

Document 00910

ADDENDUM NO. 1

Date of Addendum: 3/11/16

PROJECT NAME: Southwest WWTP Improvements - Package 3

PROJECT NO: WBS No. R-000265-0103-4

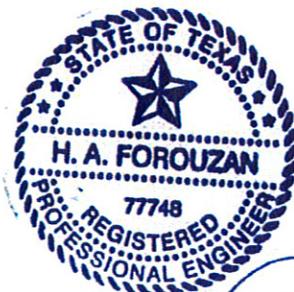
BID DATE: March 17, 2016 (There is no change to the Bid Date.)

FROM: James T. Lincoln, P.E., City Engineer
City of Houston, Department of Public Works and Engineering
611 Walker Street, 15th Floor
Houston, Texas 77002
Attn: Bill Zod, P.E., Project Manager

TO: Prospective Bidders

This Addendum forms a part of the Bidding Documents and will be incorporated into the Contract documents, as applicable. Insofar as the original Project Manual and Drawings are inconsistent, this Addendum governs.

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below. Change bars (|) are provided in the outside margins of pages from the Project Manual to indicate where changes have been made; no change bars are provided in added Sections. Reissued Drawing Sheets show the Addendum number below the title block and changes in the Drawing are noted by a revision mark and enclosed in a revision cloud.



H. A. Forouzan
3/11/2016

00910-1
02-01-2004

CHANGE IN BID DATE

There is no change in the bid date.

CHANGES TO PROJECT MANUAL

BIDDING REQUIREMENTS

1. Document 00410 – BID FORM – PART A. Remove and replace entire document.
2. Document 00410 – BID FORM – PART B. Remove and replace entire document.
3. Document 00520 – AGREEMENT. Remove page 1 and replace with revised page 1.
4. Document 00800 – SUPPLEMENTARY CONDITIONS. Remove page 2 and replace with revised page 2.
5. Document 00010 – TBALE OF CONTENTS. Remove and replace entire document.

SPECIFICATIONS

6. Section 01110 – Summary of Work. Remove and replace entire document.
7. Add specification Sections – 01255, 01270, 01292, 01321, 01325, 01326, 01330, 01340, 01422, 01450, 01452, 01454, 01506, 01576, 01581, 01630, 01732, 01740, 01755, 01770, 01782, 01785.
8. Section 04061 – Mortar. Add the document to the project manual.
9. Section 04062 – Unit Masonry System. Add the document to the project manual.
10. Section 07552 – Section title number 75552 is changed to 07552.
11. Section 09216 – Section title number 092216 is changed to 09216.
12. Section 09513 – Section title number 95113 is changed to 09513.
13. Section 11130 – Positive Displacement Blowers. Add Gardner Denver as an Engineer's approved equal.
14. Section 11380 – Mechanical Surface Aeration Equipment. Remove pages 1, 2, 7, 16, 17, and 19 and replaced with revised pages 1, 2, 7, 16, 17, and 19.
15. Section 11450 – Fiberglass Reinforced Plastic (FRP) Baffle Wall System. Section

- 2.01.B. – Add Glass-Steel, Inc. as an Engineer's approved equal.
- 16. Section 11500 – Slotted Pipe Skimmer. Remove and replace entire document.
- 17. Section 13440 – Plant Control System. Remove page 14 and replace with revised page 14.

CHANGES TO DRAWINGS

- 18. Sheet 10, Remove and replace entire sheet
- 19. Sheet 11, Remove and replace entire sheet.
- 20. Sheet 12, Remove and replace entire sheet.
- 21. Sheet 25, Delete Note 2 and replace with, "SLUDGE REMOVAL FROM THE BASINS REQUIRED FOR IMPROVEMENTS IS INCLUDED IN PAY ITEM 11 OF THE BID FORM."
- 22. Sheet 22, Remove and replace entire sheet.
- 23. Sheet 23, Remove and replace entire sheet.

CLARIFICATIONS

- 24. Question: Bid Item No. 4 described draft tubes and anti vortex baffles, repair and replacement are not included in the table "Damaged Draft Tubes and Anti-Vortex Baffles" on sheet M-6, please add the items not included in the table.

Response: The bid items have been modified to address this description. See Addendum No. 1.

- 25. Question: Add Fiberglass Fabricators as an approved manufacturer for the Chlorine Contact Basin FRP baffle wall specification.

Response: This manufacturer does not meet the requirements of the Specification Section 11450 FRP Baffle Walls.

- 26. Question: Add Glass-Steel, Inc. as an approved manufacturer for the Chlorine Contact Basin FRP baffle wall specification.

Response: The specification has been modified to add this manufacturer as an approved manufacturer to Specification Section 11450 FRP Baffle Walls. See CHANGES TO PROJECT MANUAL, Addendum No. 1.

- 27. Question: Add Online Engineering Corporation as an approved manufacturer for the Chlorine Contact Basin slotted pipe skimmer specification.

Response: The specification has been modified to add this manufacturer as an approved manufacturer to Specification Section 11500 Slotted Pipe Skimmer. See CHANGES TO PROJECT MANUAL, Addendum No. 1.

28. Question: Can the construction duration be extended from 660-days to 870-days?

Response: The construction duration has been modified to extend the construction time. See Addendum No. 1.

29. Question: The estimated materials cost for this project accounts for approximately 70% of the estimated bid cost. The MWSBE goal of 11% MBE and 7% WBE is unachievable with such constraints. Can the MWSBE goals be reduced to 6% MBE and 2% WBE, with the alternative to substitute up to 4% SBE?

Response: The MWSBE goals for the project have been modified to reduce the goal requirement. See Addendum No. 1.

30. Question: The 1-yr warranty for the aerators/MCCs is stated to start from the date of substantial completion for all Reactor Basin work. Can the City grant partial substantial completion for each phase of the aerator replacement on this project, similar to what was done on the similar work at 69th Street WWTP aerator replacement? If not, please require that the MCC, Controls, and Aerator vendors provide 2 years of warranty?

Response: Contractor shall provide additional warranty period on their bid item needed to meet the partial substantial completion required per summary of work.

31. Question: Per sheet S-4, the elevation of the existing raised access floor is 54.52. The EL of the new raised access floor is to be 55.16 (a difference of only 0.64 ft). It was mentioned at the prebid meeting that we're raising the floor approximately 40". If the as-builts are based on a different benchmark and the elevation of the existing floor is not 54.52, what is it?

Response: The existing surveyed floor elevation is 51.80, this information has been updated on the structural sheets, S-4, S-5, and S-6. See Addendum No. 1.

32. Question: Sheet S-9. Since the relocated metal doors will be installed at a higher elevation (approx. 40"?) can you please provide construction details for the wall under the new threshold? Should this wall be masonry or concrete?

Response: Follow the Detail-C, per the 'As-Built' drawing 'N-42' and using the Specification 04061- Mortar and Specification 04062-Unit Masonry System, see attached as built drawing N-42

33. Question: Specification 10100, par. 1.5.B. Is this paragraph regarding seismic design applicable?

Response: *Seismic Design is not applicable.*

34. Question: Specification 10100, par. 1.7.E says provide mockups "if required". Are they required?

Response: *No mockups are required.*

35. Question: Sheet S-5. Note 7 says to remove the roof drain cleanouts including the drain pipe. What are the limits of the pipe removal, and should sheet S-10 call for replacement of same?

Response: *Drain piping is not required to be replaced. Detail 'D' – Roof Drain Detail" per the 'As-Built' drawing N-42 is attached for reference, see attached.*

36. Question: Sheet S-8. Can steel beam/column/bracing sizes and details be provided for the ramp? What is the thickness of checkered plate? If this is a pre-engineered system, can we get a specification and design criteria?

Response: *The aluminum checkered plate thickness is ¼" thick. This is a pre-engineered system and contractor is required to provide a designed system and submit shop drawings for approval prior to procurement and installation to comply with International Building Code (IBC 2012) and amendments to City of Houston Codes.*

37. Question: Provide a masonry spec for the CMU block and face brick at the MCC B building? Also, looks like there is tile on interior, can we get detail or spec on this?

Response: *Attached are the Specification 04061- Mortar and Specification 04062- Unit Masonry System.*

38. Question: Specification 09971, High Build Glazed Coatings: This specification is included in the table of contents (COH Standard Spec). The standard COH spec is for Potable Water Storage Tanks. Are High Build Glazed Coatings required for this project? If so, can we get a project specific specification, and where is it required?

Response: *This is a City of Houston standard specifications and shall be used for reference document where applicable.*

39. Question: Extra work item 4, Extra Building Demolition: What is the scope of this Building Demolition? Is this demolition of an entire building per SF? SF of masonry or flooring?

Response: *This extra unit line item is intended for miscellaneous demolition for unforeseen demolition related to the MCC-B building modifications.*

40. Question: Document 00410, Bid Item 4 and specification 01110, par. 1.03.4 includes "dewatering *and bypass* for leaking gates/valves and associated miscellaneous work." Can the requirement be modified to "sump pumping", removing the reference to "bypass pumping"?

Response: *The Document 00410, Bid Item 4 and specification 01110 items have been modified to address this description. See Addendum No. 1.*

41. Question: Specification 11380, 1.07.B. Should there be mandatory trips for the aerator supplier to inspect the existing draft tubes and baffles in each phase of work?

Response: *It is the Manufacturer's discretion to make inspection trips to ensure the supplied equipment meets the specified performance requirements with the existing equipment. See Specification Section 11380-2.02.1.3.*

42. Question: Can you clarify the specified performance testing times, is it three days total for all five reactor basins, or a minimum of three days per reactor basin?

Response: *The specified performance test shall be a minimum of three days per reactor basin for a total of 15 days. Contractors shall assume a minimum of three 8-hour days of testing for each reactor basin, a total of 15 days.*

43. Question: Specification, 11380, par. 3.07.A. Shouldn't this paragraph state the "aerator manufacturer", not the "contractor" is responsible for all costs for re-tests, corrective actions, and/or aerator replacements to meet the performance spec?

Response: *The City enters into a contractual agreement with the Contractor, not the Manufacturer.*

44. Question: Can you clarify the required coating system required for the carbon steel draft tubes?

Response: *Provide paint system 102 specified in Section 09901 Coating Systems. See Addendum No. 1.*

45. Question: Please confirm that the existing lift station isolation gates are operable in their existing condition and operate well enough to allow isolation of each half of the lift station structure.

Response: *The scope of work for lift station solid removal and staircase is removed condition of the existing lift station isolation gates are unknown at this*

time. An allowance provision has been provided to address this concern, see Addendum No. 1.

46. Question: Document 00410, Bid Item #9. Can the grit/solids removal from the Lift station be broken out into a separate Unit Price Bid Item? The cost for this removal/disposal is much higher per CY than elsewhere on the plant and should be bid separately?

Response: The bid line item has been modified to address this description. See Addendum No. 1.

47. Question: What liner is installed in the existing lift station, and is any liner repair required after removal of the platforms/stairs/etc.? If so, please provide a SF quantity to bid for repairs?

Response: A PVC type liner system is installed in the existing lift station. Repairs and patching of the liner system shall be directly associated with the demolition of the stairs, walkways, and handrails where demolition of materials and anchors exposes bare concrete.

48. Question: Sheet M-7, note 2. We need details and locations of grout and/or concrete pads that need removal per this note on the plans?

Response: Noted, grout and/or concrete pads are associated with stair, handrailing, and catwalk demolition and correspond to the locations where these items are anchored to the existing concrete.

49. Question: Specification 01110, par. 1.09.I says to "demolish and replace the existing stairs, handrails, and perimeter catwalk." Is the stairs/handrail/catwalk being replaced? If so, we need drawings/details?

Response: The intent is to demolish the existing stairs, handrails, and perimeter catwalk. See Addendum No. 1.

50. Question: Specification 01110, par. 1.09.I includes demolition of "junction boxes and control panels" and installation of "level sensors and associated fastening hardware, conduits, and wiring". This work isn't shown on the drawings. Is this required? If so, we need drawings/details?

Response: The intent is to demolish the existing stairs, handrails, and perimeter catwalk. See Addendum No. 1.

51. Question: A bypass of the existing lift station, if required, could be in excess of \$1M, can this scope of work be delayed until future substantial improvements are planned for this lift station?

Response: The condition of the existing lift station isolation gates are unknown at this time. An allowance provision has been provided to address this concern, see Addendum No. 1.

52. Question: Sheet M-9, note 2 says cleaning of basins is subsidiary to pay item for CCB improvements. Can removal and disposal of any solids in these basins be paid for under Bid Item 9? Think it makes sense to have an established quantity included in the base bid, rather than have us guess, since that bid item exists anyway?

Response: The bid line item has been modified to include 500 CY for cleaning of the CCB basins. The note on M-9 has been modified to reflect this change. See CHANGES TO DRAWINGS, Addendum No. 1.

53. Question: Are extra work Items for extra Carbon Steel Coated Draft Tubes, 316SS anti vortex baffles, and extra work items 18-19 in addition to the base bid items of the same description?

Response: The bid line item has been modified. See Addendum No. 1.

54. Question: Specifications 13111 thru 13202, 15640, 15641, 16640 thru 16645 are for cathodic protection systems. What cathodic protection is required for this project and are these specs applicable?

Response: These sections are City of Houston standard specifications and shall be used for reference document where applicable.

55. Question: Specifications 16711 thru 16785 are for traffic control, video, and cctv systems. Are these specs applicable to this project?

Response: These sections are City of Houston standard specifications and shall be used for reference document where applicable.

56. Question: Specification Section 01110 1.03.A.4 Detailed dimensional drawings are needed for the three sizes of Draft Tubes. Drawing M6 does not provide sufficient detail for reproducibility of existing Draft Tubes?

Response: Record documents with structural fabrication details of the existing draft tubes were not available for this project. A damaged draft tube is available for inspection at the project site.

57. Question: Specification Section 01110 1.03.A.4: Please confirm the new Draft Tubes are to be a Coated Carbon Steel, not 316SS?

Response: The specification section has been modified. See Addendum No. 1.

58. Question: Specification Section 01110: General Please define what size draft tube units need to be provided. This information is required to provide an accurate and competitive quote?

Response: *The bid line item has been modified. See Addendum No. 1.*

59. Question: Specification Section 11380 2.02.F.5: Please confirm if the approximate 1.5" referenced in this section is the value added to the Avg. Flow SWD indicated in Table 1.04.B that gives the Peak Flow SWD indicated in that same table?

Response: *The low water side water depth has been added. See Addendum No. 1.*

60. Question: Specification Section 11380 2.02.H.1: Please provide detailed drawings of the existing aerator support structures?

Response: *Record documents with structural fabrication details of the existing aerator support structure were not available for this project.*

61. Question: Specification Section 11380 3.04.D.1: Please confirm if the entire aerator unit (gearbox/motor/impeller) that is to be supplied is to be used for the factory tests or if only the impeller running at the appropriate speed is required to prove the results.

Response: *The complete motor, gearbox, and impeller setup is required for testing.*

62. Question: Specification Section 11380 3.04.D.6: The low submergence level is not defined in the specification. Only the design (AVG.) and the Peak levels are defined. Please define the Low Submergence level value?

Response: *The low water side water depth has been added. See Addendum No. 1.*

63. Question: Specification Section 11380 3.05.A: Please confirm that the Field testing is to be conducted in 3 out of the 4 stages in *all* trains for oxygen dissolution. Other places in the specification detail that all 4 stages require testing (3.05.E.7.d)?

Response: *Provide field testing in all four stages, see Addendum No. 1.*

64. Question: Specification Section 11380 3.05.E.1: SOTR is a test that is done at the factory with Clean water. The DO testing referenced later is completed with dirty water in the field. The SOTR requirements are found in the field testing section. Please clarify?

Response: The table provides the minimum criteria for clean water testing.

65. Question: Specification Section 11380 3.05.E.7.b: CBOD5, Soluble CBOD5, TSS, and COD readings are required at the plant influent and reactor basin influent and effluent. Are there meters already in place for these measurements, or do these need to be provided?

Response: Meters are not provided in place for these measurements, sample must be collected and analyzed in a laboratory.

66. Question: Specification Section 11380 3.05.E.7.d: Is the intent for the DO measurements to be taken in each stage at the same time or one stage at a time by moving a temporary probe set-up from one stage to the next?

Response: The intent is to collect readings from each stage simultaneously.

67. Question: Specification Section 11380 3.05.E.7.d: Is the intent to take the DO readings through the same sampling ports used for TSS measurements?

Response: Sample readings can be collected from manways or abandoned instrumentation ports, coordinate access with Contractor.

68. Question: Specification Section 11380 3.05.E.7.d: Within each stage, are readings to be taken at each aerator unit or only one reading per stage total?

Response: Samples and reading are only required for each stage, not for each aerator.

69. Question: Specification Section 11380 3.05.G.1: Please define "selected Stages"?

Response: Collect sample data from each of the four stages per reactor basin. See Addendum No. 1.

70. Question: Sheet 6, Drawing G-6 shows the stage 4 draft tubes require relocation. The bid form and summary of work indicate that only 30 draft tubes have to be relocated. Please clarify?

Response: The Stage 4 draft tubes, cover plates, and aerator structural support do not need to be relocated.

71. Question: What is the maximum weight of a motorized crane with pneumatic tires allowed on the top of the reactor basin?

Response: The top deck is rated for a utility type pick-up truck only. Previous projects to access the reactor basins and to pick the surface aerators have been performed with a crane located at grade adjacent to the reactor basin.

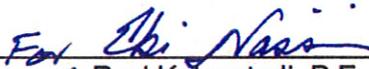
72. Question: Several sections of specifications are missing from the technical specifications (01255, 01270, 01292, 01321, 01325, 01326, 01330, 01340, 01422, 01450, 01452, 01454, 01506, 01576, 01581, 01630, 01732, 01740, 01755, 01770, 01782, and 01785)

Response: All missing specification sections are added. See Addendum No. 1

73. Question: Software Engineering qualification submitted by BLTI and Prime Control for City's approval.

Response: The qualifications for Software Engineering from BLTI and Prime Control have been received.

END OF ADDENDUM No. 1


Ravi Kaleyatodi, P.E., CPM
Senior Assistant Director
Department of Public Works
and Engineering

END OF DOCUMENT

Document 00410A

BID FORM – PART A

To: **The Honorable Mayor and City Council of the City of Houston
City Hall Annex
900 Bagby Street
Houston, Texas 77002**

Project: Southwest WWTP Improvements – Package 3

Project No.: WBS No. R-000265-0103-4

Bidder: _____

(Print or type full name of business entity, such as corporation, LLC, etc.)

1.0 OFFER

- A. Total Bid Price:** Having examined the Project location and all matters referred to in Bid Documents for the Project, we, the undersigned, offer to enter into a Contract to perform the Work for the Total Bid Price shown on the signature page of this Document
- B. Security Deposit:** Included with the Bid is a Security Deposit in the amount of 10 percent of the Total Bid Price subject to terms described in Document 00200 – Instructions to Bidders.
- C. Period for Bid Acceptance:** This offer is open to acceptance and is irrevocable for 90 days from Bid Date. That period may be extended by mutual written agreement of the City and Bidder.
- D. Addenda:** All Addenda have been received. Modifications to Bid Documents have been considered and all related costs are included in the Total Bid Price.
- E. Bid Supplements:** The following documents are attached:
 - Security Deposit (*as defined in Document 00200 – Instructions to Bidders*)
 - Document 00450 - Bidder's Statement of MWSBE Status
 - Document 00452 - Contractor's Submission List - Fair Campaign Ordinance Form A
 - Document 00453 – Bidder's Statement of Residency (*not required for AIP funded project*)
 - Document 00454 - Affidavit of Non-interest
 - Document 00455 - Affidavit of Ownership or Control
 - Document 00456 - Bidder's Certificate of Compliance with Buy American Program (*required for AIP funded project*)
 - Document 00457 – Conflicts of Interest Questionnaire (CIQ)
 - Document 00458 - Bidder's Certificate Regarding Foreign Trade Restriction (*required for AIP funded project*)
 - Document 00459 - Contractor's Statement Regarding Previous Contracts Subject to EEO (*required for AIP funded project*)
 - Document 00460 – Pay or Play Acknowledgement Form (POP 1-A)

- Document 00470 – Bidder’s MWSBE Participation Plan *(required unless no MWSBE participation goal is provided in Document 00800 (the “Goal”))*.
 - Document 00471 – Bidder’s Record of Good Faith Efforts *(required if the goal in Bidder’s Participation Plan–Document 00470 is lower than the Goal)*.
 - Document 00472 – Bidder’s Goal Deviation Request *(required if the goal in Bidder’s Participation Plan–Document 00470 is lower than the Goal)*.
 - Others as listed: Valid official letter from OBO with your designation as a City or Local Business (Bidder’s Participation Hire Houston First)
-
-

2.0 CONTRACT TIME

- A. If offer is accepted, Contractor shall achieve Date of Substantial Completion within 820 days after Date of Commencement of the Work, subject to adjustments of Contract Time as provided in the Contract.

Document 00410B

BID FORM – PART B

1.0 TOTAL BID PRICE HAS BEEN CALCULATED BY BIDDER, USING THE FOLLOWING COMPONENT PRICES AND PROCESS (PRINT OR TYPE NUMERICAL AMOUNTS):

A. STIPULATED PRICE:

N/A

(Total Bid Price; minus Base Unit Prices, Extra Unit Prices, Cash Allowances and All Alternates, if any)

B. BASE UNIT PRICE TABLE:

Item No.	Spec Ref.	Base Unit Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total in figures
1	01502	Mobilization	LS	1	\$250,000 ⁽¹⁾	\$250,000 ⁽¹⁾
2	1-16	All work associated with the Chlorine Facility solid removal system improvements shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition of existing equipment and system and replacement with baffle walls, coarse bubble aeration system, blowers, and slotted pipe, including all associated electrical, instrumentation, and miscellaneous work.	LS	1		
3	1-16	All work associated with Supervisory Control and Data Acquisition (SCADA) and electrical improvements at MCC-B, the reactor basins, and Administration Building shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition and replacement of the existing SCADA system at MCC-B building, installation of new SCADA equipment at the Administration building to meet current City standards for network hardware/software, Ethernet and fiber optic cables, PLCs,	LS	1		

		HMIs, instrumentation, control, software programming and display configuration, and associated miscellaneous work and modifications of iFIX application required at MCC-D control station. The work includes electrical improvements within the MCC B building and reactor basin replacing seven (7) MCCs equipment, new LED lighting, cable tray system, new wiring and control stations for 40 mixers and 5 primary air purge blowers.				
4	1-16	All work associated with improvements at the reactor basins shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition of the existing pure oxygen components for the reactors, 40 mechanical aerators, and 5 primary purge air blowers; for replacement with 40 new mechanical aerators and 5 primary purge air blowers, relocation of 30 existing draft tubes and base plates, and repair of existing 316-SS damaged draft tubes and anti-vortex baffles, including all associated electrical, instrumentation, dewatering and sump pumping for leaking gates/valves, and associated miscellaneous work.	LS	1		
5	1-16	All work associated with improvements at the influent lift station shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition of the existing influent lift station stairs, cat-walk, and hand rails including all associated and miscellaneous work. Bypass pumping of plant process flow for treatment operations is not included.	LS	1		

6	01570	Filter fabric fence as shown and specified in Section 01570	LF	3,000		
7	01570	Reinforced filter fabric fence as shown and specified in Section 01570	LF	50		
8	01570	Inlet protection barriers as shown and specified in Section 01570.	LF	40		
9	02101	Solids removal, loading, transport, and disposal from the Southwest Wastewater Treatment Plant Influent Lift Station as specified in Section 02101. Does not include bypass pumping.	Wet Ton	500		
10	02101	Solids removal, loading, transport, and disposal from the Southwest Wastewater Treatment Plant Reactor Basin as specified in Section 02101.	Wet Ton	2500		
11	02101	Solids removal, loading, transport, and disposal from the Southwest Wastewater Treatment Plant Chlorine Contact Basin as specified in Section 02101.	Wet Ton	500		
<u>TOTAL BASE UNIT PRICES</u>						\$ _____

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C. EXTRA UNIT PRICE TABLE:

Item No.	Spec Ref.	Extra Unit Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total in figures
1	01110	Extra 316 SS Anti-Vortex Baffles	EA	15	\$18,000 ⁽²⁾	\$270,000 ⁽²⁾
2	02101	Extra Solids Removal and Loading from process basins	Wet Ton	500	\$90.00 ⁽²⁾	\$45,000 ⁽²⁾
3	02101	Extra Solids Transportation and Disposal	Wet Ton	500	\$50.00 ⁽²⁾	\$25,000 ⁽²⁾
4	02220	Extra Demolition	CY	100	\$30.00 ⁽²⁾	\$3,000 ⁽²⁾
5	02220	Extra Building Demolition	SF	200	\$20.00 ⁽²⁾	\$4,000 ⁽²⁾
6	02318	Extra Hand Excavation Around Obstructions	CY	50	\$20.00 ⁽²⁾	\$1,000 ⁽²⁾
7	02318	Extra Machine Excavation Around Obstructions	CY	50	\$20.00 ⁽²⁾	\$1,000 ⁽²⁾
8	02318	Extra Replacement of Backfill Material	CY	25	\$20.00 ⁽²⁾	\$500 ⁽²⁾
9	02318	Extra Cement Stabilized Backfill	CY	25	\$20.00 ⁽²⁾	\$500 ⁽²⁾
10	02751	Extra Concrete Paving	SY	100	\$85.00 ⁽²⁾	\$8,500 ⁽²⁾
11	03310	Extra Class "A" Concrete, with Forms	CY	25	\$350.00 ⁽²⁾	\$8,750 ⁽²⁾
12	03310	Extra Class "A" Concrete, without Forms	CY	25	\$200.00 ⁽²⁾	\$5,000 ⁽²⁾
13	03211	Extra Grade 60 Reinforcing Steel	LB	5,000	\$1.00 ⁽²⁾	\$5,000 ⁽²⁾
14	03930	Extra Concrete Repair	SF	1,000	\$25.00 ⁽²⁾	\$25,000 ⁽²⁾
15	09510	Extra Acoustic Ceiling Tiles	SF	300	\$10.00 ⁽²⁾	\$3,000 ⁽²⁾
16	09510	Extra Painting Building Walls	SF	2000	\$4.00 ⁽²⁾	\$8,000 ⁽²⁾
17	11380	Extra Carbon Steel Coated Draft Tubes sized for 100-hp Mechanical Aerator, furnished complete in place and operational.	EA	2	\$130,000 ⁽²⁾	\$260,000 ⁽²⁾
18	11380	Extra Carbon Steel Coated Draft Tubes sized for 75-hp Mechanical Aerator, furnished complete in place and operational.	EA	2	\$120,000 ⁽²⁾	\$240,000 ⁽²⁾
19	11380	Extra Carbon Steel Coated Draft Tubes sized for 50-hp Mechanical Aerator, furnished	EA	2	\$110,000 ⁽²⁾	\$220,000 ⁽²⁾

		complete in place and operational.				
20	11380	Extra 316 SS Material – Repair Draft Tube & Anti Vortex Baffle	SF	175	\$145.00 ⁽²⁾	\$25,375 ⁽²⁾
21	11380	Extra 316 SS Welding Labor – Repair Draft Tube & Anti Vortex Baffle	HR	140	\$75.00 ⁽²⁾	\$10,500 ⁽²⁾
22	13440	Extra hours of PLC and HMI programming and configuration	HR	250	\$95.00 ⁽²⁾	\$23,750 ⁽²⁾
23	13440	Extra hours of PLC field I/O verifications and terminations	HR	300	\$50.00 ⁽²⁾	\$15,000 ⁽²⁾
24	13440	Extra hours of HMI display development	HRS	100	\$95.00 ⁽²⁾	\$9,500 ⁽²⁾
25	16122	Extra 1" PVC Coated RGS Conduit	LF	300	\$12.00 ⁽²⁾	\$3,600 ⁽²⁾
26	16122	Extra 1 1/2" PVC Coated RGS Conduit	LF	200	\$18.00 ⁽²⁾	\$3,600 ⁽²⁾
27	16122	Extra 2" PVC Coated RGS Conduit	LF	100	\$23.00 ⁽²⁾	\$2,300 ⁽²⁾
28	16122	Extra 3" PVC Coated RGS Conduit	LF	100	\$36.00 ⁽²⁾	\$3,600 ⁽²⁾
29	16122	Extra Copper No 14 AWG Conductor	LF	12000	\$0.60 ⁽²⁾	\$7,200 ⁽²⁾
30	16122	Extra Copper No 12 AWG Conductor	LF	1000	\$0.65 ⁽²⁾	\$650 ⁽²⁾
31	16122	Extra Copper No 10 AWG Conductor	LF	500	\$0.85 ⁽²⁾	\$425 ⁽²⁾
32	16122	Extra Copper No 8 AWG Conductor	LF	6000	\$1.25 ⁽²⁾	\$7,500 ⁽²⁾
33	16122	Extra Copper No 6 AWG Conductor	LF	500	\$1.50 ⁽²⁾	\$750 ⁽²⁾
34	16122	Extra Copper No 4 AWG Conductor	LF	500	\$2.50 ⁽²⁾	\$1,250 ⁽²⁾
35	16122	Extra Copper No 1/0 AWG Conductor	LF	200	\$3.50 ⁽²⁾	\$700 ⁽²⁾
36	16122	Extra 350 KCML Conductor	LF	100	\$8.50 ⁽²⁾	\$850 ⁽²⁾
37	16122	Extra 500 KCML Conductor	LF	100	\$12.50 ⁽²⁾	\$1,250 ⁽²⁾
38	16126	Extra 2/C 3/C #16 AWG twisted Shielded cable	LF	100	\$1.80 ⁽²⁾	\$180 ⁽²⁾
39	16402	Extra 1" PVC Sch 80 Conduit in Ductbank	LF	300	\$9.00 ⁽²⁾	\$2,700 ⁽²⁾
40	16402	Extra 2" PVC Sch 80 Conduit in Ductbank	LF	300	\$15.00 ⁽²⁾	\$4,500 ⁽²⁾

41	16402	Extra 3" PVC Sch 80 Conduit in Ductbank	LF	200	<u>\$25.00⁽²⁾</u>	<u>\$5,000⁽²⁾</u>
42	16402	Extra 4" PVC Sch 80 Conduit in Ductbank	LF	100	<u>\$40.00⁽²⁾</u>	<u>\$4,000⁽²⁾</u>
43	16402	Extra Ductbank with Trenching Rebar, Concrete	LF	200	<u>\$100.00⁽²⁾</u>	<u>\$20,000⁽²⁾</u>
44	13446	Extra Relays terminated within PLC panels	EH	100	<u>\$40⁽²⁾</u>	<u>\$4,000⁽²⁾</u>
45	13446	Extra Hand Switches installed on door panels	EH	50	<u>\$30⁽²⁾</u>	<u>\$1,500⁽²⁾</u>
46	13446	Extra Indicator Lights installed on door panels	EH	100	<u>\$30⁽²⁾</u>	<u>\$3,000⁽²⁾</u>
<u>TOTAL EXTRA UNIT PRICES</u>						\$<u>1,295,930⁽²⁾</u>

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D. CASH ALLOWANCE TABLE:

Item No.	Spec Ref.	Cash Allowance Short Title	Cash Allowance in figures (1)
1	01110	City of Houston Building Permit	\$70,000 (1)
2	13444	System Support Services	\$50,000 (1)
3	01506	Provide secure and safe access for completion of the lift station scope of work by means including, but not limited to, replacing the 60"x120" lift station chamber isolation gates, or bypass pumping of 60-mgd plant flow from upstream of the lift station to the bar screen influent channel. Scope shall include mobilization and re-mobilization costs for wet weather occurrences, and power/fuel requirements for bypass pumping system.	\$750,000 (1)
<u>TOTAL CASH ALLOWANCES</u>			\$870,000 (1)

E. ALTERNATES TABLE:

Item No.	Spec Ref.	Alternate Short Title	Unit of Measure	Estimated Quantity	Unit Price (this column controls)	Total Price for Alternate in figures
		N/A				
<u>TOTAL ALTERNATES</u>						\$ _____

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F. TOTAL BID PRICE: \$ _____
(Add Totals for Stipulated Price, Base Unit Price, Extra Unit Price, Cash Allowance, and All Alternates, if any)

2.0 SIGNATURES: By signing this Document, I agree that I have received and reviewed all Addenda and considered all costs associated with the Addenda in calculating the Total Bid Price.

Bidder: _____
(Print or type full name of your proprietorship, partnership, corporation, or joint venture.*)

** By: _____
Signature Date

Name: _____
(Print or type name) Title

Address: _____
(Mailing)

(Street, if different)

Telephone and Fax Number: _____
(Print or type numbers)

- * If Bid is a joint venture, add additional Bid Form signature sheets for each member of the joint venture.
- ** Bidder certifies that the only person or parties interested in this offer as principals are those named above. Bidder has not directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding.

Note: This document constitutes a government record, as defined by § 37.01 of the Texas Penal Code. Submission of a false government record is punishable as provided in § 37.10 of the Texas Penal Code.

Footnotes for Tables B through E:
(1) Fixed Unit Price determined prior to Bid. Cannot be adjusted by the Bidder.
(2) Minimum Bid Price determined prior to Bid. Can be increased by the Bidder, but not decreased, by crossing out the Minimum and inserting revised price on the line above. **Cannot** be decreased by the Bidder.
(3) Maximum Bid Price determined prior to Bid. Can be decreased by the Bidder, but not increased, by crossing out the Maximum and inserting revised price on the line above. A Bid that increases the Maximum Bid Price may be found non-conforming and non-responsive. **Cannot** be increased by the Bidder.
(4) Fixed Range Bid Price determined prior to Bid. Unit Price can be adjusted by Bidder to any amount within the range defined by crossing out prices noted and noting revised price on the line above.

Document 00520

AGREEMENT

Project: Southwest Wastewater treatment Plant Improvements (Pkg 3)

Project Location: 4211 Beechnut Houston Texas(Key Map No. 531-R)

Project No: WBS No. R-000265-0103-4

The City: THE CITY OF HOUSTON, 900 Bagby Street, Houston, Texas 77002 (the "City")
and

Contractor: _____

(Address for Written Notice) _____

Fax Number: _____ **Phone Number:** _____

City Engineer, with respect to Sections 4.3 thru 4.5 of the General Conditions, is:

J. Timothy Lincoln, P.E. (or his successor)

P. O. Box 1562, Houston, Texas 77251-1562 (Address for Written Notice)

City Engineer, with respect to all other terms of the General Conditions, is:

Joseph T. Myers, P.E. (or his successor)

Fax Number: (832) 395-2410

THE CITY AND CONTRACTOR AGREE AS FOLLOWS:

**ARTICLE 1
THE WORK OF THE CONTRACT**

1.1 Contractor shall perform the Work in accordance with the Contract.

**ARTICLE 2
CONTRACT TIME**

2.1 Contractor shall achieve Date of Substantial Completion within **820** days after Date of Commencement of the Work, subject to adjustments of Contract Time as provided in the Contract.

2.2 The Parties recognize that time is of the essence for this Agreement and that the City will suffer financial loss if the Work is not completed within the Contract Time. Parties also recognize delays, expense, and difficulties involved in proving in a legal or arbitration proceeding actual loss suffered by the City if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Parties agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay the City the amount stipulated in Document 00800 – Supplementary Conditions, for each day beyond Contract Time.

participation goals which are as follows:

- .1 the MBE goal is 5% percent,
- .2 the WBE goal is 3% percent, and
- .3 the PDBE goal is N/A percent.
- .4 The bidder may substitute SBE participation of no more than four percent of the MBE goal, the WBE goal, or portions of the MBE Goal and WBE Goal.

3.5.3.1.2 The MBE, WBE, PDBE, and SBE goals are specific to this Agreement. The Contractor shall make reasonable efforts to achieve these goals.

3.5.3.1.3 Failure by Contractor to comply with the goals for MBE, WBE, SBE, or PDBE is a material breach of the Agreement, which may result in termination of the Agreement, or such other remedy permitted as the City deems appropriate.

ARTICLE 8 - TIME

8.1 *PROGRESS AND COMPLETION: Add the following Paragraph 8.1.6.1.*

8.1.6.1 Contractor shall credit the City by Change Order for inspection services for overtime work or work performed on Sundays or Legal Holidays. The amount Contractor credits the City will be [\$50.00 per hour] per inspector for inspection services.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.12 *LIQUIDATED DAMAGES: Insert the following Paragraph 9.12.1.1.*

9.12.1.1 The amount of liquidated damages payable by Contractor or Surety for each and every day of delay beyond Contract Time, are \$ 2000.00 per day.

ARTICLE 11 - INSURANCE AND BONDS

11.2 *INSURANCE TO BE PROVIDED BY CONTRACTOR: Insert the following Paragraph 11.2.1.2., and Table 2, "Additional Required Coverage".*

11.2.1.2 Contractor shall purchase for the duration of the Contract the insurance set out in Table 2 in addition to the minimum insurance coverage set out in section 11.2.1.

TABLE 2
 ADDITIONAL REQUIRED COVERAGE
 DEFENSE COSTS EXCLUDED FROM FACE AMOUNT OF POLICY.

(Coverage)	(Limit of Liability)
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Document 00010

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NOTE: Bold capitalized Specification Sections are included in the City of Houston Department of Public Works and Engineering Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic located here: http://documents.publicworks.houstontx.gov/document-center/cat_view/88-engineering-and-construction/92-specifications/208-division-02-16-standard-specifications.html; and are incorporated in Project Manuals by reference as if copied verbatim. Documents listed "for filing" are to be provided by Bidder and are not included in this Project Manual unless indicated for example only. The Document numbers and titles hold places for actual documents to be submitted by Contractor during Bid, post-bid, or construction phase of the Project. Specification Sections marked with an asterisk (*) are amended by a supplemental specification, printed on blue paper and placed in front of the Specification it amends. Documents in the 200, 300 and 400 series of Division 00, except for Document 00410B – Bid Form, Part B, are not part of the Contract.

<u>Doc. No.</u>	<u>Document Title</u>	<u>Doc. Date</u>
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END OF DOCUMENT

Section 01110

SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Summary of the Work including work by the City, City-furnished Products, work sequence, future work, Contractor use of Premises, special conditions for substantial completion.
- B. The Pre-bid site visit for this project will be conducted on March 2, 2016 at 10:00-AM. Entrance to the site will be at the Beechnut entrance gate and all attending persons shall sign in at the Administration Building.

1.02 PROJECT DESCRIPTION

- A. The project consists of improvements at the Southwest Wastewater Treatment Plant, located at 4211 Beechnut Street, Houston, Texas and within Key Map quadrant No.531-R.
- B. The project consists of process equipment improvements, electrical and instrumentation improvements, control system and SCADA system improvements as follows:
 - 1. Improvement of the existing solid removal system at the existing chlorine contact basin.
 - 2. Improvement of the existing Supervisory Control and Data Acquisition (SCADA) system at the Administration and MCC-B buildings.
 - 3. Improvement of the existing mechanical aerator system at the existing reactor basins including associated electrical and control system within the MCC-B installed a foot above 500-year elevation.
 - 4. Demolition of existing Cat-walk and staircase in the influent lift station

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of this contract is for the improvements to the Southwest Wastewater Treatment Plant consisting of the following Base Bid Items:
 - 1. Mobilization as specified in Section 01520.
 - 2. All work associated with the Chlorine Facility solid removal system

SUMMARY OF WORK

- improvements shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition of existing equipment and system and replacement with baffle walls, coarse bubble aeration system, blowers, and slotted pipe, including all associated electrical, instrumentation, and miscellaneous work.
3. All work associated with Supervisory Control and Data Acquisition (SCADA) and electrical improvements at MCC-B, the reactor basins, and Administration Building shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition and replacement of the existing SCADA system at MCC-B building, installation of new SCADA equipment at the Administration building to meet current City standards for network hardware/software, Ethernet and fiber optic cables, PLCs, HMIs, instrumentation, control, software programming and display configuration, and associated miscellaneous work and modifications of iFIX application required at MCC-D control station. The work includes electrical improvements within the MCC B building and reactor basin replacing seven (7) MCCs equipment, new LED lighting, cable tray system, new wiring and control stations for 40 mixers and 5 primary air purge blowers.
 4. All work associated with improvements at the reactor basins shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition of the existing pure oxygen components for the reactors, 40 mechanical aerators, and 5 primary purge air blowers; for replacement with 40 new mechanical aerators and 5 primary purge air blowers, relocation of 30 existing draft tubes and base plates, repair of existing 316-SS damaged draft tubes and anti-vortex baffles, including all associated electrical, instrumentation, dewatering and sump pumping for leaking gates/valves, and associated miscellaneous work.
 5. All work associated with improvements at the influent lift station shall be provided complete in place and operational as shown and / or specified, including, but not limited to demolition of the existing influent lift station stairs, cat-walk, and hand rails including all associated and miscellaneous work. Bypass pumping of plant process flow for treatment operations is not included.
 6. Filter fabric fence as shown and specified in Section 01570.
 7. Reinforced filter fabric fence as shown and specified in Section 01570.
 8. Inlet protection barriers as shown and specified in Section 01570.
 9. Solids removal, loading, transport, and disposal from the Southwest

- Wastewater Treatment Plant Influent Lift Station as specified in Section 02101. Does not include bypass pumping.
10. Solids removal, loading, transport, and disposal from the Southwest Wastewater Treatment Plant Reactor Basin as specified in Section 02101.
 11. Solids removal, loading, transport, and disposal from the Southwest Wastewater Treatment Plant Chlorine Contact Basin as specified in Section 02101.
- B. Work of this contract is for the improvements to the Southwest Wastewater Treatment Plant consisting of the following Extra Unit Price Bid Items:
1. Extra 316 SS Anti-Vortex Baffles
 2. Extra solids removal and loading from process basins
 3. Extra solids transportation and disposal
 4. Extra demolition
 5. Extra Building Demolition
 6. Extra hand excavation around obstructions
 7. Extra machine excavation around obstructions
 8. Extra placement of backfill material
 9. Extra cement stabilized backfill
 10. Extra concrete paving
 11. Extra Class "A" concrete with forms
 12. Extra Class "A" concrete without forms
 13. Extra Grade 60 reinforcing steel
 14. Extra concrete repair
 15. Extra Acoustic Ceiling Tiles
 16. Extra Painting Building Walls

SUMMARY OF WORK

17. Extra Carbon Steel Coated Draft Tubes sized for 100-hp Mechanical Aerator, furnished complete in place and operational
18. Extra Carbon Steel Coated Draft Tubes sized for 75-hp Mechanical Aerator, furnished complete in place and operational
19. Extra Carbon Steel Coated Draft Tubes sized for 50-hp Mechanical Aerator, furnished complete in place and operational
20. Extra 316-SS Material – Repair Draft Tube & Anti Vortex Baffle
21. Extra 316-SS Welding Labor – Repair Draft Tube & Anti Vortex Baffle
22. Extra hours of PLC and HMI programming and configuration
23. Extra hours of PLC field I/O verifications and terminations
24. Extra hours of HMI display development
25. Extra 1" PVC coated RGS conduit
26. Extra 1 1/2" PVC coated RGS conduit
27. Extra 2" PVC coated RGS conduit
28. Extra 3" PVC coated RGS conduit
29. Extra copper No 14 AWG conductor
30. Extra copper No 12 AWG conductor
31. Extra copper No 10 AWG conductor
32. Extra copper No 8 AWG conductor
33. Extra copper No 6 AWG conductor
34. Extra copper No 4 AWG conductor
35. Extra copper No 1/0 AWG conductor
36. Extra 350 KCML conductor
37. Extra 500 KCML conductor
38. Extra 2/C 3/C #16 AWG twisted Shielded cable

39. Extra 1" PVC Sch 80 conduit in ductbank
40. Extra 2" PVC Sch 80 conduit in ductbank
41. Extra 3" PVC Sch 80 conduit in ductbank
42. Extra 4" PVC Sch 80 conduit in ductbank
43. Extra ductbank with trenching rebar, and concrete
44. Extra relays terminated within PLC panels
45. Extra Hand Switches installed on the door panels
46. Extra Indicator Lights installed on door panels

1.04 DEFINITION

- A. None

1.05 CASH ALLOWANCES

- A. Include the following specific Cash Allowances in the Contract Price under provision of Document 00700 General Conditions, Paragraph 3.11.

1. City of Houston Permits: Allow stipulated amount for the City of Houston Building Permits as required by Code Enforcement.
2. System Support Services.
3. Provide secure and safe access for completion of the lift station scope of work by means including, but not limited to, replacing the 60"x120" lift station chamber isolation gates, or bypass pumping of 60-mgd plant flow from upstream of the lift station to the bar screen influent channel. Scope shall include mobilization and re-mobilization costs for wet weather occurrences, and power/fuel requirements for bypass pumping system.

1.06 INCENTIVE ALLOWANCES

- A. None

1.07 CITY FURNISHED PRODUCTS

- A. Item Furnished by City for Installation and Final Connection by Contractor:

SUMMARY OF WORK

1. None

1.08 SALVAGED MATERIALS AND EQUIPMENT

- A. City will designate materials and equipment to be salvaged prior to the demolition process. Items noted for salvage shall be removed, lightly cleaned, and delivered to a City designated facility by Contractor.
- B. Contractor shall notify City 14 calendar days prior to demolition activities and request a list of the items to be salvaged.

1.09 WORK SEQUENCE

- A. Perform critical locates per Contract Drawings within 10 days from Notice to Proceed. Field verify dimensions and conditions before commencing work. Report any discrepancies to Project Manager before commencing work. Submit documentation of work completion to the Project Manager.
- B. Due to overall project complexity and numerous active utility interface requirements, a sequence of construction is provided herein and shall be followed. Submit for review by Project Manager a proposed method and timing of major construction activities. Refer to Section 01326 – Construction Schedule (Bar Chart) for specific details.
- C. Repair or replace any damaged existing utility services. No separate pay item.
- D. The Southwest Wastewater Treatment Plant is a full time, active facility. The operation of Southwest WWTP is interconnected with other facilities. The work sequence and progress of the work shall not prohibit the City from the regular treatment of raw sewage or limit the City's ability to treat wastewater up to the plant's permitted peak capacity. The bid and construction sequence prepared by the Contractor shall include provisions to maintain the permitted treatment capacity of the Southwest Wastewater Treatment Plant.
- E. MCC-B Building (Reference drawings)
 - 1. All MCC's including associated termination cabinets are to be demolished and replaced. Contractor shall record the existing terminal number and tags in each termination cabinet associated with each MCC and replace the termination cabinet with a new unit with the same quantity of terminals, tagged the same.
 - 2. Coordinate work on reactor basin with new MCC installation, i.e. installation of new cable tray sections prior to MCC installation's

- allowing for installation of new power and control cables.
3. Demolish existing light fixtures inside building
 - a. Contractor shall record quantity and location of existing light fixtures and replace with new LED type light fixtures using fixtures stipulated in lighting specifications.
 4. Demolish existing ceiling grid.
 - a. Clean area above demolished ceiling grid in preparation for cable demolition and installation work to follow.
 5. Demolition and installation of existing raised floor.
 - a. Demolition and installation of raised floor will be done in coordination with demolition and removal existing control cabinets supported on the floor.
- F. MCC-B Building and Surface Aerator Order of Demolition and Installation.
1. Step 1: MCC-4B1 Demolition and replacement (Mixer Trains No.2 & No.4) is the beginning of the order, coordinate sheets G-6, mechanical, electrical, and instrumentation.
 - a. Demolition and replacement of feeder and control cables (tray cables) routing to the mixers and instrumentation cabinet.
 - b. Coordinate with mechanical work on mixer basin as shown.
 - c. Coordinate with instrumentation interface equipment demolition and modifications. (Ref IB-9 thru IB-26).
 2. Step 2: MCC-3B1 Demolition and replacement (Mixer Trains No.2 & No.4) all work is similar to section 1.10.F.1.a, b and c.
 - a. This MCC powers 3 secondary purge blowers. Do not remove cables feeding motors. Disconnect and reconnect existing cables to new motor starters in new MCC.
 - b. Coordinate with mechanical work on mixer basin as shown.
 3. Step 3: MCC-4A1 Demolition and replacement (Mixer Trains No.1 & No.5) all work is similar to section 1.10.F.1.a, b and c.
 - a. This MCC powers 2 secondary purge blowers. Do not remove

SUMMARY OF WORK

- cables feeding motors. Disconnect and reconnect existing cables to new motor starters in the new MCC.
- b. Coordinate with mechanical work on mixer basin as shown.
4. Step 4: MCC-3A1 Demolition and replacement (Mixer Trains No.1 & No.5) all work is similar to section 1.10.F.1.a, b and c.
- a. Coordinate with mechanical work on mixer basin as shown.
5. Step 5: MCC-4A2 Demolition and replacement (Mixer Train No.3) all work is similar to section 1.10.F.1.a, b and c.
- a. Before demolition can begin. Existing feeder breakers to the Clarifier drives, panel PP-4B2, Scum screen and Head works area shall be disconnected. Breakers/cubicle's to be relocated to available space in new MCC 3A1 or 4B1, cables relocated via temporary cable splicing as required to new location and temporarily reconnecting the feeder. Power feeders to be relocated one at a time with minimum down time, in coordination with plant operation personnel.
 - b. After completion of temporary feeders, the MCC can continue with demolition and replacement of new MCC and mixers.
 - c. After completion of new MCC installation and new feeder/control wires to the new mixers, disconnect the temporary feeders described in step "a" this section, reconnecting them to their new feeder breakers in this MCC.
6. Step 6: MCC-3A2 Demolition and replacement (Mixer Train No.3) all work is similar to section 1.10.F.1.a, b and c.
- a. Before demolition can begin. Existing feeder breakers to the Clarifier drives, panels PP-3A3, PP3A1-3A2, PP-3B2, RTU-16 and Head works area shall be disconnected, breakers/cubicle's relocated to available space in new MCC 4A1 or 3B1, cables relocated via temporary cable splicing as required to new location and temporarily reconnecting the feeder. Power feeders to be relocated one at a time with minimum down time in coordination with plant operation personnel.
 - b. After completion of temporary feeders, the MCC can continue with demolition and replacement of new MCC and mixers.
 - c. After completion of new MCC installation and new feeder/control

wires to the new mixers, disconnect the temporary feeders described in step "a" this section, reconnecting them to their new feeder breakers in this MCC.

7. Step 7: MCC-EM1A Demolition and replacement (Emergency MCC).
 - a. This MCC powers 5 primary purge blowers, UPS MINIPACK load center, emergency lighting panel LP-EM1A and emergency instrumentation panel IP-EM1A.
 - b. Before demolition, tag each circuit on LP-EM1A and IP-EM1A, provide 2 temporary lighting panels and transformers, temporarily connect to available space in new MCC-3B1 via providing circuit breaker in available cubicle. Temporarily connect all circuits on lighting panels via splices to existing circuit wires.
 - c. Provide a temporary power feed to the UPS MINIPACK via relocating power breaker in MCC-EM1A to available space in new MCC-3B1.

- G. MCC-B Building and Reactor Basin Local and Remote PLC control panels. (Ref sheets ED-01 thru ED-34 and IB-9 thru IB-57). Prior to demolition of each control panel and network cabinet, contractor to verify all controls wires and field devices, including, providing temporary jumpers to keep plant network operational.
 1. Step 1: Demolition LPC-150, LPC-190, and LPC-290 including I/O rack relay control panels is the beginning of the order.
 - a. Demolition of all interface, wires and overhead conduits associated with these panels. Refer to drawings IB-9 and IB-10.

 2. Step 2: Demolition and replacement of mixer train No. 2, LPC-220 and remote LPC-220R including I/O rack relay and control panels that are associated with MCC-4B1 equipment.
 - a. Demolition, and replacement of extend conduits and cable trays from original LPC-220 to new location including routing to the mixers and all wires associated with MCC-4B1 and train No. 2 control panels. Ref. IB-9 thru IB-26 for equipment demolition, modification and proposed new control panels location and construction of new LPC-220 and LPC-220R control panels.
 - b. Replace all existing wires re-connect and terminate all existing control and field wires per record drawings for train LPC-220

SUMMARY OF WORK

- and remote LPC-220R control panels.
 - c. Coordinate with mechanical work on mixer basin.
 - d. Coordinate with electrical interface equipment demolition and modifications. (Ref ED-1 thru ED-34).
 - e. Prior to demolition next train No. 4, LPC-240 and LPC-240R control panels, contractor to ensure LPC-220 and LPC-220R completely functional including verify I/O points via plant iFIX SCADA system.
3. Step 3: Demolition and replacement of mixer train No. 4 LPC-240 and remote LPC-240R including I/O rack relay and control panels that associated with MCC-3B1 equipment.
- a. Demolition, replacement, extend conduits and cable trays from original to LPC-240 new location including routing to the mixers and all wires associated with MCC-3B1 and train No. 4 control panels. Ref. IB-9 thru IB-26 for equipment demolition, modification and proposed new control panels location and construction of new LPC-240 and LPC-240R control panels.
 - b. Replace all existing wires re-connect and terminate all existing control and field wires per record drawings for train LPC-240 and remote LPC-240R control panels.
 - c. Coordinate with mechanical work on mixer basin.
 - d. Coordinate with electrical interface equipment demolition and modifications. (Ref ED-1 thru ED-34).
 - e. Prior to demolition next train No. 1, LPC-210 and LPC-210R control panels, contractor to ensure both LPC-240 and LPC-240R completely functional including verify I/O points via plant iFIX SCADA system.
4. Step 4: Demolition and replacement of mixer train No. 1 LPC-210 and remote LPC-210R including I/O rack relay and control panels that associated with MCC-4A1 equipment.
- a. Demolition, replacement, extend conduits and cable trays from original to LPC-210 new location including routing to the mixers and all wires associated with MCC-4A1 and train No. 1 control panels. Ref. IB-9 thru IB-26 for equipment demolition, modification and proposed new control panels location and

- construction of new LPC-210 and LPC-210R control panels.
 - b. Replace all existing wires re-connect and terminate all existing control and field wires per record drawings for train LPC-210 and remote LPC-210R control panels.
 - c. Coordinate with mechanical work on mixer basin.
 - d. Coordinate with electrical interface equipment demolition and modifications. (Ref ED-1 thru ED-34).
 - e. Prior to demolition next train No. 5 LPC-250 and LPC-250R control panels, contractor to ensure both LPC-210 and LPC-210R completely functional including verify I/O points via plant iFIX SCADA system.
5. Step 5: Demolition and replacement of mixer train No. 5, LPC-250 and remote LPC-250R including I/O rack relay and control panels that associated with MCC-3A1 equipment.
- a. Demolition, replacement, extend conduits and cable trays from original to LPC-250 new location including routing to the mixers and all wires associated with MCC-3A1 and train No. 5 control panels. Ref. IB-9 thru IB-26 for equipment demolition, modification and proposed new control panels location and construction of new LPC-250 and LPC-250R control panels.
 - b. Replace all existing wires re-connect and terminate all existing control and field wires per record drawings for train LPC-250 and remote LPC-250R control panels.
 - c. Coordinate with mechanical work on mixer basin.
 - d. Coordinate with electrical interface equipment demolition and modifications. (Ref ED-1 thru ED-34).
 - e. Contractor to ensure both LPC-250 and LPC-250R completely functional including verify I/O points via plant iFIX SCADA system.
6. Step 6: Demolition and replacement of clarifier LPC-330 including I/O rack relay and control panels that associated with MCC-4A2 equipment.
- a. Demolition, replacement, extend conduits and cable trays from original to LPC-330 new location including routing to the

SUMMARY OF WORK

- clarifiers and all wires associated with MCC-4A2 and LCP-330 and LPC-310/330 termination control panels. Ref. IB-40 thru IB-57 for equipment demolition, modification and proposed new control panels location and construction of new LPC-330 and LPC-310/330 termination control panels.
- b. Replace all existing wires re-connect and terminate all existing control and field wires per record drawings for clarifiers LPC-330 control panel.
 - c. Coordinate with mechanical work on mixer basin.
 - d. Coordinate with electrical interface equipment demolition and modifications. (Ref ED-1 thru ED-34).
 - e. Prior to demolition next clarifier LPC-310 control panel, contractor to ensure clarifier control panel LPC-330 completely functional including verify I/O points via plant iFIX SCADA system.
7. Step 7: Demolition and replacement of clarifier LPC-310 including I/O rack relay and control panels that associated with MCC-3A2 equipment.
- a. Demolition, replacement, extend conduits and cable trays from original to LPC-310 new location including routing to the clarifiers and all wires associated with MCC-3A2 and LCP-310 and LPC-310/330 termination control panels. Ref. IB-11 thru IB-39 for equipment demolition, modification and proposed new control panels location and construction of new LPC-310 and LPC-310/330 termination control panels.
 - b. Replace all existing wires re-connect and terminate all existing control and field wires per record drawings for clarifiers LPC-310 control panel.
 - c. Coordinate with mechanical work on mixer basin.
 - d. Coordinate with electrical interface equipment demolition and modifications. (Ref ED-1 thru ED-34).
 - e. Contractor to ensure clarifier control panel LPC-310 completely functional including verify I/O points via plant iFIX SCADA system.
8. Completion of Steps.

- a. After completion of New MCC installations, instrumentation enclosures all terminations and successful testing, clean ceiling area, floor area, coordinate with contractor to install new ceiling grid and install new LED type ceiling lights.

H. CHLORINATION FACILITY IMPROVEMENTS

1. This work is not sequenced with other work. This work can be scheduled concurrent with other work however, coordination with the plant processing personnel is required.
 - a. Work pertaining to this area shall be sequenced to minimize shutdowns and maintain the chlorine basin operations in service at all times. Only one chlorine basin channel shall be removed from service at a time for installation of piping and baffle walls. Contractor shall stage construction such that the blower system and basin improvements are completed at the same time and the scum removal system can be tested and put into operation as shown on the drawings.

I. LIFT STATION DEMOLITION

1. This work is not sequenced with other work. This work can be scheduled concurrent with other work however, coordination with the plant processing personnel is required.
2. The existing influent lift station is split into two active chambers, the Contractor shall complete the necessary work in one chamber at a time to demolish the existing stairs, handrails, and perimeter catwalk. Only one lift station chamber can be taken out of service at a time to perform the work for that chamber. The base bid scope does not include provisions for bypass pumping of process treatment flows, but does include dewatering and sump pumping for leaking gates / valves as needed.
3. As needed bypass pumping of process treatment flows shall be provided in accordance with Specification Section 01506 as needed and authorized by the City for safe and secure access to the influent lift station to complete the indicated work. Bypass pumping shall be sized to bypass the permitted annual average plant flow of 60-mgd from upstream of the lift station to the bar screen channel and include mobilization, re-mobilization costs for wet weather occurrences, and power/fuel requirements for pumping system

1.10 COORDINATION OF WORK

SUMMARY OF WORK

- A. Coordination of the Work: Refer to Section 01312 – Coordination and Meetings.

1.11 CONTRACTOR USE OF PREMISES

- A. Comply with procedures for access to site and Contractor's use of rights-of-way as specified in Section 01145 - Use of Premises
- B. Construction Operations are limited to City's property, rights-of-way or easements.
- C. Utility Outages and Shutdown: Provide notification to City and private utility companies (when applicable) a minimum of 48 hours, excluding weekends and holidays, in advance of required utility shutdown. Schedule all work as required.
- D. Work to be done to lines, grades, elevations, and locations as shown on Drawings.
- E. Prevent overstress of any structure, and any part or member of it, during construction. This applies to existing work and structures affected by operations. Check effect of operations in this regard, and provide temporary supports and connections required to assure safety and stability of both new and existing work and to prevent overstress of any part.
- F. Coordinate activity schedule and extend full cooperation to other contractors who have responsibilities either concurrent with, proceeding or following this Contractor's time along work site. Ensure availability of access, availability of selected portions of this area to others and provide appropriate information for planning purposes to other contractors.
- G. City's Utility Maintenance Division is not bound to assist the Contractor in locating existing utilities during construction. Contractor must verify location of existing utility lines prior to commencement of excavation operations.
- H. Working multiple and separate crews during construction is allowed, as approved by Project Manager.
- I. Field Office:
 - 1. A Field Office is required on this project. See Section 01520 – Temporary Field Office.
- J. Work within City of Houston Wastewater Facilities:

1. The City reserves the right to use any items of work that are completed. Contractor is responsible for all required maintenance during the time period these items are used by the City for day-to-day operations until substantial completion is achieved for the project as a whole, or partial substantial completion is awarded as described herein.
2. Contractor's activities are limited to actual work on site. Contractor is not allowed on plant site despite obtaining permitted documents, until appropriate materials are secured or readily available unless otherwise approved by Project Manager. Submit necessary security requirements per Document 01110 - Attachment A.
3. Materials and equipment for plant work only may be stored on site immediately prior to use and unused materials must be removed immediately. Material and equipment for non-plant work may not be stored on site. Do not block access drives with material.
4. Maintain access to City of Houston Operations & Maintenance personnel at all times. Contractor must relocate materials and equipment at the request of City personnel without notice and at no additional cost.
5. Driveways, Walkways and Entrances: Keep driveways parking, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
6. Critical Stages of Work requiring shut down or limited operation of facilities to be performed during low wastewater flow periods at night. Comply with provisions of City of Houston Code of Ordinances, Section No. 40-28. A minimum of 72 hours of written notification is required before shutting down plants. Critical Stages of Work must be performed in presence of Project Manager and Wastewater Operation Division's project manager.
7. The City reserves the right to not give out process units for work if the plant experiences unforeseen process upsets or operational difficulties until the plant is determined to be back to normal operations.

SUMMARY OF WORK

8. City of Houston and Owner's representative requires background information on any and all workers present on site.
9. Submit proposed Site Utilization Plan for designated construction parking, lay down area, SWPPP (if required), and temporary fences. No separate pay.
10. Contact Mr. William Fuller (832-395-3512) or Mr. Pete Garcia (832-395-3523) to access the plant site.

1.12 STREET CUT ORDINANCE

- A. None.

1.13 WARRANTY

- A. Comply with warranty requirements in accordance with Document 00700 General Conditions.
- B. The warranty period for provided improvements shall start from the date of substantial completion.

1.14 INTERPRETATION OF CONFLICTS

- A. Should conflicts occur in Contract Documents, request interpretation before proceeding with Work. Such requests shall first be preceded by a diligent investigation into Contract Documents. Contain evidence of such investigation in requests for interpretation.

1.15 GENERAL CONSTRUCTION NOTES

- A. Notify the Utility Coordinating Committee at 1-800-669-8344 or (713) 223-4567, and the City of Houston Department of Public Works and Engineering, Civil Construction at (713) 837-7196, at least 48 hours prior to commencement of work.
- B. Field verify existing facilities shown on the drawings by whatever means necessary (metal detection, probes, excavation, survey, others) prior to excavation for proposed utilities. Field verification work and utility adjustments shall be completed prior to excavation for proposed utilities. No separate pay item.
- C. Call the Traffic Management and Maintenance Division of the City of Houston Public Works and Engineering Department when work is scheduled near signal conduits within the City of Houston (713) 837-7280. Call at least five working days in advance.

- D. These plans and the surveys upon which they are based are tied into the official City of Houston survey system in compliance with ordinance No. 69-1978. City of Houston survey markers and monuments referenced have been included in this plan set.
- E. Comply with OSHA Regulations and State of Texas laws concerning excavation, trenching and shoring as specified in City of Houston Ordinance No. 87-1457.
- F. Conduct construction operation under this contract in conformance with the erosion control practices described in Document 01410 "TPDES Requirements" and Document 01570 "Storm Water Pollution Control" and the Storm Water Pollution Prevention Plans included in the construction drawings. Work identified in this project falls under Large Construction Activity with area disturbed to be one or more acres but less than five acres. TPDES requirements applicable to Large Construction Activity will apply.
- G. Any pavement (such as wheel chair ramps, pavement curbs, sidewalks, driveways, bikeways, etc.), fences, gates, lawns, irrigation utilities, landscapes, culverts, inlets, manholes, signs or mail boxes and other improvements that have been disturbed due to utility construction shall be replaced with same quality material or better, according to City of Houston standard specifications. Contractors are required to bid accordingly.
- H. The Contractor shall be responsible for verifying the location(s) of all underground utility lines in the areas on proposed construction before beginning construction.
- I. The information contained within the project Drawings with regards to the existing facilities was taken from the original construction plans with the original work shown light and proposed work shown dark. Original work shown light is for the Contractor's information only. Its accuracy is not guaranteed and its use in no way relieves the contractor or others of any responsibility for loss due to inaccuracies. Refer to Specification (front end documents from COH) Section 00330 Existing Conditions for additional detail.
- J. Contractor shall be responsible for providing required security to protect his own property, equipment and work in progress as defined in (front end documents from COH) Section 01560.
- K. Contractor shall be responsible for adequately protecting existing structures, utilities, trees, shrubs, and other adjoining facilities and repair or replace due to damage caused by Contractor.

SUMMARY OF WORK

- L. Contractor shall field verify all dimensions and conditions before commencing work. All landscaping features shall be field verified. It shall be the Contractor's responsibility to report any discrepancies to the Construction Manager in a timely manner.
- M. Contractor to keep access road to existing plants open and free of construction related debris at all times. Contractor staging area shall be used for Contractor's personnel, parking, material, and storage. Stockpile, material fabrication and related construction uses will not be allowed to interfere with normal plant operation. Contractor to provide temporary all-weather access roads as needed to maintain access to all unloading areas, throughout the duration of the project.
- N. The Contractor to give notice to all authorized inspectors, superintendents or persons in charge of private and public utilities affected by his operations prior to commencement of work.
- O. Obtain all required construction permits prior to commencement of work.
- P. Plant coordinates shown for proposed structure locations are referenced to outside of face of exterior wall or to centerline of structure, unless otherwise noted on the Drawings.
- Q. The finished grade elevations shown are intended to provide drainage away from plant facilities. Minor changes may be necessary to provide adequate drainage.
- R. Maintain drainage of site during all phases of construction. Do not block drainage from adjacent areas or add flow to adjacent areas.
- S. These Drawings, prepared by Gupta & Associates, Inc., KIT Professionals Inc., and Atkins do not extend to or include designs or systems pertaining to the safety of the construction Contractor or its employees or agents. Gupta & Associates, Inc., KIT Professionals Inc. and Atkins, are registered professional engineer(s) or architect(s) that have sealed these bid documents does not extend to any such safety systems that may now or hereafter be incorporated in these Drawings. The construction Contractor shall prepare or obtain the appropriate safety systems required by Federal, State, and local laws and regulations.
- T. The Contractor shall contact the following, a minimum of 48 hours prior to beginning construction:
 - Texas One Call (800) 245-4545
 - CenterPoint Energy (800) 669-8344
 - Lone Star Notification Center (713) 223-4567

- U. Contractor shall not operate existing valves plant appurtenances or plant equipment unless, in the presence of the City Construction Manager and/or Wastewater Operations.
 - V. Plant Manager and Construction Manager to be notified in advance of any existing process equipment "shutdown", as specified in Section 00145.
 - W. Contractor shall comply with all Federal, State, and local laws and regulations of utility companies concerning safety and health practices.
 - X. Contractor shall provide sodding in all areas disturbed as a result of construction operations that are not covered by structures or pavement. Temporary roadways shall be removed at the conclusion of the project, and site will be restored to its original conditions.
 - Y. Yard piping locations shown are approximate. Field verify locations of existing pipe. Arrange new piping as necessary to avoid interference and provide clearance noted. All changes in piping shown, to be documented on required "red line drawings."
- 1.16 EXISTING UTILITIES
- A. Underground utilities exist in the vicinity of this project. While every effort has been made to show locations for existing utilities, they are approximate and other utilities may exist in the vicinity of this project, which are not shown on these plans. The location and grades of existing utilities are based on as-built information.
 - B. Public and private utility lines and customer service lines may exist that are not shown on the construction drawings. Locate, maintain and protect the integrity of these lines. Hand excavation may be required.
 - C. Coordinate with the proper utility company to relocate or divert any utility in conflict with proposed construction so as not to disrupt service of same. Restore relocated or diverted utility to its original condition and location upon completion of construction.
 - D. Do not interrupt existing utility service, maintain existing service within construction area until construction of the new system is complete.
- 1.17 ADDITIONAL CONDITIONS FOR SUBSTANTIAL COMPLETION
- A. The Contract covers improvements in three process treatment areas and SCADA systems. When requested by the Contractor the City will give the following independent partial substantial completion approvals:

SUMMARY OF WORK

1. Reactor Basin Process Treatment Area Improvements
 - a. Full scope for all five (5) reactor basins, mechanical, electrical, instrumentation, and controls work complete and operational in place.
2. Chlorine Contact Process Treatment Area Improvements
 - a. Full scope, mechanical, electrical, instrumentation, and controls work complete and operational in place.
3. SCADA Improvements to be fully functional, demonstrated monitoring and control both locally and remotely:
 - a. MCC-B buildings process network, communication system, local and remote SCADA control panels removal and replacement.
 - b. Administration Building SCADA server equipment and operator station installations.
4. The retainage for the project will be reduced from 5% to 4% only upon Contractor obtaining full Substantial Completion for the whole project. If Contractor should request partial substantial completion as detailed in items A.1, A.2 and A.3, then the warranty will start for that portion of the work. Retainage will be released only upon full Substantial completion of the entire project.

B. In addition to requirements outlined in Document (Front end provided by the COH) 00700 – General Conditions, for Contractor to be substantially complete with the Work and call for inspection, the Project Manager to confirm the following conditions have been met or completed:

1. Draft O&M manuals shall be delivered to Project Manager. In addition to paper copies, submit one final approved O&M manual for each system or equipment electronically, on a compact disc (CD), in a format that is navigable and searchable. The total quantities of O&M manual combined with what is required in section 01782 shall be 5 sets of hardcopy each with CD in PDF navigable and searchable.
2. Training shall be conducted utilizing draft O&M manuals.
3. All safety-related systems and equipment shall be installed, accepted by manufacturer's representative and approved for use.
4. Testing and demonstration of satisfactory control functions associated with replaced equipment and instrumentation, including remote

controllers, HMI graphics display screens related to all data points, status, and alarm indications. The testing shall also include communication verification and data transfer points with WWOPs and retrieve and reload of the exiting PLC applications, HMI applications, and demonstration of system functionalities at the plant sites as well as Groveway Control Center.

5. All pay items shall be complete.
6. SCADA software document to be furnished and accepted by WWOPS. The SCADA software shall be loadable to HMI, PLC, and communication equipment via software application tools. The PDF shall be only for reference document. All SCADA equipment programs shall be submitted in a separate CD to wastewater SCADA group. Additionally, the control schematics, loop diagrams, network diagrams, and all related drawings shall be submitted in AUTOCAD latest release as well as PDF copies.
7. All safety related work including pavement striping, signing, and signalization to be complete.

1.18 TREE PROTECTION

- A. No tree protection required for project.

PART 2 P R O D U C T S (Not Used)

PART 3 E X E C U T I O N (Not Used)

END OF SECTION

Section 01255

CHANGE ORDER PROCEDURES

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Procedures for processing Change Orders, including:
 - 1. Assignment of a responsible individual for approval and communication of changes in the Work;
 - 2. Documentation of change in Contract Price and Contract Time;
 - 3. Change procedures, using proposals and Modifications;
 - 4. Execution of Change Orders;
 - 5. Correlation of Contractor submittals.

1.02 REFERENCES

- A. Blue Book is defined as the Rental Rate Blue Book for Construction Equipment (a.k.a. Data Quest Blue Book).
- B. Rental Rate is defined as the full-unadjusted base rental rate for the appropriate item of construction equipment.

1.03 RESPONSIBLE INDIVIDUAL

- A. Provide a letter indicating the name and address of the individual authorized to execute Modifications, and who will be responsible for informing others in Contractor's employ and Subcontractors of changes to the Work. Provide this information at the pre-construction meeting.

1.04 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

- A. Maintain detailed records of changes in the Work. Provide full information required for identification and evaluation of proposed changes, and substantiate costs of changes in the Work.
- B. Document each proposal for change in Contract Price or Contract Time with sufficient data to allow evaluation of proposal.

- C. Include the following minimum information on proposals:
1. Quantities of items in original Document 00410 – Bid Form with additions, reductions, deletions, and substitutions.
 2. Quantities and cost of items in original Schedule of Values with additions, reductions, deletions and substitutions.
 3. Provide Unit Prices for new items, with supporting information, for inclusion in Schedule of Unit Price Work.
 4. Justification for changes in Contract Time.
 5. Additional data upon request.
- D. For changes in the Work performed on a time-and-material basis, provide the following additional information:
1. Quantities and description of Products.
 2. Taxes, insurance and Bonds.
 3. Overhead and profit as noted in Document 00700 - General Conditions.
 4. Dates, times and by who work was performed.
 5. Time records and certified copies of applicable payrolls.
 6. Invoices and receipts for Products, rental equipment, and subcontracts, similarly documented.
- E. For changes in the Work performed on a time-and-materials basis, rental equipment is paid as follows:
1. Actual invoice cost for duration of time required to complete extra work without markup for overhead and profit. When extra work comprises only a portion of a rental invoice where equipment would otherwise be on site, compute hourly equipment rate by dividing the actual monthly invoice by 176. One day equals eight hours and one week equals 40 hours.
 2. Do not exceed estimated operating costs given in Blue Book for items of equipment. Overhead and profit will be allowed on the operating cost.

- F. For changes in the Work performed on a time-and-materials basis using Contractor-owned equipment, use Blue Book rates as follows:
 - 1. Contractor-owned equipment will be paid at the Blue Book Rental Rate for the duration of time required to complete extra work without markup for overhead and profit. Utilize lowest cost combination of hourly, daily, weekly or monthly rates. Use 150 percent of Rental Rate for double shifts, one extra shift per day, and 200 percent of Rental Rate for more than two shifts per day. Standby rates shall be 50 percent of the appropriate Rental Rate shown in Blue Book. No other rate adjustments apply.
 - 2. Do not exceed estimated operating costs given in Blue Book. Overhead and profit will be allowed on operating costs. Operating costs will not be allowed for equipment on standby.

1.05 CHANGE PROCEDURES

- A. Changes to Contract Price or Contract Time can only be made by issuance of Document 00941 - Change Order. Issuance of Document 00940 - Work Change Directive will be formalized into a Change Order. Changes will be in accordance with requirements of Document 00700 - General Conditions.
- B. City Engineer will advise of Minor Changes in the Work as authorized by the Document 00700 - General Conditions by issuing Document 00942 – Minor Change.
- C. Request clarification of Drawings, Specifications, Contract documents or other information by using Document 00931- Request for Information. Response by Project Manager to Requests for Information does not authorize Contractor to perform tasks outside scope of the Work. Changes must be authorized as described in this Section.

1.06 PROPOSALS AND CONTRACT MODIFICATIONS

- A. Project Manager may issue Document 00932- Request for Proposal, which includes a detailed description of the proposed change with supplementary or revised Drawings and Specifications. Project Manager may also request a proposal in response to a Request for Information. Prepare and submit the proposal within seven days or as specified in request.
- B. Submit requests for Contract changes to City Engineer describing proposed change and its full effect on the Work, with a statement describing reason for change and effect on Contract Price and Contract Time including full documentation.

- C. Design Consultant may review Change Orders.

1.07 WORK CHANGE DIRECTIVE

- A. City Engineer may issue a signed Work Change Directive instructing Contractor to proceed with a change in the Work. Work Change Directive will subsequently be incorporated into a Change Order.
- B. Work Change Directives will describe changes in the Work and designate the method of determining change in Contract Price or Contract Time.
- C. Proceed promptly to execute changes in the Work in accordance with the Work Change Directive.

1.08 STIPULATED PRICE CHANGE ORDER

- A. A Stipulated Price Change Order will be based on an accepted proposal.

1.09 UNIT PRICE CHANGE ORDER

- A. Where Unit Prices for affected items of the Work are included in Document 00410 – Bid Form, the Change Order will be based on Unit Prices, subject to Articles 7 and 9 of Document 00700 - General Conditions.
- B. Where Unit Prices of the Work are not pre-determined in Document 00410-Bid Form, the Work Change Directive or accepted proposal will specify the Unit Prices to be used.

1.10 TIME-AND-MATERIAL CHANGE ORDER

- A. Provide itemized account and supporting data after completion of change, within time limits indicated for claims in Document 00700 - General Conditions.
- B. City Engineer will determine the change allowable in Contract Price and Contract Time as provided in Document 00700 - General Conditions.
- C. Maintain detailed records for work done on time-and-material basis as specified in Paragraph 1.04 above.
- D. Provide full information required for evaluation of changes and substantiate costs for changes in the Work.

1.11 EXECUTION OF CHANGE DOCUMENTATION

- A. City Engineer will issue Change Orders, Work Change Directives, or Minor Change in the Work for signatures of Parties as described in Document 00700 - General Conditions.

1.12 CORRELATION OF CONTRACTOR SUBMITTALS

- A. For Stipulated Price Contracts, promptly revise Schedule of Values and Application for Payment forms to record authorized Change Orders as separate line item.
- B. For Unit Price Contracts, the next monthly estimate of the Work after acceptance of a Change Order will be revised to include new items not previously included with appropriate Unit Prices.
- C. Promptly revise progress schedules to reflect change in Contract Time, and to adjust time for other items of work affected by the change, and resubmit for review.
- D. Promptly enter changes to on-site and record copies of Drawings, Specifications or Contract documents as required in Section 01785 - Project Record Documents.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01270

MEASUREMENT AND PAYMENT

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Procedures for measurement and payment plus conditions for nonconformance assessment and nonpayment for rejected Products.

1.02 AUTHORITY

- A. Measurement methods delineated in Specification sections are intended to complement criteria of this Section. In event of conflict, requirements of the Specification section shall govern.
- B. Project Manager will take all measurements and compute quantities accordingly.
- C. Assist by providing necessary equipment, workers, and survey personnel.
- D. Measurement and Payment paragraphs are included only in those Specification sections of Division 01 where direct payment will be made. Include costs in the total bid price for those Specification sections in Division 01 that do not contain Measurement and Payment paragraphs,

1.03 UNIT QUANTITIES SPECIFIED

- A. Quantity and measurement estimates stated in the Agreement are for contract purposes only. Quantities and measurements supplied or placed in the Work and verified by Project Manager will determine payment as stated in Article 9 of Document 00700 - General Conditions.
- B. When actual work requires greater or lesser quantities than those quantities indicated in Document 00410 – Bid Form, provide required quantities at Unit Prices contracted, except as otherwise stated in Article 9 of Document 00700 - General Conditions.

1.04 MEASUREMENT OF QUANTITIES

- A. Measurement by Weight: Reinforcing steel, rolled or formed steel or other metal shapes are measured by CRSI or AISC Manual of Steel Construction weights. Welded assemblies are measured by CRSI or AISC Manual of Steel Construction or scale weights.

MEASUREMENT AND PAYMENT**STANDARD GENERAL REQUIREMENT**

- B. Measurement by Volume:
 - 1. Stockpiles: Measured by cubic dimension using mean length, width, and height or thickness.
 - 2. Excavation and Embankment Materials: Measured by cubic dimension using average end area method.
- C. Measurement by Area: Measured by square dimension using mean length and width or radius.
- D. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
- E. Stipulated Price Measurement: By unit designated in the Agreement.
- F. Other: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.
- G. Measurement by Each: Measured by each instance or item provided.
- H. Measurement by Lump Sum: Measure includes all associated work.

1.05 PAYMENT

- A. Payment includes full compensation for all required supervision, labor, Products, tools, equipment, plant, transportation, services, and incidentals; and erection, application or Installation of an item of the Work; and Contractor's overhead and profit.
- B. Total compensation for required Unit Price work shall be included in Unit Price bid in Document 00410 – Bid Form. Claims for payment as Unit Price work, but not specifically covered in the list of Unit Prices contained in Document 00410 – Bid Form, will not be accepted.
- C. Interim payments for stored materials will be made only for materials to be incorporated under items covered in Unit Prices, unless disallowed in Document 00800 - Supplementary Conditions.
- D. Progress payments will be based on Project Manager's observations and evaluations of quantities incorporated in the Work multiplied by Unit Price.
- E. Final payment for work governed by Unit Prices will be made on the basis of actual measurements and quantities determined by Project Manager multiplied by the Unit Price for work which is incorporated in or made necessary by the Work.

1.06 NONCONFORMANCE ASSESSMENT

- A. Remove and replace work, or portions of the Work, not conforming to the Contract documents.
- B. When not practical to remove and replace work, City Engineer will direct one of the following remedies:
 - 1. Nonconforming work will remain as is, but Unit Price will be adjusted lower at discretion of City Engineer.
 - 2. Nonconforming work will be modified as authorized by City Engineer, and the Unit Price will be adjusted lower at the discretion of City Engineer, when modified work is deemed less suitable than specified.
- C. Specification sections may modify the above remedies or may identify a specific formula or percentage price reduction.
- D. Authority of City Engineer to assess nonconforming work and identify payment adjustment is final.

1.07 NONPAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in an unacceptable manner.
 - 2. Products determined as nonconforming before or after placement.
 - 3. Products not completely unloaded from transporting vehicles.
 - 4. Products placed beyond lines and levels of required work.
 - 5. Products remaining on hand after completion of the Work, unless specified otherwise.
 - 6. Loading, hauling, and disposing of rejected Products.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01292

SCHEDULE OF VALUES

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Preparation and submittal of Schedule of Values for Stipulated Price Contracts or for Major Unit Price Work on Unit Price Contracts.

1.02 PREPARATION

- A. For Stipulated Price Contracts, subdivide the Schedule of Values into logical portions of the Work, such as major work items or work in contiguous construction areas. Use Section 01325 - Construction Schedule as a guide to subdivision of work items. Directly correlate Items in the Schedule of Values with tasks in the Construction Schedule. Organize each portion using the Project Manual Table of Contents as an outline for listing value of the Work by Sections. A pro rata share of mobilization, Bonds, and insurance may be listed as separate items for each portion of the Work.
- B. For Unit Price Contracts, items should include a proportional share of Contractor's overhead and profit so that total of all items will equal Contract Price.
- C. For lump sum equipment items, where submittal of operation and maintenance data and testing are required, include separate items for equipment operation and maintenance data where:
 - 1. submittal of maintenance data is valued at five percent of the lump sum amount for each equipment item and
 - 2. submittal for testing and adjusting is valued at five percent of the lump sum amount for each equipment item.

Round off figures for each item listed to the nearest \$100. Set the value of one item, when necessary, to make total of all values equal the Contract Price for Stipulated Price Contracts or the lump sum amount for Unit Price Work.

SCHEDULE OF VALUES

1.03 SUBMITTAL

- A. Submit the Schedule of Values, in accordance with requirements of Section 01330 - Submittal Procedures, at least 10 days prior to processing of the first Certificate for Payment.
- B. Submit the Schedule of Values in an approved electronic spreadsheet file and an 8 1/2-inch by 11-inch print on white bond paper.
- C. Revise Schedule of Values for items affected by Contract Modifications. After City Engineer has reviewed changes, resubmit at least 10 days prior to the next scheduled Certificate for Payment date.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01321

CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Photographic requirements for construction photographs and submittals.

1.02 DEFINITIONS

- A. Pre-construction Photographs: Photographs taken, in sufficient numbers and detail, prior to Date of Commencement of the Work, to show original construction site conditions.
- B. Progress Photographs: Photographs, taken throughout the duration of construction at regular intervals and from fixed vantage points, pre-approved by the City, that document progress of the Work.
- C. Finished Photographs: Photographs, taken by a professional photographer near Date of Substantial Completion and before City Council's acceptance of the Work, that are suitable for framing and for use in brochures or on the Internet

1.03 SUBMITTALS

- A. Refer to Section 01330, Submittal Procedures, for submittal requirements.
- B. Format and Media. Film or digital photography may be used. Submit color photographs, unless otherwise specified.
 - 1. Prints. Submit each Progress or Pre-construction Photograph print in a three-hole plastic pocket or sleeve, bound in a three-ring notebook. Produce prints on photographic-quality paper approved by Project Manager. Minimum size for Pre-construction Photograph prints shall be 3-inches by 5-inches. Progress Photograph prints shall be 8-inches by 10-inches.
 - 2. Film. Use 35mm or larger color film. Submit negatives used to make submitted photographs, in 3-hole 8-1/2 inch by 11-inch plastic sheets with sleeves for negatives.
 - 3. Digital Photography. Use 2.1 megapixel density or greater for photographs. Scanned photographs must equal or exceed 400 dots

per inch when scanned from 8-inch by 10-inch prints. Submit digital photographic files on computer disks. Format disks for MS-DOS (Microsoft Disk Operating System) filing system and in JPEG (Joint Photographic Experts Group) format.

- C. Submittal Quantities and Frequencies.
1. Pre-construction Photographs:
 - a. For Stipulated Price Contracts, submit two sets of Pre-construction Photographs, if required, prior to first Application for Payment.
 - b. For Unit Price Contracts, submit two sets of Pre-construction Photographs prior to start of construction operations.
 2. Progress Photographs:
 - a. For Stipulated Price Contracts, submit three sets of Progress Photographs with each Application for Payment at the times established for submittal of Applications for Payment. Monthly Applications for Payment shall be deemed incomplete if not accompanied by the required Progress Photographs. Contractor's failure or election to not submit a monthly Application for Payment shall not affect the requirement for monthly Progress Photographs.
 - b. Progress Photographs are not required for Unit Price Contracts unless otherwise specified.
 3. Finished Photographs: For Stipulated Price Contracts submit two sets of Finished Photographs, if required, after Date of Substantial Completion and prior to final payment. Each set shall contain one 11-inch by 14-inch matte finish color photographic print from each of the two vantage points pre-approved by the City. Vantage points for Finished Photographs will be approved separately from vantage points approved for Progress Photographs. Finished Photographs are not required for Unit Price Contracts unless otherwise specified.
- D. Labeling. Place a label on the back of each photographic print, applied so as to not to show through on the front. Labels shall contain the following information:
1. Name of Project, address of Project and GFS Number.
 2. Name and address of Contractor.
 3. Date photograph was taken.
 4. Location photo was taken from and short description of photo subject.

5. Name and address of professional photographer who took the photograph, if applicable.
 - E. Hand-deliver or transmit prints in standard photographic mailers marked "Photographs - Do Not Bend".
 - F. Photographic prints, negatives, photographic files and disks become the property of the City. Do not be publish photographs without written consent by the City.
- 1.04 QUALITY ASSURANCE
- A. Contractor shall be responsible for the quality of and timely execution and submittal of photographs.
 - B. For Finished Photographs, Contractor shall use a professional photographer, with five years minimum professional experience in the Houston area. Contractor shall submit name, address and credentials of professional photographer for Project Manager's review and approval.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 PRE-CONSTRUCTION PHOTOGRAPHS

- A. Prior to commencement of construction operations, photograph the site to include initial construction corridor, detour routes, and staging or storage areas.
 1. For Stipulated Price Contracts, unless specified as a requirement in other Sections, these photographs are optional for Contractor, but are highly recommended for areas bounded by other property owners.
 2. Pre-construction photographs are required for Unit Price Contracts. For line projects with scheduled construction segments, take Pre-construction Photographs prior to commencement of work on each segment.

CONSTRUCTION PHOTOGRAPHS**STANDARD GENERAL REQUIREMENT**

- B. Prepare Pre-construction Photographs as follows:
1. Show the following information on a non-reflective chalkboard placed within the picture frame:
 - a. Job number.
 - b. Project Number.
 - c. Date and time photographs were taken (Automatic date/time in negative is acceptable).
 - d. Baseline station, direction of view (i.e. N, S, NW, etc.) and house number or street address and street name.
 2. Pre-construction Photographs shall indicate condition of the following:
 - a. Esplanades and boulevards.
 - b. Yards (near side and far side of street).
 - c. House walks and sidewalks.
 - d. Curbs.
 - e. Areas between walks and curbs.
 - f. Particular features (e.g. yard lights, shrubs, fences, trees).
 3. Show date photographs were taken on negatives.
- C. Show the location of vantage points and direction of shots on a key plan of the site.

3.02 PROGRESS PHOTOGRAPHS

- A. Progress Photographs document monthly advancement of the Work. Select vantage points for each shot so as to best show status of construction and progress since last photograph submittal. Select camera stations that will require little or no movement or adjustment over the duration of construction.
- B. Take monthly Progress Photographs at regular intervals to coincide with cutoff dates associated with each Application for Payment.

3.03 FINISHED PHOTOGRAPHS

- A. Finished Photographs shall be "staged" and taken by a professional photographer to depict the most flattering images of a finished facility. Two vantage points, from which Finished Photographs will be taken, shall be agreed to in advance by the City. Photographer shall consider lighting, time of day, height of eye, landscaping and placement of vehicles, people and other props in each picture. Filters and post-photography processing may be utilized to achieve a finished product acceptable to the City.

3.04 LOCATION

- A. Vantage points, times and conditions for camera stations and photography for Progress and Finished Photographs shall be mutually agreed upon by the City, Contractor and Photographer. Progress Photograph vantage points may be changed by mutual agreement as the Work progresses, at no additional cost to the City.

END OF SECTION

Section 01325

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.01 GENERAL

- A. Provide Construction Schedules for the Work included in this Contract in accordance with requirements in this Section. Create Construction Schedule using Critical Path Method (CPM) computer software capable of mathematical analysis of Precedence Diagramming Method (PDM) plan. Provide printed activity listings and bar charts in formats described in this Section.
- B. Combine activity listings and bar charts with narrative report to form Construction Schedule submittal for Project Manager.

1.02 SCHEDULING STAFF

- A. Employ or retain services of individual experienced in CPM scheduling for duration of the Contract. Individual shall cooperate with Project Manager and update schedule monthly as required to indicate current status of the Work.

1.03 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures.
- B. During preconstruction meeting, as described in Section 01312 - Coordination and Meetings, provide sample bar charts and activity listings produced from scheduling software proposed. Scheduling software is subject to review by Project Manager and must meet requirements provided in this Section. Project Manager will provide review of samples within seven days of submittal.
- C. Within 21 days of receipt of approval of Contractor's format, or 30 days of Notice to Proceed, whichever is later, submit proposed Construction Schedule for review. Base Construction Schedule submittal on the following:
 - 1. Level of detail and number of activities required in schedule are dependent on project type.
 - a. For wastewater projects, categorize work type and area code in schedule.
 - 1) For wastewater rehabilitation projects, there are six work-type categories. An area code will be assigned for each

Meter Service Area or Basin. Include at least one activity for each unique combination of work type and area code.

Normal schedules of wastewater rehabilitation projects contain between 35 and 100 activities, depending on number of basins and work types involved in each basin.

- 2) For wastewater relief projects (line work), area codes will be assigned geographically.
 - 3) For wastewater plant or facility work, other criteria may apply to assignment of area codes, such as a combination of geographical and craft categories.
- b. For projects with multiple types of tasks within scope, indicate types of work separately within schedule.
 - c. For projects with work at different physical locations or service areas, or different facilities within a site, indicate each location or facility separately within schedule. Show work on each floor of multi-story building as separate tasks.
 - d. For projects with multiple crafts or significant Subcontractor components, indicate elements separately within schedule. Unless permitted by Project Manager, tasks shall consist of work covered by only one division of Project Manual.
2. Unless permitted by Project Manager, each scheduled task shall be same as Schedule of Values line item, and vice versa.
 3. For projects with Major Unit Price Work, indicate Shop Drawing submittal and review, purchase, delivery, and Installation dates on Project schedule. Include activities for testing, adjustment, and delivering O&M manuals.
 4. No task except the acquisition of Major Unit Price Work shall represent more than one percent of Original Contract Price for facility projects and three percent of Original Contract Price for other projects. Duration of tasks may not exceed 40 calendar days.
 5. For projects where operating facilities are involved, identify each period of work that will impact any process or operation in the schedule and that must be agreed to by Project Manager and facility operator prior to starting work in the area.
- D. Construction Schedule submittals shall include:
1. printed bar charts that meet criteria outlined in this Section and are produced by Contractor's approved scheduling software;
 2. activity listings that meet criteria outlined in this Section and are produced by Contractor's approved scheduling software; and

3. a predecessor/successor listing sorted by Activity ID that meets criteria outlined in this Section and is produced by Contractor's scheduling software.
 4. A logic network diagram is required with the first Construction Schedule submittal for facilities projects.
 5. Prepare and submit graphic or tabular display of estimated monthly billings (i.e. a cash flow curve for the Work) with the first schedule submittal. This information is not required in monthly updates, unless significant changes in work require re-submittal of schedule for review. Display shall allocate units indicated in bid schedule or Schedule of Values to Construction Schedule activities. Weighted allocations are acceptable, where appropriate. Dollar value associated with each allocated unit will be spread across the duration of that activity on a monthly basis. Total for each month and cumulative total will be indicated. These monthly forecasts are only for Project Manager's planning purposes. Monthly payments for actual work completed will be made in accordance with Document 00700 - General Conditions.
 6. Narrative Report that provides the information outlined in this Section.
- E. No payment will be made until Project Manager approves Construction Schedule and billing forecast.
 - F. If Contractor desires to make changes in its method of operating and scheduling, after Project Manager has reviewed original schedule, notify Project Manager in writing, stating reasons for changes. When Project Manager considers these changes to be significant, Contractor may be required to revise and resubmit for review all or affected portion of Contractor's Construction Schedule to show effect on the Work.
 - G. Upon written request from Project Manager, revise and submit for review all or any part of Construction Schedule submittal to reflect changed conditions in the Work or deviations made from original schedule.
 - H. Updated Construction Schedule with actual start and actual finish dates, percent complete, and remaining duration of each activity shall be submitted monthly. Data date used in updating monthly Construction Schedule shall be the same date as used in monthly Payment Application. Monthly update of Construction Schedule is required for monthly Payment Application to be processed for payment.

1.04 SCHEDULING COMPUTER SOFTWARE REQUIREMENTS

- A. Contractor's scheduling software shall be capable of creating bar charts and activity listings, which can be sorted by various fields (i.e. Activity ID, Early Start, Total Float, Area Code, Specification Section number, and Subcontractor). Use software capable of producing logic network diagram.
- B. Use scheduling software capable of producing activity listings and bar charts with the following information for each activity in the schedule:
 - 1. Activity ID
 - 2. Activity Description
 - 3. Estimated (Original) Duration
 - 4. Remaining Duration
 - 5. Actual Duration
 - 6. Early Start Date
 - 7. Late Start Date
 - 8. Early Finish Date
 - 9. Late Finish Date
 - 10. Free Float
 - 11. Total Float
 - 12. Activity Codes (such as Area Code, Work Type, Specification Section, Subcontractor)
- C. Use scheduling software capable of printing calendars using mathematical analysis of schedule, indicating standard workdays of week and scheduled holidays.
- D. Use scheduling software capable of printing activity listing that indicates predecessors and successors, lag factors and lag relationships used in creating logic of the schedule.
- E. Use scheduling software to provide monthly time in Bar Chart format and scale with 12-month scale not to exceed one page width. Bar charts may be

printed or plotted on 8-1/2 by 11-inch, 8-1/2 by 14-inch or 11 by 17-inch sheet sizes. Over-size plots are not acceptable.

1.05 NARRATIVE SCHEDULE REPORT

- A. Narrative schedule report shall list activities started this month, activities completed this month, activities continued this month, activities scheduled to start or complete next month, problems encountered this month, and actions taken to solve these problems.
- B. Narrative schedule report shall describe changes made to Construction Schedule logic (i.e. changes in predecessors and lags), activities added to schedule, activities deleted from schedule, any other changes made to the schedule other than addition of actual start dates and actual finish dates and changes of data date and remaining durations for re-calculation of mathematical analysis.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01326

CONSTRUCTION SCHEDULE (BAR CHART)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provide an initial Construction Schedule as required by this section for the Work. Do not start construction until Project Manager reviews the schedule.

1.02 FORM AND CONTENT OF INITIAL CONSTRUCTION SCHEDULE

A. Bar Chart:

1. Show major construction activities such as pipe laying, by traffic control phases or other approved key areas; tunnel construction, pavement removal, pavement replacement, pressure testing, chlorination, clean up and punch list as separate activities on the schedule.
2. Show week duration for each activity.
3. Show separate activities for each Shop Drawing and Product Data submittal critical to timely completion. Show submittal dates and dates Project Manager needs to provide approved submittals.
4. Provide separate horizontal bar for each activity. List start and finish date for each activity at left side of diagram.
5. Horizontal Time Scale: Identify first work day of each week.
6. Scale and Spacing: Notes must be legible. Allow space for notations and future revisions.
7. Order of Listings: Order bar chart listings by phases or other approved groups of activities that are contiguous. List activities in chronological order within each phase or group.

B. Narrative Description:

1. Submit narrative descriptions of anticipated work sequences as indicated by the sequence of activities presented in the schedule.

2. Discuss any activity that affects the public (such as phases of traffic control), interaction with specific forces of the City (such as valve operation, chlorination and testing) or other associated contractors.

1.03 PROGRESS REVISIONS

- A. Submit progress revisions or necessary information to complete and process Payment Applications. When required, re-submittals for rejected revisions must be submitted and reviewed prior to the following month's processing of a Payment Application. The following month's Payment Application will not be processed until the re-submittal is reviewed and required progress revisions are received.
- B. Provide a narrative report to describe:
 1. Major changes in scope.
 2. Revised projections in progress, completion, or changes in activity duration.
 3. Other identifiable changes.
 4. Problem areas, anticipated delays, and the impact on schedule.
 5. Corrective action recommended and its effect.
 6. Effect of changes on schedules or other contractors.
 7. Product delivery lead times.
- C. Include additional data with Bar Chart described in Paragraph 1.03A of this Section:
 1. Show original dates for each activity in the approved initial progress schedule by narrow bar next to a wider bar for the current schedule.
 2. Show date each activity actually started or finished when an event has occurred. Clearly identify actual dates in two right-most columns in left portion of an 11 by 17-inch chart.
 3. Indicate the percentage progress to the date of submittal for each activity.

1.04 SUBMITTALS

- A. Submit the initial progress schedule within 15 days after award of contract. Project Manager will review the schedule and return a reviewed copy within 21 days after receipt.
- B. Cut-off dates for progress revisions may be as early as the 20th of the month to avoid delaying processing of Payment Applications. Use the cut-off date for the first approved revision for further revisions.
- C. When required, re-submit within seven days after return of review copy.
- D. Include connecting lines between bars in the schedule to indicate the sequence that activities will be accomplished. Connecting lines when the activity's start or finish is modified will identify impact of preceding or succeeding activities. Submit a minimum of six copies of the bar chart on 11 by 17-inch opaque reproductions. Project Manager will retain five copies and return the remaining copy.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01330

SUBMITTAL PROCEDURES

PART 1 G E N E R A L

1.01 SECTION INCLUDES

A. Submittal procedures for:

1. Schedule of Values
2. Construction Schedules and Cash Flow Curve (billing forecast).
3. Shop Drawings, Product Data and Samples
4. Operations and Maintenance (O&M) Data
5. Manufacturer's Certificates
6. Construction Photographs
7. Project Record Documents and monthly certification.
8. Video Tapes
9. Design Mixes

1.02 SUBMITTAL PROCEDURES

A. Scheduling and Handling:

1. Submit Shop Drawings, data and Samples for related components as required by Specifications and Project Manager.
2. Schedule submittals well in advance of need for construction Products. Allow time for delivery of Products after submittal approval.
3. Develop submittal schedule that allows sufficient time for initial review, correction, resubmission and final review of all submittals. Allow a minimum of 30 days for initial review. Project Manager will review and return submittals to Contractor as expeditiously as possible but time required for review will vary depending on complexity and quantity of data submitted.

4. Project Manager's review of submittals covers only general conformity to Drawings, Specifications and dimensions that affect layout. Contractor is responsible for quantity determination. No quantities will be verified by Project Manager. Contractor is responsible for errors, omissions or deviations from Contract requirements; review of submittals does not relieve Contractor from the obligation to furnish required items in accordance with Drawings and Specifications.
 5. Submit five copies of documents unless otherwise specified.
 6. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
 7. Assume risk for fabricated Products delivered prior to approval. Do not incorporate Products into the Work, or include payment for Products in periodic progress payments, until approved by Project Manager.
- B. Transmittal Form and Numbering:
1. Transmit each submittal to Project Manager with Transmittal letter which includes:
 - a. Date and submittal number
 - b. Project title and number
 - c. Names of Contractor, Subcontractor, Supplier and manufacturer
 - d. Identification of Product being supplied
 - e. Location of where Product is to be Installed
 - f. Applicable Specification section number
 2. Identify deviations from Contract documents clouding submittal drawings. Itemize and detail on separate 8-1/2 by 11-inch sheets entitled "DEVIATIONS FOR _____." When no deviations exist, submit a sheet stating no deviations exist.
 3. Have design deviations signed and sealed by an appropriate design professional, registered in the State of Texas.
 4. Sequentially number transmittal letters beginning with number one. Use original number for resubmittals with an alphabetic suffix (i.e., 2A for the first resubmittal of submittal 2, or 15C for third resubmittal of submittal 15, etc.). Show only one type of work or Product on each submittal. Mixed submittals will not be accepted.

C. Contractor's Stamp:

1. Apply Contractor's Stamp certifying that the items have been reviewed in detail by Contractor and that they comply with Contract requirements, except as noted by requested variances.
2. As a minimum, Contractor's Stamp shall include:
 - a. Contractor's name
 - b. Job number
 - c. Submittal number
 - d. Certification statement Contractor has reviewed submittal and it is in compliance with the Contract
 - e. Signature line for Contractor

D. Submittals will be returned with one of the following Responses:

1. "ACKNOWLEDGE RECEIPT" when no response and resubmittal is required.
2. "NO EXCEPTION" when sufficient information has supplied to determine that item described is accepted and that no resubmittal is required.
3. "EXCEPTIONS AS NOTED" when sufficient information has been supplied to determine that item will be acceptable subject to changes, or exceptions, which will be clearly stated. When exceptions require additional changes, the changes must be submitted for approval. Resubmittal is not required when exceptions require no further changes.
4. "REJECTED-RESUBMIT" when submittal does not contain sufficient information, or when information provided does not meet Contract requirements. Additional data or details requested by Project Manager must be submitted to obtain approval.

1.03 MANUFACTURER'S CERTIFICATES

- A. When required by Specification sections, submit manufacturers' certificate of compliance for review by Project Manager.
- B. Place Contractor's Stamp on front of certification.
- C. Submit supporting reference data, affidavits, and certifications as appropriate.
- D. Product certificates may be recent or from previous test results, but must be acceptable to Project Manager.

1.04 DESIGN MIXES

- A. When required by Specification sections, submit design mixes for review.
- B. Place Contractor's Stamp, as specified in this section, on the front of each design mix.
- C. Mark each mix to identify proportions, gradations, and additives for each class and type of mix submitted. Include applicable test results from samples for each mix. Perform tests and certifications within 12 months of the date of the submittal.
- D. Maintain copies of approved mixes at mixing plant.

1.05 CHANGES TO CONTRACT

- A. Changes to Contract may be initiated by completing a Request for Information form. Project Manager will provide a response to Contractor by completing the form and returning it to Contractor.
 - 1. If Contractor agrees that the response will result in no increase in cost or time, a Minor Change in the Work will be issued by City Engineer.
 - 2. If Contractor and Project Manager agree that an increase in time or cost is warranted, Project Manager will forward the Request for Proposal for negotiation of a Change Order.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Methods, schedules, and processes to be followed for Shop Drawings, Product Data and Sample submittals.

1.02 REQUIREMENT

- A. Submit Shop Drawings, Product Data and Samples as required by Document 00700 - General Conditions and Specification sections, using procedures specified in Section 01330 - Submittal Procedures and the requirements of this Section.
- B. Shop Drawings, Product Data and Samples are not considered Contract documents.

1.03 SHOP DRAWING/SUBMITTAL SCHEDULE

- A. Submit a separate Shop Drawing submittal schedule at same time the Construction Schedule is submitted. List Products for which Shop Drawings and other submittals are required in the order that they appear in Specifications. Include Product Data and Sample submittals in the schedule. Payment Applications or Certificates for Payment will not be processed until Project Manager has approved the Shop Drawing submittal schedule.

1.04 SHOP DRAWINGS

- A. Submit a minimum of seven sets of Shop Drawings and Product Data in a form and quality suitable for microfilming. Review and sign Shop Drawings indicating compliance with the Contract.
- B. Place Contractor's Stamp on each drawing as described in Section 01330 - Submittal Procedures.
- C. Show the following accurately and distinctly:
 - 1. Field and erection dimensions;
 - 2. Arrangement and section views;

3. Relation to adjacent materials or structure, including complete information for making connections between the Work and work under other contracts;
4. Types of Products and finishes;
5. Parts list and descriptions;
6. Assembly drawings of equipment components and accessories showing respective positions and relationships to the complete equipment package;
7. Identify details by referencing drawing sheet and detail numbers, schedule or room numbers as shown on the Contract drawings, where necessary for clarity.

D. Scale drawings to provide a true representation of the specific equipment or item Furnished.

E. Coordinate and submit components, necessary for Project Manager to adequately review submittal, as a complete package. Reproduction of the Drawings for use in Shop Drawings is not allowed.

F. For major changes to original documents, submit Computer-Aided Design (CAD) drawings on a media acceptable to Project Manager.

1.05 PRODUCT DATA

A. Submit Product Data for review as required in Specifications.

B. Place Contractor's stamp, on each data item submitted, as described in Section 01330 - Submittal Procedures.

C. Mark each copy to identify applicable Products, models, and options to be used in the Work. Where required by Specifications, supplement manufacturers' standard data to provide information unique to the Work.

D. Give manufacturers, trade name, model or catalog designation and applicable reference standard for Products specified only by reference standards.

E. Pre-approved and Pre-qualified Products.

1. For "pre-approved", "pre-qualified" and "approved" Products named in the City standard products list, provide an appropriate list designation,

as described in Section 01630 - Product Substitution Procedures,
within 30 days after Notice to Proceed.

2. For Products proposed as alternates to "approved" products, provide information required to demonstrate that the proposed Products meet the level of quality and performance criteria of the "approved" product.

1.06 SAMPLES

- A. Submit Samples for review as required by Specifications. Have Samples reviewed and signed by a Registered Professional.
- B. Place Contractor's stamp on each Sample or firmly attach a sheet of paper with Contractor's stamp, as described in Section 01330 - Submittal Procedures.
- C. Submit the number of Samples specified in Specifications; Project Manager will retain one.
- D. Reviewed Samples that may be used in the Work are identified in Specifications.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01422

REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Section includes general quality assurance as related to Reference Standards and a list of references.

1.02 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on the date as stated in the General Conditions.
- C. Request clarification from Project Manager before proceeding should specified reference standards conflict with Contract documents.

1.03 SCHEDULE OF REFERENCES

AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094
AGC	Associated General Contractors of America 333 John Carlyle Street Alexandria, VA 22314
AI	Asphalt Institute Research Park Drive P.O. Box 14052 Lexington, KY 40512

REFERENCE STANDARDS**STANDARD GENERAL REQUIREMENT**

AITC	American Institute of Timber Construction 7012 S. Revere Parkway, Suite 140 Englewood, CO 80112
AISC	American Institute of Steel Construction One East Wacker Dr. Chicago, IL 60601
AISI	American Iron and Steel Institute 1101 17 th Street NW, Suite 1300 Washington, DC 20036
ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016
ANSI	American National Standards Institute 1819 L Street NW Sixth Floor Washington, D.C. 20036
APA	American Plywood Association Box 11700 Tacoma, WA 98411
API	American Petroleum Institute 1220 L Street, N.W. Washington, DC 20005
AREA	American Railway Engineering and Maintenance-of-Way- Association 8201 Corporate Drive, Suite 1125 Landover, Maryland 20785
ASTM	American Society for Testing and Materials 100 Barr Harbor Drive West Conshohocken, PA 19428
AWPA	American Wood-Preservers' Association P.O. Box 5690 Granbury, TX 76049
AWS	American Welding Society 550 NW 42 nd Avenue Miami, FL 33126

CITY OF HOUSTON
STANDARD GENERAL REQUIREMENT

REFERENCE STANDARDS

AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
COH	City of Houston P.O. Box 1562 Houston, TX 77251-1562
CLFMI	Chain Link Fence Manufacturers Institute 9891 Broken Land Parkway, Suite 300 Columbia, MD 21046
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60173-4758
EJMA	Expansion Joint Manufacturers Association 25 North Broadway Tarrytown, NY 10591
FS	Federal Standardization Documents General Services Administration Specifications Unit (WFSIS) 7th and D Streets, S.W. Washington, DC 20406
ICEA	Insulated Cable Engineer Association P.O. Box 440 S. Yarmouth, MA 02664
IEEE	Institute of Electrical and Electronics Engineers 445 Hoes Lane P.O. Box 440 Piscataway, NJ 08855-459
ISA	International Society of Arboriculture P.O. Box 3129 Champaign, IL 61826-3129
MIL	Military Specifications General Services Administration Specifications Unit (WFSIS) 7th and D Streets, S.W. Washington, DC 20406

REFERENCE STANDARDS**CITY OF HOUSTON
STANDARD GENERAL REQUIREMENT**

NACE	National Association of Corrosion Engineers 1440 South Creek Drive Houston, TX 77084-4906
NEMA	National Electrical Manufacturers' Association 1300 North 17 th Street, Suite 1847 Rosslyn, VA 22209
NFPA	National Fire Protection Association 1 Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101
OSHA	Occupational Safety Health Administration U.S. Department of Labor Office of Public Affairs – Room N3647 Washington, DC 20210
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077-1083
PCI	Prestressed Concrete Institute 209 W. Jackson Blvd. Chicago, IL 60606
SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60021
SSPC	Society for Protective Coatings (Steel Structures Painting Council) 40 24 th Street, Sixth Floor Pittsburgh, PA 15222
TAC	Texas Administrative Code Texas Water Resources Conservation Commission P. O. Box 13087 Library MC-196 Austin, TX 78711-3087
TxDOT	Texas Department of Transportation 125 East 11 th Street Austin, TX 78701-2483

CITY OF HOUSTON
STANDARD GENERAL REQUIREMENT

REFERENCE STANDARDS

UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062
UNI-BELL	UNI-BELL Pipe Association 2655 Villa Creek Drive, Suite 155 Dallas, TX 75234

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01450

CONTRACTOR'S QUALITY CONTROL

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Quality assurance and control of Installation and manufacturers' field services and reports.

1.02 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

- A. Monitor quality control over Suppliers, manufacturers, Products, services, site conditions and workmanship, to produce work of specified quality at no additional cost to the City.
- B. Comply fully with manufacturers' Installation instructions, including each step in sequence.
- C. Request clarification from Project Manager before proceeding when manufacturers' instructions conflict with the Contract.
- D. Comply with specified standards as minimum requirements for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform the Work by persons qualified to produce a specified level of workmanship.

1.03 REFERENCES

- A. Obtain copies of standards and maintain at job site when required by individual Specification sections.

1.04 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual Specification sections, or as required by Project Manager, provide Product suppliers' or manufacturers' technical representative to observe site conditions, conditions of surfaces and Installation, quality of workmanship, start-up of equipment, operator training, testing, adjusting and balancing of equipment as applicable and to initiate required operation. Conform to minimum time requirements for start-up operations and operator training when provided in Specification sections.

CITY OF HOUSTON

CONTRACTOR'S QUALITY CONTROL STANDARD GENERAL REQUIREMENT

- B. At Project Manager's request, submit qualifications of manufacturers' representative to Project Manager 15 days in advance of required representatives' services. Representative is subject to approval by Project Manager.

- C. Manufacturer's representatives shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to a manufacturer's written instructions. Submit report within 14 days of observation to Project Manager for review.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01452

INSPECTION SERVICES

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Inspection services and references

1.02 INSPECTION

- A. City Engineer will appoint an Inspector to represent the City and perform inspections, tests, and other services specified in individual Specification sections.
- B. City Engineer may also appoint, employ, and pay an independent firm to provide additional inspection or construction management services as indicated in Section 01454 - Testing Laboratory Services.
- C. The independent firm will submit reports to Project Manager, indicating observations and results of tests and indicating compliance or noncompliance with Contract requirements.
- D. Contractor shall assist and cooperate with the Inspector; furnish samples of materials, design mix, equipment, tools, and storage.
- E. Contractor shall notify Project Manager 24 hours prior to expected time for operations requiring services.
- F. Contractor shall sign and acknowledge reports for Inspector.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01454

TESTING LABORATORY SERVICES

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Testing laboratory services and Contractor responsibilities related to those services.

1.02 REFERENCES

- A. ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- B. ASTM D 3666 - Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials.
- C. ASTM D 3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- D. ASTM E 329 - Standard Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
- E. ISO/TEC Guide 25 - General Requirements for the Competence of Calibration and Testing Laboratories.

1.03 SELECTION AND PAYMENT

- A. The City will select, employ, and pay for services of an independent testing laboratory to perform inspection and testing identified in Part 3 of individual Specification sections.
- B. Contractor shall employ and pay for services of an independent testing laboratory or laboratories to perform inspection and testing identified in Part 2 of individual Specification sections.
- C. Employment of a testing laboratory by the City shall not relieve Contractor of its obligation to perform work in accordance with requirements of Contract documents.

TESTING LABORATORY SERVICES**STANDARD GENERAL REQUIREMENT**

- D. The City will deduct a minimum two-hour charge for testing laboratory time from periodic progress payment when operations requiring testing or inspection are canceled without prior notification.
- E. The City will deduct cost of retesting from periodic progress payment whenever failed work is removed, replaced and retested.

1.04 QUALIFICATION OF LABORATORY

- A. Meet laboratory requirements of ASTM E 329 and applicable requirements of ASTM C 1077, ASTM D 3666, and ASTM D 3740.
- B. Meet ISO/TEC Guide 17025 conditions for accreditation by the American Association for Laboratory Accreditation (A2LA) in specific fields of testing required in individual Specification sections.
- C. If laboratory subcontracts are part of the testing services, such work will be placed with a laboratory complying with the requirements of this Section.

1.05 LABORATORY REPORTS

- A. Testing laboratory shall provide and distribute copies of laboratory reports to the distribution list Project Manager provides at the pre-construction conference.
- B. Keep one copy of each laboratory report distributed or faxed at the site field office for duration of the Work.
- C. Laboratory will fax material supplier, Contractor and Project Manager reports that indicate failing test results by no later than close of business on the working day following test completion and review.

1.06 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge requirements of the Contract.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume Contractor duties.
- D. Laboratory has no authority to stop the Work.

1.07 CONTRACTOR RESPONSIBILITIES

- A. Provide safe access to the Work and to manufacturer's facilities for Project Manager and for testing laboratory personnel.
- B. Provide testing laboratory with a copy of the Construction Schedule and a copy of each update to Construction Schedule.
- C. Notify Project Manager and testing laboratory during normal working hours of the day previous to expected time for operations requiring inspection and testing services. When Contractor fails to make timely prior notification, do not proceed with the operations requiring inspection and testing services.
- D. Notify Design Consultant 24 hours in advance when Specification requires presence of Design Consultant for sampling or testing.
- E. Request and monitor testing as required to provide timely results and to avoid delays to the Work. Provide samples to laboratory in sufficient time to allow required test to be performed in accordance with specified test methods before intended use of the Product.
- F. Cooperate with laboratory personnel in collecting samples on site. Provide incidental labor and facilities for safe access to the Work to be tested, to obtain and handle samples at site or at source of Products to be tested, and to facilitate tests and inspections including storage and curing of test samples.
- G. Make arrangements with laboratory through Project Manager. Payment for additional testing will be made in accordance with Document 00700 - General Conditions:
 - 1. Re-testing required for failed tests.
 - 2. Re-testing for nonconforming work.
 - 3. Additional sampling and tests requested beyond specified requirements.
 - 4. Insufficient notification of cancellation of tests for work scheduled but not performed.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 CONDUCTING TESTING

- A Conform to laboratory sampling and testing methods specified in individual Specification sections to the latest issues of ASTM standards, TxDOT methods, or other recognized test standards as approved by Project Manager.

- B Requirements of this Section shall also apply to those tests for approval of materials, for mix designs, and for quality control of materials as performed by employed testing laboratories.

END OF SECTION

Section 01506

DIVERSION PUMPING

PART 1 GENERAL

1.01 DEFINITIONS

- A. Diversion-pumping: Installation and operation of bulkheads, plugs, hoses, piping, and pumps required to maintain sewer flow and prevent backups and overflows.

1.02 SYSTEM DESCRIPTION

- A. Provides continuous sewer service to users of sewer systems while maintenance or construction operations are in progress, by diverting flow around construction locations. Maintain sewer flow to prevent backup or overflow onto streets, yards and unpaved areas or into buildings, adjacent ditches, storm sewers, and waterways. Do not divert sewage outside of sanitary sewer system.
- B. When pumps are operating, have an experienced operator on site to monitor operation, adjust pumps, make minor repairs to system, and report problems.

1.03 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittals Procedures.
- B. For systems that bypass sanitary sewer line segments of 42-inch diameter or larger, submit a Diversion Pumping Plan prior to installation. Show location, number and size of pumps, number, location, size and type of hoses or rigid piping, and location of downstream discharge; and special features where pipes or hoses cross roadways, temporary trenches, support bridges.

1.04 SCHEDULING

- A. When the City operates or maintains diversion pumping in construction areas, coordinate construction activities with Project Manager.
- B. Cease operation of diversion pumping when approved by Project Manager.

DIVERSION PUMPING**STANDARD GENERAL REQUIREMENT**

PART 2 P R O D U C T S

2.01 MATERIALS

- A. Design piping, joints and accessories to withstand at least twice maximum system pressure or 50 psi, whichever is greater.
- B. Use self-priming type or submersible electric pumps, with a working pressure gauge on the discharge. Pumps shall meet requirements of City of Houston Noise and Sound Level Regulations.

PART 3 E X E C U T I O N

3.01 FIELD QUALITY CONTROL

- A. During diversion pumping, do not allow sewage to leak, dump, or spill into or onto areas outside of existing sanitary sewer systems.
- B. In the event of an accidental spill or overflow, immediately stop discharge and take action to clean up and disinfect spill. Promptly notify Project Manager so required reporting can be made to the Texas Commission on Environmental Quality (TCEQ) and the Environmental Protection Agency (EPA).

3.02 CLEANING

- A. When diversion-pumping operations are complete, drain sewage within piping into sanitary sewers prior to disassembly.

END OF SECTION

Section 01576

WASTE MATERIAL DISPOSAL

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Disposal of waste material and salvageable material.

1.02 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures.
- B. Submit copy of approved "Development Permit", as defined in Chapter 19 of Flood Plain Ordinance (City Ordinance Number 81-914 and Number 85-1705), prior to disposal of excess material in areas designated as being in "100-year Flood Hazard Area" within the City. Contact the City of Houston Flood Plain Manager, 3300 Main Street, at (713) 525-7605 for flood plain information.
- C. Obtain and submit disposal permits for proposed disposal sites, if required by local ordinances.
- D. Submit copy of written permission from property owner, with description of property, prior to disposal of excess material adjacent to Project. Submit written and signed release from property owner upon completion of disposal work.
- E. Describe waste materials expected to be stored on-site and a description of controls to reduce Pollutants from these materials, including storage practices to minimize exposure of materials to storm water; and spill prevention and response measures in the Project's Storm Water Pollution Prevention Plan (SWPPP). Refer to Section 01410 – TPDES Requirements.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N

3.01 SALVAGEABLE MATERIAL

- A. Excavated Material: When indicated on Drawings, load, haul, and deposit excavated material at location or locations shown on Drawings outside limits of Project.

WASTE MATERIAL DISPOSAL**STANDARD GENERAL REQUIREMENT**

- B. Base, Surface, and Bedding Material: Load shell, gravel, bituminous, or other base and surfacing material designated for salvage into City trucks.
- C. Pipe Culvert: Load culverts designated for salvage into City trucks.
- D. Other Salvageable Materials: Conform to requirements of individual Specification Sections.
- E. Coordinate loading of salvageable material on City trucks with Project Manager.

3.02 EXCESS MATERIAL

- A. Remove and legally dispose of vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage from job site.
- B. Excess soil may be deposited on private property adjacent to Project when written permission is obtained from property owner. See Paragraph 1.02 D above.
- C. Verify flood plain status of any proposed disposal site. Do not dispose of excavated materials in area designated as within 100-year Flood Hazard Area unless "Development Permit" has been obtained. Remove excess material placed in "100-year Flood Hazard Area" within the City, without "Development Permit", at no additional cost to the City.
- D. Remove waste materials from site daily, in order to maintain site in neat and orderly condition.

END OF SECTION

Section 01581

EXCAVATION IN PUBLIC WAY PERMIT SIGNS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project sign installation.
- B. Maintenance and removal of Project sign.

1.02 SYSTEM DESCRIPTION

- A. Sign Construction: Construct signs of new materials.
- B. Appearance: Maintain signs to present a clean and neat look throughout the Contract duration.
- C. Sign Placement: Place signs at each street entrance to street cut excavation.

1.03 SUBMITTALS

- A. Submit Shop Drawings under provisions of Section 01330 - Submittal Procedures.
- B. Show content, layout, lettering style, lettering size and colors. Make sign and lettering to scale, clearly indicating condensed lettering, if used.

PART 2 PRODUCTS

2.01 SIGN LAYOUT

- A. Conform to Texas Manual on Uniform Traffic Control Devices. Minimum size: 36 inches by 36 inches.
- B. Lettering: Uppercase Helvetica Regular lettering.
- C. Composition: Include on sign copy of street cut permit, title "City of Houston", contracting department's name, address, and emergency telephone number and Contractor's name. Project Manager will provide department name, address, and emergency telephone number for preparation of sign.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install Project signs before commencement of pavement excavation in Public Way.
- B. Position sign so it is fully visible and readable to general public.
- C. Erect sign level and plumb.
- D. Erect sign so that top edge of sign is at a nominal 8 feet above existing grade.

3.02 MAINTENANCE AND REMOVAL

- A. Keep signs and supports clean. Repair deterioration and damage.
- B. Remove signs, framing, supports and foundations to depth of at least 2 feet upon completion of the Work. Restore area to condition equal to or better than before construction.

END OF SECTION

Section 01630

PRODUCT SUBSTITUTION PROCEDURES

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Options for making Product or process selections.
- B. Procedures for proposing equivalent Products or processes, including pre-approved, pre-qualified, and approved Products or processes.

1.02 DEFINITIONS

- A. Product: As defined in Document 00700 – General Conditions. Product does not include machinery and equipment used for production, fabrication, conveying, and erection of the Work. Products may also include existing materials or components designated for reuse.
- B. Process: Any proprietary system or method for installing system components resulting in an integral, functioning part of the Work. For this Section, the word Products includes Processes.

1.03 SELECTION OPTIONS

- A. Pre-approved Products: Construction products of certain manufacturers or Suppliers designated in Specifications as "pre-approved." The City maintains a list of pre-approved products. Pre-approved Products for this Project are designated as pre-approved in Specifications. Products of other manufacturers or suppliers are not acceptable for this Project and will not be considered under the submittal process for approving alternate products.
- B. Pre-qualified Products: Construction products of certain manufacturers or Suppliers designated in Specifications as "pre-qualified." Pre-qualified Products for this Project are designated as pre-qualified in Specifications. Products of other manufacturers or suppliers are not acceptable for this Project and will not be considered under the submittal process for approving alternate products.
- C. Approved Products: Construction products of certain manufacturers or Suppliers designated in Specifications followed by words "or approved equal." Approval of alternate products not listed in Specifications may be obtained through provisions for product options and substitutions in Document 00700 - General Conditions, and by following submittal procedures specified in

Section 01330- Submittal Procedures. The procedure for approval of alternate products is not applicable to pre-approved or pre-qualified products.

- D. Product Compatibility: To the maximum extent possible, provide Products that are of the same type or function from a single manufacturer, make, or source. Where more than one choice is available, select Product that is compatible with other Products already selected, specified, or in use by the City.

1.04 CONTRACTOR'S RESPONSIBILITY

- A. Responsibility related to Product options and substitutions is defined in Document 00700 - General Conditions.
- B. Furnish information Project Manager deems necessary to judge equivalency of alternate Product.
- C. Pay for laboratory testing, as well as any other review or examination costs, needed to establish equivalency between products in order to obtain information upon which Project Manager can base a decision.
- D. If Project Manager determines alternate product is not equal to that named in Specifications, Furnish one of the specified Products.

1.05 CITY REVIEW

- A. Use alternate Products only when approved in writing by Project Manager. Project Manager's determination regarding acceptance of proposed alternate Product is final.
- B. Alternate Products shall be accepted if Products are judged by Project Manager to be equivalent to specified Product or to offer substantial benefit to the City.
- C. The City retains the right to accept any Product deemed advantageous to the City, and similarly, to reject any product deemed not beneficial to City.

1.06 SUBSTITUTION PROCEDURE

- A. Collect and assemble technical information applicable to the proposed Product to aid in determining equivalency as related to the approved Product specified.
- B. Submit a written request for a construction Product to be considered as an alternate Product.

- C. Submit Product information after the effective date of the Contract and within the time period allowed for substitution submittals given in Document 00700 - General Conditions. After the submittal period has expired, requests for alternate Products shall be considered only when specified Product becomes unavailable because of conditions beyond Contractor's control.
- D. Submit five copies of each request for alternate Product approval. Include the following information:
 - 1. Complete data substantiating compliance of proposed substitution with the Contract.
 - 2. For Products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature with Product description, performance and test data, and reference standards.
 - c. Samples, as applicable.
 - d. Name and address of similar projects on which Product was used and date of installation. Include names of Owner, design consultant, and installing contractor.
 - 3. For construction methods:
 - a. Detailed description of proposed method.
 - b. Drawings illustrating methods.
 - 4. Itemized comparison of proposed substitution with Product or method specified.
 - 5. Data relating to changes in Construction Schedule.
 - 6. Relation to separate contracts, if any.
 - 7. Accurate cost data on proposed substitution in comparison with Product or method specified.
 - 8. Other information requested by Project Manager.
- E. Approved alternate Products will be subject to the same review process as the specified Product would have been for Shop Drawings, Product Data, and Samples.

PART 2 P R O D U C T S - Not Used

**PRODUCT SUBSTITUTION
PROCEDURES**

CITY OF HOUSTON
STANDARD GENERAL REQUIREMENT

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01732

PROCEDURE FOR WATER VALVE ASSISTANCE

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Operation of valves. City of Houston employees will operate existing valves. Contractor's employees may operate new valves included in the Project prior to acceptance by the City.

1.02 PROCEDURE

- A. Perform activities listed in Exhibit A attached to this Section.

1.03 SUBMITTALS

- A. Submit request for work order planning meetings in accordance with Exhibit A. Include information listed in Step 1 of Exhibit A, attached to this Section.

1.04 CANCELLATION

- A. Contractor, Project Manager, or Public Utilities Division may cancel a scheduled valve assistance appointment at no extra cost or payment to Contractor. Contractor shall notify City's appointed Project Inspector ("Inspector") 24 hours in advance of cancellation. Inspector shall notify Central Operation Service (COS) immediately upon receipt of cancellation notice. Cancellation may be caused by bad weather, preparation work taking longer than anticipated, or unforeseen delays by one or more of the three parties.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

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EXHIBIT A

PROCEDURE FOR VALVE ASSISTANCE

The following procedure will be used by Utility Maintenance Branch personnel when completing a service request from individual Contractors, through Inspector, for operation of existing water valves.

ROUTINE VALVE ASSISTANCE REQUEST (NON-EMERGENCY JOBS):

- Step 1.** a. When notified by Contractor, Inspector will schedule a work order planning meeting by calling Central Operation Service (COS) at **(713) 295-5521** and providing information shown below. The work order planning meeting shall be conducted a minimum of three days after the request; excluding weekends, holidays, inclement weather days, and the day of the call.

Location of Work (Street Intersection)	Project #
Project Description	Contractor (Company Name)
Job Superintendent's Name	Superintendent's Office #/Mobile #/Pager #
Contractor's Emergency Information	Name and Phone #/Mobile #/Pager #
Inspector/Senior Inspector	Name, Phone #/Mobile #/Pager #
Date & Time assistance is requested	

- b. COS will create a work order for each wet connection, cut and plug, etc. that will be designated as a "Code 40" (Private Contractor).
- c. COS will give Inspector the work order number. This work order number must be used as a reference in all communications regarding this request for Valve Assistance.
- d. Valve personnel must have the work order number on their route sheet. When valve personnel arrive at the job site for the Work Order Planning Meeting between Inspector, Contractor, and Utility Maintenance valve personnel, they will verify the street intersection and work order number with the Inspector before beginning Work Order Planning Meeting.
- e. During Work Order Planning Meeting, the work to be performed will be outlined and the actual date work will be performed will be mutually determined by Inspector, Contractor and City's Utility Maintenance Division valve personnel, based upon relevant factors such as preparatory work needed, customer requirements, etc.
- f. Valve personnel will perform work specifically outlined in the work order requested. Also, Utility Maintenance Branch valve personnel will only operate existing water valves. Inspector must contact COS and request a new work order for additional work.

**PROCEDURE FOR WATER
VALVE ASSISTANCE**

**CITY OF HOUSTON
STANDARD GENERAL REQUIREMENT**

- g. Valve personnel will contact the dispatcher and advise when the job is complete. Valve personnel will list all appropriate information on the Crew Activity Report.
- Step 2.** Should valve personnel not be able to keep an appointment to provide valve assistance, Utility Maintenance Branch will provide notification to appropriate Inspector by phone at least 24 hours prior, with that fact and rescheduling information, if available.
- Step 3.** Inspector will notify COS if valve personnel have not arrived at the site within 30 minutes of scheduled appointment. If Contractor is not ready when valve operator arrives to provide valve assistance, the City shall charge Contractor \$50.00 per hour, starting 15 minutes after the scheduled appointment time, minimum one hour charge.
- Step 4.** Contractor will not be due delay claims or downtime if Utility Maintenance Branch has notified Inspector that they will not be able to provide valve assistance as scheduled.
- Step 5.** Test installed new valves in the presence of Inspector before substantial completion inspection is scheduled. Place new valves in open position on or before the Date of Substantial Completion.
- Step 6.** Project Manager will notify, in writing, Utility Maintenance Branch two months before the warranty expires to report any problems they have with new water lines. Project Manager will notify Contractor about these problems.

EMERGENCY REQUEST FOR VALVE ASSISTANCE PROCEDURE:

- Step 1.** When notified by Contractor, Inspector will request emergency Valve Assistance due to a broken line/service, etc. by calling COS at **(713) 295-5521** and providing the following information:
- | | |
|--|--|
| Location of Work (Street Intersection) | Project # |
| Project Description | Superintendent's Office #/Mobile #/Pager # |
| Contractor (Company Name) | Name and Phone #/Mobile #/Pager # |
| Job Superintendent's Name | Name, Phone #/Mobile #/Pager # |
| Contractor's Emergency Information | |
| Inspector/Senior Inspector | |
| Date & Time assistance is requested | |
- Step 2.** COS will create an emergency work order number and describe the work to be performed.
- Step 3.** COS will give Inspector the emergency work order number. Reference work order number in all communications regarding request for Valve Assistance.
- Step 4.** COS will contact designated valve personnel and assign emergency work order. Dispatcher will follow standard COS procedures if this situation occurs after normal working hours.
- Step 5.** Valve personnel must have the emergency work order number on the route sheet. When valve personnel arrive at the job site for emergency work, they will verify the street intersection and emergency work order number with Inspector prior to beginning work requested for operating existing water valves. Valve personnel will coordinate verification of street intersection and work order number with Inspector prior to performing work.

Section 01740

SITE RESTORATION

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Restoration of site affected by the Work in public or private property, including pavement, esplanades, sidewalks, driveways, fences, lawns and landscaping.

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for restoration of Project site disturbed by utility construction operations is on a linear foot basis. Measurement will be as provided for corresponding utility in each Specification section. No separate payment made for branch pipe, valves and, other associated work for utilities. Measurement for restoration with multiple utilities within the same right-of-way will be on a linear foot basis for only one utility.
2. No separate payment made for facility or roadway projects. Include cost in the surface improvements associated with the facility or roadway construction.
3. Payment includes required site restoration within the right-of-way or easement regardless of size or type of pipe, method of construction, paved or unpaved areas or thickness and width of pavement.
4. No separate payment made for site restoration for service connections under this Section. Include cost in appropriate utility section.
5. Refer to Section 01270 – Measurement and Payment for Unit Price procedures.

- B. Stipulated Price (Lump Sum) Contracts. If Contract is Stipulated Price Contract, include payment for work under this section in total Stipulated Price.

1.03 DEFINITIONS

- A. Phase: Locations identified on the plans and listed in Section 1110 – Summary of Work under Work Sequence.

SITE RESTORATION**STANDARD GENERAL REQUIREMENT**

- B. Site Restoration: Replacement or reconstruction of Site Improvements located in rights-of-way, easements, public property, and private property affected or altered by the Work.
- C. Site Improvement: Includes pavement, curbs and gutters, esplanades, sidewalks, driveways, fences, lawns, irrigation systems, landscaping, and other improvements in existence at the Project site before commencement of construction operations.

1.04 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures.
- B. Schedule of testing, service connections, abandonment, backfill, and site restoration.
- C. Sample of notices to residents outlining their responsibility for maintenance of site improvements adjacent to the Project that are not disturbed by construction operations

1.05 SCHEDULING

- A. Schedule testing, service connections, abandonment, backfill and site restoration immediately following completion of pipe laying work or paving within each block or line segment.
- B. Phased Construction:
 - 1. Commencement of subsequent Phase will follow scheduling of site restoration of prior Phase. Limit work to a maximum of two Phases of the project.
- C. Construction of Projects with no Phases listed in Section 01110- Summary of Work:
 - 1. Complete site restoration prior to disturbing over 50% of total project linear feet or 2,000 linear feet, whichever is greater, of right-of-way or easement.
 - 2. Limit work to a maximum of 50% of total project linear feet or 2,000 linear feet, whichever is greater, of right-of-way and easement. Commence work in additional right-of-way or easement after completion of site restoration.

PART 2 P R O D U C T S

2.01 MATERIALS

- A. Pavement, Sidewalks and Driveways: Materials specified in Section 02951 - Pavement Repair and Resurfacing.
- B. Seeding and Sodding: Sod specified in Section 02922 - Sodding and Seed specified in Section 02921 - Hydromulch Seeding.
- C. Trees, Shrubs and Plantings: Conform to requirements of Section 01562 – Tree and Plant Protection.

PART 3 E X E C U T I O N

3.01 Preparatory Work

- A. Provide cleanup and restoration crews to work closely behind pipe laying and roadway construction crews, and where necessary, during testing, service restoration, abandonment, backfill and surface restoration.
- B. Water Lines: Unless otherwise approved by Project Manager, comply with the following:
 - 1. Once Project Manager approves work within a Phase, immediately begin preparatory work for disinfection effort.
 - 2. No later than three days after completing disinfection preparatory work, submit to City appropriate request for disinfection.
 - 3. If City fails to perform initial disinfection of lines in accordance with Section 2514 - Disinfection of Water Lines, within seven days from submission of appropriate request, and if approved by Project Manager, pipe laying operations may continue beyond approved limits until the City responds.
 - 4. Immediately after transfer of services, begin abandonment of old water lines and site restoration.
- C. Wastewater Lines:
 - 1. Once Project Manager approves work within a Line Segment, immediately begin preparatory work for testing effort.

2. No later than three days after completing preparatory work for testing, initiate testing work.
3. Immediately after transfer of service connections, begin abandonment of old wastewater lines, and site restoration.

D. Street Construction and Paving Projects

1. Once Project Manager approves work within a Line Segment or block, immediately begin preparatory work for testing effort.
2. No later than three days after completing preparatory work for testing, initiate testing work.
3. Immediately after testing begin site restoration.

E. Street Construction and Paving Projects

1. Once Project Manager approves work within a block, immediately begin preparatory work for sidewalk construction, sodding and hydromulching and tree planting.
2. No later than seven days after completing preparatory work, initiate construction.

3.02 CLEANING

- A. Remove debris and trash to maintain a clean and orderly site in accordance with requirements of General Conditions and Section 01576 - Waste Material Disposal.

3.03 LANDSCAPING AND FENCES

A. Seeding and Sodding.

1. Remove construction debris and level area with bank sand so that new grass surface matches level of existing grass and maintains pre-construction drainage patterns. Level and fill minor ruts or depressions caused by construction operations with bank sand, where grass is still viable.
2. Restore previously existing turfed areas with sod and fertilize in accordance with Section 02922 - Sodding. Sod to match existing turf.

3. Restore unpaved areas not requiring sodding with hydromulch seeding conforming to Section 02921 - Hydromulch Seeding.
- B. Trees, Shrubbery and Plants.
1. Remove and replant trees, shrubs, and plants in accordance with requirements of Section 01562 – Tree and Plant Protection.
- C. Fence Replacement.
1. Replace removed or damaged fencing to equal or better condition than existed prior to construction, including concrete footings and mow strips. Provide new wood posts, top and bottom railing and panels. Metal fencing material, not damaged by the Work, may be reused.
 2. Remove and dispose of damaged or substandard material.
- 3.04 MAINTENANCE
- A. Maintain shrubs, plantings, sodded areas and seeded areas.
- B. Replace shrubs, plantings and seeded or sodded areas that fail to become established.
- C. Refer to Section 01562 - Tree and Plant Protection, Section 02921 - Hydromulch Seeding and Section 02922 - Sodding for maintenance requirements.

END OF SECTION

Section 01755

STARTING SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting and balancing.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Project Manager seven days prior to startup of each item.
- C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other damage-causing conditions.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision in accordance with manufacturer's instructions.
- G. When specified in individual Specification sections, require manufacturer to provide an authorized representative to be present at the site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

- H. Submit written report indicating that equipment or system has been properly installed and is functioning correctly.

3.02 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Project Manager two weeks prior to Date of Substantial Completion.
- B. Utilize O&M Manuals as the basis for instruction. Review contents of manual with Project Manager in detail to explain aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at the equipment location.
- D. Prepare and insert additional data in O&M Manuals when the need for additional data becomes apparent during instruction.
- E. At a minimum, Contractor will demonstrate the following:
 - 1. Products and procedures to be used in maintaining various surfaces, e.g., counter tops, toilet partitions, tile floors and carpeting;
 - 2. procedures to set and maintain landscape irrigation system;
 - 3. procedures to set and maintain security and fire alarm systems; and
 - 4. procedures to set and maintain HVAC systems.

3.03 TESTING, ADJUSTING AND BALANCING

- A. Contractor shall appoint, employ and pay for the services of an independent firm to perform testing, adjusting and balancing.
- B. Submit reports by the independent firm to Project Manager describing observations and results of tests and signifying compliance or non-compliance with specified requirements and requirements of the Contract.

END OF SECTION

Section 01770

CLOSEOUT PROCEDURES

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Procedures to establish Date of Substantial Completion.
- B. Closeout procedures for final submittals, O&M data, warranties, spare parts and maintenance materials.
- C. Texas Department of Licensing and Regulation (TDLR) inspection for Texas Accessibility Standards (TAS) compliance.

1.02 SUBSTANTIAL COMPLETION

- A. Comply with Document 00700 - General Conditions regarding Date of Substantial Completion when Contractor considers the Work, or portion thereof designated by Project Manager, to be substantially complete.
- B. Insure the following items have been completed when included in the Work, prior to presenting a list of items to be inspected by Project Manager for issuance of a Certificate of Substantial Completion:
 - 1. cutting, plugging, and abandoning of water, wastewater, and storm sewer lines, as required by Contract documents for each item;
 - 2. construction of, and repairs to, pavement, driveways, sidewalks, and curbs and gutters;
 - 3. sodding and hydromulch seeding, unless waived by Project Manager in writing;
 - 4. general clean up including pavement markings, transfer of services, successful testing and landscape;
 - 5. additional requirements contained in Section 01110 - Summary of Work.
- C. Assist Project Manager with inspection of Contractor's list of items and complete or correct the items, including items added by Project Manager, within specified time period.

CLOSEOUT PROCEDURES**STANDARD GENERAL REQUIREMENT**

- D. Should Project Manager's inspection show failure of Contractor to comply with requirements to obtain Date of Substantial Completion, including those items in Paragraph 1.02 B. of this section, Contractor shall complete or correct the items, before requesting another inspection by Project Manager.

1.03 CLOSEOUT PROCEDURES

- A. Comply with Document 00700 - General Conditions regarding final completion and final payment when the Work is complete and ready for Project Manager's final inspection.
- B. Provide Project Record Documents in accordance with Section 01785 - Project Record Documents.
- C. Complete or correct items on punch list, with no new items added. Address new items during warranty period.
- D. The City will occupy portions of the Work as specified in other sections.

1.04 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. For facilities, clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to sanitary condition.
- D. Clean or replace filters of operating equipment.
- E. Clean debris from roofs, gutters, down spouts, and drainage systems.
- F. Clean site; sweep paved areas, and rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and temporary construction facilities from site following final test of utilities and completion of the Work.

1.05 ADJUSTING

- A. Adjust operating equipment to ensure smooth and unhindered operation. Value of this testing and adjusting is five percent of Lump Sum Price in the Schedule of Values for item being tested.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit O&M data as noted in Section 01330 - Submittal Procedures.
- B. Five percent of lump sum amount of each piece of equipment as indicated in Schedule of Unit Price Work or Schedule of Values will be paid after the required O&M data submittals are received and approved by Project Manager.

1.07 WARRANTIES

- A. Provide one original of each warranty from Subcontractors, Suppliers, and manufacturers.
- B. Provide Table of Contents and assemble warranties in a 3-ring/D binder with durable plastic cover.
- C. Submit warranties prior to final progress payment.
- D. Warranties shall commence in accordance with the requirements in Document 00700 - General Conditions.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual Specification sections.
- B. Deliver to a location within the City limits as directed by Project Manager. Applicable items must be delivered prior to issuance of a final Certificate for Payment.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01782

OPERATIONS AND MAINTENANCE DATA

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittal requirements for equipment and facility Operations and Maintenance (O&M) Manuals

1.02 MEASUREMENT AND PAYMENT

- A. Measurement for equipment O&M Manuals is on a lump sum basis equal to five percent of the individual equipment value contained in Schedule of Unit Prices or Schedule of Values. The lump sum amount may be included in the first Progress Payment following approval of the O&M Manuals by Project Manager.

1.03 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures. Submit a list of O&M Manuals and parts manuals for equipment to be incorporated into the Work.
- B. Submit documents with 8-1/2 x 11-inch text pages, bound in 3-ring/D binders with durable plastic covers.
- C. Print "OPERATION AND MAINTENANCE INSTRUCTIONS", Project name, and subject matter of binder on covers when multiple binders are required.
- D. Subdivide contents with permanent page dividers, logically organized according to the Table of Contents, with tab titling clearly printed under reinforced laminated plastic tabs.
- E. O&M Manual contents: Prepare a Table of Contents for each volume, with each Product or system description identified.
 - 1. Part 1 - Directory: Listing of names, addresses, and telephone numbers of Design Consultant, Contractor, Subcontractors, and major equipment Suppliers.

2. Part 2 - O&M instructions arranged by system. For each category, identify names, addresses, and telephone numbers of Subcontractors and Suppliers and include the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
3. Part 3 - Project documents and certificates including:
 - a. Shop Drawings and relevant data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties.

F. Submit two copies of O&M Manuals and parts manuals, for review, within one month prior to placing the equipment or facility in service.

G. Submit one copy of completed volumes in final form 10 days prior to final inspection. One copy with Project Manager comments will be returned after final inspection. Revise content of documents based on Project Manager's comments prior to final submittal.

H. Revise and resubmit three final volumes within 10 days after final inspection.

1.04 EQUIPMENT O&M DATA

A. Furnish O&M Manuals, prepared by manufacturers for all equipment. Manuals must contain, as a minimum, the following:

1. Equipment functions, normal operating characteristics, and limiting conditions.
2. Assembly, Installation, alignment, adjustment, and checking instructions.
3. Operating instructions for start-up, normal operation, regulation and control, normal shutdown, and emergency shutdown.
4. Detailed drawings showing the location of each maintainable part and lubrication point with detailed instructions on disassembly and reassembly of the equipment.

5. Troubleshooting guide.
 6. Spare parts list, predicted life of parts subject to wear, lists of spare parts recommended to be on hand for both initial start-up and for normal operating inventory, and local or nearest source of spare parts availability.
 7. Outline, cross-section, and assembly drawings with engineering data and wiring diagrams.
 8. Test data and performance curves.
- B. Furnish parts manuals for all equipment, prepared by the equipment manufacturer, which contain, as a minimum, the following:
1. Detailed drawings giving the location of each maintainable part.
 2. Spare parts list with predicted life of parts subject to wear, lists of spare parts recommended on hand for both initial start-up and for normal operating inventory, and local or nearest source of spare parts availability.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01785

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Maintenance and submittal of record documents and Samples.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain one record copy of documents at the site in accordance with Document 00700 - General Conditions.
- B. Store record documents and Samples in field office, if a field office is required by the Contract, or in a secure location. Provide files, racks, and secure storage for record documents and Samples.
- C. Label each document "PROJECT RECORD" in neat, large, printed letters.
- D. Maintain record documents in a clean, dry, and legible condition. Do not use record documents for construction purposes. Do not use permit drawings to record Modifications to the Work.
- E. Keep record documents and Samples available for inspection by Project Manager.
- F. Bring record documents to progress review meetings for viewing by Project Manager and, if applicable, Design Consultant.

1.03 RECORDING

- A. Record information legibly with red ink pen on a set of blueline opaque drawings, concurrently with construction progress. Maintain an instrument on site at all times for measuring elevations accurately. Do not conceal work until required information is recorded
- B. Contract Drawings and Shop Drawings: Mark each item to record completed Modifications, or when minor deviations exist, the actual construction including:
 - 1. Measured depths of elements of foundation in relation to finish first floor datum.
 - 2. Measured horizontal locations and elevations of Underground Facilities and appurtenances, referenced to permanent surface improvements.

3. Elevations of Underground Facilities referenced to City of Houston benchmark utilized for the Work.
 4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 5. Dimensions and details of field changes
 6. Changes made by Modifications.
 7. Details not on original Drawings.
 8. References to related Shop Drawings and Modifications.
- C. Survey all joints of water mains at the time of construction. Record on Drawings, water main invert elevation, elevation top of manway, and centerline horizontal location relative to baseline.
- D. For large diameter water mains, mark specifications and addenda to record:
1. Manufacturer, trade name, catalog number and Supplier of each Product actually Installed.
 2. Changes made by Modification or field order.
 3. Other matters not originally specified.
- E. Annotate Shop Drawings to record changes made after review.
- 1.04 SUBMITTALS
- A. At closeout of the Contract, deliver Project record documents to Project Manager.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 04061

MORTAR

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mortar and grout for masonry.

1.02 MEASUREMENT AND PAYMENT

- A. No separate payment will be made for work required under this Section. Contractor will include all costs of the requirements of this Section in the appropriate bid item(s) on the Bid Form.

1.03 REFERENCES

- A. ASTM C 5 - Quicklime for Structural Purposes.
- B. ASTM C 143 - Testing Method for Slump of Hydraulic Cement Concrete
- C. ASTM C 144 - Aggregate for Masonry Mortar.
- D. ASTM C 150 - Portland Cement.
- E. ASTM C 207 - Hydrated Lime for Masonry Purposes.
- F. ASTM C 270 - Mortar for Unit Masonry.
- G. ASTM C 387 - Packaged, Dry, Combined Materials for Mortar and Concrete.
- H. ASTM C 404 - Aggregates for Masonry Grout.
- I. ASTM C 476 - Grout for Masonry.
- J. ASTM C 595 - Blended Hydraulic Cement.
- K. ASTM C 780 - Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
- L. ASTM C 109 - Method of Sampling and Testing Grout.

1.04 SUBMITTALS

- A. Submit product data and samples under provisions of Section 01330 - Submittal Procedures.
- B. Include design mix, indicate Property Method used, required environmental conditions, and admixture limitations.

MORTAR

- C. Samples: Submit two ribbons of each mortar color, illustrating color and color range.
- D. Submit test reports on mortar indicating conformance to ASTM C 270.
- E. Submit test reports on grout indicating conformance to ASTM C 476.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site and store and protect.
- B. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperatures to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

1.07 MIX TESTS

- A. Test mortar and grout in accordance with Section 01410 - Testing Laboratory Services.
- B. Testing of Mortar Mix: Test in accordance with ASTM C 780. Test mortar mix for compressive strength, consistency, mortar aggregate ratio, water content, air content, and splitting tensile strength.
- C. Testing of Grout Mix: Test in accordance with ASTM C 109. Test grout mix for compressive strength and slump.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C 150, Type I, white color.
- B. Masonry Cement: Not permitted.
- C. Mortar Aggregate: ASTM C 144, standard masonry type. Grading and color suitable for type of masonry, one source for entire project. (Not less than 5 percent shall pass the No. 100 sieve).
- D. Hydrated Lime: ASTM C 207, Type S.
- E. Grout Aggregate: ASTM C 404.
- F. Water: Clean and potable.

2.02 MORTAR COLOR

- A. Mortar Color: Mineral oxide pigment; color; to be selected by the City Engineer from manufacturer's samples.

2.03 ADMIXTURES

- A. Antifreeze: Antifreeze admixtures will not be permitted.
- B. Accelerator: Accelerator may be used only with approval of the City Engineer.

2.04 MORTAR

- A. Mortar for Load Bearing Walls and Partitions: ASTM C 270, Type S utilizing the Property Method to achieve 1800 psi strength.
- B. Mortar for Non-load Bearing Walls and Partitions: ASTM C 270, Type S utilizing the Property Method to achieve 1800 psi strength.
- C. Mortar for Masonry Below Grade or in Contact with Earth: ASTM C 270, Type M utilizing the Property Method to achieve 2500 psi strength.
- D. Pointing Mortar: ASTM C 270, Type N, using the Property Method to achieve 750 psi strength.

2.05 MORTAR MIXING

- A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C 270 to achieve strengths noted in Paragraph 2.04.
- B. Add mortar color and admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and coloration.
- C. Do not use anti-freeze compounds to lower the freezing point of mortar.
- D. If water is lost by evaporation, retemper only within 2 hours of mixing.
- E. Use mortar within 2 hours after mixing at temperatures of 80 degrees F, or 2-1/2 hours at temperatures under 50 degrees F.

2.06 GROUT

- A. Bond Beams, Lintels, and Other Areas to be Grouted Solid: 3000 psi strength at 28 days; 7 to 8 inches slump per ASTM C 143; mixed in accordance with ASTM C 476, Fine Grout.

2.07 GROUT MIXING

- A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C 476, Fine Grout.
- B. Add admixtures in accordance with manufacturer's instructions. Provide uniformity of mix.
- C. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

MORTAR

3.01 EXAMINATION

- A. Request inspection of spaces to be grouted.

3.02 PREPARATION

- A. Apply bonding agent to existing concrete surfaces.
- B. Plug cleanout holes with masonry units to prevent leakage of grout materials. Brace masonry for wet grout pressure.

3.03 INSTALLATION

- A. Install mortar and grout in accordance with manufacturer's instructions.
- B. Work grout into masonry cores and cavities to eliminate voids.
- C. Do not displace reinforcement while placing grout.
- D. Remove grout spaces of excess mortar.

END OF SECTION

SECTION 04062

UNIT MASONRY SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Face brick.
- B. Concrete masonry units.
- C. Reinforcement, anchorage, and accessories.

1.02 MEASUREMENT AND PAYMENT

- A. No separate payment will be made for work required under this Section. Contractor will include all costs of the requirements of this Section in the appropriate bid item(s) on the Bid Form.

1.03 REFERENCES

- A. ANSI/ASTM A 82 – Cold-Drawn Steel Wire for Concrete Reinforcement.
- B. ANSI/ASTM C 216 - Facing Brick (Solid Masonry Units Made From Clay or Shale).
- C. ASTM A 123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- D. ASTM A 615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- E. ASTM C 62 - Building Brick (Solid Masonry Units Made From Clay or Shale).
- F. ASTM C 90 - Hollow Load Bearing Concrete Masonry Units.
- G. UL - Underwriters Laboratories.

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 01330 - Submittal Procedures.
- B. Submit product data for face brick, concrete masonry units, adjustable ties, and fabricated wire reinforcement.
- C. Submit samples under provisions of Section 01330 - Submittal Procedures.

UNIT MASONRY SYSTEM

- D. Submit four samples of face brick to illustrate color, texture and extremes of color range.
- E. Submit manufacturer's certificate that products meet or exceed specified requirements.
- F. Submit manufacturer's installation instructions under provisions of Section 01330 - Submittal Procedures.

1.05 QUALIFICATIONS

- A. Installer: Company specializing in performing the work of this Section with minimum 5 years experience.

1.06 MOCK-UP

- A. Erect face brick and concrete masonry units to 3 feet x 4 feet panel size, include specified mortar and accessories.
- B. When accepted, mock-up will demonstrate minimum standard for the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products to protect them from damage.
- B. Accept units on site. Inspect for damage.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Maintain mortar materials temperature to between 40 degrees F and 120 degrees F prior to, and during, masonry work.
- B. In hot weather conditions, limit the amount of water that may evaporate from the mortar bed.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Hollow Load Bearing Block Units: ASTM C 90, Grade N, Type I - Moisture Controlled; normal weight.
- B. Solid Load Bearing Block Units: ASTM C 145, Grade N, Type I - Moisture Controlled; normal weight.
- C. Masonry Units: Nominal modular size of 8" x 16" x 8", or as shown on the Drawings. Provide special units for 90-degree corners, bond beams, lintels, and bull-nose corners.

2.02 BRICK UNITS

- A. Face Brick: ANSI/ASTM C 216, Type FBX, Grade SW; color as selected.
- B. Size: Nominal modular size of 2-2/3" x 8" x 4".

2.03 REINFORCEMENT AND ANCHORAGE

- A. Multiple Wythe Joint Reinforcement: Ladder type; with moisture drip; hot dip galvanized after fabrication cold-drawn steel conforming to ANSI/ASTM A 82, 3/16-inch side rods with 9 mm cross ties.
- B. Reinforcing Steel: ASTM A 615, grade 60, deformed billet bars, unprotected finish.

2.04 FLASHINGS

- A. Plastic Flashing: Sheet polyvinyl chloride; 40-mil-thick minimum.
- B. Copper Flashing: Preformed sheets; 20 oz.
- C. Asphalt-impregnated felt is not acceptable.

2.05 ACCESSORIES

- A. Joint Filler: Closed cell polyethylene; oversized 50 percent to joint width.
- B. Building Paper: 15-pound asphalt saturated felt.
- C. Cleaning Solutions: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Beginning of installation means installer accepts existing conditions, including but not limited to weather conditions.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied to other Sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

UNIT MASONRY SYSTEM

3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Lay concrete masonry units in running bond. Course one unit and one mortar joint to equal 8 inches. Form concave mortar joints.
- D. Lay brick units in running bond. Course three brick units and three mortar joints to equal 8 inches. Form concave mortar joints.

3.04 PLACING AND BONDING

- A. Lay hollow masonry units with face shell bedding on head and bed joints.
- B. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
- C. Remove excess mortar as work progresses.
- D. Interlock intersections and external corners.
- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform jobsite cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

3.05 WEEPS AND VENTS

- A. Provide weep holes in veneer at 16 inches on center horizontally above through-wall flashing and at bottom of walls.

3.06 CAVITY WALL

- A. Do not permit mortar to drop or accumulate in cavity air space or to plug weep holes.
- B. Build inner wythe ahead of outer wythe to receive cavity insulation, and air/vapor barrier adhesive.

3.07 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

- C. Place joint reinforcement continuous in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches. Extend minimum 16 inches each side of openings.
- E. Place and consolidate grout fill without displacing reinforcing where grouting is shown on drawings.

3.08 MASONRY FLASHINGS

- A. Extend flashings through veneer, turn up minimum 8 inches and bed into mortar joint of masonry.
- B. Lap end joints minimum 6 inches and seal watertight.
- C. Use flashing manufacturer's recommended adhesive and sealer.

3.09 LINTELS

- A. Install loose steel lintels over openings.
- B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
- C. Openings Up To 78 Inches: Place two, No. 5 reinforcing bars 1 inch from bottom web.
- D. Openings Over 78 Inches: Reinforce openings as detailed.
- E. Use single piece reinforcing bars only.
- F. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- G. Place and consolidate grout fill without displacing reinforcing.
- H. Allow masonry lintels to attain specified strength before removing temporary supports.
- I. Maintain minimum 8 inch bearing on each side of opening.

3.10 GROUTED COMPONENTS

- A. Reinforce bond beam with two, No. 5 bars, placed 1 inch from bottom web.
- B. Reinforce jambs and joints with one No. 5 bar placed in center of masonry core.
- C. Lap splices minimum 24 bar diameters.

UNIT MASONRY SYSTEM

- D. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- E. Place and consolidate grout fill without displacing reinforcing.
- F. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.11 BUILT-IN WORK

- A. As work progresses, build in metal door frames, fabricated metal frames, plates and other items furnished by other Sections.
- B. Build in items plumb and level.
- C. Bed anchors of metal doorframes in adjacent mortar joints. Fill frame voids solid with grout.
- D. Do not build in organic materials subject to deterioration.

3.12 TOLERANCES

- A. Maximum Variation From Unit to Adjacent Unit: 1/32 inch.
- B. Maximum Variation From Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- C. Maximum Variation From Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- D. Maximum Variation From Level Coursing: 1/8 inch in 3 feet and 1/4 inch in 10; feet 1/2 inch in 30 feet.
- E. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.
- F. Maximum Variation From Cross Sectional Thickness of Walls: 1/4 inch.

3.13 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other Sections of work to provide correct size, shape, and location.
- B. Obtain approval of City Engineer prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.14 CLEANING

- A. Clean work under provisions of Section 01770 - Closeout Procedures.
- B. Remove excess mortar and mortar smears.
- C. Replace defective mortar. Match adjacent work.

- D. Clean soiled surfaces with cleaning solution.
- E. Use non-metallic tools in cleaning operations.

3.15 PROTECTION OF FINISHED WORK

- A. Without damaging completed work, provide protective boards at exposed external corners that may be damaged by construction activities.

END OF SECTION

UNIT MASONRY SYSTEM

Southwest WWTP Improvements – Package 3
WBS No. R-000265-0103-4

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Section 11380

MECHANICAL SURFACE AERATION EQUIPMENT

PART 1: GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, and incidentals required to install, test, and make completely ready for operation forty (40) mechanical surface aerator assemblies (aerators) and all appurtenant equipment as indicated on the Drawings and as specified herein. Each aerator assembly shall include an electric motor, a gear reduction drive with input and output couplings, an impeller shaft, an impeller, capable of mounting to the existing skid on which all components are mounted and using the existing draft tubes.
- B. The existing surface aerator equipment, including draft tubes, top plates, and supports are Philadelphia Mixer, Inc. equipment. The selected Manufacturer shall certify that the submitted surface aerator equipment is compatible and can be installed with the existing components that will be reused.

1.02 MEASUREMENT AND PAYMENT

- A. No separate payment will be provided for work performed under this Section. Include the cost for this work in the lump sum base bid.

1.03 RELATED WORK

- A. Demolition of existing mechanical surface aerators is included in Section 02220.
- B. Concrete work is included under Division 3.
- C. Painting is included under Division 9.
- D. Instrumentation is included under Division 13.
- E. Mechanical piping, valves, pipe hangers and supports are included in the respective sections of Division 15.
- F. Electrical work, except as specified herein, is included under Division 16.

1.04 DESCRIPTION OF SYSTEM

- A. Overview: The existing activated sludge system consists of a plug flow reactor system with five process trains. Each train consists of four stages for the biological treatment and removal of carbonaceous oxygen demands. Each stage

contains two mechanical surface aerators with draft tubes to improve reactor mixing.

- B. Physical Reactor Basin Parameters: The following table below provides the existing activated sludge reactor basin physical parameters:

Description	Value
Permitted Avg. Daily Flow (mgd)	35.0
Permitted 2-hr Peak Flow (gpm)	125,010
Minimum D.O. (mg/L)	2.0
Low Water Side Water Depth (ft)	20.34
Avg. Flow Side Water Depth (ft)	23.22
Peak Flow Side Water Depth (ft)	23.34
Number of Trains	5
Number of Stages Per Train	4
Typical Dimensions for Each Stage	
Length (ft)	40
Width (ft)	85
Surface Aerators per Stage (ea)	2
Draft Tubes per Stage (ea)	2

- C. Process Description: Screened and degrittied plant influent enters the first stage of each of the trains where it mixes with return activated sludge. The mixed liquor generated is continuously and thoroughly mixed by the mechanical surface aerators. In the first reactor basin stage forced ambient air is introduced into the first stage of each reactor by purge air blowers. Oxygen, from the forced ambient air, is transferred into the mixed liquor water column by the mechanical surface aerators. The mixed liquor and forced air flow, concurrently, to the subsequent stages. Each successive stage is designed to have the characteristics of the preceding stage except that the biological oxygen demand decreases in the mixed liquor with each successive stage. A second forced air blower delivers ambient air in each reactor basin third stage. Ambient air is vented to the atmosphere in several locations on the reactor basin.
- D. Influent Design Criteria: The following table below provides the influent design criteria for each reactor basin process design:

time, and do not relieve the Contractor of obligation to provide sufficient service to place equipment in satisfactory operation.

1. Installation: to assist in location of anchor bolts; shaft-seals setting, leveling, field erection, etc.; coordination of piping, electrical, miscellaneous utility connections: Five 8 hour days.
 2. Start up, detailed inspection, and calibration. Pre-startup inspection, including certification that the equipment has been checked and is completely ready for service: Five 8 hour days.
 3. Testing: Standard City of Houston performance testing time as required. Minimum three 8-hour days per reactor basin for sampling and data collection.
 4. Operation and maintenance instruction to include start-up, shutdown, troubleshooting, lubrication, maintenance and safety of all equipment: Two 8 hour days, of which four hours shall be formal classroom instruction.
 5. Service inspections during first year of actual operation, for use at Owner's request, and exclusive of repair, malfunction or other trouble shooting service calls: Four 8 hour days (not anticipated as consecutive).
- C. Additional service shall be provided if there are difficulties in operation of equipment due to manufacturer's design or fabrication, or component controls, at no additional cost to the Owner.
- D. Certificate from the manufacturer stating that the installation of the equipment is satisfactory, that the unit has been satisfactorily tested, is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication, and care of the unit shall be submitted.
- E. Hard copy and electronic copies (indexed Adobe.pdf files) of operating and maintenance manuals shall be furnished. The manuals shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with such equipment.
- F. The manufacturer shall provide three copies of a video DVD produced, covering all aspects of operation and maintenance of the specific type of equipment specified, including start-up, shutdown, troubleshooting, lubrication, maintenance and safety of each major piece of equipment. If the manufacturer does not already have such a video, the supplier shall take full responsibility for preparing one on-site.

3.03 FIELD PAINTING

- A. Field painting by the installing contractor is included in Division 9. The primer and paint used in the field shall be products of the same manufacturer as the shop primer to assure compatibility.

3.04 INSPECTION AND CLEAN WATER TESTING

- A. Qualified servicemen of the manufacturer shall be provided as necessary to complete all testing procedures specified herein to the satisfaction of the Engineer.
- B. All equipment, manpower, electrical power, chemicals, water, instrumentation, and other costs associated with the testing specified herein shall be the responsibility of the Contractor.
- C. All test procedures, data, calculations, and results shall be assembled in book form and submitted to the Engineer for approval in accordance with Part 1.
- D. Pre- Installation Testing: The proposed aerator supplier shall conduct clean water testing at the manufacturer's facility to demonstrate that the supplied aerators are capable of meeting the minimum clean water transfer efficiency specified under Paragraph 1.06 C. The clean water testing shall be performed in accordance with the following:
 - 1. One mechanical surface aerator of each size shall be tested to determine their oxygenation capacities and power draw. The tank size to be utilized for clean water testing shall be 42.5 ft x 40 ft x 23 ft (side water depth) or Engineer's approved equal.
 - 2. Clean water testing shall include a matching draft tube for accuracy, provided by the manufacturer.
 - 3. The aerators to be tested shall be matched with a job motor and gearbox and submitted for approval by the Engineer. The aerators will be set at the proper operating condition for testing.
 - 4. The Engineer shall reserve the right to witness the aerator tests; therefore, at least two weeks notification shall be given by the Contractor and manufacturer to the Engineer before the commencement of these tests.
 - 5. The Contractor shall coordinate and cooperate closely with the manufacturer to satisfactorily complete these above performance tests. All equipment required for clean water testing will be furnished by the aerator manufacturer. Test procedures for the oxygenation capacity performance tests shall conform to the latest edition of the standard clean

water testing procedure developed by the ASCE Oxygen Transfer Standards Subcommittee (ASCE Standard, Measurement of Oxygen Mass Transfer in Clean Water).

6. Test shall be run on each aerator for both high and low submergence and the design submergence.
7. The oxygenation and efficiency test shall be considered successful only if the unit tested equals or exceeds the minimum oxygen transfer requirement specified in Part 1.06C. Units that do not test successfully shall be modified or replaced by the Contractor and retested until the specified values are attained. All installed units shall be modified and/or replaced equally.
8. The aerator assemblies shall satisfy the clean water oxygen transfer requirements specified under Paragraph 1.06C. Certified test data shall be provided to demonstrate compliance with these limits.
9. The aerator assemblies shall not exceed the maximum aerator power draw during operation at the designated operating criteria. Certified test data shall be provided to demonstrate compliance with these limits.
10. No shipment of aerators is allowed until clean water test results have been approved by the Engineer.

3.05 FIELD PERFORMANCE TESTING

- A. A field performance test shall be conducted on each stage in each train to demonstrate that the aerator equipment meets the specified oxygen dissolution requirements specified herein.
- B. The City of Houston Wastewater Operations staff will operate the plant during field testing. The aerator manufacturer shall coordinate all aspects of the testing with City operations staff prior to and during field testing.
- C. The field performance test shall be performed after the following conditions are met:
 1. The Manufacturer has furnished a statement in writing that Contractor's installation is 100 percent complete with no deficiencies.
 2. The Contractor has successfully completed the initial system start up and continuous seven (7) day run test of the specified train, including the associated surface aerators and air blowers.
- D. A minimum of three (3) days of full normal operating solids retention time of stabilization shall be allowed prior to initiation of the performance test. The

be performed by an approved laboratory and the cost of all tests shall be paid for by the Contractor. Submit copies of test reports to the Engineer for approval upon the completion of the tests. Copies of laboratory test results shall be submitted with each performance test report. As a minimum, the following data and measurements shall be taken and/or collected:

- a. Plant effluent flow rate in mgd for the period of the testing, data provided by the City. Estimated flow split to each reactor basin for the period of the testing, data provided by the City. Return sludge rate of flow in mgd into the reactor basin for the period of the testing, data provided by the City.
 - b. CBOD5, soluble CBOD5, Total Suspended Solids (TSS), and COD shall be measured for the plant influent (raw sewage) and reactor basin influent and effluent measured in 24-hour flow-proportioned composite samples collected one every hour. Testing shall be performed in accordance with "Standard Methods of Examination of Water & Wastewater", latest Edition. Soluble CBOD5 shall be determined after filtration of the samples using specified filter medium in accordance with "Standard Methods of Examination of Water & Wastewater", latest Edition for each step.
 - c. MLTSS and MLVSS by grab samples taken every six hours from the last stage of the reactor trains determined in accordance with, "Standard Methods for Examination of Water & Wastewater", latest Edition.
 - d. Dissolved oxygen concentrations at 5-ft, 10-ft, 15-ft, and 20-ft depths below the water surface for each stage in each train. Dissolved oxygen content shall be measured with temporary installed dissolved oxygen probes in each reactor stage.
 - e. Ambient air temperature and wet bulb temperature.
 - f. Influent and mixed liquor effluent temperature.
 - g. Electric energy consumption in kWh for each of the aerators in the test basin; tested at the motor input.
 - h. Influent and effluent pH for each reactor train.
- F. **Mixing Requirements:** The Contractor shall perform a field mixing test for each of the reactor trains. Once the Stage 1 mixed liquor suspended solids (MLSS) concentration in the test basin is stabilized within the nominal range, a field mixing test shall be performed. The test shall be considered successful if it can be demonstrated that the aerators completely mix the

SECTION 11500

SLOTTED PIPE SKIMMER

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to install three (3) stainless steel slotted pipe skimmers as shown on the Drawings and specified herein.

1.02 UNIT PRICES

- A. No separate payment will be made for slotted pipe skimmers under this Section.

1.03 RELATED WORK

- A. Concrete - Division 3
- B. Painting - Division 9

1.04 REFERENCE STANDARDS

- A. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

ASTM A276, stainless and heat-resisting steel bars and shapes.

ASTM A480, stainless steel plate, sheet, and strip.

ASTM B584, copper alloy and sand castings for general application.

ASTM D4020, U.H.M.W. polyethylene molding and extrusion material.

ASTM D2000, standard classification system for rubber products in automotive applications.

ASTM B26, aluminum alloy sand castings.

1.05 QUALITY ASSURANCE

SLOTTED PIPE SKIMMER

- A. Consideration shall be given to manufacturers who have in operation a minimum of 10 similar stainless steel slotted pipe skimmers and have been supplying stainless steel slotted pipe skimmers for at least 10 years.
- B. The stainless steel slotted pipe skimmers shall be manufactured by Online Engineering Corp, Whipps, Inc., Wawcon, or WesTech.

1.06 SUBMITTALS

- A. Submit certified shop drawings and literature describing the equipment, detailed specifications, materials, parts, and any and all other information required to verify compliance with these specifications. As a minimum, the following information shall be provided.
 - 1. Dimensions
 - 2. Weights
 - 3. Layout drawings for all equipment showing installation details
 - 4. Deviations from Drawings and Specifications
 - 5. Manufacturer's installation and testing instructions
 - 6. Affidavits of compliance with referenced standards and codes

1.07 OPERATION AND MAINTENANCE MANUALS

- A. Furnish operation and maintenance manuals for the equipment in accordance with the Contract Documents. As a minimum, the following information shall be included:
 - 1. Certified shop and erection drawings showing all important details of construction, dimensions, and anchor bolts locations.
 - 2. Descriptive literature, bulletins, and/or catalogs of the equipment.
 - 3. The total weight of the equipment including the weight of the single largest item.
 - 4. Materials of construction of all parts.
 - 5. A complete total bill of materials for all equipment.
 - 6. A list of the manufacturer's recommended spare parts.

- 7, In addition to paper copies, submit one final approved O&M manual electronically, on a compact disc (CD), in a format that is navigable and searchable.

1.08 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the site to ensure uninterrupted progress of work. Handle all material and appurtenances with care. Protect all operating mechanisms, stem threads and seals from on-site damage. Store material to permit easy access for inspection and identification. Store all slotted pipe assemblies and appurtenances on timbers or planks, on a flat, even surface to prevent distortion. All equipment should be covered to prevent damage.

PART 2 PRODUCTS

2.01 SLOTTED PIPE SKIMMER

- A. Each slotted pipe shall be fabricated from a minimum ¼" thick 8" diameter x 8 feet long 304 stainless steel pipe. The skimmer pipe shall be furnished with an opening cut into the top of the pipe to collect scum from the surface of the basin.
- B. The slotted pipe assembly shall be furnished with an end support bracket consisting of an adjustable 304 stainless steel base plate and split babbitted bearing with a removable 304 stainless steel stub shaft for the end of the skimmer pipe. The end support assembly shall include a 304 stainless steel scum deflector plate. The pipe shall be kept from shifting horizontally by the use a split 304 stainless steel set collar on each side of the end bearing.
- C. The slotted pipe operator shall include a 304 stainless steel lever attached to the slotted pipe and accessible from the top of the basin to rotate the slotted pipe.

2.02 ANCHOR BOLTS AND FASTNERS

- A. Provide 316 stainless steel anchors. Anchor bolts shall be no less than 1/2" diameter. All fasteners shall be 316 stainless steel.

2.03 PAINTING

- A. All cast iron parts shall be shop coated with a high grade primer that conforms with the finish paint specified in Division 9.

SLOTTED PIPE SKIMMER

PART 3 EXECUTION

3.01 INSTALLATION

- A. The stainless steel slotted pipe assemblies shall be installed in accordance with the manufacturer's recommendations as approved by the Engineer. Prior to start-up of the stainless steel slotted pipe skimmer assemblies, a field service representative shall inspect the equipment, make necessary final adjustments and certify the equipment ready for operation.

3.02 SERVICE

- A. The equipment manufacturer shall provide a factory trained field service representative to inspect the installation and operation of the stainless steel slotted pipe skimmers. In addition, the field service representative shall instruct the owner's personnel in the proper operation and maintenance of the equipment.

As a minimum, the manufacturer's field service representative must be available for one (1) day of service in one (1) separate trip.

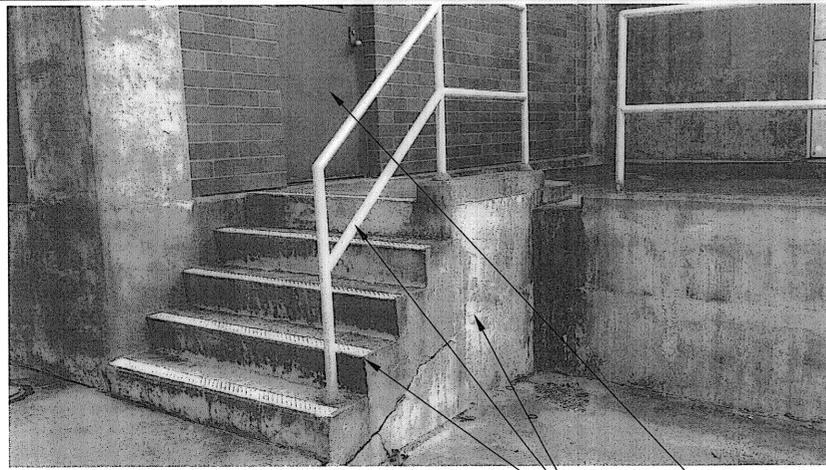
END OF SECTION 11500

PLANT CONTROL SYSTEM

- 1) Siemens Energy & Automation, 6ES7-972-0BA50-0XA0
- 2) Helmholtz, 700-972-0BA50/-0FA50
- b. Cable Outlet: 90-degree, dual cable path
- c. Terminating Resistor: Integrator resistor combination, slide switch enabled
- d. Interfaces: DB9F connector and four insulation displacement terminals

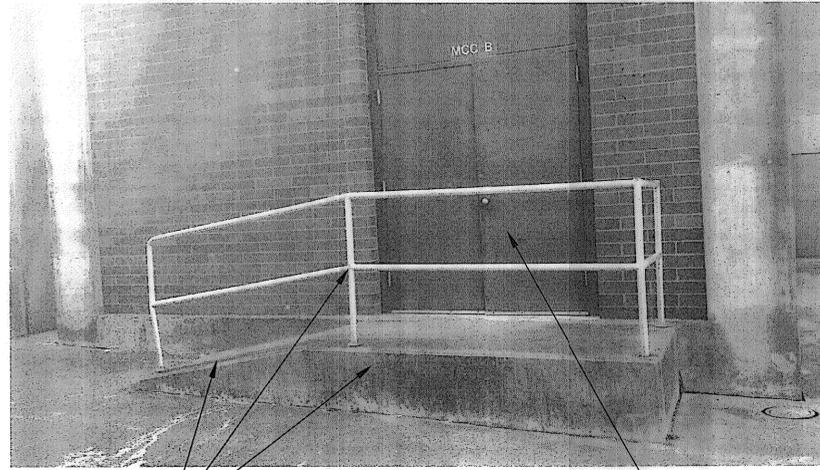
L. Programming, Software and Programming Equipment

- 1. Configure system and program for operation as specified in this Section.
- 2. System Software: Siemens Step 7 software will be loaned by City for utilization by contractor on this project. Contractor shall subcontract the PLC and HMI programming to a Software Engineer (SE) if not meeting the SE requirement. The SE shall supply any other software or interfaces and cables needed to support equipment supplied on this project.
- 3. Control Program: Copies of all PLC application programs will be provided by Wastewater Operations. The PLC program applications will be provided in binary as well as PDF for all Square PLC units. SE shall review the reference material and re-develop the logic program in Step-7 ladder logic loadable in Siemens S7-315 PLCs. SE shall provide necessary programming modifications and enter the required variable parameters to provide a complete functional and integrated system per existing control logic for each PLC. The mixer reactor PLC program shall be modified to remove oxygen and two speed mixer process control functions for each train. SE shall customize the software to meet site-specific conditions for new equipment installations per drawings. The system shall be fully tested to be operational prior to substantial completion. SE shall provide IFIX application development and modifications at the plant site and Groveway control center to ensure system is fully functional, controlled and monitored locally and remotely from Groveway.
- 4. Control Program Data Sheet: SE shall complete and submit plant Data Sheet to Control Program Librarian designated by City of Houston. System I/O list shall be submitted with Data Sheet to the City of Houston two weeks prior to the 7-day test where communication can be verified by the Control Center.



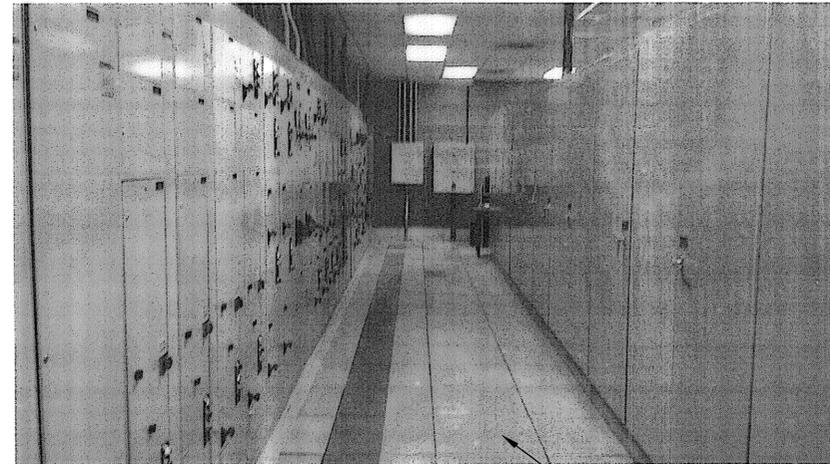
EXIST WESTSIDE STAIRS WITH HANDRAIL

PICTURE 1
NTS



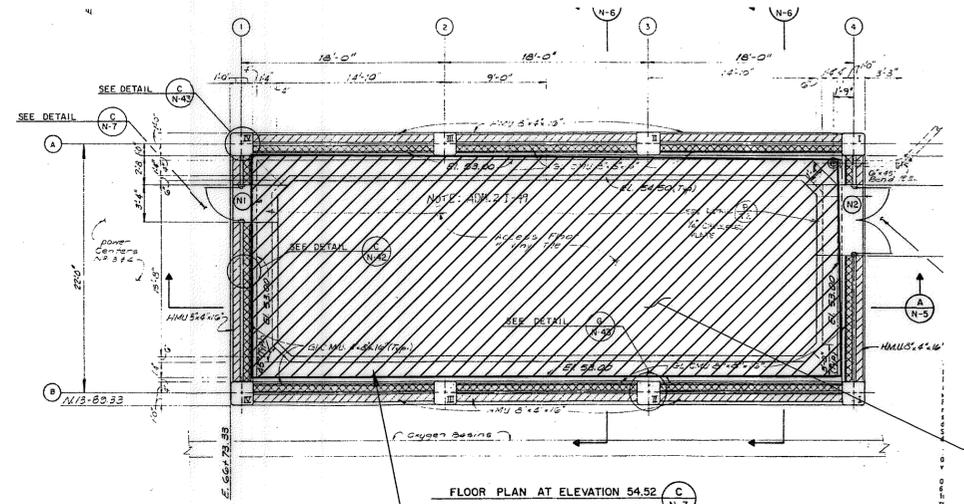
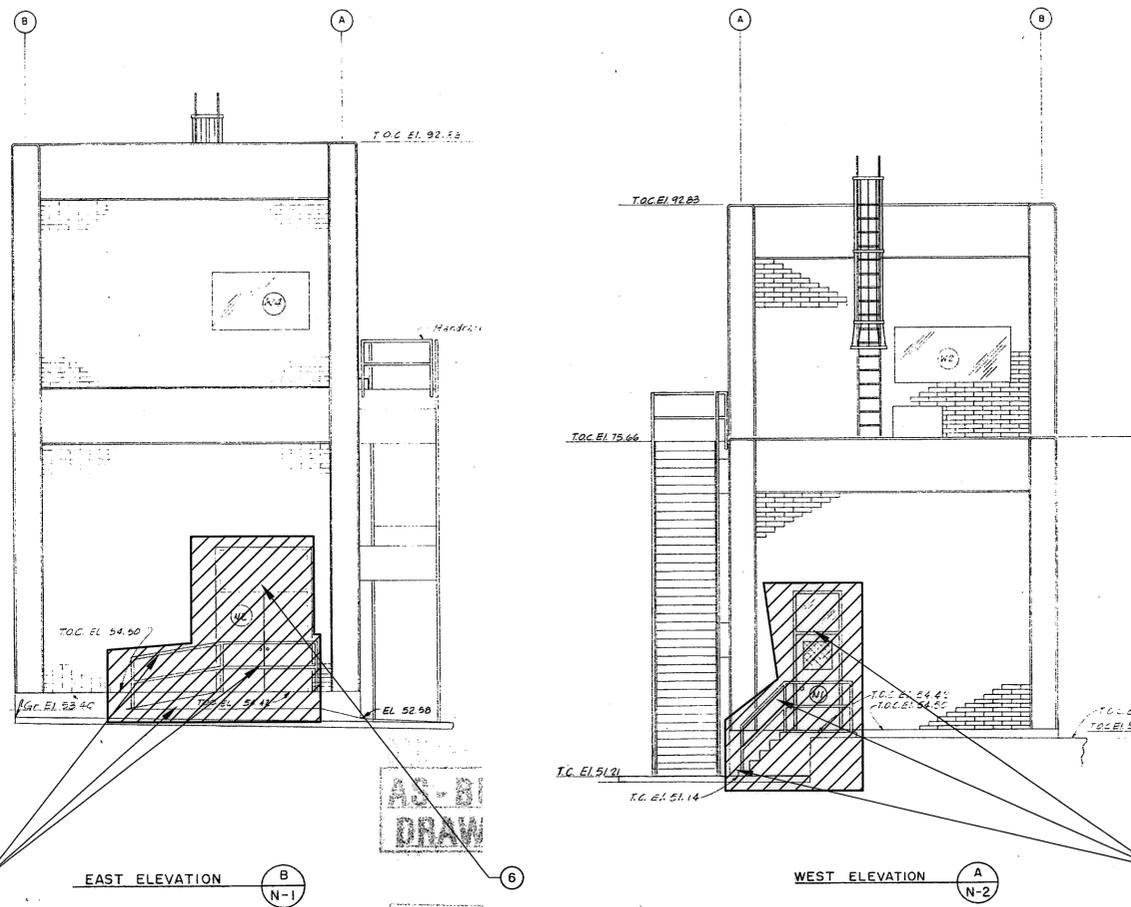
EXIST EASTSIDE RAMP WITH HANDRAIL

PICTURE 2
NTS



EXIST RAISED TILE FLOOR

PICTURE 3
NTS



LEGEND
 DEMOLITION ACTIVITY HATCHED ON AS-BUILT DRAWINGS PER BUBBLED NOTE ITEM.

GENERAL NOTES:

- EXISTING STRUCTURE AND UTILITY INFORMATION SHOWN IS NOT GUARANTEED TO BE ACCURATE AND ALL INCLUSIVE. ALL EXISTING INFORMATION SHOWN IS APPROXIMATE, BASED ON AVAILABLE RECORD DRAWINGS, AND SHOULD BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION ACTIVITIES.
- THE SURVEYED FINISHED FLOOR ELEVATION OF MCC-B IS EL. 51.80 AND CORRESPONDS TO THE RECORD DRAWING FINISHED FLOOR ELEVATION OF 54.50. CONTRACTOR SHALL COORDINATE THE DIFFERENCE IN BENCHMARK ELEVATIONS BETWEEN THE RECORD DRAWING ELEVATIONS AND PROPOSED WORK.
- CONTRACTOR SHALL CERTIFY THAT EQUIPMENT DESIGNATED FOR DEMOLITION IS DISCONNECTED AND LOCKED OUT OF ALL SERVICES PRIOR TO COMMENCING THAT WORK.
- ANY CONCRETE EXPOSED OR DAMAGED AS A RESULT OF DEMOLITION ACTIVITIES SHALL BE REPAIRED AT CONTRACTORS EXPENSE.
- FOR DEMOLITION OF ELECTRICAL SCOPE ITEMS REFER TO ELECTRICAL DEMOLITION SHEETS.

BUBBLED NOTES:

- DEMOLISH EXISTING CONCRETE LANDING RAMP AND HANDRAIL FROM GRADE TO THE FACE OF CMU WALL.
- DEMOLISH EXISTING CONCRETE STAIRS, LANDING AND HANDRAIL FROM GRADE TO THE FACE OF CMU WALL.
- DEMOLISH RAISED ACCESS FLOOR TILES WITH PEDESTAL SUPPORTS IN SEGMENTS PER THE APPROVED DEMOLITION PHASING PLAN.
- REMOVE CEILING TILES WITH ALL HANGING 'T' STRUT ASSEMBLIES.
- REMOVE ALL BUILT-UP MEMBRANE ROOFING INCLUDING ASPHALT FELT AND GRAVEL.
- REMOVE AND SALVAGE EXISTING METAL DOORS.
- REMOVE EXISTING ROOF DRAIN CLEANOUTS INCLUDING DRAIN PIPE.
- REMOVE EXISTING ALUMINUM ROOF SHEET CLIPS.
- REMOVE EXISTING CABLE TRENCH CHEQUERED PLATE COVER.

NOTES:

- CONTRACTOR TO COORDINATE WITH CITY OF HOUSTON PLANT OPERATIONS MANAGER PRIOR TO THE START OF ANY DEMOLITION WORKS.
- CONTRACTOR TO COORDINATE WITH COH PLANT MANAGER FOR PREPARING A DEMOLITION PHASING PLAN KEEPING IN VIEW THE OPERATION SCHEDULE OF PLANT.

LAST SAVED BY: SAMBAPUDI | 1/12/2016 11:55 AM
 PLOT BY: SAROU SHARMA | 1/13/2016 | R:373 Gupta | 3.2.6 Struct\SW WWP S-04 S-05 MCC DEMO.dwg

1	ADDENDUM 1	KIT	3-7-16
REV. NO.	DESCRIPTION	APP'D	DATE

GAI
 Gupta & Associates, Inc.
 CONSULTING ENGINEERING
 Registration No. F-2593

KIT Professionals, Inc
 Engineers • Planners • Construction Manager
 2000 W. Sam Houston Pkwy S, Suite 1400,
 Houston, Texas 77042
 Phone: (713) 783-9700, Fax: (713) 783-8747
 TBPE Firm Registration No. F-4991

DATE: JANUARY 2016
 JOB NO. H822

DESIGNED BY: HF
 DRAWN BY: JH

SURVEYED BY: AMANI
 FB NO.: P-5784

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SOUTHWEST WASTEWATER TREATMENT
 PLANT IMPROVEMENTS PACKAGE 3

MCC BUILDING
 DEMOLITION PLAN (SHEET 1 OF 2)

WBS#: R-000265-0103-4

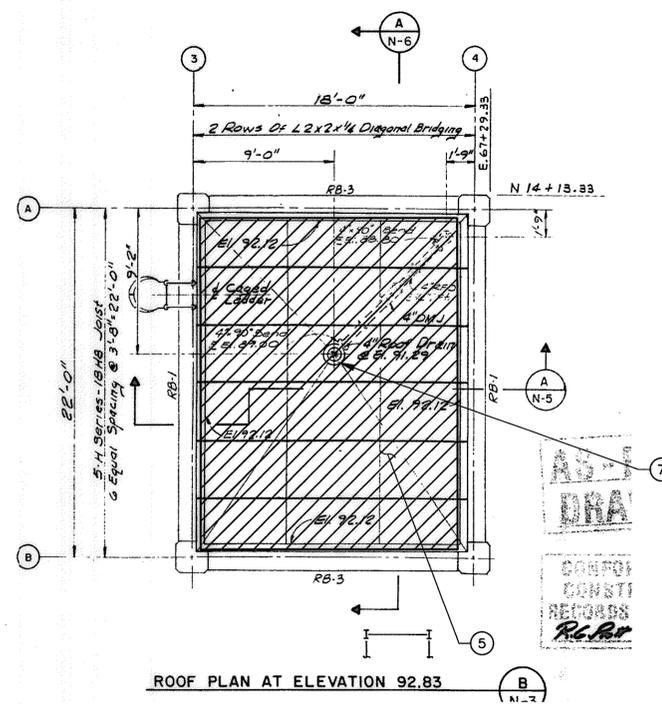
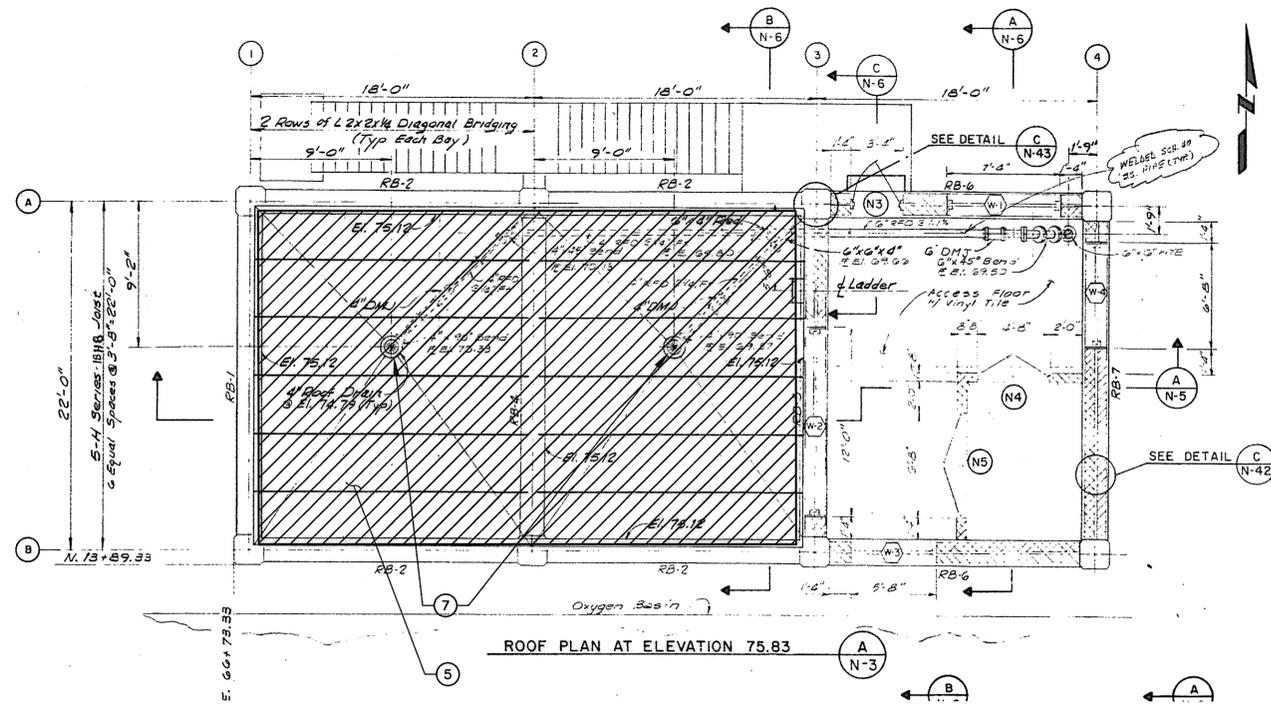
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 PLANS AND SECTIONS: AS SHOWN
 DETAILS: NOT TO SCALE

CITY OF HOUSTON PM

BILL ZOD, P.E.

S-4

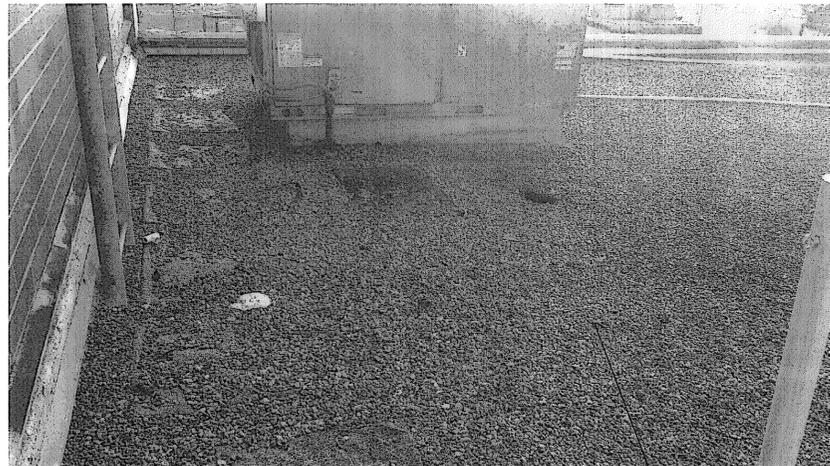
SHEET NO. 10 OF 131



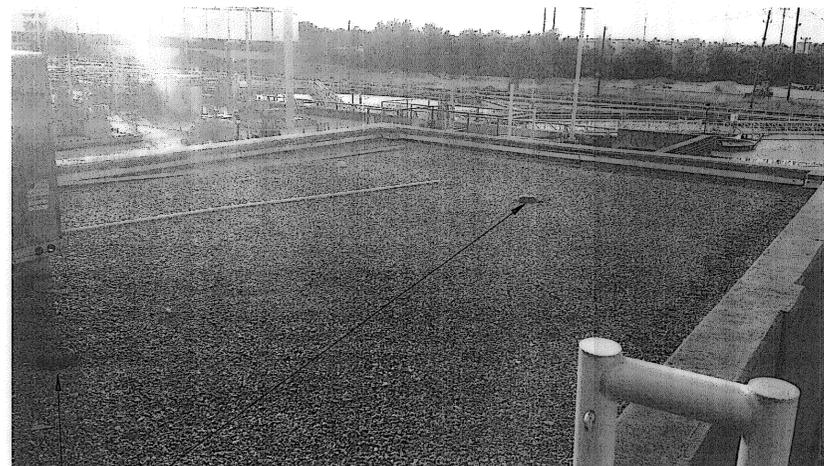
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GENERAL NOTES:

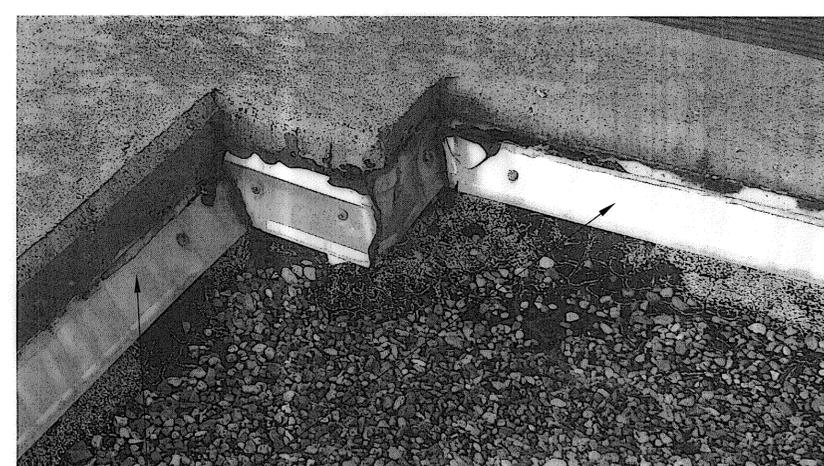
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EXIST MEMBRANE BUILT-UP ROOF
 PICTURE 4
 NTS -



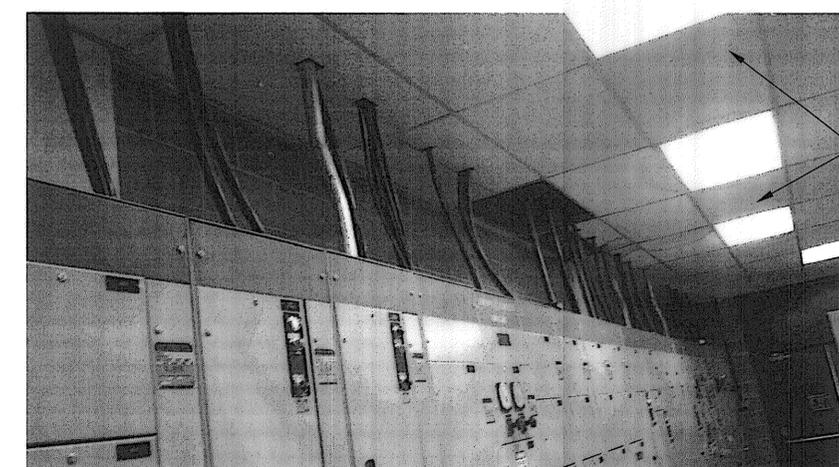
EXIST MEMBRANE BUILT-UP ROOF
 PICTURE 6
 NTS -



EXIST ROOF CORNER ALUMINUM CLIP
 PICTURE 7
 NTS -



EXIST DOUBLE LEAF DOOR
 PICTURE 8
 NTS -



EXIST CEILING TILES
 PICTURE 9
 NTS -

- BUBBLED NOTES:**
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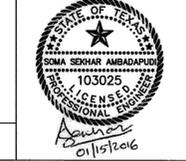
- NOTES:**
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1	ADDENDUM 1	KIT	3-7-16
REV. NO.	DESCRIPTION	APP'D	DATE

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 Houston, Texas 77042
 Phone: (713) 783-8700; Fax: (713) 783-8747
 TBE Firm Registration No. F-4991

DATE: JANUARY 2016
 JOB NO. H822
 DESIGNED BY: HF
 DRAWN BY: JH



CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SOUTHWEST WASTEWATER TREATMENT
 PLANT IMPROVEMENTS PACKAGE 3

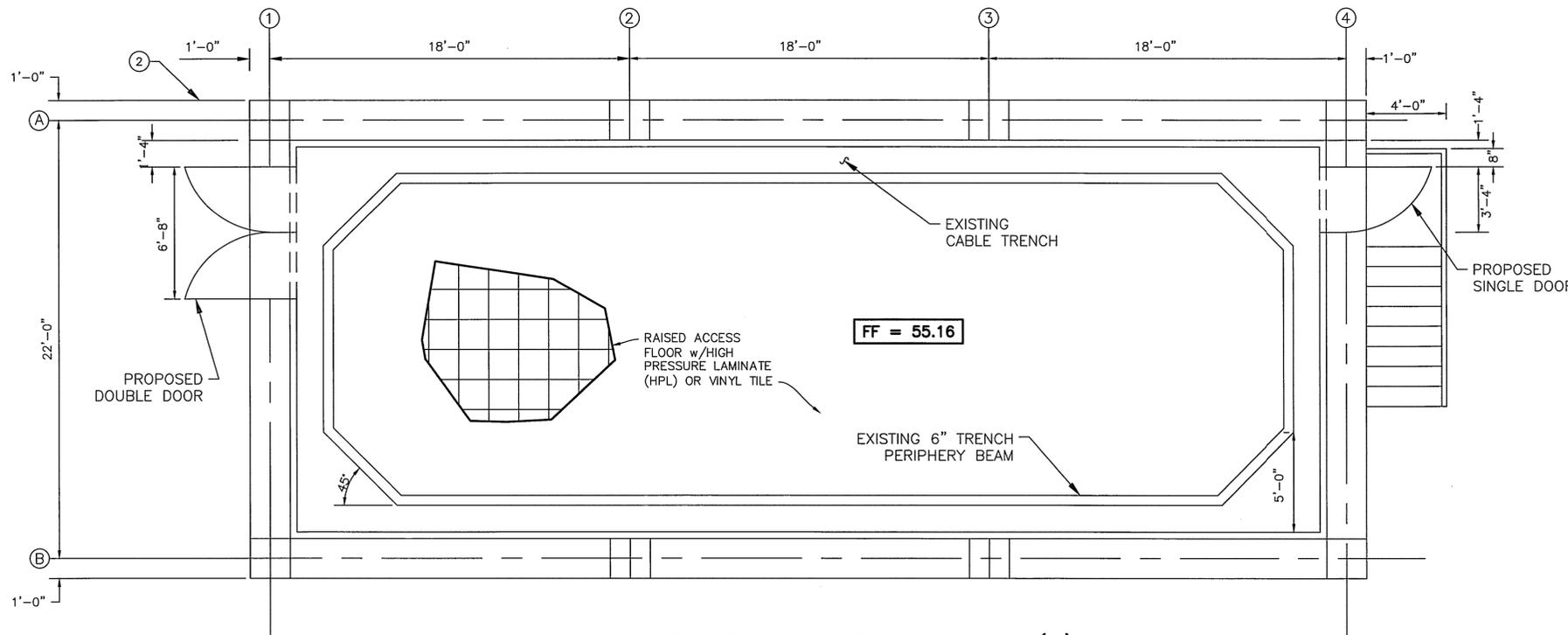
MCC BUILDING
 DEMOLITION PLAN (SHEET 2 OF 2)

WBS#: R-000265-0103-4	
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CITY OF HOUSTON PM BILL ZOD, P.E. <i>BZ</i>	
S-5	
SHEET NO. 11 OF 131	

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 PLOT BY: SAROU SHARMA | 1/13/2016 | R:373 Gupta | 1201-Southwest WWP | PROD:3.2, CAD:3.2.6, Struct:SW, WWP: S-04, S-05, MCC DEMO.dwg

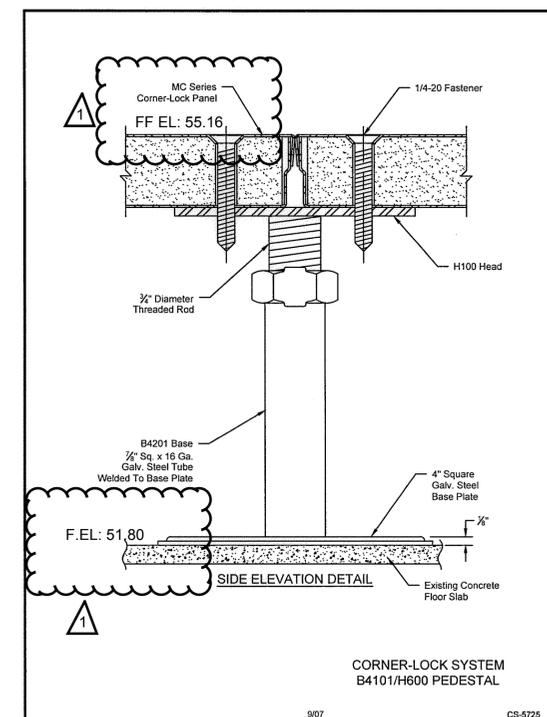
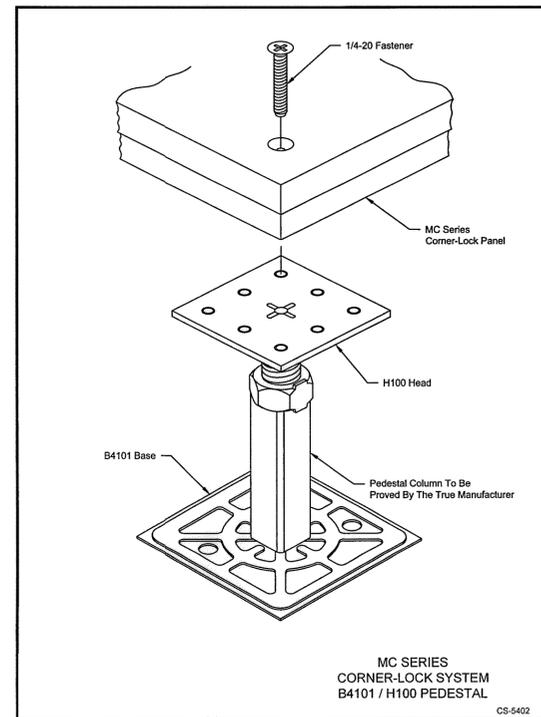
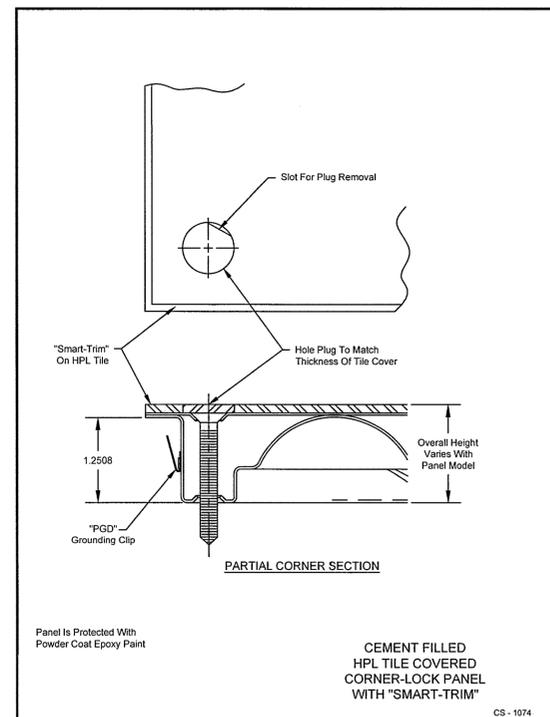
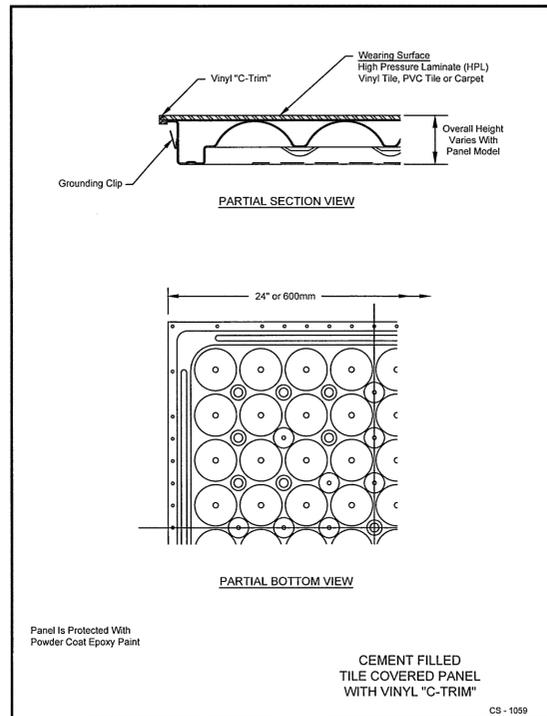


BENCH MARK:
 HARRIS COUNTY FLOODPLAIN RM #040150 A BRASS DISK ON BRIDGE
 OF NORTH BRASWOOD BOULEVARD & GRAYS BAYOU LOCATED ON CENTERLINE
 OF DOWNSTREAM SOUTH SIDE OF BRIDGE WALKWAY.
 ELEV.=53.17 (NAVD88 2001ADJ GEOD99)
 ELEV.=53.20 (NAVD88 GEOD12A)
 TEMPORARY BENCH MARK (TBM):
 TBM-Z A BOX CUT IN CONCRETE LOCATED OFF THE MOST
 NORTHERLY CORNER OF BUILDING MCC-B INSIDE CURB (AS SHOWN).
 ELEV.=48.82 (NAVD88 2001ADJ GEOD99)



NOTES:
 CONTRACTOR TO SUBMIT SHOP DRAWINGS OF RAISED
 ACCESS FLOOR SYSTEM SEALED AND SIGNED BY A
 REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF
 TEXAS FOR APPROVAL PRIOR TO PROCUREMENT AND
 INSTALLATION.

FLOOR PLAN AT ELEVATION 55.16(±)
 SCALE: 1/4"=1'-0"



REV. NO.	DESCRIPTION	APP'D	DATE
1	ADDENDUM 1	KIT	3-7-16

GAI
 Gupta & Associates, Inc.
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 Registration No. F-2593

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DATE: JANUARY 2016
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DESIGNED BY: HF
 DRAWN BY: JH

SURVEYED BY: AMANI
 FB NO.: P-5784

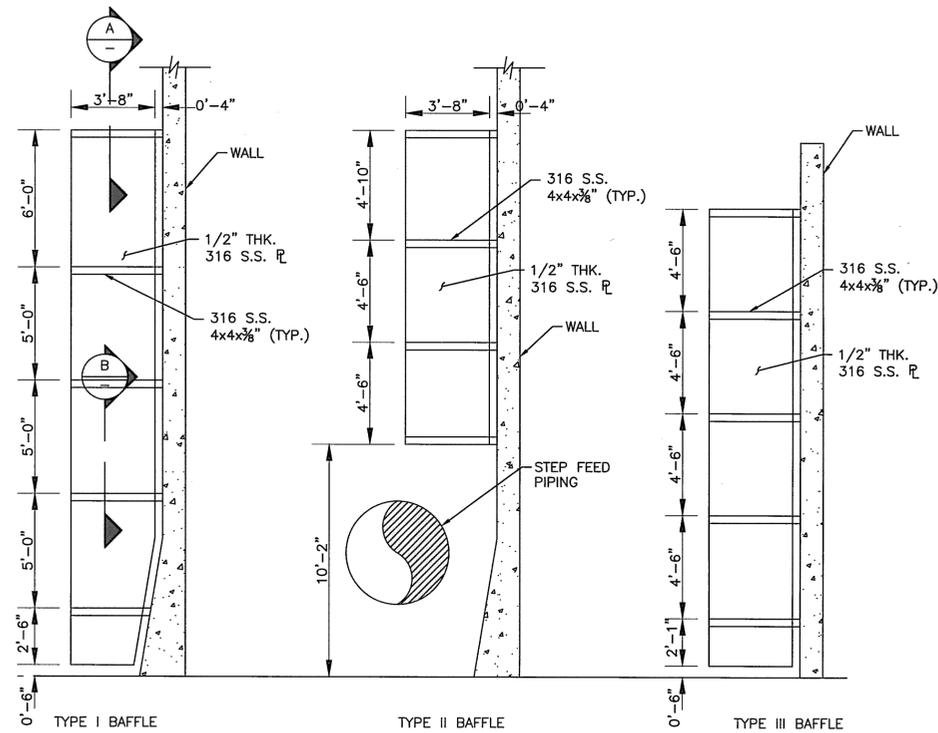
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

**SOUTHWEST WASTEWATER TREATMENT
 PLANT IMPROVEMENTS PACKAGE 3**

**MCC BUILDING
 RAISED FLOOR PLAN
 SECTIONS AND DETAILS**

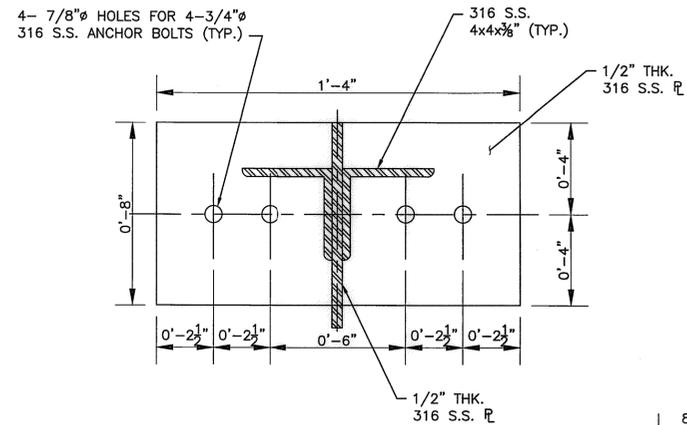
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 DETAILS: NOT TO SCALE
 CITY OF HOUSTON PM
 BILL ZOD, P.E.
 S-6
 SHEET NO. 12 OF 131

LAST SAVED BY: FSTERHENS | 1/5/2016 3:59 PM
 PLOT BY: SAROJ SHARMA | 1/12/2016 10:37:33 Gupta\1201-Southwest WWTP\PROD\3.2 CAD\3.2.6 Struct\SW WWTP S-06 MCC FLOOR.dwg

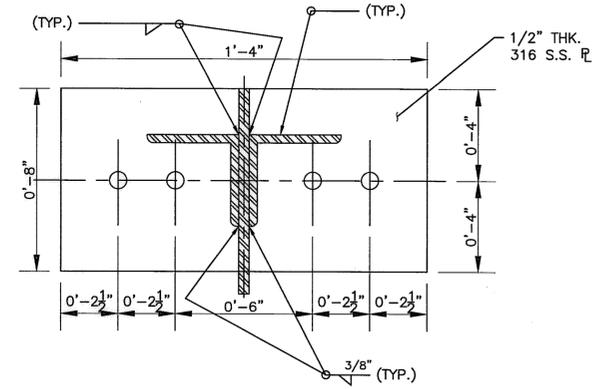


TYPICAL 316 STAINLESS STEEL ANTI-VORTEX BAFFLES

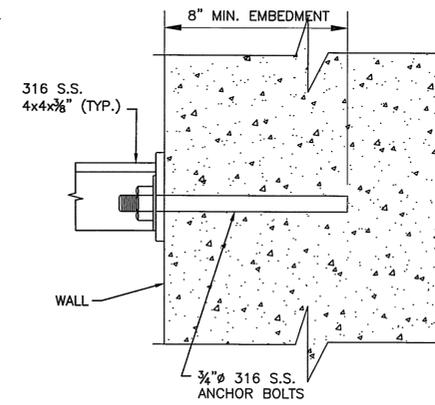
ELEVATION
1/4" = 1'-0"



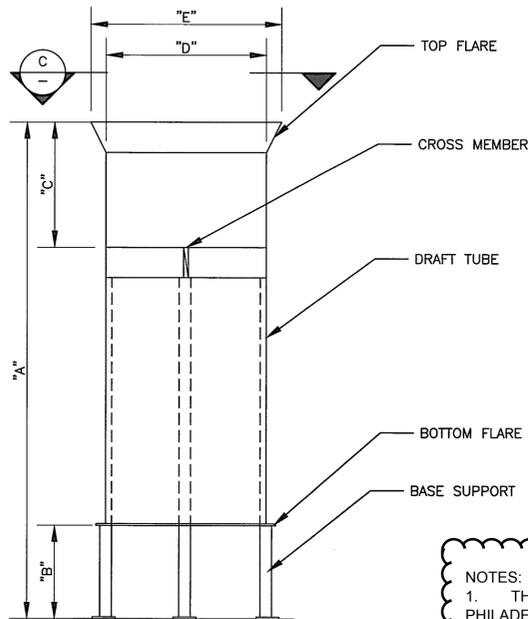
SECTION A
3' = 1'-0"



SECTION B
3' = 1'-0"

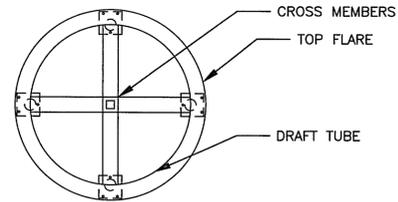


ANCHOR BOLT DETAIL
NTS

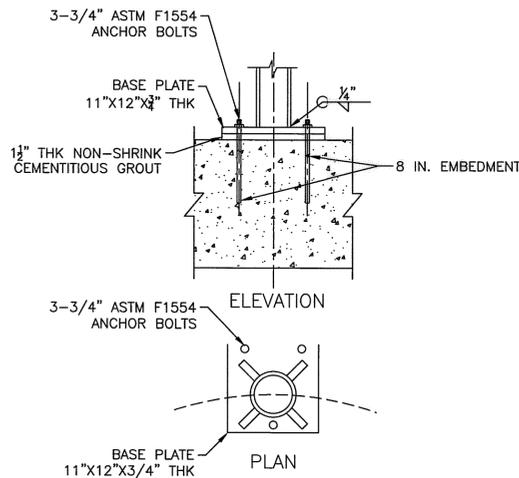


TYPICAL 316 STAINLESS STEEL DRAFT TUBE
ELEVATION
NTS

TYPICAL DRAFT TUBE DIMENSIONS (INCHES)					
SIZE	"A"	"B"	"C"	"D"	"E"
100-HP	261.5	49.3	66.0	84.0	100.0
75-HP	262.5	42.3	66.0	72.0	87.0
50-HP	261.5	33.3	66.0	63.0	78.0



SECTION C
NTS



TYPICAL 316-SS DRAFT TUBE ANCHOR PLATE
DETAIL
NTS

NOTES:
1. THE DIMENSIONS PROVIDED ARE BASED ON AVAILABLE RECORDS FROM PHILADELPHIA MIXING SOLUTIONS AND ARE NOT GUARANTEED TO BE ACCURATE AND ALL INCLUSIVE. THE SELECTED MECHANICAL AERATOR MANUFACTURER SHALL CERTIFY THE PROVIDED EQUIPMENT IS COMPATIBLE WITH THE EXISTING EQUIPMENT.

GENERAL NOTES:

- EXISTING STRUCTURES SHOWN ARE NOT GUARANTEED TO BE ACCURATE AND ALL INCLUSIVE. ALL EXISTING INFORMATION SHOWN IS APPROXIMATE, BASED ON AVAILABLE RECORD DRAWINGS, AND SHOULD BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION ACTIVITIES.
- ANY CONCRETE EXPOSED OR DAMAGED AS A RESULT OF DEMOLITION ACTIVITIES OR THE PROPOSED WORK SHALL BE REPAIRED.
- THE FOLLOWING EQUIPMENT WAS INSPECTED BY OTHERS IN 2015 AND IDENTIFIED AS DAMAGED OR MISSING FOR REPAIR OR REPLACEMENT.

DAMAGED DRAFT TUBES (DT) & ANTI-VORTEX BAFFLES (AVB)						
EQUIPMENT TYPE	REACTOR	STAGE	POSITION	SIZE / TYPE	DAMAGE	ACTION
DT	3	1	A	75-HP	1, 2, 3	REPAIR
DT	3	3	B	100-HP	3	REPAIR
DT	5	3	B	100-HP	2, 3	REPAIR
AVB	1	3	EAST WALL	I	4	REPLACE
AVB	1	4	EAST WALL	I	5	REPAIR
AVB	2	3	WEST WALL	I	4	REPLACE
AVB	5	3	NORTH WALL	II	4	REPLACE
AVB	5	3	SOUTH WALL	I	4	REPLACE

DAMAGE NOTES:

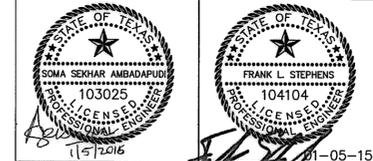
- LEGS MISSING, REPLACE LEGS.
- PORTIONS OF BOTTOM FLARE CRACKED OR TORN OFF, REPAIR FLARE.
- PORTIONS OF TOP FLARE TORN OFF, REPAIR FLARE.
- BAFFLES REMOVED OR MISSING, REPLACE BAFFLE.
- CONCRETE ANCHOR DAMAGED, REPAIR ANCHOR.

REV. NO.	DESCRIPTION	KIT APP'D	DATE
1	ADDENDUM 1		3-7-16

GAI
Gupta & Associates, Inc.
CONSULTING ENGINEERING
Registration No. F-2593

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TBPE Firm Registration No. F-4981

DATE: JANUARY 2016
JOB NO. H822
DESIGNED BY: FLS
DRAWN BY: JV



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SOUTHWEST WASTEWATER TREATMENT PLANT IMPROVEMENTS PACKAGE 3

REACTOR BASINS DRAFT TUBES AND ANTI-VORTEX BAFFLE WALL DETAILS

WBS#: R-000265-0103-4	
DRAWING SCALE:	
AS SHOWN	
CITY OF HOUSTON PM	
BILL ZOD, P.E. <i>BZ</i>	
M-6	
SHEET NO. 22 OF 131	

LAST SAVED BY: FSTEPHENS | 1/6/2016 1:55 PM
PLOT BY: FRANK STEPHENS | 1/6/2016 1:53:37
Gupta & Associates, Inc. | W:\P\PROD\3.2 CAD\3.2.7 Mech\375-1201-1201-1201.dwg

GENERAL NOTES:

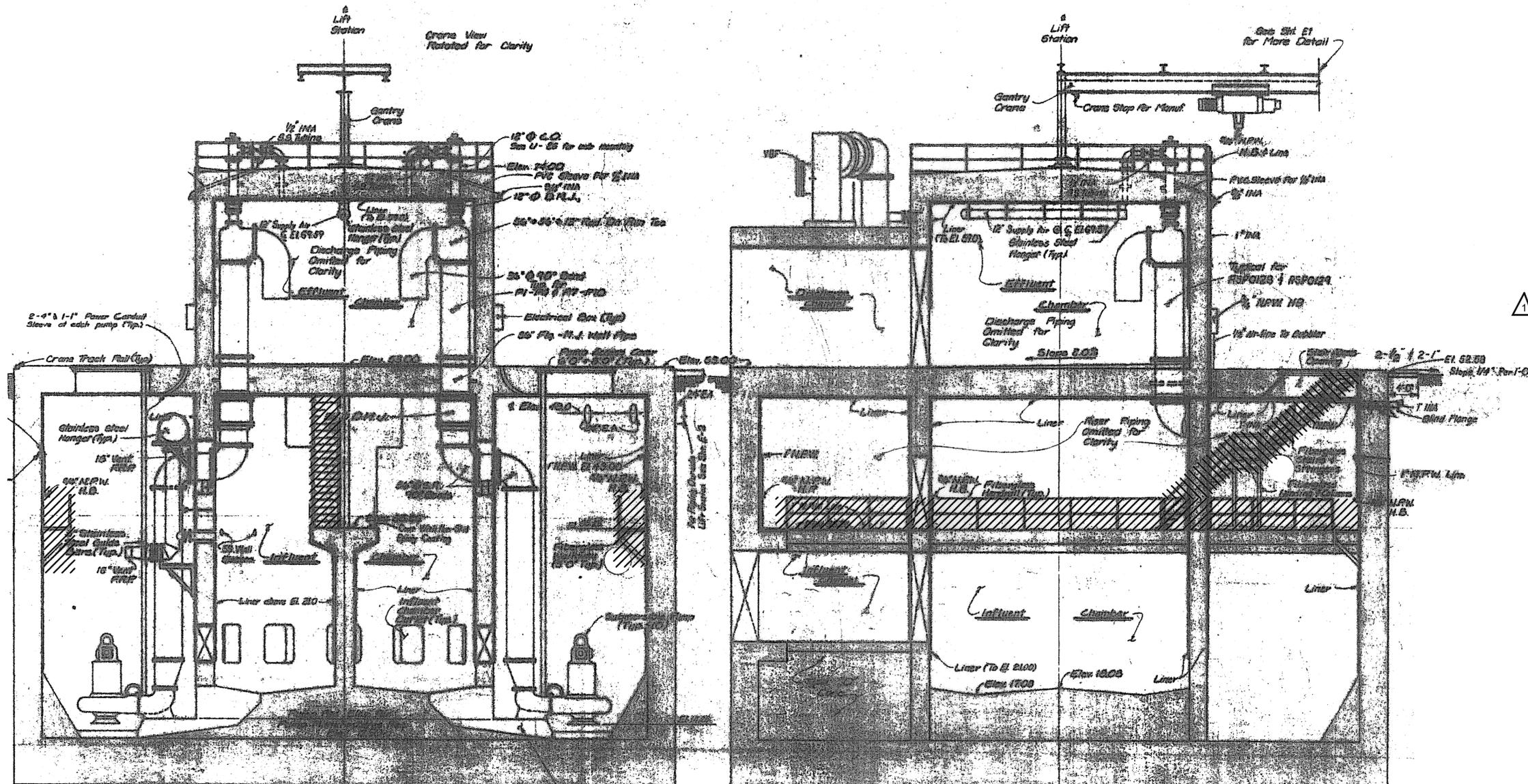
- EXISTING STRUCTURE AND UTILITY INFORMATION SHOWN IS NOT GUARANTEED TO BE ACCURATE AND ALL INCLUSIVE. ALL EXISTING INFORMATION SHOWN IS APPROXIMATE, BASED ON AVAILABLE RECORD DRAWINGS, AND SHOULD BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION ACTIVITIES.
- CONTRACTOR SHALL COORDINATE PLANS FOR DEMOLITION WORK WITH CITY OPERATIONS PRIOR TO ANY WORK OR ACCESS INSIDE THE LIFT STATION. WORK SHALL BE STAGED SUCH THAT ONLY ONE HALF OF LIFT STATION OPERATION IS OUT OF SERVICE AT ANY TIME.
- ANY CONCRETE EXPOSED OR DAMAGED AS A RESULT OF DEMOLITION ACTIVITIES SHALL BE REPAIRED AT CONTRACTORS EXPENSE.
- LIFT STATION IS A CONFINED SPACE.

LEGEND:



DEMOLITION NOTES:

- DEMOLISH STAIRS, HANDRAILS, CATWALK, AND ASSOCIATED SUPPORTS AND APPURTENANCES.
- DEMOLISH GROUT FILL OR CONCRETE PADS FLUSH WITH THE EXISTING CONCRETE DECK AND WITH A SMOOTH FINISH. REPAIR ANY CONCRETE DAMAGED OR EXPOSED DUE TO DEMOLITION WORK.
- DO NOT LEAVE ANCHORS OR REINFORCING STEEL EXPOSED BY DEMOLITION. GRIND OR CUT ANCHORS OR EXPOSED STEEL 2-INCHES BELOW CONCRETE SURFACE AND REPAIR CONCRETE SMOOTH AND FLUSH WITH THE SURROUNDING SURFACES.
- THE EXISTING LINER MATERIAL IS PVC TYPE. REPAIR OR PATCH LINER AT LOCATIONS WHERE CONCRETE IS EXPOSED OR LINER DAMAGED BY DEMOLITION WORK.



Details of Pump and Requirements to be Supplied by Pump Manufacturer.

EXISTING INFLUENT LIFT STATION
ELEVATION VIEW
NTS

1	ADDENDUM 1	KIT	3-7-16
REV. NO.	DESCRIPTION	APP'D	DATE

GAI
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TBPPE Firm Registration No. F-4991

DATE: JANUARY 2016
JOB NO. H822

DESIGNED BY: FLS
DRAWN BY: JV



SURVEYED BY: AMANI
FB NO.: P-5784

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

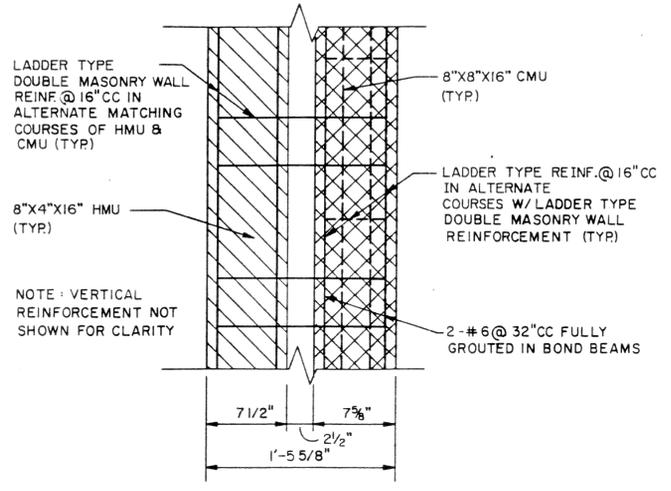
SOUTHWEST WASTEWATER TREATMENT
PLANT IMPROVEMENTS PACKAGE 3

INFLUENT LIFT STATION
SECTIONS
ACCESS STAIR DEMOLITION

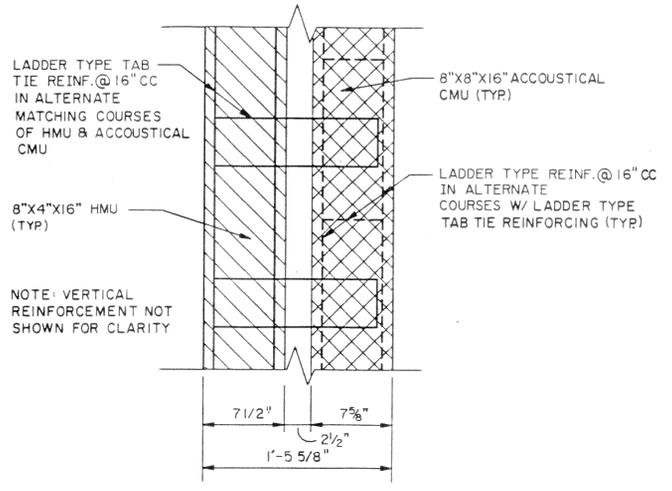
WBS#: R-000265-0103-4	
DRAWING SCALE:	
NOT TO SCALE	
CITY OF HOUSTON PM	
BILL ZOD, P.E.	
M-7	
SHEET NO. 23 OF 131	

LAST SAVED BY: FSTEPHENS | 1/6/2016 1:55 PM
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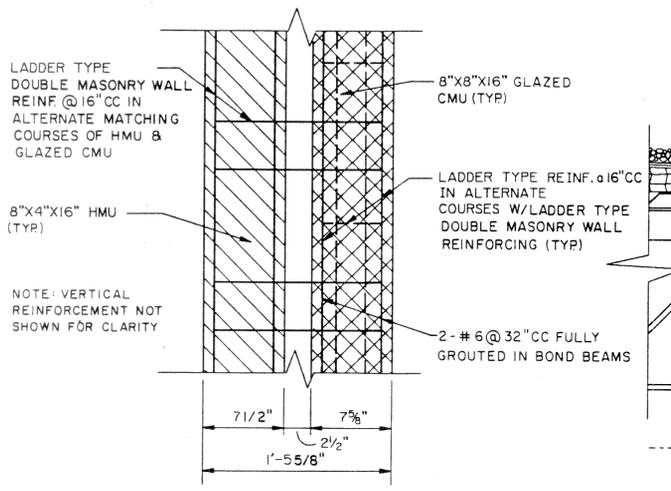
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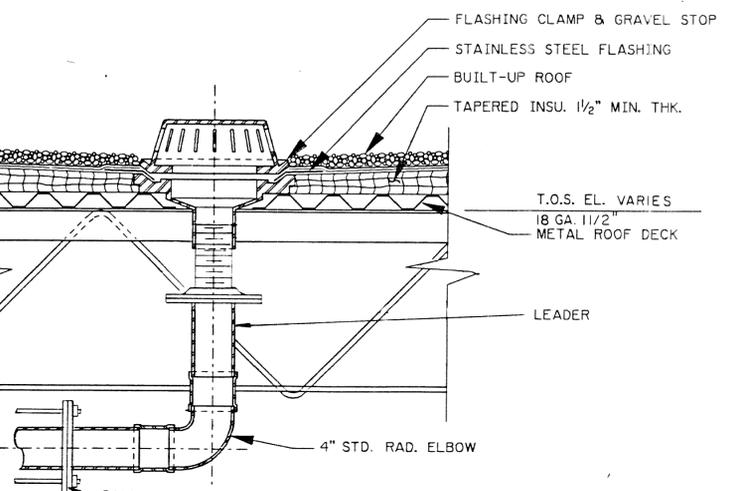
DETAIL A N-42 SCALE: 1 1/2"=1'-0"



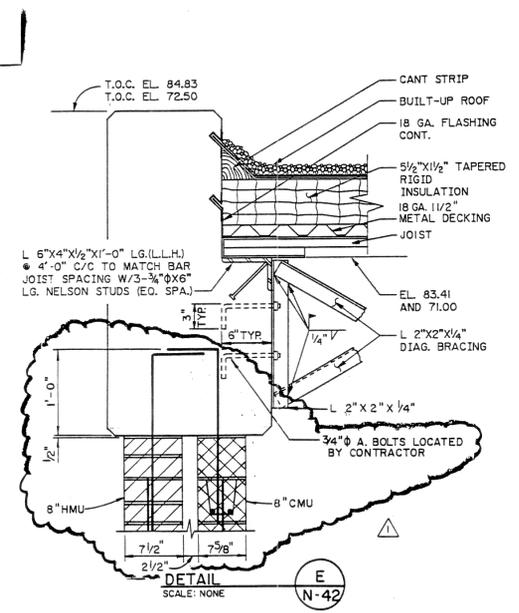
DETAIL B N-42 SCALE: 1 1/2"=1'-0"



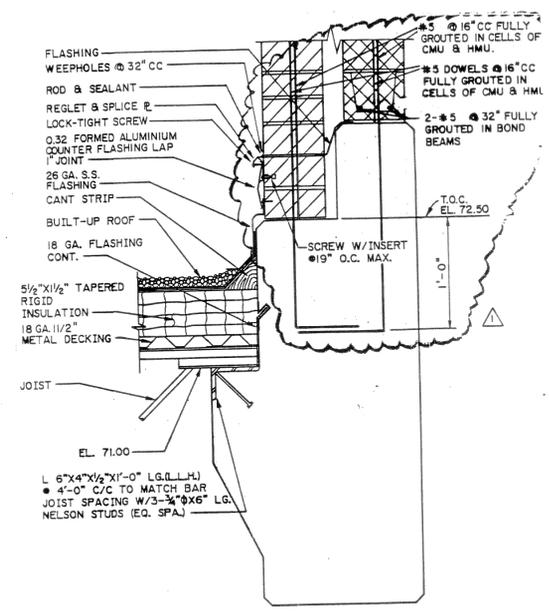
DETAIL C N-42 SCALE: 1 1/2"=1'-0"



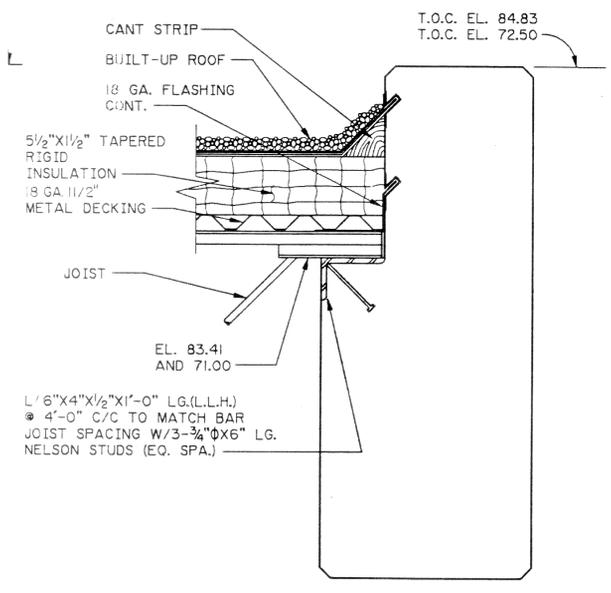
ROOF DRAIN DETAIL D N-42 SCALE: 3"=1'-0"



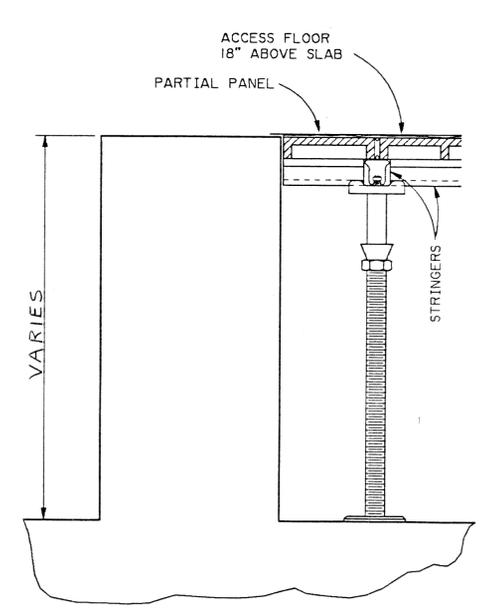
DETAIL E N-42 SCALE: NONE



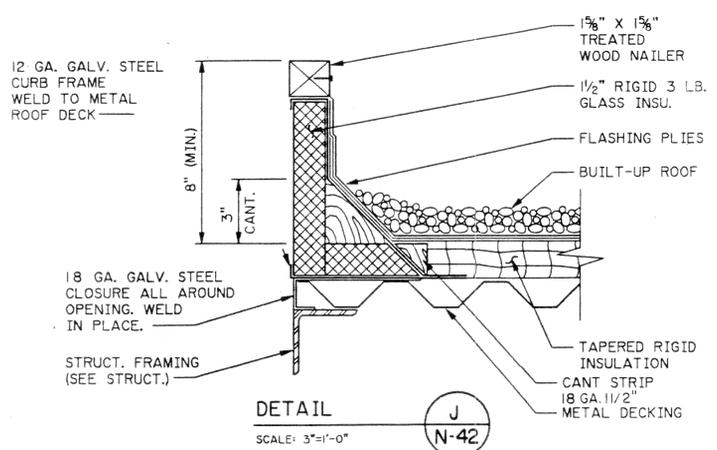
DETAIL F N-42 SCALE: 1 1/2"=1'-0"



DETAIL G N-42 SCALE: 1 1/2"=1'-0"



DETAIL H N-42 SCALE: 3"=1'-0"



DETAIL J N-42 SCALE: 3"=1'-0"

ADDENDUM 3 FIGURE 32

ADDENDUM 3 FIGURE 31

AS-BUILT DRAWING

CONFORMED TO CONSTRUCTION RECORDS DRAWING R.G. Platt

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS SOUTHWEST WASTEWATER TREATMENT PLANT WASTEWATER DIVISION JOB NO. 3477-2

ARCHITECTURAL DETAILS

RECOMMENDED FOR APPROVAL Binkley & Holmes, Inc. CONSULTING ENGINEERS



APPROVED

Approval signatures for Wastewater, Water, Storm Sewer, and Asst. Director.

DESIGNED BY: M.L.Y. SCALE: AS SHOWN DRAWN BY: P.E.C. DATE: JAN. 1987 CHECKED BY: O.E.S. DRAWING NO. 28655 SHEET N-42 SHEET NO. 301 OF 490

On Plan Sheet N-42 (301 of 490) the access floor support Detail H/N-42, shows 1'-6" but should say varies.

On Plan Sheets N-3, N-5, N-6, N-13, N-14, N-15, N-16, N-21, N-22, N-23, N-24, N-25, N-26, N-27, N-28, N-29 and N-30 all above slab Roof Drain Piping shall be changed from Ductile Iron and Soil Pipe as shown to welded Schedule 40 Stainless Steel Pipe in accordance with Specification Section 15 063. The connection to the Roof Drain Fixture shall be made with a threaded connection stainless steel riser welded to the Schedule 20 main piping. The roof drain piping shall be rerouted such that no piping is routed parallel to and directly over any installed electrical or instrumentation cabinetry. Support all roof drain piping at maximum 10'-0" spacing in accordance with specification 15 094 and 15 063.

On Plan Sheets N-1 through N-42 (Sheets 261 through 301 of 490) add vapor barrier under seal slab on all buildings.

On Plan Sheets N-1 through N-44, S-1 through S-28 and G-35 minimum 6" thick kraft faced Batt insulation with vapor barrier shall be installed against the interior face of the metal or precast concrete roof deck. The insulation shall be wired in place with galvanized 1" hexagonal pattern wire netting. The netting shall be attached to the roof deck with self tapping screws or power driven concrete nails.