will be capable of operating in the

temperature phased anaerobic digestion (TPAD) mode. The design will include all necessary heating, cooling, and pumping appurtenances, including the use of sludge-to-sludge heat exchangers for heat recovery.

5. The drawings included in the attached List of Drawings will be required for completion of project design.

PHASE 016 - DETAILED DESIGN OF MODIFICATIONS TO EXISTING DIGESTERS

Evaluations and final plans and specifications will be prepared for modifications to the existing digesters during this phase of the project for soliciting bids for construction and for obtaining the necessary site and building permits. Sixty percent, ninety percent and final drawings and specifications along with structural calculations will be prepared as part of this phase. Additionally, an existing conditions assessment and a safety audit and permit analysis will be performed as part of this phase.

To complete this phase of work, the Contractor will perform the following tasks:

Task 161 - Existing Condition Assessment

An on-site inspectional inspection of the existing digesters will be conducted to assess the current state of structural, mechanical, and electrical systems. A report will be prepared discussing the findings and recommending any repairs or upgrades. All inspections will be visual. This work will include structural inspection inside the digester covers and inside the digesters. Prior to this inspection, the City will drain and clean the digesters. Contractor personnel performing the inspection will be qualified and trained to enter digester and cover spaces. Contractor will provide all safety and access equipment required to perform the inspections.

Task 162 - Safety Audit and Permit Analysis

A safety audit of the existing digesters will be performed. The safety audit will be presented in a technical memorandum early in the design phase of the project and will recommend any modifications or upgrades to bring the existing digesters to the highest safety level practical and up to all standards required for existing structures by the building and Code officials. As part of this task the Contractor will continue to work with Code officials to ascertain those requirements in order to obtain the proper building permits.

Task 163 – Modifications to Existing Digester Heating System

This task includes work necessary for completion of the design modifications to existing digester heating and feed piping as required to integrate the existing digesters with the two new digesters in the TPAD process mode, up to and including final drawings and specifications, suitable for inclusion in the contract documents for public bidding of the project. The work includes modifications to the existing hot water system, addition of a cooling water system, sludge piping, and sludge pumping to modify the use of the four Alfa-Laval spiral heat exchangers in the existing digester control building to allow alternative operation in sludge cooling service. The City will independently purchase and install the new spiral HEXs prior to this Project construction.

Task 164 - Design Mixing Upgrades

This task includes work necessary for completion of the design modifications for new mixing systems in the existing digesters, up to and including final drawings and specifications, suitable for inclusion in the contract documents for public bidding of the project. It is assumed that 4 new telescoping mechanical draft tube mixers will be installed in one existing digester. The mixers will be roof mounted. This work includes design of structural modifications to the existing floating cover required to adequately support the new mixers. This work assumes that no structural repairs will be required following the internal structural inspection conducted under Task 161. Design of any repairs to the covers, up to and including cover replacement, would be added to this scope by amendment or completed under Task 165.

Task 165 - Design Modification Allowance

During the course of design and design inspections of the existing digesters it may be found that modifications or repairs are required other than those specifically listed in Tasks 163 and 164 that at present are unknown. An allowance for other design modifications is included in this task. Work on this task will be done only following specific scope and budget authorization of the City's Project Manager. Potential design activities under this subtask could include items such as removing gas compressors and gas piping from the existing gas rooms, repair of structural issues with the existing floating covers, modifications to address safety concerns, modifications to the existing covers for enhanced odor containment, etc. Work will completed as authorized up to the limit of the budget allowance allocated to this task as may be amended by subsequent amendments.

City's Role for Phase 016:

City Staff will provide review comments for each deliverable in an electronic form that will be developed during the early phases of detail design. Additionally, City staff will participate in deliverable review meetings and will meet as necessary on site with design team members to address detail design issues. City Staff will empty and wash down the internals of the existing digesters one digester at a time for internal inspection by Contractor personnel.

Phase 016 Deliverables:

1. Existing Condition Assessment (One copy of a Draft and Final Report to be provided to the City)
2. Safety Audit and Permit Analysis (One copy of a Draft and Final Technical Memorandum to be provided to the City)
3. 60 percent Plans, Specifications and Estimate incorporated into the single bid package prepared under Phase 015 (One ½ size set to be provided to the City)
4. Response to 60 percent review comments.
5. 90 percent Plans, Specifications and Estimate incorporated into the single bid package prepared under Phase 015 (One ½ size set to be provided to the City)
6. Response to 90 percent review comments

7. Sealed Final Plans, Specifications and Estimate incorporated into the single bid package prepared under Phase 015 (One full size set to be provided to the City)
8. Stamped Structural Calculations – (3 copies). Stamped structural calculations will be a combined deliverable that includes calculations for both Phase 015 and 016.

Phase 016 Assumptions:

1. Design review submittals and final design drawings will be prepared in 2D AutoCAD drawing format using standard Brown and Caldwell design drafting standards.
2. Unique drawings and specifications for this design work will be prepared under this phase. General drawings and specifications required to make a complete biddable document will be prepared under Phase 015. Drawings and specifications prepared under phases 015 and 016 will be integrated into a single bid package.
3. Drawings required for modifications to the existing digesters are included in the List of Drawings.

PHASE 017 - SUPPORT SERVICES

Permitting assistance and an allowance for special studies are included in this phase of the project. To complete this phase the Contractor will perform the following tasks:

Task 171 - Permitting Support

Contractor will provide design clarifications and changes to the plans ands specifications as required to address comments from Building Permit officials and the Oregon Department of Environmental Quality (DEQ). Only those plans and specifications that require updates will be provided to the City for insertion into the Sealed Final Plans and Specifications prepared in the previous project phase.

Task 172 - Special Studies

This task includes an allowance for any special studies needed as a result of the detailed design, inspections or permitting support Work on this task will be done only following specific scope and budget authorization of the City's Project Manager. Work will completed as authorized up to the limit of the budget allowance allocated to this task as may be amended by subsequent amendments.

City's Role for Phase 017:

City staff will participate in permitting meetings and provide assistance in developing responses to building department and DEQ review comments. Additionally, City staff may need to provide assistance for any special studies defined as part of this phase.

Phase 017 Deliverables:

1. Revised plans and specifications as required to respond to site development and building permit plan review check sheets and DEQ review comments.

2. Documentation as required by the regulatory official to demonstrate that the Contractor's design complies with applicable code or regulations.
3. Results from any special studies will be presented in a technical memo format (One copy of a Draft and Final Report to be provided to the City)

Phase 017 Assumptions:

1. Up to five (5) revised and sealed drawings and (5) five updated specifications will be provided to address permitting questions or DEQ review comments where the revisions are not required to make the design comply with applicable code, regulatory requirements, or standard municipal wastewater engineering design practice.
2. The budget limit for Phase 017 will not be amended for plan and specification revisions required to make the project design comply with code, regulatory requirements, or standard municipal wastewater engineering design practice, unless to accommodate a new code or regulatory requirements or unusual or non standard code interpretations code.
3. The Phase will require the Contractor to attend no more than two meetings – one with the Building Department and the second with Oregon DEQ.
4. Design review submittals and final design drawings will be prepared in 2D AutoCAD drawing format using standard Brown and Caldwell design drafting standards.
5. Reports will be prepared by the Contractor in Word format using Brown and Caldwell standard formats, tailored to the specific requirements of this project.

PHASE 018 - SERVICES DURING CONSTRUCTION

The Contractor will perform the following Tasks to provide services during the bidding and construction phase of the project.

Task 181 - Bid Phase Design Clarifications

Respond in writing to questions from bidders forwarded to the Contractor. When required, prepare details or other drawing or specification revisions to address bidder questions as requested by BES.

City Role for Task 181

During the Bid Phase, City staff shall prepare advertisement to bid, distribute addenda to plan holders, respond to questions from bidders and receive and evaluated bid proposals. Bidder questions that require input from the Contractor shall be forwarded to the Contractor in writing.

Task 181 Deliverables

Revised drawings and specifications for inclusion in addenda as required to clarify the project design and answer bidder questions.

Task 181 Assumptions

1. The scope does not include attendance at any pre-construction or pre-bid conferences or meetings.
2. The task effort will require no more than 300 hours for responding to bidder questions.

Task 182 - Prepare Conformed Drawings

Incorporate all addenda changes into a conformed set of drawings and specifications.

Task 182 Deliverables

1. One full size set of sealed conformed drawings and one set of conformed specifications
2. Electronic copies of conformed drawings and specifications in MSWord and AutoCAD.

Task 183 - Submittal Reviews

Submittals will be reviewed for general conformance with the project design concept and general compliance with the information or design requirements given in the Contract Documents. Submittal review comments will identify the corrections, modifications, and additions required, and, if appropriate, reasons as to why the submittal does not comply with the specifications. Should any submittal be found to be substantially deficient, Contractor may reject the submittal without markups, while giving written examples of major deficiencies as cause for rejection. The City or its Construction Contractor will scan all submittals into electronic format and transmit them to the Contractor using Autodesk's Constructware internet based construction management application. Written responses, in the form of written comments and/or marked-up submittals, will be transmitted to the City via Constructware and supplemented by mark-ups of hard copy submittal documents where required for clarity.

City Role for Task 183

1. Submittals shall be packaged and sent directly to appropriate discipline or facility leads by the City using Autodesk's Constructware internet based construction management application.

2. The City will obtain licenses for the Contractor and Subcontractors as required for the utilization of Autodesk's Constructware internet based construction management application.

3. The City will provide training for Contractor and Subcontractor personnel on the use of the Constructware construction management application.

Task 183 Deliverables

1. Responses to contractor submittals forwarded to the Contractor by the City in the form of written comments and/or marked-up submittals. Responses will be transmitted to the City via Constructware and supplemented by mark-ups where appropriate.

Task 183 Assumptions

1. Specific submittal reviews that are outside the scope of this Amendment include the Contractor's Injury and Illness Prevention Program (IIPP), Site Specific Health and Safety Plans (HASP), Contractor's Applications for Payment, construction schedules, and Contractor claims (except as provided under Task 186).

2. Submittals shall be packaged and sent directly to appropriate discipline or facility leads by the City or their Construction Manager using the Constructware application. Distribution of submittals within the Contractor's team is not anticipated and no budget has been included.

3. Majority of submittals will be electronic copies that will not require filing at the Contractor's offices. All submittals and review comments will be readily available via the internet based Constructware application.

4. Task budget assumes 300 total submittal review events. Original submittals and re-submittals are each considered a single review event.

5. Contractor assumes 80 hours of training (10 individuals for 8 hours each) for Constructware use and an average of 5 hours per submission to review, document comments, and return submittal for a total of 1580 hours.

6. Number of submittals and hours is an estimate and may not reflect actual number of submittals or time required for submittal review. Submittal review data will be reviewed monthly and included in the monthly progress report.

Task 184 - Field Visits / Site Inspection

Facility and discipline design leads will conduct periodic site visits as requested by the City, to review the progress of construction and as required for Code or Building Official mandated inspections. Site visits may include attendance at key weekly construction meetings or facility coordination meetings, structural observation by the engineer of record, and specialty inspection by the geotechnical engineer.

Task 184 Deliverables

Site visit memoranda will be prepared where applicable or requested, with electronic copies sent to City. Memoranda will discuss field observations and will provide pertinent information to the City's Construction Manager for resolution of construction issues.

Task 184 Assumptions

1. Frequency of site visits will vary depending on construction activities and project status, on a schedule mutually acceptable to the Contractor and the City.
2. The Task 184 budget assumes 10 different staff members representing discipline/facility leads with a total of 60 half day visits and 15 full day visits. Full day visits by out-of-area staff assume 4 hours each visit plus 4 hours of travel time.
3. Daily inspections and specialty inspections for all facilities will be conducted by the City except for specialty inspection required by the geotechnical engineer.
4. Budget indicated in assumption 2 above includes 80 hours for geotechnical inspection and 8 hours for cultural resource inspection.

Task 185 - Design Clarification Services

Review of and response to requests for information (RFIs) and preparation of technical information to clarify the requirements of the design are included in this task. RFIs will be reviewed as requested by the City. RFIs will be forwarded to the Contractor using the Constructware application. RFIs will be issued and responded to in writing on appropriate RFI forms using the Constructware application. If work under this task requires a design modification, Contractor will prepare necessary drawings, specifications, and supporting information.

Task 185 Assumptions

1. RFI's will not include calculations and other submittal items (i.e. pipe support calculations, which are considered a shop drawing submittal).

2. The task budget is based on a total of 200 RFIs with an average of 8 hours per RFI for office staff to prepare responses, for a total of 1600 hours assumed for RFIs.

3. Number of RFIs and hours is an estimate and may not reflect actual number of RFIs or time required for RFI review. RFI review and response data will be reviewed monthly and included in the monthly progress report.

Task 186 - Design Modifications Allowance

Upon City request, Contractor will evaluate and prepare plans and specifications required to implement City requested modifications to the project design. Design modification work on this task will be done only following specific scope and budget authorization of the City's Project Manager. Work will completed as authorized up to the limit of the budget authorization.

Task 186 Deliverables:
Plans and specifications and/or revisions to plans and specifications as required to implement Owner requested design modifications.

Task 186 Assumptions
The Task 186 budget allowance includes 1000 hours for Owner requested design modifications.

PHASE 019 - STARTUP AND CLOSEOUT PHASE SERVICES

Phase 019 includes services for training and startup of the new facilities through support during the first year of operation. The work will be provided under the following tasks:

Task 191 - Prepare Browser Based Operation and Maintenance Manual

The Contractor will update the City's existing browser based electronic operation and maintenance manual for the Digester Improvements using Dreamweaver to generate HTML code and other features to achieve compatibility with the existing system. Utilizing up to six site visits to consult with staff and gather the necessary background data, the Contractor will develop material for

insertion in the manual. The Contractor will then populate the manual with the specific data and photographs for the expansion. The manual will include links to existing Safety, Emergency Response Documents, Spill Plans, and CAD drawing files. The manual updates will include operation and non-equipment maintenance material for all systems between the booster pump station at the sludge processing building through the new TPAD digestion system and back to either the lagoon or sludge processing. It will not include updates for the sludge thickening, dewatering, lagoon, or cogeneration systems, or for other existing support systems not modified as part of this project.

City Role in Task 191

The City will be responsible for staff participation in the development meetings; for review and comment on the templates and graphics; for identifying preferred links to existing electronic documents and files; for attending training to learn and understand navigation and management skills for the software; and for obtaining and maintaining manual associated software and licensing.

Task 191 Deliverables

1. A Compact Disc containing the files that make up the Operations and Maintenance Manual for the CBWTP Digesters.

Task 191 Assumptions

1. The Contractor will conduct up to six meetings on-site to consult with staff and gather necessary data.
2. The City's existing content templates will be utilized for the basic manual along with graphic content to populate the site-specific manual.
3. Links will be provided to existing electronic documents, any equipment specific manuals in a compatible electronic format and other files pertinent to the operation and maintenance of a facility.
4. Staff training will be provided to navigate, maintain, and expand the manual for future uses.
5. Contractor will prepare electronic MS Word files of O&M Manual text for review. Review of hard copy documents will be performed using hand written markups. Review of electronic documents will be performed using track changes feature.
6. The Task 191 budget is based on the assumption that no more than 1000 hours of engineering staff time will be required for O&M Manual preparation

Task 192 - Configuration Offline Database (COD) Services

Under this task the Contractor will provide up to eighty hours (80) of CH2M-Hill support services for BES personnel to perform COD data entry. PLC and HMI programming will be performed by BES staff.

Task 193 - Training

Assist BES in training CBWTP staff for the operation of the new digestion processes. Four initial training sessions each 4 hours in duration will be provided. Each of the initial training sessions also includes 8 hours of preparation time. A total of 6 follow-up training sessions will be provided in the first 2 months of operation, each lasting one hour. Each follow-up training session includes 2 hours of preparation time. Information presented in the training sessions will consist mostly of screen captures and information in the updated Operation and Maintenance Manual.

Task 193 Budget
Up to 120 hours of engineering staff time for training preparation and on-site time.

Task 194 - Process Startup Support Services

Process services include preparation of a start up plan and subsequent services during the actual commissioning of the project.

Task194 Assumptions

1. Five start-up planning meetings are anticipated prior to startup.
2. Arrangement/conducting of meetings and meeting notes are provided by City staff.
3. Technical analyses of treatment plant start up issues will be presented as brief memoranda.
4. Draft and final text for start-up plan will be provided as MS Word document.
5. The City, their Construction Manager, and the construction contractor shall conduct all testing and commissioning and shall provide test and commissioning data to the Contractor in electronic format. Contractor shall review the data, meet with City staff or witness testing activities, and provide written feed back in the form of a technical memorandum where appropriate.
6. Contractor facility leads will be present in field for set periods of time during testing and commissioning of their respective areas of design as requested by the City.
7. Commissioning shall be completed during a nominal 1 month period.
8. Field notes and memoranda identifying corrective actions for problems or deficiencies noted during testing and commissioning will be provided.

Task 194 Budget

1. Startup meetings assumed to require four hours each meeting, four hours of travel time for attendance from outside the Portland area, and an additional two hours anticipated for preparation and additional one hour for follow-up. Two Contractor team members will attend each meeting.
2. Up to an average of 15 hours per meeting, for a total of 75 hours.
3. An additional 55 hours is allocated to authoring of the draft and final start-up plan text.

4. Commissioning oversight, testing, field note preparation, trouble shooting, and corrective action recommendations and documentation for a total of 470 hours.

5. Total task effort is 600 hours for the work listed above.

Task 195 - Technical Support During First Year of Operation

Provide as-needed engineering services during the first year of operation of the Digester Expansion. Services may include phone consultation, meetings, or site visits to prepare advice, reports, or analyses as may be requested by City staff during the first year of operation.

Task 195 Budget

Up to 180 engineering staff hours are allocated for the Contractor to assist the City to use under this task.

LIST OF DRAWINGS

Sheet Number	Drawing Description
	* Denotes drawings not included in the 60% design deliverable
	* * Denotes drawings not included in the 60% or 90% design deliverable
General	
1	Vicinity Map and Location Plan
2	Drawing Index 1
3	Drawing Index 2
4	Drawing Index 3
5	Drawing Index 4
6	General Symbols
7	General Abbreviations and Legends
8	Design Data - 1
9	Hydraulic Profile and Mass Balance
10	Process Flow Schematic - Sludge 1
11	Process Flow Schematic - Sludge 2
12	Process Flow Schematic - Gas
13	Process Flow Schematic - Hot Water

Demolition

14		Demolition Plan
15	*	Demolition Sections

Civil

16		Civil General Notes and Legend
17		Overall Site Plan
18		Ground Improvement Plan
19		Site Piping Plan
20		Site Paving and Grading Plan
21		Blend Tank Site Piping, Paving and Grading Plan
22		Control Coordinate Sheet
23		Erosion Control - Plan
24	*	Erosion Control - Details
25		Stormwater - Plan
26	*	Stormwater - Details

Process

27		Process and Instrumentation Identification Systems
28		Process and Instrumentation Process Symbols
29		Process and Instrumentation Symbols and Identification Systems
30		Digester Feed Heat Recovery
31		Digester Feed Heat Recovery
32		Digester 9 Feed Pumping
33		Digester 10 Feed Pumping
34		Digester 9 Process
35		Digester 9 Heating Circulation
36		Digester 10 Process
37		Digester 10 Heating Circulation
38		Digester 9 & 10 Deep Tank Drain Pumping
39		Digester 10 Withdrawal Pumping
40		Digester 9 Withdrawal Pumping

41		Blend Tank
42		Cooling System (including HEXs added in Amendment# 1)
43		Cooling System (including HEXs added in Amendment# 1)
44		Cooling System (including HEXs added in Amendment# 1)
45		Digester 9 & 10 Gas Management System
46		Digester 5 & 6 Gas Management System
47		Digester 7 & 8 Gas Management System
48		Existing Heating Water System
49		Digester 9 Heating Water System
50		Digester 10 Heating Water System
51		Sump Pumps
52		Instrument Air System
53		Utility Air System
54		Process Water System
55		Utility System 1
56		Utility System 2
57		Biofilter System

Architectural

58		Architectural Building Code Analysis
59		Door, Louver and Room Finish Schedules
60	*	Door, Louver and Wall Assembly Details
61	*	Roofing details 1
62	*	Roofing details 2 - (green roof)
63		Deep Tank Drain Plan at EL 15.0
64		Building Plan at EL 24.0 - North
65		Building Plan at EL 24.0 - Middle
66		Building Plan at EL 24.0 - South
67		Building Plan at EL 42.0 - North
68		Building Plan at EL 42.0 - Middle
69		Building Plan at EL 42.0 - South
70		Building Plan at EL 76.0

71		Building Elevations - 1
72	*	Building Elevations - 2
73		Building Sections - 1
74	*	Building Sections - 2
75	*	Stair Details
76	*	Wall & Enlarged Sections - 1
77	*	Wall & Enlarged Sections - 2
78		Blend Tank Plan
79	*	Blend Tank Sections
80	*	Project Specific Details - 1
81	*	Project Specific Details - 2

Structural

82		General Structural Notes - 1
83		General Structural Notes - 2
84	*	OSSC Quality Assurance Plan
85		General Concrete Details - 1
86		General Concrete Details - 2
87		General Concrete Details - 3
88		General Concrete Details - 4
89	*	Conc Beam, Col and Slab Schedules
90		General Equipment Mounting Details
91	*	General Structural Metal Details
92		General Grating, Cover Plates and Ladder Details
93	*	Misc Metal Work Details
94		Key Plan at EL 24.0
95		Key Plan at EL 42.0
96		Key Plan at EL 76.0
97		Deep Tank Drain Plan at EL 15.0
98		Digester Plan at EL 24.0
99		Digester Plan at EL 76.0
100		Enlarged Gas Dome Plan

101		Building Plan at EL 24.0 - North
102		Building Plan at EL 24.0 - Middle
103		Building Plan at EL 24.0 - South
104		Building Plan at EL 42.0 - North
105		Building Plan at EL 42.0 - Middle
106		Building Plan at EL 42.0 - South
107		Building Plan at EL 76.0 - North
108		Building Plan at EL 76.0 - Middle
109		Building Plan at EL 76.0 - South
110		Sections - 1
111		Sections - 2
112	*	Sections - 3
113	*	Sections - 4
114	*	Sections - 5
115	*	Sections - 6
116		Project Specific Details - 1
117	*	Project Specific Details - 2
118	*	Project Specific Details - 3
119	*	Project Specific Details - 4
120		Blend Tank Plan 1
121		Blend Tank Plan 2
122		Blend Tank Sections 1
123	*	Blend Tank Sections 2
124	*	Blend Tank Details
125		Biofilter Plan and Sections
126		Existing Digester Mixing Modifications - Plan
127	*	Existing Digester Mixing Modifications - Section
128		Existing Digester Mixing Modifications - Details
129	*	Existing Digester Mixing Modifications - Details
130	* *	Existing Digester Mixing Modifications - Details

Mechanical

131		Mechanical General Notes, Symbols and Legends
132		General Mechanical Pipe Penetration Details
133		General Pipe Support Details
134		General Pipe Support Anchor Details
135		General Pipe Penetration Details
136		Miscellaneous Details
137		Miscellaneous Details
138	*	Miscellaneous Details
139	*	Miscellaneous Details
140		Process Schematic - Gas System
141		Process Schematic - Digesters
142		Process Schematic - Hot Water System
143		Key Plan at EL 24.0
144		Key Plan at EL 42.0
145		Key Plan at EL 76.0
146		Deep Tank Drain Plan at EL 15.0
147		Building Plan at EL 24.0 - North
148		Building Plan at EL 24.0 - Middle
149		Building Plan at EL 24.0 - South
150		Building Plan at EL 42.0 - North
151		Building Plan at EL 42.0 - Middle
152		Building Plan at EL 42.0 - South
153		Building Plan at EL 76.0 - North
154		Building Plan at EL 76.0 - Middle
155		Building Plan at EL 76.0 - South
156		Digester 9 Plan at EL 24.0
157		Digester 9 Plan at EL 42.0
158		Digester 9 Plan at EL 76.0
159		Digester 10 Plan at EL 24.0
160		Digester 10 Plan at EL 42.0
161		Digester 10 Plan at EL 76.0
162		Sections - 1

163		Sections - 2
164		Sections - 3
165	*	Sections - 4
166	*	Sections - 5
167	* *	Sections - 6
168		Blend Tank Plan
169		Blend Tank Sections
170	*	Blend Tank Details
171		Biofilter Plan
172	*	Biofilter Sections
173		Biofilter - Details 1
174	* *	Biofilter - Details 2
175		Mixing Modifications - Plan
176	*	Mixing Modifications - Section
177		Cooling System Plan 1 (for new and HEXs to be installed as amendment 1)
178		Cooling System Plan 2 (for new and HEXs to be installed as amendment 1)
179		Cooling System Sections 1 (for new and HEXs to be installed as amendment 1)
180	*	Cooling System Sections 2 (for new and HEXs to be installed as amendment 1)

Plumbing

181		Plumbing General Notes, Symbols and Legends
182		Deep Tank Drain Plan at EL 15.0
183		Building Plan at EL 24.0
184		Building Plan at EL 42.0
185		Building Plan at EL 76.0
186	*	Building Sections
187		Blend Tank Plan

HVAC

188		HVAC General Notes, Symbols and Legends

189		Air Flow Schematic
190		General HVAC Details
191		Deep Tank Drain Plan at EL 15.0
192		Building Plan at EL 24.0
193		Building Plan at EL 42.0
194		Building Plan at EL 76.0
195	*	Sections
196		Blend Tank Plan

Electrical

197		Electrical General Notes and Symbols
198		Electrical Abbreviations and Legends
199		Electrical Details - 1
200		Electrical Details - 2
201		Electrical Details - 3
202		Electrical Details - 4
203	*	Electrical Details - 5
204	*	Electrical Details - 6
205		Grounding Schematic
206		Site Electrical Plan
207		Overall Plan and Area Classification at EL 24.0
208		Overall Plan and Area Classification at EL 42.0
209		Overall Plan and Area Classification at EL 76.0
210		Power and Instrument Plan at EL 24.0 - North
211		Power and Instrument Plan at EL 24.0 - Middle
212		Power and Instrument Plan at EL 24.0 - South
213		Power and Instrument Plan at EL 42.0 - North
214		Power and Instrument Plan at EL 42.0 - Middle
215		Power and Instrument Plan at EL 42.0 - South
216		Power and Instrument Plan at EL 76.0
217		Blend Tank Power and Instrumentation Plan
218		Deep Tank Drain Plan at EL 15.0

219			Lighting and Receptacles Plan at EL 24.0 - North
220			Lighting and Receptacles Plan at EL 24.0 - Middle
221			Lighting and Receptacles Plan at EL 24.0 - South
222			Lighting and Receptacles Plan at EL 42.0 - North
223			Lighting and Receptacles Plan at EL 42.0 - Middle
224			Lighting and Receptacles Plan at EL 42.0 - South
225			Lighting and Receptacles Plan at EL 76.0 - North
226			Lighting and Receptacles Plan at EL 76.0 - Middle
227			Lighting and Receptacles Plan at EL 76.0 - South
228			Blend Tank Lighting and Receptacles Plan
229			Grounding and Lightning Protection Plan
230	*	*	Electrical Sections - 1
231	*	*	Electrical Sections - 2
232	*		Unit Substation Elevation
233			Medium Voltage One-Line Diagram
234			Low Voltage One-Line Diagram
235	*		MCC Elevations
236	*		Panel Schedules - 1
237	*		Panel Schedules - 2
238			MCC One-Line Diagrams - 1
239			MCC One-Line Diagrams - 2
240			MCC One-Line Diagrams - 3
241			MCC One-Line Diagrams - 4
242			MCC One-Line Diagrams - 5
243			Thickened Sludge Blend Tank 1 Circ Pump Control Schematic
244			Thickened Sludge Blend Tank 1 Circ Pump Wiring Diagram
245			Thickened Sludge Blend Tank 1 Grinder Control Schematic
246			Thickened Sludge Blend Tank 1 Grinder Wiring Diagram
247			Blend Tank 1 PS Feed Valve Control Schematic
248			Blend Tank 1 PS Feed Valve Wiring Diagram
249			Blend Tank 1 TWAS Feed Valve Control Schematic
250			Blend Tank 1 TWAS Feed Valve Wiring Diagram

251		Blend Tank 1 Discharge Isolation Valve Control Schematic
252		Blend Tank 1 Discharge Isolation Valve Wiring Diagram
253	*	Thickened Sludge Blend Tank 2 Circ Pump Control Schematic
254	*	Thickened Sludge Blend Tank 2 Circ Pump Wiring Diagram
255	*	Thickened Sludge Blend Tank 2 Grinder Control Schematic
256	*	Thickened Sludge Blend Tank 2 Grinder Wiring Diagram
257	*	Blend Tank 2 PS Feed Valve Control Schematic
258	*	Blend Tank 2 PS Feed Valve Wiring Diagram
259	*	Blend Tank 2 TWAS Feed Valve Control Schematic
260	*	Blend Tank 2 TWAS Feed Valve Wiring Diagram
261	*	Blend Tank 2 Discharge Isolation Valve Control Schematic
262	*	Blend Tank 2 Discharge Isolation Valve Wiring Diagram
263		Mixed Sludge Circ Pump 1 Control Schematic
264		Mixed Sludge Circ Pump 1 Wiring Diagram
265	*	Mixed Sludge Circ Pump 2 Control Schematic
266	*	Mixed Sludge Circ Pump 2 Wiring Diagram
267	*	Combustible Gas Detector at Blend Tanks Control Schematic
268	*	Combustible Gas Detector at Blend Tanks Wiring Diagram
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270		Feed Sludge Pump 1 Wiring Diagram
271		Digested Sludge Pump 1 Control Schematic
272		Digested Sludge Pump 1 Wiring Diagram
273		Sludge Heat Exchanger 1 Control Schematic
274		Sludge Heat Exchanger 1 Wiring Diagram
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276	*	Feed Sludge Pump 2 Wiring Diagram
277	*	Digested Sludge Pump 2 Control Schematic
278	*	Digested Sludge Pump 2 Wiring Diagram
279	*	Sludge Heat Exchanger 2 Control Schematic
280	*	Sludge Heat Exchanger 2 Wiring Diagram
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283	*		Digester Transfer Cleaning Pump 2 Control Schematic
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286			Cooling Water Pump 1 Wiring Diagram
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288	*	*	Cooling Water Pump 2 Wiring Diagram
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291	*	*	Cooling Tower Wiring Diagram - 1
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295	*		Air Handling Unit 2 Control Schematic
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302	*		EL 15 Sump Pump 1 Wiring Diagram
303	*		EL 15 Sump Pump 2 Control Schematic
304	*		EL 15 Sump Pump 2 Wiring Diagram
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329	*	Biofilter Wiring Diagram - 1
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332		Digester 9 Feed Pump 1 Wiring Diagram
333	*	Digester 9 Feed Pump 2 Control Schematic
334	*	Digester 9 Feed Pump 2 Wiring Diagram
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336		Digester 9 Feed Valve 1 Wiring Diagram
337	*	Digester 9 Feed Valve 2 Control Schematic
338	*	Digester 9 Feed Valve 2 Wiring Diagram
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340	*	Digester 9 Feed Valve 3 Wiring Diagram
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343	*	Digester 9 Tank Discharge Isolation Valve 2 Control Schematic
344	*	Digester 9 Tank Discharge Isolation Valve 2 Wiring Diagram
345	*	Digester 9 Tank Discharge Isolation Valve 3 Control Schematic
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347	*	Digester 9 Tank Discharge Isolation Valve 4 Control Schematic
348	*	Digester 9 Tank Discharge Isolation Valve 4 Wiring Diagram
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350		Digester 9 Mixer 1 Wiring Diagram
351	*	Digester 9 Mixer 2 Control Schematic
352	*	Digester 9 Mixer 2 Wiring Diagram
353	*	Digester 9 Mixer 3 Control Schematic
354	*	Digester 9 Mixer 3 Wiring Diagram
355	*	Digester 9 Mixer 4 Control Schematic
356	*	Digester 9 Mixer 4 Wiring Diagram
357		Digester 9 Gas Dome Pump Control Schematic
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360		Digester 9 Circ Grinder 1 Wiring Diagram
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379	*	Digester 9 Circ Grinder 3 Control Schematic
380	*	Digester 9 Circ Grinder 3 Wiring Diagram
381	*	Digester 9 Circ Pump 3 Control Schematic
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418	*	Digester 10 Mixer 4 Wiring Diagram
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494	*	*	Cable Schedules - 6
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643	*		Area Control Panel I/O Wiring - 1
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645	*		Area Control Panel I/O Wiring - 3
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648	*		Area Control Panel I/O Wiring - 6
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