

ORIGINAL

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CITY OF NEWBERG
NEWBERG, OREGON

SPECIFICATIONS
AND
CONTRACT DOCUMENTS

FOR THE CONSTRUCTION
OF
SANITARY SEWERAGE SYSTEM IMPROVEMENTS
SCHEDULE F - SLUDGE COMPOSTING FACILITY

ENVIRONMENTAL PROTECTION AGENCY PROJECTS

NO. C-410494-03

NOVEMBER 1985

AMENDMENT JULY 1992

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SLUDGE COMPOSTING FACILITY

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SETTLEMENT AGREEMENT AND CONTRACT AMENDMENT

THIS AGREEMENT made this _____ day of April, 1992, by and between CITY OF NEWBERG (hereinafter "City"), and ASHBROOK-SIMON-HARTLEY CORP. (hereinafter "Ashbrook").

RECITALS:

City and Ashbrook entered into a contract (hereinafter "the Contract") dated May 19, 1986, for the Sludge Compost Facility in Newberg, Oregon (hereinafter "Facility"); and

Certain disputes arose between the parties resulting in litigation being instituted; and

Without admitting any liability with respect to any of the issues in dispute, the parties desire to resolve such disputes as herein provided.

NOW, THEREFORE, IT IS AGREED:

1. Ashbrook agrees to demolish, design, rebuild and complete construction of the Facility as specified in Exhibit A and in accordance with the Contract Documents as defined in Exhibit B, all at no cost to City, except for those circumstances permitting additional compensation for reimbursement of costs under the terms of the Contract Documents and for those reimbursed costs pursuant to paragraph 7. Ashbrook will have sole responsibility for the design and construction of the rebuild and completion of the Facility according to the Contract Documents.

2. Ashbrook agrees to perform the work relating to the equipment as specified in Exhibit C, at no cost to City. If the parties agree to delete any of the

work relating to the equipment in Exhibit C, City shall be entitled to a credit for the estimated cost of the work relating to such equipment as described on Exhibit C. This credit shall be applied to the cost of any changes (improvements) under paragraph 7.

3. The Engineer for the Facility will be designated by the City. Until such designation, if any, the City's Public Works Director will act as the Engineer.

4. The work will be commenced immediately upon execution of this Agreement by all parties. It will be substantially completed within 396 calendar days from the date the work is to commence. The work shall be finally completed (including the satisfactory completion of all performance tests) 488 calendar days from the date the work is to commence. The work shall proceed in general accordance with the schedule on Exhibit D.

5. Ashbrook agrees to pay City upon execution of this Agreement the amount of \$130,771.00. City acknowledges receipt of such payment.

6. Ashbrook guarantees all labor, materials and equipment and other work performed by Ashbrook will be free of defects and in accordance with the Contract, as modified herein, for a period of one year from Substantial Completion.

7. It is recognized by the parties that the City may make certain changes (improvements) during the course of the rebuild of the Facility. In the event any changes are made, City agrees to pay Ashbrook for such changes in accordance with the Contract Documents and the rates outlined in Exhibit E.

City further agrees, upon the ordering of any additional work to be performed by Ashbrook under the terms of the Contract Documents, to place the amount due for such work in the separate interest-bearing City account in the

Local Government Investment Pool specified in Exhibit F ("Escrow Account"), within ten (10) days from the date such work is ordered. Any interest earned on such sums will accrue to the City until Ashbrook is entitled to be paid for such work pursuant to the terms of the Contract.

City will notify Ashbrook within ten (10) days of all such deposits in the Escrow Account. In the event such deposit is not made, Ashbrook may suspend work until it is made.

8. The parties agree that the amount of \$171,876 (\$140,126 in retainage and \$31,750 (see letter agreement as to \$3,516 Ashbrook claim) in other amounts earned) is currently held by the City as the balance of the original Contract Price for the Facility. City agrees to place such funds in the Escrow Account. The balance of the Contract Price will be paid at the time final payment is due. Ashbrook will be entitled to interest earned on the retainage from February 24, 1992 until final payment is due.

Ashbrook is not entitled to any further payment for the rebuild and completion of the Contract, except for those circumstances permitting additional compensation for reimbursement of costs under the terms of the Contract Documents and for those reimbursed costs pursuant to paragraph 7.

9. Ashbrook agrees that the Facility, when completed, shall meet the performance standards specified in Exhibit G. Except as modified by Exhibit G, all performance standards from the Contract shall remain in full force and effect. Compliance with the performance standards shall be determined pursuant to the performance testing procedures specified in Exhibit H.

10. City releases Ashbrook from any obligation to pay life cycle costs pursuant to the Contract, as those costs are defined in paragraphs 8 and 9 of the Contract Bid Form.

11. In the event Ashbrook, during performance of the Contract, as amended, requests a response from the City on any issue relating to the Facility or Contract Documents, City will respond to such request within fifteen (15) days. In the event such information is necessary for construction to proceed and in the event City fails to so respond, Ashbrook may suspend performance until City responds to such request.

12. Except as modified herein, the Contract Documents for the Facility remains in full force and effect. Ashbrook agrees to complete the Facility according to the Contract Documents as amended by this Agreement. All bonds and guarantees remain in full force and effect, and apply to the completion of the work under this Agreement.

13. Except for the obligations of the parties under this Agreement, the parties each release the other and their officers, agents and employees from any and all claims of any kind as of the date hereof.

14. The parties agree to dismiss the litigation pending in the United States District Court for the District of Oregon with prejudice and without costs.

15. In the event there are any disputes on the Project with respect to Ashbrook's work or the parties are unable to agree upon the amount to be paid to Ashbrook for any new improvements to be performed by Ashbrook, Ashbrook shall proceed with the work in accordance with written instructions issued by Owner and perform such disputed work as follows:

A. Ashbrook will proceed in accordance with such instructions and perform all such work for all disputed items with an individual cost of less than \$50,000 so long as the total aggregate amount for all disputes, whether for one dispute or multiple disputes, does not exceed \$100,000. In the event that any single dispute exceeds \$50,000 or the total aggregate amount for all disputes, whether for one dispute or multiple disputes, exceeds \$100,000, Ashbrook will continue with the work pending a resolution of the dispute if City deposits in the Escrow Account an amount equal to the disputed amount as agreed upon by the parties.

B. In the event the parties cannot agree to the disputed amount to be placed in the Escrow Account, the parties will select one of the parties on Exhibit I solely to determine the amount in dispute and to be placed in the Escrow Account. Such decision will be based solely on documentation forwarded by the parties within three (3) working days of the date of the dispute. The decision will be made as soon as possible after receipt of all documentation. Ashbrook will proceed with the work while the amount placed in escrow is being determined and continue with the work so long as the disputed amount, as determined by such third party, is placed in escrow by the City within five (5) days of receipt of any such decision.

C. The party selected will only determine the amount to be placed in escrow while the work proceeds. City will notify Ashbrook within ten (10) days of all such deposits in the Escrow Account. In the event such deposit is not so made, Ashbrook may suspend work until it is made.

16. In the event of any dispute between the parties, it shall be determined by litigation unless the parties otherwise agree.

17. In the event of any dispute arising out of or relating to this Agreement, the prevailing party will be entitled to its reasonable attorney fees and expenses at trial and upon any appeal.

18. This constitutes the entire settlement agreement between the parties, supersedes all oral or written prior or contemporaneous agreements, and shall not be modified except by a document and signed in writing by the parties.

19. It is understood that this Agreement is not binding on Ashbrook until and if it has been approved by Federal Insurance Company and Simon Engineering, P.L.C.

CITY : CITY OF NEWBERG

APPROVED AS TO FORM:
CITY OF NEWBERG

By: Terrance D. Mahan
City Attorney

By: Elvern Hall
Elvern Hall
Mayor

By: Duane R. Cole
Duane Cole
City Manager

ASHBROOK : ASHBROOK-SIMON-HARTLEY CORP.

By: _____

Title: _____

APPROVED:

FEDERAL INSURANCE COMPANY

By: _____

APPROVED:

SIMON ENGINEERING, P.L.C.

By: _____

DEMOLITION, REDESIGN AND REBUILD

Ashbrook shall demolish the existing two tunnel reactors and aeration gallery area of the Facility. As a part of the demolition, Ashbrook will attempt to salvage and reuse equipment and materials if such salvaged equipment and materials comply with the Contract specifications. Ashbrook shall then design and rebuild this portion of the Facility structure, including the installation of all related aeration, mechanical and electrical equipment. The design of the rebuild of the two new tunnel reactors will be in accordance with Ashbrook's latest (1992) design criteria. Ashbrook shall perform this demolition, design and rebuild at no cost to the City.

1. Demolition: The existing concrete tunnel reactors and aeration gallery will be demolished. This includes demolishing the roof, four walls, floor, push walls and footings. The structural steel penthouse, lighting, electrical control panels and items, aeration piping, aeration blowers, and any other equipment and concrete embeds will be saved, refurbished and re-used if at all possible.

2. Concrete Structural Re-Design: The criteria for the concrete structural redesign of the two new tunnel reactors will be as follows:

- a. ACI Standard 350R-89 shall be the primary standard used with ACI 318, for design items not covered by ACI 350R. Where conflicts occur, ACI 350R-89 shall control.
- b. The Z-Factor of 115 shall be used. This is the factor for sanitary exposure; which is defined as, watertight structure, pH > 5.0, sulfates < 1500 ppm.
- c. The design life is 50 years.
- d. Minimum ratio of shrinkage and temperature reinforcing shall be as shown on Figure 2.5 of ACI 350R-89.
- e. Minimum specified 28-day compressive strength of concrete shall be 5,000 psi.
- f. The service load hydraulic line pressure to all of the rams for the reactor door shall be 1,900 psi. The design shall make provisions for possible short durations of hydraulic line pressures up to 115 percent of this value - using higher allowable stresses.

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Exhibit "A"

ADDENDUM TO STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

ARTICLE I - DEFINITIONS

- A. CHANGE THE DEFINITION OF CONTRACT DOCUMENTS to include (i) those contract documents defined in Article 1 of the Standard General Conditions of the Construction Contract, (sometimes hereafter referred to as "Old Documents") and to also include (ii) the Settlement Agreement between OWNER and CONTRACTOR, dated April 3, 1992, along with Exhibits and Schedules attached thereto, this Addendum, the Addendum to Supplemental Conditions, and the ⁰⁰⁸⁰⁰ specifications and designs to be written and drawn pursuant to the Settlement Agreement, (all sometimes hereinafter referred to as "New Documents"). Should a conflict arise from the provisions of the Old Documents and from the provisions contained in the New Documents, then the provisions of the New Documents shall prevail.
- B. CHANGE THE DEFINITION OF ENGINEER to read:
"ARCHITECT/ENGINEER/OWNER." Whenever "ENGINEER" is called out in the contract documents, it shall mean ARCHITECT/ENGINEER/OWNER or its designee.

ARTICLE 2

BASIS FOR PROGRESS PAYMENTS

- A. In Paragraph 2.6.3, beginning on the seventh line, delete the words "overhead and profit" and add the words "general and administrative overhead charges, and engineering fees charged in accordance with the engineering fee schedule attached to the Settlement Agreement between OWNER and CONTRACTOR",...

ARTICLE 3 - PRELIMINARY METHODS

- A. In Paragraph 3.2, delete the first sentence and revise it to state as follows: "It is the intent of the Contract Documents to describe a project to be constructed in accordance with the Contract Documents, and the plans and specifications to be designed as the project proceeds, as per the Settlement Agreement between OWNER and CONTRACTOR."
- B. In Paragraph 3.2, on the sixth line, after the words "the intended result", insert "as specified in the Settlement Agreement and in accordance with the plans and specifications to be designed"...

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- C. In Paragraph 3.6, add the words, "or KCM" after the word "Engineer" in the seventh line and add the following:

"OWNER acknowledges that CONTRACTOR has a proprietary right to the ownership and re-use of the plans, specifications and contract documents prepared by CONTRACTOR and its consultants, subcontractors, vendors, material men and suppliers including all drawings related thereto, for utilization in connection with this project, or any other project. CONTRACTOR and OWNER acknowledge that OWNER has a non-exclusive rights to use plans, specifications and contract documents, including drawings prepared by CONTRACTOR and its consultants, subcontractors, vendors, material men and suppliers for this specific project only."

ARTICLE 5 - BONDS AND INSURANCE

- A. In Paragraph 5.12, on the third line, after the second reference to the word "OWNER", delete the words "as trustee for the insureds, as their interests may appear" and insert the words "and CONTRACTOR."
- B. In Paragraph 5.12, on the sixth line, immediately after the word "OWNER", insert the words "and CONTRACTOR."
- C. In Paragraph 5.13, delete the entire paragraph and insert the following:

"OWNER and CONTRACTOR shall adjust and settle any loss with the insurers."

- D. Add 5.13(a): "Notwithstanding anything contained hereinabove in Paragraphs 5.12 and 5.13, CONTRACTOR may pursue actions against its insurers in connection with past failures of the Newberg facility, and OWNER waives any right to any of the proceeds recovered as a result of CONTRACTOR's efforts to pursue such claims."

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

- A. In Paragraph 6.7.3, prior to the first sentence, insert the following:

"OWNER and CONTRACTOR acknowledge that the Newberg project was originally designed for a Taulman Weiss system. The system being installed pursuant to the new contract documents is an Ashbrook system. All references below to

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proposed substitutes shall refer to the Ashbrook system and not the Taulman Weiss system."

- B. Delete the last two sentences of 6.7.3 and insert the following:

"CONTRACTOR shall be under no obligation to reimburse OWNER for any charges of ENGINEER or anyone employed by ENGINEER for evaluation of any proposed substitutes."

- C. Paragraph 6.11, delete the entire paragraph.

- D. In Paragraph 6.14.2, add the following sentence:

"Any costs incurred by CONTRACTOR, resulting from changes in laws and regulations which become effective after the date of the Settlement Agreement between OWNER and CONTRACTOR shall be borne by OWNER. Such costs are to be incorporated in a subsequently issued change order following negotiations by OWNER and CONTRACTOR as to the effect of such changes."

- E. In Paragraph 6.15, delete the word "CONTRACTOR" in the first line, and insert the word "OWNER." Insert the word "Oregon" before the word "sales"; add the word "and" before the word "use"; delete the phrase "and other similar".

- F. In Paragraph 6.16, add the following sentence at the end of the paragraph:

"CONTRACTOR may use the existing buildings on the project site to house its offices and CONTRACTOR may use OWNER's facilities for water, existing telephone lines, heat, toilet and electrical power."

- G. In the Paragraph immediately after Paragraph 6.20.3, and prior to 6.21, which commences "CONTRACTOR shall comply with all applicable laws", on the twentieth line, immediately after the word "liable", delete the following: "and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR." Insert the following before the last sentence: "OWNER and CONTRACTOR shall each be respectively responsible for the percentage of damage attributable to their own fault and/or acts of negligence, whether in whole or part. OWNER's and CONTRACTOR's responsibility for their respective acts of negligence or fault may be determined to be less than 100% and more than 0%,

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as appropriate under the circumstances, taking into account the parties' comparative fault or negligence."

- H. In Paragraph 6.26, add the following sentence to the end of the paragraph: "Notwithstanding anything contained herein to the contrary in Paragraph 6.26, in the event OWNER desires new improvements as per the Settlement Agreement and New Documents, then the ENGINEER must approve the shop drawings and plans prior to the commencement of such work by the CONTRACTOR, and such review and approval by ENGINEER shall constitute review and approval by OWNER, and an acknowledgment by OWNER that, to the extent the design (and any installation in conformance with such design) of such new improvements affect the performance of the other systems installed on the project, CONTRACTOR will not be responsible for the effect of such modifications and changes to the performance of the systems being installed on the project site, so long as CONTRACTOR advises ENGINEER of any adverse effect CONTRACTOR is aware of, or in the exercise of reasonable care, should be aware of as a result of such modifications and changes."
- I. In Paragraph 6.28, add the following sentence to the end of the paragraph: "In the event OWNER has requested new improvements, OWNER will be responsible for engineering fees and other fees related thereto. Engineering fees shall be charged in accordance with Exhibit "E" attached to the settlement documents executed by OWNER and CONTRACTOR."
- J. In Paragraph 6.30, delete the following words from the last four lines of the paragraph: "regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by law and regulations regardless of the negligence of any such party." In lieu of such deletion, immediately after the word "liable", insert the following: "...except to the extent that such claim, damage, loss or expense is attributable to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or to anyone whose acts either of them may be liable."

ARTICLE 8 - OWNER'S RESPONSIBILITIES

- A. In 8.1, delete the entire paragraph and state the following: "OWNER may communicate directly with CONTRACTOR, or may do so through the ENGINEER."

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ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

- A. In Paragraph 9.10, on the first line, immediately after the word "ENGINEER", insert "and CONTRACTOR." Delete the remaining paragraph after the first sentence.
- B. In Paragraph 9.11, delete the first sentence. On the ninth line, after the phrase "ENGINEER in writing", insert a period and delete the remainder of the paragraph.
- C. Delete Paragraphs 9.12 and 9.13.

ARTICLE 10 - CHANGES IN THE WORK

- A. In Paragraph 10.4.3, delete the remainder of the paragraph following "changes in the contract price or contract time." Also delete the carryover paragraph of 10.4, which appears immediately after Paragraph 10.4.3.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

- A. In Paragraph 11.2, on the sixteenth line, after the words "shall be determined", delete the words "by ENGINEER."
- B. In Paragraph 11.4, on the fourth line, after the words "such costs shall", delete the remainder of the paragraph and insert the following: "be in amounts which include only the following items:"
- C. In Paragraph 11.4.1, add the following sentences to the end of the paragraph: "Notwithstanding anything contained hereinabove in Paragraph 11.4.1, engineering services for new improvements performed by CONTRACTOR will be charged in accordance with the schedule of hourly engineering charges attached to the Settlement Agreement executed by OWNER and CONTRACTOR."
- D. In Paragraph 11.5, on the second line, delete the colon, add a comma after the words "the following" and then add the following words: "unless applicable as a part of the cost of the work for new improvements which OWNER may request, as per the Settlement Agreement executed by OWNER and CONTRACTOR."
- E. In Paragraph 11.6 on the second line, immediately after the word "overhead", delete the words "and profit."

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- F. In Paragraph 11.8, insert the following words at the beginning of the first sentence: "Except for the work related to new improvements which OWNER may request pursuant to the settlement documents executed between OWNER and CONTRACTOR." On the fifth line, after the word "allowances", delete the words "as may be acceptable to ENGINEER."
- G. In the paragraph preceding 11.9.1, which is a carryover and continuation of Paragraph 11.8, on the top of Page 24, add the following at the end of the paragraph: "Appropriate change orders shall also be issued to reflect actual amounts due CONTRACTOR on account of work which falls into the category of new improvements, and the contract price shall be correspondingly adjusted, as required by the Settlement Agreement executed by OWNER and CONTRACTOR."

ARTICLE 12 - CHANGE OF CONTRACT TIME

- A. In Paragraph 12.1, delete the first sentence and insert the following: "The contract time shall be that stated in the Settlement Agreement executed by OWNER and CONTRACTOR, and thereafter, may only be changed by a change order or a written amendment."

ARTICLE 13 - WARRANTY AND GUARANTEE. TESTS AND INSPECTIONS: CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

- A. In Paragraph 13.1, in the second line, after the word "OWNER", delete the words "and ENGINEER". On the third line, after the words "Contract Documents", insert "as newly defined in this Addendum".
- B. In Paragraph 13.11, add a new sentence follows:
"In the event a dispute exists between ENGINEER/OWNER and CONTRACTOR regarding defective work, then ENGINEER/OWNER and CONTRACTOR shall resolve such dispute in accordance with the remedies provisions provided for in the Settlement Agreement executed by OWNER and CONTRACTOR."
- C. In Paragraph 13.12, add a new sentence as follows: "Any disputes between OWNER and CONTRACTOR regarding such defective work and the costs associated therewith shall be governed by the remedies provisions of the Settlement Agreement executed by OWNER and CONTRACTOR."

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- D. In Paragraph 13.13, add the following provisions: "In the event a dispute exists between OWNER and CONTRACTOR regarding the cost of such defective work, then OWNER and CONTRACTOR shall comply with the remedies provisions contained in the Settlement Agreement executed by OWNER and CONTRACTOR."
- E. In Paragraph 13.14, add the following: "In the event CONTRACTOR and OWNER dispute any costs associated with OWNER's correction of such defective work, then in that event, OWNER and CONTRACTOR shall be governed by the remedies provisions of the Settlement Agreement executed by OWNER and CONTRACTOR."
- F. Notwithstanding anything to the contrary in Paragraphs 13.11 through 13.14, in the event of any defects in CONTRACTOR's work, CONTRACTOR will be responsible for all costs of repair or replacement and the cost of disposal of sludge (provided such disposal is done in a reasonably cost-effective way and CONTRACTOR is provided a credit for any expenses not incurred by City as a result of such defects, repair or replacement) and all other direct costs, arising out of such defects. CONTRACTOR will not be responsible for lost profits of OWNER or other consequential or punitive damage.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

- A. In Paragraph 14.1, on the first line, after the word "values", insert the words "and the costs and engineering fees associated with new improvements." On the second line, after the words "Paragraph 2.9", insert the words "and the Settlement Agreement and New Documents as it may be applicable for the costs of new improvements."
- B. In Paragraph 14.4, add the following sentence at the end of the paragraph: "CONTRACTOR reserves the right to seek additional funds from OWNER if CONTRACTOR disagrees with ENGINEER's recommendation."
- C. In the carryover of Paragraph 14.7, which immediately precedes Paragraph 14.8, insert the following sentence at the end of the paragraph: "CONTRACTOR reserves the right to dispute OWNER's refusal to make payment due to OWNER's setoff."
- D. In Paragraph 14.8, delete the last sentence in its entirety and add the following: "In the event ENGINEER refuses to issue a Certificate of Substantial Completion, CONTRACTOR reserves the right to dispute

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the ENGINEER's refusal to issue such definitive certificate of substantial completion.

- E. In the event of a dispute between OWNER and CONTRACTOR arising out of the issues in Articles 14A-D, the parties will be governed by the remedies provisions in the Settlement Agreement executed between OWNER and CONTRACTOR.

ARTICLE 16 - ARBITRATION

- A. Delete Paragraphs 16.1, 16.2, 16.3, 16.4 and 16.5.

ADDENDUM TO SUPPLEMENTARY CONDITIONS

- SECTION 00800-3
1. In Paragraph 5.3, delete the insertion of Paragraph 5.3.8 and insert the following: "5.3.8 During the term of the contract, the CONTRACTOR shall, at its own expense, procure, maintain and furnish evidence of the following insurance coverage:"
- P. 00800-6
2. Add the following sentence to the end of 6.28.1: "Notwithstanding anything contained hereinabove in 6.28.1, with respect to new improvements which OWNER requests, and to the extent such new improvements affect the efficiency or performance of the equipment being furnished, then CONTRACTOR shall be relieved of any claims under the contract on account of any failures or any partial failures or inefficiency or insufficiency or lack of performance of any part of the project affected by such new improvements so long as CONTRACTOR advises ENGINEER of any adverse effect CONTRACTOR is aware of or, in the exercise of reasonable care, should be aware of, as a result of such new improvements."
- 00800-7
3. In Paragraph 14.4, delete "thirty days" and reinsert the original period of "ten days after presentation."
4. Delete Paragraph 14.8.1.
5. In Paragraph 14.11.1, add the following: "CONTRACTOR reserves the right to dispute any such costs. In the event CONTRACTOR disputes such costs, any payment by CONTRACTOR of such costs shall not be due to the OWNER until said dispute is resolved by agreement or decided by a court of competent jurisdiction."

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00800-9
6. In Paragraph 15.6, on the ninth line after the words "material or labor", insert the following: "(unless CONTRACTOR is exercising a reasonable right of offset in connection with a claim CONTRACTOR has against subcontractors)." On the sixteenth line, after the words "the employment and", delete the remainder of the sentence and add "after affording to CONTRACTOR ten (10) days to cure any complaints (that are capable of being cured) or to commence to cure any other complaints within such ten (10) days, then if CONTRACTOR does not take the necessary steps to cure such complaints, OWNER may transfer the employment for said work from the CONTRACTOR to the Surety."

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7. Add the following sentence at the end of the second paragraph of 15.6: "In the event CONTRACTOR does not agree with OWNER's decision to terminate employment and withhold any further payments to CONTRACTOR, then and in that event, OWNER and CONTRACTOR shall be governed by the remedies provisions contained within the Settlement Agreement executed by OWNER and CONTRACTOR."

00800-10
8. In Paragraph 16.1, delete the entire paragraph.

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EQUIPMENTDESCRIPTION OF REHABILITATION WORK

- | | |
|---|--|
| 1. Amendment Silo | Overhaul drive unit, check level switches and check operation. |
| 2. Amendment Metering Screw Conveyor | Overhaul drive unit, check level switches & operation
The capacity of this conveyor shall be adequate to provide at least a 3 to 1 sawdust to sludge ratio. |
| 3. Sludge Belt Conveyor from Dewatering Building | Overhaul drive unit, check level switches & operation. |
| 4. Sludge Bin | Clean unit, overhaul drive unit, check bearings, level switches and check operation. Replace shaft seals for all feeders and leveling screws. Provide gasket seal around chain guard where presently welded. |
| 5. Recycle Bin | Clean, rehabilitate and check for operation |
| 6. Drag Chain Conveyor to Mixer and Drag Chain Conveyor from Mixer to InFeed Drag Chain | Clean, rehabilitate and check for and the operation. |
| 7. T.R. Discharge Drag Chain Conveyor. | Clean unit, overhaul drive unit, oil chains and check bearings. |
| 8. Discharge Drag Chain Elevating Conveyor | Clean unit, overhaul drive unit, oil chains and check bearings. |
| 9. Compost Outfeed | Clean unit, overhaul drive unit, oil chains and check bearings. |
| 10. Mixer | Clean unit, overhaul drive unit and check bearings. Replace mixing paddle shaft seals. |
| 11. Cure Fans | Clean units, overhaul drive unit, check operation. |
| 12. A.C. Unit on Roof | Clean units, overhaul drive unit and check operation. |
| 13. MCC Room | Clean, check starters, breakers and fuses. Provide elapsed time meters. |
| 14. Upstairs Control Room | Clean, check starters, breakers and fuses. |
| 15. Main Control Room including computer system | Clean, check circuits & boards including control console & computer and replace if necessary. |
| 16. Aeration Blowers | Recondition by factory authorized service center personnel. Re-conditioning shall include new bearings, new shaft seals, restoration of the coating system to "like new" condition. |
| 17. Exhaust Blowers | Replace with multi-stage centrifugal blowers as proposed by ASH. |
| 18. Aeration Headers and Exhaust Piping | Replace as required. |
| 19. Control Valves | Replace with new valves as required. |

- | | |
|---|--|
| 20. Hydraulic Unit and Hydraulic Cylinders | Recondition by factory authorized service center personnel. The hydraulic components shall be disassembled, cleaned, inspected, and rebuilt as required. |
| 21. Instruments, Transmitters, & Actuators in Gallery | Replace with comparable operating system to that currently being installed in other ASH facilities with automatic aeration control. |
| 22. Wiring to Aeration Gallery | Remove and replace as appropriate for new equipment sizes and instrumentation. |
| 23. Infeed Drag Chain | Replace with double strand drag chain as prop. by ASH |
| 24. Amendment Fill System | Replace with hopper and conveyor as proposed by ASH. To meet the 20-ton per hour specs. |
| 25. Odor Control Diffuser | Lower to the original depth proposed. |
| 26. Modem Installation | As described in ASH proposal of 11/19/91. |

Definitions of terms used in above descriptions is as follows:

Clean units. Remove all compost, sludge, amendment, or sludge mixture from the unit; visually inspect the unit for signs of corrosion and coating system failures; resurface and re-coat any affected areas; and lubricate all moving parts not specifically indicated for reconditioning.

Overhaul Drive Unit. Drive motors shall be removed and sent to a motor shop (or on-site if factory authorized service can be properly performed there), for megger testing and disassembled for bearing inspection and drying of the windings, as required, and certification by the motor shop that the resulting motor is "like new" condition. V-belts should be replaced. Gear motors shall be removed and sent to a factory-authorized service center (or on-site if factory authorized service can be properly performed there), the gear oil drained, the housing disassembled for a visual inspection of the gears and bearings for signs of corrosion, the unit assembled and filled with oil, and the resulting gear motor certified to meet design specifications.

Check Bearings. It is assumed that the bearings referred to here are other than those found on the drive unit since these bearings are covered above. Because checking the bearings will require that the bearing housings be disassembled and the bearings removed, bearings shall be replaced at this time. This will eliminate any ambiguity in determining what is acceptable condition and the risk of accepting bearings that flat spots that will ultimately shorten bearing life and potentially damage equipment.

Check Operation. All equipment shall have their operation checked, but only after the prescribed reconditioning work is complete. This operational check shall follow the same procedures as the original start-up and testing requirements.

All equipment regardless if it is new or reconditioned shall have a 1-year warranty from the time the facility is complete and accepted by the City.

Other Miscellaneous Items Outstanding.

1. The mix room floor does not slope to a drain and puddles water. ASH shall provide an acceptable solution to this.

NEWBERG OREGON REBUILD
 Responsible : BILL LLOYD
 As-of Date : 3-Mar-92

Schedule File : NEWBERG

MBS Code Task Name	Start Date	End Date	Percent Achieved	Duratin (Days)	Start Status
ENGINEERING DESIGN	1-May-92	1-Oct-92	0	106	Future
PURCHASE FAB & DEL EQUIP	1-Jun-92	1-Feb-93	0	169	Future
DEMOLITION	1-Jun-92	1-Sep-92	0	65	Future
NEW CONCRETE INSTALLATION	3-Aug-92	1-Mar-93	0	145	Future
INSTALL EQUIPMENT	2-Nov-92	1-Jun-93	0	145	Future
INSTALL ELECT & INST	3-Aug-92	1-Oct-92	0	42	Future
COMPLETE ELECT & INST	1-Dec-92	1-Jun-93	0	126	Future
MECHANICAL COMPLETION	1-Jun-93	1-Jun-93	0	0	Future
STARTUP & CHECKOUT	1-Apr-93	1-Jun-93	0	41	Future
PERFORMANCE TESTING	1-Jun-93	1-Sep-93	0	65	Future

92												93							
Totals	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
18L	1	1	1	1	1	1	1	1	2	1	4	1	1	1	1	1	1	2	

ASHBROOK HOURLY RATES

Work performed is based on cost plus overhead. These rates apply to time actually devoted to the job and to required travel.

Expenses for travel are billed at cost.

Prices do not include state or local taxes.

For 8 hours per day and 40 hours per week normal working hours, Monday through Friday, hourly rates for Ashbrook engineering staff are:

Category 1 -	Manager of Engineering, Project Manager	\$90/Hr.
Category 2 -	Project Engineer	\$80/Hr.
Category 3 -	Electrical/Instrumentation and Controls Engineer	\$75/Hr.
Category 4 -	Structural Engineer	\$70/Hr.
Category 5 -	Mechanical/Materials Handling Engineer	\$65/Hr.
Category 6 -	Civil/Process Engineer	\$60/Hr.
Category 7 -	Designer/Drafter	\$50/Hr.
Category 8 -	Technical Assistant	\$40/Hr.
Category 9 -	Secretarial	\$35/Hr.

Other Staff Hourly Rates

Purchasing Manager	\$50/Hr.
Purchasing Expeditor	\$35/Hr.
Quality Control Inspector	\$40/Hr.
Project Site Superintendent	\$60/Hr.
Estimator	\$55/Hr.

04713735043000/22-00012921043

Exhibit "E"

RESOLUTION OF THE NEWBERG CITY COUNCIL ESTABLISHING A SPECIAL
EXPENDITURE ACCOUNT WITHIN THE SEWER AND WATER FUND TO PLACE
FUNDS FOR EXPENDITURE ON MODIFICATION TO SLUDGE COMPOSTING PLANT
DURING THE RECONSTRUCTION PHASE PURSUANT TO THE SETTLEMENT
AGREEMENT IN THE CASE OF CITY OF NEWBERG V. ASHBROOK,
SIMON & HARTLEY, ET AL. CASE NO. 90-1173, US DISTRICT COURT FOR
THE DISTRICT OF OREGON.

1. The City of Newberg has filed legal action against Ashbrook, et al., Case No. 90-1173FR, US District Court for the District of Oregon, concerning the failure of the compost facility at the City of Newberg.
2. A settlement agreement has been reached concerning this litigation.
3. As part of the reconstruction, the City may request certain modifications and additions to the facility which may require payment to Ashbrook-Simon-Hartley (Ashbrook).
4. The City agrees to place in a special account in the interest bearing Local Government Investment Pool the amount due for modifications and additions, the contract balance due Ashbrook and any other amounts required by the settlement agreement.

1. A special account within the City of Newberg budget is established for the funds as outlined in recital number 4 and such funds shall be placed in said account.

- Capital Project Fund: Account No. 04-5150-706.620
(Composter Modifications)

~~PROD~~-4600.1 19684 0001

3. The City will notify Ashbrook within ten (10) days of all deposits in such account.
4. The City shall, upon request from Ashbrook, furnish an accounting of the funds in said special account.

Adopted by the Newberg City Council on the ____ day of April, 1992.

Duane R. Cole
City Recorder

EXHIBIT "F"

2

DESIGN CRITERIA AND PERFORMANCE REQUIREMENT

The sludge composting facility shall be designed to compost waste oxidation ditch sludge according to the following design criteria and operating conditions:

I. Constituent Parameters

A. Feed Sludge

1. Total solids concentration:
Weekly average: 16%
Range: 15-19%
2. Volatile solids concentration:
Weekly average = 75%
Range = 70-80%
3. Available Composting Volatile Solids
(Biodegradable Coefficient)
Weekly average = 30%
Range = 25-35%
4. Volatile Heat Rating
Weeking Rating = 8,800 btu per lb.
Range = 8,000-11,000 btu per lb.

B. Recycle Compost (from reactor)

1. Total solids concentration:
Minimum = 38%

C. Sawdust Amendment

1. Characteristics: per ¶ 2.01G of Contract
2. Total solids concentration:
Weekly average = 60%
Minimum = 50%
3. Sawdust/sludge ratio: Facility will be capable of operating at a 1:1 ratio under normal operating procedures and produce compost meeting the contract requirements

D. Infeed Mix

1. Total solids concentration
Weekly average = 38%

II. Compost Product

- A. Compost will meet all requirements of Contract
- B. Total solids concentration
Minimum = 38%

Paragraph 3.04, PERFORMANCE TESTING shall be modified as follows:

A. General

1. The supplier shall submit a detailed description of performance test procedures at least 60 days before beginning the performance test period, as required by Paragraph 1.05C4. The Contractor will notify the Engineer when the system has operated in the steady state mode for not less than 60 days. "Steady state" will mean continuous operation in accordance with ASH's operating procedures using available sludge and producing compost per the contract specifications. Upon receipt of this notice the Engineer will set a date within 14 days for beginning the performance test period.
2. The system will be considered in compliance with the performance test requirements when the arithmetic average of the data taken during the performance test meets the specified limits.
3. Unmodified.
4. Unmodified.
5. The supplier shall provide at least one person on site 40 hours per week throughout the performance test to supervise plant operation and maintenance and supervise the performance test. If additional labor is required for the performance test, then it shall be provided by the supplier.
6. Unmodified.
7. Deleted.

Paragraphs 8 through 10: Deleted and replaced by the following:

8. The supplier shall program operation of the sludge composting facility during the testing period to simulate performance under steady state conditions. It is anticipated that only one reactor will be utilized for the composting process during the performance testing.

EXHIBIT "H"

9. During the initial 60 days of the performance testing period, hereafter referred to as "Phase 1," the facility shall be operated using available sludge and one reactor. During the 60 day test period, the system shall be tested for compliance with the requirements for pathogenic safety, seed germination, moisture content, sawdust use, outfeed uniformity, temperature profile, chemical use, and odor removal. Although it is understood that the supplier is not required to comply with any specific requirements regarding electrical power use and demand, the supplier shall measure and provide the city with data generated during Phase 1 on electrical power use and demand.
10. Following Phase 1, the performance testing will enter into a second phase, "Phase 2", to assess whether the system as operated with two reactors will meet the mechanical, structural and sequencing requirements of the contract. During Phase 2, the second reactor shall be loaded with material to simulate operating conditions and assessed for conformance with all mechanical, structural and sequencing requirements.
11. Deleted.
- B. Unmodified.
- C. Unmodified.
- D. Moisture content testing: composite samples shall be taken from the mixture fed into the reactor and from the discharge of the reactor and tested for moisture content. This sampling and testing shall be performed by plant staff per the O&M manual during Phase 1 of the performance test.
- E. Electrical power use: Electrical power use shall be measured and totalized continuously during the performance test while the system is operated in a steady state. Sufficient data shall be collected to allow calculations to be accurate within +3%.
- F. Electrical power demand: The peak thirty minute electrical power demand shall be monitored. This monitoring shall be continuous during the performance test while the system is operated in a steady state.
- G. Unmodified.

EXHIBIT "H"

- H. Odor removal testing aerated cure piles (if required or used): Gas samples shall be taken from the odor scrubber inlet and outlet and tested for NH₃ and H₂S emissions. The sampling and testing shall be performed at least once each week during the performance test while the system is operated in a mode with the reactors completely full. Sampling and testing procedures shall be as outlined in EPA standard methods. The average emissions from the odor scrubber outlet and at least 80% of the individual tests are required to meet EPA/DEQ NH₃ and H₂S emission standards.
- I. Deleted.
- J. Outfeed device testing: The discharge rates of the outfeed devices for the sawdust silo, dewatered sludge hopper and recycle bin shall be monitored at the commencement of Phase 1 of the performance test, midway through Phase 1 of the performance test, and at the completion of Phase 1 of the performance test. Each time the outfeed device shall be operated at 10%, 40%, 70%, and 100% of full range, and the discharge rates shall be within plus or minus 5% of the rate settings at the controls.
- K. Temperature profile testing: The temperature profiles in the reactors shall be monitored continuously during the performance test using the permanently installed temperature monitoring system. The temperature shall be checked to verify that material in the reactor is maintained at a temperature of 55 degrees C for at least 72 hours continuously. The performance of the temperature control system shall maintain the selected temperature set point within plus or minus 10°C. The temperature control system shall be checked by manual temperature measurements at the sampling points.
- L. Unmodified.
- M. ASH shall document performance test results in a detailed report provided to the City within 60 days after completion of Phase 2 of the performance test.
- N. Deleted.
- O. During Phase 1 of the performance test, the sludge composting facility shall operate for 60 days with no down time. The 60 day period shall take place while

EXHIBIT "H"

the facility is operated at steady state. If down time occurs part of the way through the 60 day test period, then the clock shall be reset to zero and the test shall resume, including all associated monitoring when steady state conditions are reestablished.

EXHIBIT "H"

4

HLL

~~Approved List of Arbitrators~~

HLL

~~For mediation and/or arbitration, the following organizations
will be used to settle disputes:~~

1. Process Disputes:

Camp, Dresser & McKee Engineers
Boston, MA

Burgess & Niple, Ltd. Engineers
Columbus, Ohio

Malcolm Pirnie Engineers
New York, New York

Hazen & Sawyer Engineers
Raleigh, North Carolina

Gannett Fleming Engineers
Harrisburg, PA

2. Structural Disputes:

CRSS Infrastructure Group
Portland, Oregon

URS Corp.
Portland, Oregon

Rust International Corp.
Portland, Oregon

Klein & Hoffman, Inc.
Philadelphia, PA

James Montgomery Engineers
California

Malcolm Pirnie Engineers
New York, New York

Consoer, Townsend & Associates
Chicago, Illinois

3. Material Handling/Equipment Disputes:

CRS Serrine Engineers
Greenville, South Carolina

Karl W. Schmidt & Assoc.
Denver, Colorado

FECCO International
Green Bay, Wisconsin

Wolf & Associates, Inc.
St. Paul, Minnesota

Jacobson, Inc.
Minneapolis, Minnesota

4. Electrical and Instrumental Disputes:

Rust International Corp.
Portland, Oregon

Cone Hazzard & Nail, Inc.
Birmingham, Alabama

Consoer, Townsend & Assoc.
Chicago, Illinois

Malcolm Pirnie Engineers
New York, New York

Hasen & Sawyer Engineers
Raleigh, North Carolina

This document has important legal consequences: consultation with an attorney is encouraged with respect to its completion or modification.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by
Engineers' Joint Contract Documents Committee
and
Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

CONSTRUCTION SPECIFICATIONS INSTITUTE

This document has been approved and endorsed by

The Associated General  Contractors of America

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2, 1983 editions). Their provisions are interrelated and a change in one may necessitate a change in the others. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents, No. 1910-9, 1981 edition. For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17, 1983 edition). When bidding is involved, the Standard Form of Instructions to Bidders (No. 1910-12, 1983 edition) may be used.

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GENERAL CONDITIONS

ARTICLE I—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement—The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Offer—The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds—Bid, performance and payment bonds and other instruments of security.

Change Order—A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price—The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

Contract Time—The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

CONTRACTOR—The person, firm or corporation with whom OWNER has entered into the Agreement.

defective—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Drawings—The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

Effective Date of the Agreement—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

***ENGINEER**—The person, firm or corporation named as such in the Agreement.

Field Order—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements—Sections of Division 1 of the Specifications.

Laws and Regulations; Laws or Regulations—Laws, rules, regulations, ordinances, codes and/or orders.

Notice of Award—The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

OWNER—The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization—Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

Project—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Resident Project Representative—The authorized representative of ENGINEER who is assigned to the site or any part thereof.

Shop Drawings—All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Specifications—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Supplementary Conditions—The part of the Contract Documents which amends or supplements these General Conditions.

Supplier—A manufacturer, fabricator, supplier, distributor, materialman or vendor.

Underground Facilities—All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work—Work to be paid for on the basis of unit prices.

Work—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Directive Change—A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER,

ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

Written Amendment—A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly Work-related aspects of the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time; Notice to Proceed:

2.3. The Contract Time will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Time commence to run later than the seventy-fifth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Project:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown

thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2. a preliminary schedule of Shop Drawing submissions; and

* 2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

2.7. Before any Work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.3 and 5.4, and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by CONTRACTOR) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Effective Date of the Agreement, but before CONTRACTOR starts the Work at the site, a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to discuss the schedules referred to in paragraph 2.6, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

Finalizing Schedules:

2.9. At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to finalize the schedules submitted in accordance with para-

graph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility therefor. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

* 3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3. If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification

from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents:

3.4. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

- 3.4.1. a formal Written Amendment,
- 3.4.2. a Change Order (pursuant to paragraph 10.4),
or
- 3.4.3. a Work Directive Change (pursuant to paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and Contract Time may only be changed by a Change Order or a Written Amendment.

3.5. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

- 3.5.1. a Field Order (pursuant to paragraph 9.5),
- 3.5.2. ENGINEER's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27), or
- 3.5.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

- * 3.6. Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and

such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER's furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions:

4.2.1. *Explorations and Reports:* Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon nontechnical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2. *Existing Structures:* Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3. *Report of Differing Conditions:* If CONTRACTOR believes that:

4.2.3.1. any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2. any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22), notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Document Change:* If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. *Possible Price and Time Adjustments:* In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions—Underground Facilities:

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.3.1.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2. *Not Shown or Indicated.* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to

determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of. If the parties are unable to agree as to the amount or length thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5—BONDS AND INSURANCE

Performance and Other Bonds:

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of

the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to OWNER.

Contractor's Liability Insurance:

5.3. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.3.1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

5.3.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.3.4. Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason;

5.3.5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom;

5.3.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

5.3.7. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least

thirty days' prior written notice has been given to OWNER and ENGINEER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

Contractual Liability Insurance:

5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31.

Owner's Liability Insurance:

5.5. OWNER shall be responsible for purchasing and maintaining OWNER's own liability insurance and, at OWNER's option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work, all of whom shall be listed as insureds or additional insured parties, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER AND ENGINEER's consultants in the Work, all of whom shall be listed as insured or additional insured parties.

5.8. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to CONTRACTOR by certified mail and will contain waiver provisions in accordance with paragraph 5.11.2.

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are provided in the Supplementary Conditions. The risk of loss within the deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policy, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

Waiver of Rights:

5.11.1. OWNER and CONTRACTOR waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and 5.7 and any other property insurance applicable to the Work, and also waive all such rights against the Subcontractors, ENGINEER, ENGINEER's consultants and all other parties named as insureds in such policies for losses and damages so caused. As required by paragraph 6.11, each subcontract between CONTRACTOR and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of OWNER, CONTRACTOR, ENGINEER, ENGINEER's consultants and all other parties named as insureds. None of the above waivers shall extend to the rights that any of the insured parties may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. OWNER and CONTRACTOR intend that any policies provided in response to paragraphs 5.6 and 5.7 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insureds or additional insureds, and if the insurers require separate waiver forms to be signed by ENGINEER or ENGINEER's consultant OWNER will obtain the same, and if

such waiver forms are required of any Subcontractor, CONTRACTOR will obtain the same.

Receipt and Application of Proceeds:

* 5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

* 5.13. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of such duties.

Acceptance of Insurance:

5.14. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3 and 5.4 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 on the basis of their not complying with the Contract Documents, CONTRACTOR shall notify OWNER in writing thereof within ten days of the date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided by each as the other may reasonably request. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

Partial Utilization—Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no

such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

Adjusting Progress Schedule:

6.6. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or "Or-Equal" Items:

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or

royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute.

6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient information to allow ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.7.1 as applied by ENGINEER and as may be supplemented in the General Requirements.

* 6.7.3. ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute. ENGINEER will record time required by ENGINEER and ENGINEER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by

OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject *defective Work*.

6.9. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

* 6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.11. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 and 5.7.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER

or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

* 6.14.2. If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

* 6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the

place of the Project which are applicable during the performance of the Work.

Use of Premises:

* 6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon com-

pletion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all employees on the Work and other persons and organizations who may be affected thereby;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

* CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21. CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies:

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

Shop Drawings and Samples:

6.23. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1. Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on

each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.2 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.1.

* 6.28. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to ENGINEER's review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

Indemnification:

* 6.30. To the fullest extent permitted by Laws and Regulations CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work,

provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against OWNER or ENGINEER or any of their consultants, agents or employees by any employee of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER, ENGINEER's consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications.

ARTICLE 7—OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

7.2. CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CON-

TRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR's failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in the other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.

ARTICLE 8—OWNER'S RESPONSIBILITIES

* 8.1. OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to arbitration.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing struc-

tures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.8.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

* 9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

Project Representation:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER's agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER; and also on CONTRACTOR who shall perform the Work involved promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.8. In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with ENGINEER's responsibilities in respect of Applications for Payment, etc., see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decisions thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other party to the Agreement and

to ENGINEER written notice of intention to appeal from such a decision.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities:

9.13. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be

effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10—CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.4.1. changes in the Work which are ordered by OWNER pursuant to paragraph 10.1, are required because of acceptance of *defective* Work under paragraph 13.13 or correcting *defective* Work under paragraph 13.14, or are agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Time which are agreed to by the parties; and

* 10.4.3. changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

* 11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1. through 11.9.3, inclusive).

11.3.2. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3. On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject

to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage

requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.9.

* 11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4— all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

CONTRACTOR's Fee:

* 11.6. The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2. a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's Fee shall be fifteen percent;

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

11.6.2.3. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.4. the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's Fee by an amount equal to ten percent of the net decrease; and

11.6.2.5. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

* 11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER. CONTRACTOR agrees that:

11.8.1. The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the

allowances. No demand for additional payment on account of any thereof will be valid.

- * Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

ARTICLE 12—CHANGE OF CONTRACT TIME

- * 12.1. The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time

shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

ARTICLE 13—WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

- * 13.1. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to CONTRACTOR. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also

be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's or ENGINEER's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent

thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work:

* 13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with *nondefective* Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period:

* 13.12. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with *nondefective* Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

Acceptance of Defective Work:

* 13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential

costs attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

- * 13.14. If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct *defective* Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

- * 14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

- * 14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a

representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation); and that CONTRACTOR is entitled to payment of the amount recommended. However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is *defective*, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct *defective* Work or complete Work in accordance with paragraph 13.14, or

14.7.4. of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling

OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Docu-

ments, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and useable part of the Work that can be used by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work although it is not substantially complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER that such part of the Work is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing and so informed ENGINEER). During such operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

14.10.3. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents—all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation—all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.16.

Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16. The making and acceptance of final payment will constitute:

14.16.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of

CONTRACTOR's continuing obligations under the Contract Documents; and

14.16.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

**ARTICLE 15—SUSPENSION OF WORK AND
TERMINATION**

Owner May Suspend Work:

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2. if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3. if CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.4. if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR's creditors;

15.2.5. if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.6. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents

(including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as revised from time to time);

15.2.7. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.8. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.9. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if there be one) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

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ARTICLE 16—ARBITRATION

* 16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

* 16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period shall result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

* 16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the

American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

* 16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's agents, employees or consultants) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration,

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

* 16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration Act (9 U.S.C. §§10,11).

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ARTICLE 17—MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

General:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omis-

sion or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

Updated 11/8/85 to include Addendums 1-9.

This Update is For Convenience During
Construction Only and is Not Intended to
Supercede Original Contract Documents.

CITY OF NEWBERG
NEWBERG, OREGON

SPECIFICATIONS
AND
CONTRACT DOCUMENTS

FOR THE CONSTRUCTION
OF
SANITARY SEWERAGE SYSTEM IMPROVEMENTS
SCHEDULE F - SLUDGE COMPOSTING FACILITY

ENVIRONMENTAL PROTECTION AGENCY PROJECTS

No. C-410494-03

NOVEMBER 1985

KRAMER, CHIN & MAYO, INC.
Consulting Engineers, Applied Scientists and Planners
10 S. W. Ash Street
Portland, Oregon 97204

RECEIVED
NOV 12 1985

NEWBERG OFFICE
Kramer, Chin & Mayo, Inc.

N10010267

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REVISED ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of the City of Newberg Sanitary Sewerage System Improvements, Schedules E and F, addressed to Michael Warren, City Manager, City of Newberg, City Hall, 414 East First Street, Newberg, Oregon 97132, will be received at the office of the City Manager until the time and date as follows:

Schedule E Wastewater Treatment Plant, 1:00 PM on the 14th Day of June 1985.

Schedule F Sludge Composting Facility, 1:00 PM on the 18th Day of October 1985.

The proposals then will be publicly opened and read in the Council Chambers of the City of Newberg, 414 East First Street, Newberg, Oregon at 1:00 PM on the 14th day of June 1985 for Schedule E and Tuesday the 26th day of July 1985 for Schedule F. Bids may be mailed or delivered to the address shown above.

Principal items of work consist of the following:

Schedule E, Wastewater Treatment Plant: An 18 mgd headworks, two 2 mg oxidation ditches, one 1-mg equalization basin, three 80-foot diameter clarifiers, sludge pump station, chlorine contact tank, solids handling building, operations building and sitework.

Schedule F, Sludge Composting Facility: Conveyors, blowers, enclosed vessel compost reactor(s), equipment building(s), storage hoppers compost storage yard and associated sitework.

Bids shall be based on the contract lump sum and unit prices stated in the Contractors Bid Form.

Work shall be substantially complete within 730 calendar days for Schedule E and 730 calendar days for Schedule F after the date set forth in the Notice to Proceed.

No bid will be considered unless fully completed in the manner provided in the "Instructions to Bidders" upon the bid form provided.

Each bid shall be accompanied by a bid bond or a certified check or cashiers check made payable to the Owner in an amount not less than 10% of the amount of the bid. The bid bond/check shall be given as a guarantee that the successful bidder will execute the contract if it be awarded in conformity with the contract documents and shall provide surety bond or bonds as specified therein within 15 days after notification of Award of Contract to the bidder.

The successful bidder will be required to furnish a performance bond and a payment bond in an amount not less than 100% of the contract price.

Drawings and specifications are available at the project office of Kramer, Chin & Mayo, 207 N. Meridian, Newberg, Oregon 97132. A nonrefundable deposit to cover printing costs in the amount of \$40 per set made out to KCM is required for the drawing and specifications.

Drawings and specifications may be examined at the following: City of Newberg, Public Works Department, Engineering Division, 414 East First, Newberg, Oregon 97132; Kramer, Chin & Mayo, Inc. offices: 2755 12th Street S.E., Salem, Oregon 97302; 10 SW Ash Street, Portland, Oregon 97204; 1917 First Avenue, Seattle, Washington 98101; Builders Exchange Co-Op, 1125 SE Madison Street, Portland, Oregon 97214; Construction Data, 925 NW Twelfth, Portland, Oregon 97214; Northwest Plan Center, 901 Southeast Oak, Suite 208, Portland, Oregon 97214.

Bidders requesting drawings and specifications should identify themselves as general contractors, subcontractors, equipment suppliers or other.

Funding is provided by a 75% grant from the Federal Environmental Protection Agency (under Public Law 92-500.); and 25% from the City of Newberg General Obligation Sewer Bond Fund.

Neither the United States nor any of its departments, agencies, or employees is or will be a part of this invitation for bids or any resulting contract. This procedure will be subject to regulations contained in 40 CFR 33.1030 including all appendices thereto. A copy of said regulations and appendices are attached to the contract documents.

Bidders on this work must comply with all applicable governmental requirements including, but not limited to, Buy American Provision, affirmative action programs and other equal employment opportunity actions as explained in the specifications.

The award of the contract shall be made to the qualified bidder or combination of bidders submitting the lowest responsive bid. Schedules E and F will be awarded as separate contracts. The Owner reserves the right to award any or all the schedules and to award the bids in a manner and on a basis which will best serve the Owner.

The Owner reserves the right to reject any or all bids and to waive irregularities or informalities in the bid or in the bidding.

No bidder may withdraw his bid after the hour set for the opening thereof, or before Award of Contract, unless said award is delayed for a period exceeding 90 days.

No bid will be received or considered unless the bid contains a statement that the provisions regarding prevailing rates of wage required by ORS 279.350 and the Davis-Bacon Act, as may be applicable, shall be complied with.

Bidders must be prequalified in compliance with the applicable parts of Chapter 279 of the Oregon Revised Statutes. These forms, completely filled out, must be submitted to the Director of Public Works, at 414 East First Street, City of Newberg by May 17, 1985 which is at least 10 days prior to the bid opening date.

All bidders must be willing to comply with the applicable provisions of the Equal Employment Opportunity Act of 1972 and the Civil Rights Act of 1964, as amended.

All envelopes must be sealed and plainly marked on the outside showing the name of the bidder, date and time of bid opening, the project name, and the words "Sealed Bids."

A prebid meeting will be held on May 1, 1985 at 10:00 AM in the City Council Chambers, 414 East First Street, Newberg, Oregon.

The City strongly encourages the serious consideration of local (Newberg area) contractors, subcontractors, equipment and materials suppliers, tradesmen and laborers by general contractors responding to this advertisement, although the City has no power to require that local businesses be included in bids responding to this advertisement, nor can these bidders utilizing local resources be given preference.

For information regarding this project, contact Gareth S. Ott, P.E. (KCM) at (503) 221-1814, James Santroch, P.E. (KCM) at (206) 447-3593 and Robert Sanders, Director of Public Works at (503) 538-9421

A prebid meeting for Schedule F will be held on Friday August 16, 1985 at 10:00 AM in the City Council Chambers, 414 East First Street, Newberg, Oregon.

DATED: This ____th day of _____, 198__

Published:

By: _____
City of Newberg
Robert Sanders, P.E.
Public Works Director

End of Section

BID FORM

Project Identification:

City of Newberg Sanitary Sewerage System Improvements

Contract Identification and Number:

Schedule F, Sludge Composting Facility, C-410494-03This Bid is submitted to: City of NewbergCity Hall414 East First StreetNewberg, OR 97132

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with the Owner in the form included in the contract documents to complete all work as specified or indicated in the contract documents for the contract price and within the contract time indicated in this Bid and in accordance with the contract documents.
2. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain open for 90 days after the day of Bid opening. Bidder will sign the Agreement and submit the Contract Security and other documents required by the contract documents within 15 days after the date of Owner's Notice of Award.
3. The undersigned Bidder hereby agrees that the provisions of ORS 279.348 to ORS 279.356 will be complied with, so that she/he will pay to his/her employees the prevailing rate of wage as determined by the Oregon Labor Commissioner or the Secretary of the United States Department of Labor, whichever is higher, and further agrees to pay such wages not less than once per week.
4. Bidder shall indicate sludge compost facility supplier in the space below. Another supplier may not be substituted after bidding without the written consent of the Engineer.

Specification Section

11351 Sludge Composting Facility

Manufacturer/Subcontractor

5. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that;

- a) Bidder has examined copies of all the contract documents and of the following addenda:

<u>Date</u>	<u>Number</u>
May 6, 1985	No. 1
May 17, 1985	No. 2
May 31, 1985	No. 3
June 7, 1985	No. 4
July 9, 1985	No. 5
August 2, 1985	No. 6
August 30, 1985	No. 7
September 23, 1985	No. 8
October 11, 1985	No. 9

(receipt of all of which is hereby acknowledged) and also copies of the Advertisement for Bids and the Instructions to Bidders.

- b) Bidder has examined the site and locality where the work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules, and regulations) and the conditions affecting cost, progress, or performance of the work and has made such independent investigations as Bidder deems necessary.
- c) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation, and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham bid; Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for himself any advantage over any other Bidder or over Owner; and has executed and attached hereto the "Noncollusion Affidavit Certificate."
6. Bidder agrees that he will be substantially completed within 730 calendar days after the date set forth in the Notice to Proceed.

Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the work on time.

7. Bidders will complete the work for the following prices: (Refer to Section 01150 for description of bid item.)

Schedule F: Sludge Composting Facility

<u>Item No.</u>	<u>Item</u>	<u>Lump Sum Contract Price</u>
1.	Sludge Composting Facility	
	(Words)	(Figures)

8. Evaluation of Bids

8.1 Approach

Schedule F will be awarded to the responsive bidder with the lowest life cycle costs identified in Line 9 below. The following factors will be combined to determine the life cycle costs: the lump sum contract price, electrical power use and demand, sawdust, scheduled downtime, and chemical costs. Life cycle costs shall be calculated with the procedures described in this paragraph, and in the space provided below. No credit is allowed from the sale of finished compost; however the owners goal is to sell finished compost for \$10/ton or more.

In addition the Contractor is required to compensate the Owner for operation and maintenance costs as described in Paragraph 9 should performance be worse than indicated in these life cycle cost calculations.

No bid will be considered unless all requested information is provided.

Calculation of Life Cycle Costs

1. Sludge composting facility lump sum contract price from Paragraph 7 \$ _____
 2. Electrical power use see Paragraph 8.2
_____ kWh/lb x \$950,000/kWh/lb = \$ _____
 3. Electrical power demand see Paragraph 8.3
_____ kW x \$600/kW = \$ _____
 4. Sawdust see Paragraph 8.4
_____ lb/lb x \$260,000/lb/lb = \$ _____
 5. Downtime see Paragraph 8.5
_____ days/yr x \$5,000/day/yr = \$ _____
 6. Chemical costs, see Paragraph 8.6
_____ \$/lb x 16,000,000 lb = \$ _____
-
7. Total life cycle costs (sum of Items 1 through 6) \$ _____

8.2 Electrical Power Use

For the bid evaluation costs are included for electrical power use. Enter in the appropriate space in Paragraph 8.1, line 2, the monthly average rate of power use in kWh/lb of sludge dry solids fed into the sludge composting facility. The number for kWh/lb should be based on expected power use when 3,000 lb/day of sludge dry solids with 15% dry solids and 70% volatile solids are fed to the sludge composting facility, and all reactor chambers are operated completely full. This power use rate will be checked during performance tests as specified in Section 11351, Paragraph 3.04 and during the warranty period. Calculate the present worth with the \$950,000/kWh/lb multiplier in the space provided.

The \$950,000 multiplier is based on an electric power use charge of \$0.044/kWh which inflates at 3% per year and sludge loads which increase from 3,000 lb/day at start up to 7,000 lb/day over the 20 year project life.

8.3 Electrical Power Demand

For the bid evaluation costs are included for the power demand which occurs during simultaneous operation of many pieces of equipment such as conveyors, mixers and blowers. Enter in the appropriate space in Paragraph 8.1, line 3, the maximum 30 minute average power demand in kW which will occur at the sludge composting facility. This demand will be checked during performance tests as specified in Section 11351, Paragraph 3.04 and during the warranty period. The kW power demand should be based on expected demand when 3,000 lb/day of sludge dry solids with 15% dry solids and 70% volatile solids are fed to the sludge composting facility and all reactor chambers are operated completely

full. Calculate the present worth with the \$600/kW multiplier in the space provided.

The \$600 multiplier is based on an electric power demand charge of \$4.00/kW/month which inflates at 3% per year, over the 20-year project life.

8.4 Sawdust

For the bid evaluation sawdust costs are estimated based on the compost mixture selected by the supplier for design of the facility. Enter in the appropriate space in Paragraph 8.1 line 4 the weight ratio of sawdust dry solids to sludge dry solids selected by the supplier. The quality of the sawdust will be as specified in Section 11351, Paragraph 2.01G. The sawdust/sludge ratio will be checked during performance tests as specified in Section 11351, Paragraph 3.04 and the warranty period. Calculate the present worth with the \$260,000/lb/lb multiplier in the space provided.

The \$260,000 multiplier is based on sawdust costs of \$5/cy, and sludge loads which increase from 3,000 lb/day at start up to 7,000 lb/day over the 20 year project life.

8.5 Scheduled Downtime

Enter in Paragraph 8.1 line 5 the number of days per year during which the sludge compost facility will be out of service due to scheduled maintenance, and calculate the present worth with the \$5,000/day/yr multiplier in the space provided. Refer to specification Section 11351, Paragraph 2.01H for further information on scheduled downtime.

The \$5,000 multiplier is based on the daily cost for hauling and dumping sludge offsite by two workers with a sludge truck, during each day of downtime over the 20-year project life.

8.6 Chemical Costs

For the bid evaluation, chemicals used to enhance the composting or supplemental dewatering processes will be assumed to be proportional to the amount of sludge composted. Enter in the appropriate space in Paragraph 8.1 line 6 the monthly average cost for chemical additives in \$ per pound of sludge dry solids fed into the composting facility. This chemical use rate will be checked during performance tests as specified in Section 11351, Paragraph 3.04 and during the warranty period. Calculate the present worth with the 16,000,000 lb multiplier in the space provided.

The 16,000,000 lb multiplier is based on sludge loads which increase from 3,000 lb/day at start up to 7,000 lb/day over the 20 year project life.

9. Operation and Maintenance Compensation

The Contractor is required to compensate the Owner for operation and maintenance costs if actual performance is worse than indicated by the life cycle costs in Paragraph 8. To determine whether compensation is required, the total life cycle costs will be calculated exactly the same as described in Paragraph 8, except that the values entered for the performance parameters (kWh/LB power use, kW power demand, LB/LB sawdust/sludge ratio, days downtime and \$/lb for chemicals) will be calculated based on operating experience and performance tests described in Section 11351, Paragraph 3.04. The entries for lump sum contract price in the calculations will be the same as listed in the bid proposal and will not be adjusted to reflect change orders.

The Engineer and Contractor recognize that the calculations may be based on experience and performance tests at Newberg with sludge that has different characteristics than the 3,000 lb/day, 15% dry solids and 70% volatile solids used for the bid evaluation. In this case the available data from Newberg will be used to estimate performance parameter values which would occur if the Newberg facilities were fed with sludge at 3,000 lb/day dry solids, 15% dry solids and 70% volatile solids. The estimated values will then be used to calculate the total life cycle cost as described above.

If the calculated total life cycle cost is less than in the bid proposal, then there shall be no payments between the Owner and Contractor to compensate for operation and maintenance costs.

If the calculated total life cycle cost is more than in the bid proposal, then the Contractor shall pay the difference to the Owner in a single lump sum payment prior to project closeout to compensate for the higher costs. However, if the difference exceeds 30% of the lump sum contract amount listed in Paragraph 7, then the sludge composting facility shall be considered unacceptable and it shall be revised or replaced to complete the work in accordance with the contract documents. In no case will it be acceptable for the sawdust/sludge ratio or downtime to exceed the maximum limits defined in Section 11351, Paragraph 2.01H and 2.02B.

The numbers entered in the bid proposal for power use, power demand, sawdust/sludge ratio, downtime and chemical cost/LB sludge will be considered accurate to three places, even if numbers are entered with fewer places. For example, an entry of 1 LB/LB for the ratio of sawdust to sludge will be considered to be 1.00 LB/LB.

Operation and maintenance compensation will be independent of any liquidated damages specified in Section 00510, Paragraph 3.2

10. The following documents are attached to and made a condition of this Bid:

- a) Required Bid Security as set forth in Paragraph 6, Bid Security, in the Instructions to Bidders.
- b) A tabulation of subcontractors and other persons and organizations required to be identified in this Bid.
- c) Compost facility supplier information package, as described in Section 11351 Paragraph 1.05A.

11. Communications concerning this Bid shall be addressed to (Select one):

- a) The address of Bidder indicated below:
- b) To the following address:

12. The terms used in this Bid are defined in Article 1 of the Standard General Conditions of the Construction Contract which are included as part of the Contract Documents.

Submitted on _____, 19__

652-60a

If Bidder is:

An Individual

By: _____
(Individual's Name)

doing business as: _____

Business address: _____

Phone No. _____ License No. _____

Partnership

By: _____
(Firm's Name)

(General Partner)

Business address: _____

Phone No. _____ License No. _____

Corporation

By: _____
(Corporation's Name)

(State of Incorporation)

By: _____
(Name of Person Authorized to Sign)

(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: _____

Phone No. _____ License No. _____

A Joint Venture

By: _____
(Name)

(Address)

By: _____
(Name)

(Address)

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

End of Section

SUPPLEMENTARY CONDITIONS

1. THE GENERAL CONDITIONS

The General Conditions of this contract is the National Society of Professional Engineers and the American Consulting Engineers Council (NSPE-ACEC) document 1910-8, Standard General Conditions of the Construction Contract, 1983 edition, a copy of which is bound herein.

2. THE SUPPLEMENTARY CONDITIONS

The Supplementary Conditions contain changes and additions to the NSPE-ACEC General Conditions. Where any part of the NSPE-ACEC General Conditions is modified or voided by the Supplementary Conditions, the unaltered provisions shall remain in effect.

3. ARTICLE 1 - DEFINITIONS

A. CHANGE THE DEFINITION OF ENGINEER to read: "ARCHITECT/ENGINEER - the person, firm or corporation named as such in the Agreement. Wherever ENGINEER is called out in the contract documents it shall mean ARCHITECT/ENGINEER."

B. ADD THE FOLLOWING NEW DEFINITIONS:

"ACT OF GOD": ACT OF GOD means a cataclysmic phenomenon of nature. A rain, windstorm, high water or other natural phenomenon of unusual intensity for the specific locality of the WORK, which might reasonably have been anticipated from historical records of the general locality of the WORK, shall not be construed as an ACT OF GOD.

"PRODUCT": The term "Product" as used in these contract documents refers to materials, systems and equipment provided by Contractor.

"PROJECT MANUAL": The term "Project Manual" as used in these contract documents includes bidding requirements, conditions of the contract and specifications.

"PROVIDE": PROVIDE, wherever and in whatever manner used, shall be understood to mean PROVIDE complete in place, that is, furnish and install.

"SHALL OR WILL": SHALL or WILL whenever used to stipulate anything means SHALL or WILL be done or be performed by either the Contractor or the Owner, and means that the Contractor or the Owner has thereby entered into a covenant with the other party to do or perform the same.

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"AS SHOWN", "AS INDICATED", "AS DETAILED", "AS NOTED", or words of similar import, refer to contract documents.

"UNIT PRICE": The term "Unit Price" means a fixed price including all labor, materials, supplies, equipment, tools and all things of whatever nature required for the complete incorporation of the item into the work the same as though the item were to read "In Place," unless the plans and special provisions shall provide otherwise.

If the "Payment" clause in the specifications relating to any unit contract price in the proposal requires that said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the specifications.

4. ARTICLE 2 - PRELIMINARY MATTERS

A. DELETE PARAGRAPH 2.3 and SUBSTITUTE THE FOLLOWING:

"2.3 Within 45 days after execution of the Agreement, written Notice to Proceed will be given by the Owner to the Contractor. The Contract Time will commence to run upon the date set forth in the Notice to Proceed."

B. PARAGRAPH 2.4. In the third line of 2.4 delete the phrase "at the site," and add the following at the end of the paragraph:

"Notwithstanding any other provision of the contract, the Owner shall not be obligated to accept or to pay for any work furnished by the Contractor prior to date set forth in Notice to Proceed, whether or not the Owner has knowledge of the furnishing of such work."

5. ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

A. PARAGRAPH 4.2.1. Add the following at the end of the paragraph:

"4.2.1.1 Subsurface investigations were performed at the site of the project and reports prepared by Kelly/Strezer & Associates, Inc. These investigations were carried out for design purposes and are not considered adequate for construction. Copies of the reports are available for review at the offices of the Engineer (Kramer, Chin & Mayo, Inc., 1917 First Avenue, Seattle, WA 98101-1027; 10 SW Ash Street, Portland, OR 97204-3589; and at the City of Newberg, Public Works Department, City Hall, 414 East First Street, Newberg, OR.

a. Neither Owner nor Engineer warrants the following:

- 1) That the samples or the locations of samples are representative for the soils and conditions throughout the project.

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- 2) That the Soils Consultant's summary and recommendations accurately reflect conditions to be encountered during execution of the contract.
- 3) That variable conditions, such as groundwater, have not changed.
- b. Bidder must make his own investigations and draw his own conclusions regarding conditions to be encountered in the execution of the contract."
- c. Unforeseen conditions shall not constitute a claim for additional payment under the terms of the contract or constitute a basis for cancellation thereof.
- B. PARAGRAPH 4.2.3. Add the following paragraphs:
 - 4.2.3.3 No claim of the Contractor under this clause shall be allowed unless the Contractor has given the written notice required in Paragraph 4.2.3.
 - 4.2.3.4 No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.
- 6. ARTICLE 5 - BONDS AND INSURANCE
 - A. PARAGRAPH 5.1 A supplemental performance bond equal to 50% of the lump sum contract amount for Schedule F shall be furnished by the supplier of the sludge composting facility specified in Section 11351.
 - B. PARAGRAPH 5.3 In the first line following the word "maintain," insert the words "in a company or companies licensed to do business in the State in which the project is located,"
 - C. PARAGRAPH 5.3. Insert the following new paragraph:
 - "5.3.8 During the term of the contract the Contractor shall, at his own expense, purchase and maintain the following insurance in companies properly licensed and satisfactory to Owner:
 - 5.3.8.1 Workmen's Compensation including Occupational Disease, and Employer's Liability Insurance.
 - a. Workmen's Compensation - Amounts and coverage complying with statutory requirements.
 - b. The Contractor and subcontractors shall comply with the State Industrial Insurance Act, the Federal Longshoremen's and Harbor Workers Act and the Jones Act (Maritime Employers' Liability Insurance). In case any class of employees engaged in hazardous work under this contract are not covered by any

of the above insurances, then comparable insurance with a private insurance company shall be provided.

- c. The Contractor shall execute and file a "joint declaration of independent contractor status" pursuant to ORS 656.029.

5.3.8.2 Comprehensive General Liability including premises-operations, independent contractors' protective, products and complete operations, broad form property damage and "stop-gap" (employer contingent liability), with limits not less than those stated below:

- a. Bodily Injury
 \$ 500,000 Each person
 \$ 500,000 Each occurrence
- b. Property Damage
 \$ 500,000 Each occurrence
- c. Umbrella Excess Liability for General Liability \$5,000,000 each occurrence.
- d. Products and Completed Operations to be maintained for 2 years after final payment.
- e. Property damage liability insurance will not exclude explosion, collapse and underground damage coverage as applicable.
- f. The Owner and Architect/Engineer shall be named as an additional insured on the above liability policy, but only in respect to the Contractor's operations.

5.3.8.3 Contractual Liability

- a. Bodily Injury
 \$ 500,000 Each Occurrence
 \$ 100,000 Each Person
- b. Property Damage
 \$ 50,000 Each Occurrence

5.3.8.4 Personal Injury, with Employment Exclusion deleted:

- a. \$ 300,000 Each Occurrence
 \$ 100,000 Each Person

5.3.8.5 Comprehensive Automobile Liability

- a. Bodily Injury
 - \$ 100,000 Each Person
 - \$ 300,000 Each Occurrence
- b. Property Damage
 - \$ 50,000 Each Occurrence

5.3.8.6 Aircraft Liability (owned and non-owned) when applicable:

5.3.8.7 Watercraft Liability (owned and non-owned) when applicable:

5.3.8.8 The Contractor shall furnish "ALL RISK" Builders Risk Insurance including, but not limited to, earthquake, and the results of faulty workmanship. The Owner and all subcontractors shall be named as additional insured as their interest may appear."

D. PARAGRAPH 5.4. Insert the following new paragraph:

"5.4.1 The Contractor shall furnish one copy each of Certificates of Insurance herein required for each copy of the Agreement which shall specifically set forth evidence of all coverage required in paragraphs 5.3., 5.4, 5.6 and 5.7. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits."

E. PARAGRAPH 5.6. Replace the first sentence with the following: The Contractor shall purchase and maintain property insurance at the site to the full insurable value thereof (subject to the deductible amounts as may be required by laws and regulations). The Contractor shall be responsible for the deductible amounts.

F. PARAGRAPH 5.7. In the first line replace the word "Owner" with the word "Contractor".

G. PARAGRAPH 5.15. Add the following new paragraph. "The Contractor shall furnish one copy each of Certificates on Insurance herein required for each copy of the Agreement which shall specifically set forth evidence of all coverage required in subparagraphs 5.3.7. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits."

7. ARTICLE 6, CONTRACTOR'S RESPONSIBILITIES

A. PARAGRAPH 6.3. Insert the following new paragraph:

"6.3.1 HOURS OF WORK. The Contractor shall so schedule his operations that the work shall be performed during the daylight hours of 7:00 AM to 7:00 PM." However, when necessary to complete the project within the time specified, work may be undertaken

during the hours of darkness; provided the Contractor obtains approval of the Owner for work conducted between the hours of 7:00 PM and 7:00 AM and furnishes and operates during such period an adequate and effective artificial lighting apparatus to ensure that all work undertaken can be carried on satisfactorily in the manner contemplated by the specifications.

- B. PARAGRAPH 6.13. In the last sentence delete "and Owner shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees." And substitute "unless otherwise specified in the contract documents."
- C. PARAGRAPHS 6.23, 6.24, 6.25.2, 6.26, 6.27, and 6.28. Delete the word "approval", or "approved", or "approve" when in reference to Engineer review.
- D. PARAGRAPH 6.26. In the second sentence change "will not indicate approval" to "will not indicate a review."
- E. PARAGRAPH 6.28. Add the following new paragraph:

"6.28.1 EFFECT OF REVIEW OF CONTRACTOR'S INFORMATION. Review by the Engineer of any drawing, method of work or any information regarding materials and equipment the Contractor proposes to furnish shall not relieve the Contractor of his responsibility for any errors therein and shall not be regarded as an assumption of risks or liability by the Engineer or the Owner, or any officer or employee thereof, and the Contractor shall have no claim under the contract on account of the failure or partial failure or inefficiency or insufficiency of any plan or method of work or material and equipment so reviewed. Action other than rejection shall be considered to mean merely that the Engineer has no objection to the Contractor using, upon his own full responsibility, the plan or method of work proposed, or furnishing the materials and equipment proposed. Markings or comments shall not relieve the Contractor from compliance with the plans and specifications, nor any requirements of the contract document."

8. ARTICLE 11 - CHANGE OF CONTRACT PRICE

- A. PARAGRAPH 11.4.5.3. Add the following to paragraph 11.4.5.3:

"Ownership or rental costs of construction plant and equipment shall be in accordance with the current "Rental Rate Blue Book for Construction Equipment" and the "Rental Rate Blue Book for Older Construction Equipment" which are published by the Equipment Guidebook Company, P.O. Box 10113, Palo Alto, California 94303, at the time the change in work is authorized. The rates in effect at the time change in work is authorized, as set forth in the above, are the maximum rates allowable for equipment of modern design in good working condition and include and are full compensation for furnishing all fuel, oil, lubrication, repairs, maintenance, insurance, small tools, overhead, profit, and all

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other costs incidental to furnishing and operating such equipment except labor for operation thereof."

9. ARTICLE 13 - WARRANTY AND GUARANTEE

- A. PARAGRAPH 13.12. Add the following sentence.

"The Contractors warranty and guarantee for Schedule F shall extend one year after the date of substantial completion and until satisfactory completion of the performance tests specified in Section 11351, Paragraph 3.04."

10. ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

- A. PARAGRAPH 14.2. Application for Progress Payment. Delete the last sentence in the paragraph and add the following:

"The Owner will retain 5% of all amounts of progress payments."

When, in the opinion of the Architect/Engineer, the Contractor is not diligently pursuing completion of the work, the Architect/Engineer will withhold the monthly estimate payment until the Contractor has demonstrated to the Architect/Engineer that the project is being pursued diligently in compliance with the approved construction schedule.

The Contractor's attention is directed to the requirements set forth in Section 01700, Contract Closeout, limiting payment for work prior to the submission of acceptable operating and maintenance instructions."

- B. PARAGRAPH 14.4. In the last sentence change "ten days after presentation" to "thirty days after presentation."

- C. PARAGRAPH 14.11. Add the following new paragraph:

"14.11.1 If, during final inspection, any of the work is found to be still incomplete, or does not comply with the specifications and requires correction work by the Contractor necessitating subsequent trips of inspection by the Engineer to ascertain if the work has been properly installed and completed, the Contractor shall pay the Engineer the cost of such inspection work at the rate of \$36.00 per hour plus living and travel expenses."

- D. PARAGRAPH 14.12. Add the following new paragraph:

"14.12.1 For a listing of submissions required of the Contractor before Final Certificate for Payment will be issued see Section 01700, Contract Closeout."

- E. PARAGRAPH 14.8

"14.8.1 Contract time shall cease to run 365 days after the date of substantial completion. If all work including start up, per-

formance tests and those items required to be corrected are not completed within the contract time, the Owner shall have the right to terminate the Agreement with the Contractor and have all work completed at the Contractor's expense.

11. ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

A. Delete the article heading and substitute the words "Suspension of Work, Termination and Transfer."

B. Paragraph 15.1 service as follows:

Owner may, at any time and without cause, suspend the work or any portion thereof for a period of time as the Owner may determine to be appropriate for the convenience of the Owner in accordance with 40CFR 33.1030 paragraph 5.

C. Paragraph 15.2.9 Revise as follows:

15.2.9 OWNERS RIGHT TO TERMINATE EMPLOYMENT

Owner may, after giving Contractor and Surety 10 days written notice by certified mail, return receipt requested of the intent to terminate the services of the Contractor and an opportunity for consultation with the Owner prior to termination, terminate the services of Contractor, exclude Contractor from the site and take possession of the Work and all Contractor's tools, appliances, construction equipment and machinery at the site and use the same to full extent they could be used by Contractor (without liability to Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to Contractor. If such costs exceed such unpaid balance, Contractor shall pay the difference to Owner. Such costs incurred by Owner will be approved as to reasonableness by Engineer and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. PARAGRAPH 15.4 revise as follows:

Owner may after giving Contractor 10 days written notice by certified mail, return receipt requested, of interest to abandon the Work, and provide an opportunity for consultation with the Owner prior to abandoning the Work, may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, Contractor shall be

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paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs.)

E. PARAGRAPH 15.5 revise as follows:

15.5 CONTRACTOR MAY STOP WORK OR TERMINATE

If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety days by Owner or under an order of court or other public authority, or Engineer fails to act on any Application for Payment within thirty days after it is submitted, or Owner fails for thirty days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days and written notice to Owner and Engineer, terminate the Agreement and recover from Owner payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if Engineer has failed to act on an Application for payment or Owner has failed to make any payment as aforesaid, Contractor may upon 10 days written notice to Owner and Engineer by certified mail, return receipt requested of intent to stop work and provide an opportunity for consultation with Contractor prior to stopping the work, stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve Contractor of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with Owner.

F. Add PARAGRAPH 15.6 as follows:

15.6 OWNER'S RIGHT TO TRANSFER EMPLOYMENT

If the Contractor should abandon the work or should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if he should fail to make prompt payment to subcontractors for material or labor, or persistently disregard laws, ordinances, or the instruction of the Engineer, or otherwise be guilty of a substantial violation of any provision of the Contract or any laws or ordinance, then the Owner may, without prejudice to any other right or remedy, and after giving the Contractor and Surety 10 days written notice by certified mail, return receipt requested of intent to transfer the employment and an opportunity for consultation with the Owner prior to transfer, transfer the employment for said work from the Contractor to the Surety. Upon receipt of such notice, such Surety shall enter upon the premises and take possession of all materials, tools, and appliances thereon

for the purpose of completing the work included under this Contract and employ, by Contract or otherwise, any qualified person or persons to finish the work and provide the materials therefor, in accordance with the Contract Documents, without termination of the continuing full force and effect of this Contract. In case of such transfer of employment to such Surety, the Surety shall be paid in its own name on estimates according to the terms hereof without any right of the Contractor to make any claim for the same or any part thereof.

In lieu of the foregoing, if the Owner so elects, he may terminate the employment of the Contractor and take possession of the premises and of all materials, tools, and appliances thereon and finish the work by whatever method he may seem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of completing by Contract, through the warranty period, including compensation for addition managerial and administrative services, shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner.

11. ARTICLE 16 - ARBITRATION

- A. PARAGRAPH 16.1. Change the first sentence of Paragraph 16.1 by deleting the words "will be decided by arbitration" and replacing with "will be decided by arbitration if the parties hereto mutually agree, or in a court of competent jurisdiction within the state in which the Owner is located."
- B. Delete Paragraphs 16.2 and 16.3.
- C. PARAGRAPH 16.5. Add the following new paragraph:
 "16.5.1. It is understood and agreed that the prevailing party, should there be any suit or action commenced on this contract, shall receive from the other party a reasonable attorney's fee both for the prosecution of the action, settlement and/or judgment and upon appeal. The attorney fee shall be set by the court or courts hearing the matter. In the event of arbitration, it is understood and agreed that the arbitrator or arbitrators, as the case may be, may set reasonable attorney fees for the prevailing party which shall be paid by the other party."

12. CONTRACTOR, AN INDEPENDENT AGENT

The Contractor shall perform all work under this Contract as an Independent Agent and shall not be considered as an agent of the Owner, nor shall the Contractor's subcontractors or employees be subagents of the Owner.

13. REQUIREMENTS OF OREGON LAW FOR PUBLIC CONTRACTS

When the Contract Documents concern public works of the State or any County, municipality, or political subdivision created by its laws, the applicable statutes of the State of Oregon shall apply. For this reason, Sections 279.310 through 279.356 of the Oregon Revised Statutes, as amended or superseded, including the latest additions and revisions, are incorporated by reference as part of these Contract Documents.

These sections define the requirements of Oregon law for public Contracts:

- A. Concerning payments of laborers and materialmen, contributions to State Accident Insurance Fund (SAIF), prevention of liens, payment of withholding taxes.
- B. Concerning the maximum hours and lengths of day's labor, overtime provisions and requirements, and payment of medical care and attention to employees.
- C. Concerning payment of not less than prevailing wage rates. The Contractor shall pay not less than the prevailing rate of wages in conformance with ORS 279.350. Certification of wage payments by the Contractor shall be submitted to the Owner in conformance with ORS 279.354. Wage certification forms shall be provided by the Contractor.

The schedule of minimum hourly wage rates, as determined by the Commissioner of the Bureau of Labor of the State of Oregon is appended hereto, or will be included by an Addendum sent to all Planholders at least one week prior to the bidding date.

The Owner does not guarantee that labor can be procured for the minimum wages in the wage scale. The rates of wages listed are minimum only, below which the Contractor cannot pay, and they do not constitute a representation that labor can be procured for the minimum listed.

- D. Concerning payment of claims by public offenders, provisions relating to environmental and natural resource laws and rules, and termination of Contract by mutual agreement or for public interest.

It is understood and agreed that all parties to this Contract shall determine the contents of these applicable statutes and comply with their provisions throughout the performance of the Contract.

14. SAFETY

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property from the time of award of the Contract through and including final acceptance by the Owner. This requirement and attendant liability shall apply continuously on a 24-hour basis. Contractor's covenant to indemnify contained herein expressly includes any damages,

etc., arising out of such jobsite conditions. Safety provisions shall conform to U.S. Department of Labor (OSHA), the State Occupational Safety and Health Act, and all other applicable Federal, State, County, and local laws, ordinances, codes, the requirements set forth below, and any regulations that may be detailed in other parts of these Documents. Where any of these are in conflict, the more stringent requirement shall be followed, the Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth herein.

The Contractor shall develop and maintain for the duration of this Contract, a safety program that will effectively incorporate and implement all required safety provisions. The Contractor shall appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program.

The duty of the Engineer to conduct construction review of the Contractor's performance is not intended to include a review or approval of the adequacy of the Contractor's safety supervisor, the safety program, or any safety measures taken in, on, or near the construction site.

The Contractor, as a part of his safety program, shall maintain at this office or other well-known place at the jobsite, safety equipment applicable to the work as prescribed by the aforementioned authorities, all articles necessary for giving first aid to the injured, and shall establish the procedure for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the jobsite.

If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Engineer and the Owner. In addition, the Contractor must promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses.

If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Engineer, giving full details of the claim.

15. FEDERAL REGULATIONS

Additional Supplementary Conditions follow that are required by Federal Environmental Protection Agency Regulations under Public Law 92-500.

End of Supplementary Conditions

MINIMUM FEDERAL WAGE DETERMINATION

The labor rate schedules appended are part of this Section. These schedules are current at the time of printing. However, it is possible that changes may be issued prior to bid opening. If changes are made and published up to and including 10 days prior to bid opening, such wage schedules shall be incorporated by reference, and the successful bidder agrees to be bound by it, regardless of what is contained herein. It shall be the Bidder's responsibility to determine if a change has been published and to make certain that his proposal is based upon the latest available wage information.

The Owner does not guarantee that labor can be procured for the minimum wages shown on the appended schedules. The rates of wages listed are minimum only, below which the contractor cannot pay, and they do not constitute a representation that labor can be procured for the minimum listed.

It shall be the bidder's responsibility to determine if a change has been published and to make certain that his proposal is based upon the latest available wage information.

The bidder shall use the higher of the Federal or Oregon wage rates.



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
SEATTLE REGIONAL OFFICE
ARCADE PLAZA BUILDING, 1321 SECOND AVENUE
SEATTLE, WASHINGTON 98101

REGION X

IN REPLY REFER TO:

August 30, 1985

RECEIVED
SEP 10 1985

NEWBERG OFFICE
Kramer, Chin & Mayo, Inc.

TO: Oregon Davis-Bacon Mailing List

Attached is Modification #2, effective today, August 30, 1985, to the Oregon Statewide Decision #OR85-5030. This modification clarifies the fact that there is no "80% rate" for Group 5 Laborers (landscaping or planting labor and fence builder). The rate of \$8.00 + \$5.06 is to be used for all Group 5 laborers, no matter what the dollar amount of the project is. If you have questions or if we can be of assistance regarding the Davis-Bacon rates, please feel free to call Karen Jennings (206/442-4867), or you may write me at the above address.

Sincerely,

Joseph A. Stripling, Jr.
Joseph A. Stripling, Jr.
Regional Labor Relations Officer

Attachment

00831-2

N10010299

00831-3

DECISION NO. OR85-5030 - Mod #2
(50 FR 26893 - June 28, 1985)
Statewide Oregon

CHANGE:
LABORERS:
(See Footnote "C" Groups
1 to 4 only)

Basic Hourly Rates	Fringe Benefits

*Modification # 2
dated 8-30-85*

to

*Oregon Statewide
Decision # OR85-5030
(dated 6-28-85)*

N10010300

29594

Federal Register / Vol. 50, No. 139 / Friday, July 19, 1985 / Notices

DECISION NO. OR85-5030 - Mod #1
 50 FR 26393 - June 28, 1985
 Statewide Oregon

CHANGE:
 POWER EQUIPMENT OPERATORS:

	Base Hourly Rate	Fringe Benefits
Group 1	\$15.59	\$5.15
Group 2	15.77	5.15
Group 3	15.91	5.15
Group 4	16.13	5.15
Group 5	16.17	5.15
Group 6	16.28	5.15
Group 7	16.35	5.15
Group 8	16.49	5.15
Group 9	16.58	5.15
Group 10	16.66	5.15
Group 11	16.68	5.15
Group 12	16.78	5.15
Group 13	16.88	5.15
Group 14	17.12	5.15
Group 15	17.31	5.15
Group 16	17.56	5.15
Group 17	17.76	5.15
Group 18	18.01	5.15
Group 19	18.19	5.15

Modification # 1
 dated 7-19-85

to
 Oregon Statewide (commercial)
 Decision # OR85-5030
 (dated 6-28-85)

00831-4

N10010301

STATE: W
 DECISION NUMBER: 00831-5030
 SUPERSEDES Decision No. 0084-5020 dated June 27, 1984, in 49 FR 25821
 DESCRIPTION OF WORK: Building Projects (have not include single-family homes and apartments up to and including 4 stories), Heavy and Highway Projects, and Docking.

CITY/STATE: Stateville
 DATE: Date of Publication

	Hourly Rate	Prev. Rate		Hourly Rate	Prev. Rate
ABRISTON MECHANICS	119.52	117.52	Area 3:	18.00	1.50+30
BOILERMAKING:			Electricians	19.55	3.50+30
Work on Storage Tanks:			Cable Splicers		
Erection	17.25	4.25	Area 6:	15.00	3.75+30
Repair	16.05	4.25	Electricians	16.50	3.75+30
All other work	19.67	4.25	Cable Splicers		
BRICKLAYERS: STONEWORKERS:			ELEVATOR CONSTRUCTORS:		
Area 1	17.29	3.00	Mechanics	19.51	3.29+0
Area 2			Helpers	700	3.29+0
Projects under \$1 million	14.25		Provisionary Helpers	500	
Projects over \$1 million	17.70	3.27	ELASIS:		
CARPENTERS: (See Footnote "C")			Area 1	18.97	2.00
Bone 1:			Area 2	13.76	1.37
Group 1	17.02	4.02	IRONWORKERS:		
Group 2	17.17	4.02	Structural Reinforcing:		
Group 3	17.27	4.02	Ornamentals: Riggers: Fence	18.26	4.71
Group 4	17.42	4.02	Erectors: and Signal Men	13.55	4.87
Group 5	17.12	4.02	LATERS:		
Group 6	17.22	4.02	MARBLE SETTERS:		
Zone Differential (Add to			Area 1	17.11	2.05
Zone 1 rates):			IRON TENDERS:		
Zone 2 \$0.65			See Footnote "C"		
Zone 3 1.15			Trainers to Plasterers, Brick-		
Zone 4 1.70			layers, Tile setters, Marble		
Zone 5 2.75			setters & terrazzo workers,		
CEMENT MIXERS: (See Footnote "C")			trapping for cement finishers		
Cement Mixers	16.19	4.72	and mortar mixers	14.05	4.00
Composition Workers and Power			PAINTERS:		
Machinery Operators	16.51	4.72	Area 1:	12.25	1.70
OPHMALL & ACUSTICAL			Painters and Tapers		
APPLICATORS	14.40	4.02	Area 2:		
ELECTRICIANS:			Brush	12.07	2.66
Area 1:			Spray	13.37	2.66
Electricians	15.05	2.00+40	Bricks, high work over	13.62	2.66
Cable Splicers	16.56	2.00+40	50 ft (Brush)		
Area 2:			Bricks, high work over	14.12	2.66
Electricians	18.76	3.61+30	50 ft (Spray)	15.48	2.11
Cable Splicers	19.70	3.61+30	Drywall Tapers		
Area 3:			Area 3:	17.64	1.05
Electricians	15.00	4.35+30	Highway & parking lot painter		
Area 4:			PLASTERERS:		
Electrical Contracts under			Area 1	15.36	1.57
\$100,000:			Area 2	15.23	3.56
Electricians	15.00	2.42+30	PLUMBERS & PIPEFITTERS:		
Cable Splicers	1100	2.42+30	Area 1	16.79	4.31
Electrical Contracts over			Area 2	19.43	7.23
\$100,000:			Area 3	17.75	3.97
Electricians	18.00	2.42+30			
Cable Splicers	1100	2.42+30			

PLUMBERS & PIPEFITTERS (Cont'd)

	Hourly Rate	Prev. Rate
Area 4:	520.48	83.70
Pipefitters		
Plumbers:		
Where cost of plumbing (Labor		
+ Material) is more than	20.48	3.70
\$50,000		
Where cost of plumbing (Labor		
+ Material) is less than	16.00	3.70
\$50,000		
Area 5:	20.38	3.56
Pipefitters		
PLUMBERS:		
Where cost of plumbing (Labor		
+ Material) is more than	19.54	3.56
\$50,000		
Where cost of plumbing (Labor		
+ Material) is less than	16.00	2.06
\$50,000		
Area 6:		
Where cost of plumbing & pipe-		
fitting (Labor + Material) is	19.50	4.15
more than \$50,000		
Where cost of plumbing & pipe-		
fitting (Labor + Material) is	17.50	4.15
less than \$50,000	20.48	3.15
Area 7		
JOINT FLOOR LAYERS:	14.454	2.65+0
Area 1	13.66	1.19
Area 2	19.17	3.23
TRIMMER/FITTERS		
Area 1	20.48	3.65
FILE SETTERS:		
Area 1	17.01	3.57
Area 2	15.43	2.40
FILE & TERRAZZO HELPERS:		
Area 1	13.27	2.20
LINE CONSTRUCTION:		
Area 1:		
Bone 1:	20.03	3.25+
Group 1		3 1/20
Group 2	18.11	3.25+
		3 1/20
Group 3	16.35	3.25
		3 1/20
Group 4	15.41	2.55
		3 1/20
Group 5	13.66	2.55
		3 1/20
Group 6	13.66	2.55
		3 1/20
Group 7	12.84	2.55
		3 1/20

LINE CONSTRUCTION (Cont'd)

	Hourly Rate	Prev. Rate
Area 1 (Cont'd):		
Zone Differential (Add to		
Zone 1 rates)		
Zone 2 - \$2.60		
Zone 3 - 3.15		
Zone 4 - 3.90		
Zone 5 - 5.15		
Groups 3 and 6 receive		
Zone 1 rates only		
Area 2:		
Cable Splicer	18.66	2.25+
		3 1/20
Journeyman Lineman	16.42	2.25+
		3 1/20
Line Equipment Mechanic		
(Right of Way)	15.55	2.25+
		3 1/20
Line Equipment Mechanic		
(Base Shop)	14.57	2.25+
		3 1/20
Line Equipment Serviceman	14.57	2.25+
		3 1/20
Line Equipment Operator	14.81	2.25+
		3 1/20
Groundman	11.55	2.25+
		3 1/20
ROOFERS:		
Area 1:		
Roofers	14.60	2.90
Handling coal tar & pitch	16.06	2.90
Area 2:		
Roofers	14.75	1.72
Spray and/or application of		
irritating materials in a		
confined area	15.75	1.72
		2.05
Area 3	13.46	
Area 4	14.56	4.10
Area 5	16.48	2.55
BEST METAL WORKERS:		
Area 1	20.04	4.54
Area 2	16.97	2.25+30
Area 3	17.06	3.07+30
Area 4	15.50	2.50
PLASTERER'S TENDERS	13.56	4.06
BREEDING:		
Livestock, Hydraulic	17.83	5.05
Livestock, Dipper	18.57	5.05
Assistant Engineer (including		
watch engineer, welder,		
mechanic, machinist, Mate	17.26	5.05
Tenderman (Boatman, attending		
drivage plant), Fireman	18.83	5.05
Assistant Mate (Deckhand) Officer	16.46	5.05

652-60a

Federal Register Vol. 50, No. 125 / Friday, June 28, 1985 / Notices

26893

00831-5

N10010302

DECISION #0085-5030

DAVIS-BACON RATES FOR COMMERCIAL (residential construction of five or more stories), HEAVY AND HIGHWAY CONSTRUCTION PROJECTS. DHUD - SRN/CAN

JUL 9 1985

These wage rates, together with the labor standards provisions and all current modifications, are to be bound into the project specifications and contract documents.

RECEIVED

(Call Karen Jennings (206/442-4867) for information regarding modifications.)

POWER SALES REVENUE:

Operating Engineer

Transformer

Laborer

(See Footnote "c")

Zone 1:

Group 1

Group 2

Group 3

Group 4

Group 5

Zone Differential (Add to

Zone 1 rates):

Zone 2 - \$0.65

Zone 3 - 1.15

Zone 4 - 1.70

Zone 5 - 2.75

POWER EQUIPMENT OPERATORS:

(See Footnote "c"):

Group 1

Group 2

Group 3

Group 4

Group 5

Group 6

Group 7

Group 8

Group 9

Group 10

Group 11

Group 12

Group 13

Group 14

Group 15

Group 16

Group 17

Group 18

Zone Differential (Add to

Zone 1 rates):

Zone 2 - \$0.65

Zone 3 - 1.15

Zone 4 - 1.70

Zone 5 - 2.75

TRUCK DRIVERS (See Footnote "c"):

Zone 1:

Group 1

Group 2

Group 3

Group 4

Group 5

Group 6

Group 7

Group 8

Group 9

Hourly Rate	Fringe Benefits
\$10.37	\$4.15
9.74	3.74
8.35	4.30
9.12	4.30
12.84	5.06
13.19	5.06
13.49	5.06
13.74	5.06
8.00	5.06
15.52	5.15
15.71	5.15
15.87	5.15
16.07	5.15
16.10	5.15
16.22	5.15
16.29	5.15
16.43	5.15
16.52	5.15
16.60	5.15
16.62	5.15
16.82	5.15
17.06	5.15
17.25	5.15
17.50	5.15
17.70	5.15
17.95	5.15
18.13	5.15
15.24	4.77
15.29	4.77
15.34	4.77
15.39	4.77
15.44	4.77
15.54	4.77
15.64	4.77
15.74	4.77
15.84	4.77

TRUCK DRIVERS (Cont'd):

Group 10

Group 11

Group 12

Group 13

Group 14

Zone Differential (Add to

Zone 1 rates):

Zone 2 - \$0.65

Zone 3 - 1.15

Zone 4 - 1.70

Zone 5 - 2.75

FOOTNOTES:

a. Vacation Pay: 8% with 5 or more years of

service, 6% for 6 months to 5 years service.

Paid Holidays: New Years Day, Memorial Day,

Independence Day, Labor Day, Thanksgiving

Day and Friday after, and Christmas Day

b. Vacation Pay: 6% with less than one year of

service, 4% with less than one year. Paid

Holidays: New Years Day, Memorial Day,

Independence Day, Labor Day, Thanksgiving

Day and Friday after, and Christmas Day.

c. CARPENTERS, CEMENT MAKING, MASON TENDERS,

PLASTERERS TENDERS, LABOURERS, POWER EQUIP-

MENT OPERATORS & TRUCK DRIVERS:

All projects with a total value, including

the cost of utilities, of less than

\$1,000,000; or projects which involve work

on buildings, bridges, or docks and meet

both of the following criteria:

(A) The total cost of the project is less

than \$1.5 million excluding the cost

of underground utilities which are

located 5 ft or more outside of or

away from the building, bridge, or

dock and which are incidental or

subordinate to it. "Utilities" are

facilities for the conveyance of

electricity, water, gas, sewerage

(including storm), and communications

(B) Work on buildings, bridges, or docks

shall constitute 20% or more of the

cost of the project.

On work which meets the above criteria,

employees may be paid 80% of the basic

hourly rate plus full fringes. All

other work shall be paid at the 100% rate.

AREA AND GROUP DESCRIPTIONS

BRICKLAYERS, STONEMAKERS

Area 1: Baker, Clackamas, Clatsop, Columbia, Gilliam, Hood River, Malheur (North part), Marion, Morrow, Multnomah, Polk, Sherman, Tillamook, Umatilla, Union, Wallowa, Wasco (North of the City of Maupin), Washington, and Yamhill Counties.

Area 2: Benton, Crook, Coos, Curry, Deschutes, Douglas, Grant, Harney, Jackson, Jefferson, Josephine, Klamath, Lake, Lane, Lincoln, Linn, Malheur (South part), Wasco (including the City of Maupin and south thereof), and Wheeler County.

CARPENTERS:

Group 1: Carpenters, Automatic Nailing machine, Form Strippers, Man hole Builders.

Group 2: Floor Layers and Finishers, Stationary power saw operators.

Group 3: Millwrights and Machine Erectors

Group 4: Certified Welders

Group 5: Piledrivermen, Bridge, Dock and Wharf builders

Group 6: Boom Men

ELECTRICIANS:

Area 1: Malheur County

Area 2: Baker, Gilliam, Grant, Morrow, Umatilla, Union, Wallowa, and Wheeler Counties.

Area 3: Coos, Curry, and Lincoln Counties; Douglas and Lane Counties (Area lying West of a line North and South from the N.E. corner of Coos County to the S.E. corner of Lincoln County).

Area 4: Benton, Crook, Deschutes, Jefferson, Lane (Eastern part), Linn, Marion, Polk, and Yamhill (Southern part)

Area 5: Clackamas, Clatsop, Columbia, Hood River, Multnomah, Sherman, Tillamook, Wasco, Washington, Yamhill (Northern part of Co.)

Area 6: Harney, Jackson, Josephine, Klamath, Lake, and Douglas County (Area lying East of a line running North and South from the N.E. corner of Coos County to the S.E. corner of Lincoln County)

GLAZIERS:

Area 1: Statewide except Malheur County

Area 2: Malheur County.

00831-6

N10010303

AREA DESCRIPTIONS (Cont'd)

LATHERS:

Area 1: Clackamas, Clatsop, Columbia, Gilliam, Harney, Hood River, Morrow, Multnomah, Sherman, and Yamhill Counties

MARBLE SETTERS:

Area 1: Baker, Clackamas, Clatsop, Columbia, Gilliam, and Hood River Counties; Malheur County (north half); Multnomah, Morrow, Sherman, and Tillamook Counties; Union, Umatilla, and Wallows Counties; Wasco County (north of the City of Maupin); Washington County; Yamhill County (north half)

PAINTERS:

Area 1: Malheur County
Area 2: Remaining Counties
Area 3: Statewide

PLASTERERS:

Area 1: Benton, Coos, Crook, Curry, Douglas, Deschutes, Harney, and Jefferson Counties; Klamath County (northern one-third); Lane County; Lincoln, Linn, Wasco, and Wheeler Counties (south half)
Area 2: Remaining Counties

PLUMBERS:

Area 1: Baker County; Harney (except NW portion); Malheur County
Area 2: Grant County (except SW corner); Morrow, Umatilla, Wallows, and Union Counties
Area 3: Benton, Lincoln, and Linn Counties (north half); Marion and Polk Counties; Tillamook and Yamhill Counties (south half)
Area 4: Clackamas, Clatsop, Columbia, Gilliam, Hood River, Jefferson, Multnomah, Sherman, Wasco, Wheeler, and Washington Counties; Tillamook and Yamhill Counties (north half)
Area 5: Coos and Curry Counties; Douglas County (West Coast portion); Lane County (including the City of Florence)
Area 6: Benton County (south half); Crook and Deschutes Counties; Douglas County (except Coast portion); Grant County (SW corner); Harney County (NW portion); Jefferson County (south half); Klamath and Lake Counties (northern portion); Lane County (except the City of Florence); Lincoln and Linn Counties (south half)
Area 7: Remainder of Klamath and Lake Counties, Jackson and Josephine Counties

ROOFERS:

Area 1: Baker, Clackamas, Clatsop, Columbia, Grant, Gilliam, Hood River, Multnomah, Sherman, Tillamook, Wasco, Washington, and Wheeler Counties
Area 2: Benton, Coos, Crook, Curry, Deschutes, Douglas, Harney, Jackson, Josephine, Klamath, Lake, Lane, Lincoln, Linn, Marion, Polk, and Yamhill Counties
Area 3: Malheur County
Area 4: Umatilla, Union, and Wallows Counties
Area 5: Morrow County

AREA AND GROUP DESCRIPTIONS (CONT'D)

SHEET METAL WORKERS:

Area 1: Benton, Clackamas, Clatsop, Columbia, Crook, Deschutes, Gilliam, Grant, Harney, Hood River, Jefferson, Lincoln, Linn, Marion, Multnomah, Polk, Sherman, Tillamook, Wasco, Washington, Wheeler, and Yamhill Counties
Area 2: Baker and Malheur Counties
Area 3: Morrow, Umatilla, Union, and Wallows Counties
Area 4: Coos, Curry, Douglas, Jackson, Josephine, Klamath, Lake, Lane

SOFT FLOOR LAYERS:

Area 1: All Counties except Malheur County
Area 2: Malheur County

STEAMFITTERS

Area 1: Clackamas, Clatsop, Columbia, Gilliam, Hood River, Jefferson, Multnomah, Sherman, Wasco, Wheeler, and Washington Counties; Tillamook and Yamhill Counties (north half)

TILE SETTERS:

Area 1: Baker, Clackamas, Clatsop, Columbia, Gilliam, and Hood River Counties; Malheur County (north half); Morrow, Multnomah, Sherman, Tillamook, Umatilla, Union, and Wallows Counties; Wasco County (north of Maupin); Washington County; Yamhill County (north half)
Area 2: Benton, Coos, Crook, Curry, Deschutes, Douglas, Grant, Harney, Jackson, Josephine, Klamath, Lake, Lane, Lincoln, and Linn Counties; Malheur County (south half); Wasco County (Maupin and south thereof); Wheeler County (south half)

TILE and TERRAZZO HELPERS:

Area 1: Baker, Clackamas, Clatsop, Columbia, Gilliam, and Hood River Counties; Malheur County (north half); Morrow, Multnomah, Sherman, Tillamook, Umatilla, Union, and Wallows Counties; Wasco County (north of Maupin); Washington County; Yamhill County (north half)

LINE CONSTRUCTION:

Area 1: All Counties Except Malheur County
Group 1: Cable Splicer, Leadman Pole Sprayer
Group 2: Lineman, Pole Sprayer, Heavy Line equipment Man, Certified Lineman Welder
Group 3: Tree Trimmer
Group 4: Line Equipment Man
Group 5: Head Groundman, Powderman, Jackhammer Man
Group 6: Head Groundman (Clipper)
Group 7: Groundman

ZONE DEFINITIONS - LINE CONSTRUCTION ONLY

Zone 1 - 0 to 3 miles radius from the geographical center of Seattle, Tacoma, Portland, Medford.
Zone 2 - 3 to 20 miles radius from Seattle, Tacoma, Portland, Medford; and 0 to 20 miles radius from the Cities listed below

00831-7

N10010304

ZONE DEFINITIONS - LINE CONSTRUCTION (Area 1 only) Cont'd

- Zone 3 - 20 to 35 miles radius from all Cities
 Zone 4 - 35 to 50 miles radius from all Cities
 Zone 5 - More than 50 miles radius from all Cities

BASE POINTS

	Oregon	Idaho
Washington	Astoria	Coeur D'Alene
Bellingham	Baker	Kellogg
Ellensburg	Burns	Lewiston
Ephrata	Bend	Oro Fino
Everett	Corvallis	Sandpoint
Kennewick	Eugene	
Longview	Klamath Falls	
Olympia	Lakeview	
Spokane	Pendleton	
Walla Walla	Salem	
Wenatchee	Roseburg	
Wilbur	The Dalles	
Yakima	Umtilla	

ZONE DESCRIPTIONS FOR CARPENTERS, LABORERS, POWER EQUIPMENT OPERATORS AND TRUCK DRIVERS

CITIES		Oregon City
Albany	Grants Pass	Newport
Astoria	Hermiston	Ontario
Baker	Hood River	Pendleton
Bend	Klamath Falls	Portland
Bingen	La Grande	Port Orford
Brookings	Lakeview	Reedsport
Burns	Longview	Roseburg
Coom Bay	Madras	Salem
Corvallis	Medford	The Dalles
Eugene	McMinnville	Tillamook
Goldendale	Vancouver	

- Zone 1 - All jobs or projects located within 30 miles of the respective City Hall
 Zone 2 - More than 30 miles but less than 40 miles from the respective City Hall
 Zone 3 - More than 40 miles but less than 50 miles from the respective City Hall
 Zone 4 - More than 50 miles but less than 60 miles from the respective City Hall
 Zone 5 - More than 60 miles from the respective City Hall

LABORERS

Group 1: Asphalt Plant Laborers; Asphalt Spreaders; Batch Weighman; Broomers; Brush Burners and Cutters; Car and Truck Loaders; Carpenter Tender; Change-house Man or Dry Shack Man; Choke Setters; Clean-up Laborers; Concrete Laborers; Culvert hand labor; Curing concrete; Demolition, wrecking, and moving laborers; Driller Tenders; Dumpers, road oiling crew; Dumpmen (for grading crew); Elevator Feeders; Guard Rail, Median Rail, Reference Post, Right-of-way Marker; Fine Graders; Form Strippers (not swinging stages); General Laborers; Leverman or Aggregate Spreader (Flaherty and Loading Laborers); Material Yard Man (including electrical); Spotters and similar types; Material Chipper Operator of similar types; Ribbon Powderman Tender; Pittsburgh Chipper Operator of similar types; Road Pump Setters (including Steel Forms); Rip Rap Man (hand placed); Road Pump Tender; Sewer Labor; Signalman; Skipman; Slopers; Spraymen; Stake Chaser; Stockpile; Timber Faller and Buckor (hand labor); Tool-room Man (at job site); Tunnel Bullgang (above ground); Weightman, Crusher (aggregate when used); Railroad Track Laborers

Group 2: Applicator (including Pot Tender for same), applying protective material by hand or nozzle on utility lines or storage tanks on project; Brush Cutters (power saw); Burners; Choker Splicers; Clay Power Spreader and similar types; Clean-up Mossleman; Green Cutter (concrete, rock, etc.); Concrete Power Buggymen; Crusher Feeder; Demolition and wrecking charred materials; Grade Checker; Granite Mossleman Tender; Gunite or Pot Tender; Handlers or Mixers of all materials of an irritating nature (including cement and lime); Power Tool Operators, includes but not limited to; Dry Pack Machine; Jackhammer; Chipping Guns; Paving Breakers; Vibrators (less than 4" in diameter); Post Hole Digger, air, gas or electric; Vibrating Screed; Tampers; Sand Blasting (wet); Stake-setter; Tunnel - Muckers, Brakemen, Concrete Crew, Bull Gang (underground)

Group 3: Asphalt Bakers; Bit Grinder; Drill Doctor; Drill Operators, Air Tracks, Cat Drills, Wagon Drills, Rubber-mounted Drills, and other similar types; Concrete Saw Operator; Gunite Mossleman; High Scalars, Strippers and Drillers (covers work in swinging stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping); Laser Beam (pipe laying) (applicable when employee assigned to move, set up, align Laser Beam); Manhole Builder; Powderman; Power Saw Operators (bucking and falling); Pumpcrete Mossleman; Sand Blasting (dry); Sewer Pipe Layers; Sewer Timberman; Track Liners, Anchor Machines, Ballast Regulators, Multiple Tampers, Power Jacks; Tugger Operator; Tunnel - Chuck Tenders, Nippers, and Timbermen; Vibrator (4" and larger); Water Blaster; Welder

Group 4: Laser Beam (tunnel) - applicable when employee assigned to move, set up, align Laser Beam; Tunnel Miners; Tunnel Powderman

Group 5: Landscaping or Planting Laborer; fence builders

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POWER EQUIPMENT OPERATORS

Group 1: Oiler, including Plant, Crane, Crusher, Guardrail equipment, and Trenching Machine; Assistant Conveyor Operator; Crusher Feeder; Deckhand; Self-propelled Scaffolding Operator; Guardrail Punch Oiler; Pump Operator, under 4"; Brakeman; Switchman; Parts Man (tool room)

Group 2: Blade Operator, pulled type; Truck Crane Oiler - Driver, 25 ton capacity or over; Crane Fireman (all equipment except floating); A-Frame Truck Operator, single drum; Tugger or Coffin type Hoist Operator; Driller Tender; Auger; Oiler; Boatman; Fork Lift or Lumber Stacker Operator (on job site); Oiler, combination Guardrail Machines; Temporary Heating Plant Operator; Grade Oiler, required to check grades; Grade Checker; Tar Pot Fireman; Tar Pot Fireman (power agitated); H.D. Repairman Tender; Welder's Tender; Helicopter Radioman (ground); Roller Operator, grading of base rock (not asphalt)

Group 3: Asphalt Plant Fireman; Pugmill Operator (any type); Tractor mounted Asphalt Spreader, with Screed; Compressor Operator (any power), under 1,250 cu. ft. total capacity; Conveyor Operator; Mixer Box Operator (C.T.B., Dry Batch, etc.); Cement Hog; Concrete Saw; Concrete Curing Machine (riding type); Wire Mat or Brooming Machine; Ross Carrier Operator (on job site); Bucket Elevator Loader, Barber Greene and similar types; Hydraulic Pipe Press; Pump Operator (any power), 4" and over; Hydrostatic Pump; Motorman; Ballast Jack Tamper; Bell Boy, phones, etc.; Tamping Machine, mechanical self-propelled; Hydrographic Seeder Machine, straw, pulp or seed; Broom Operator, self-propelled (on job site); Air Filtration Equipment; Welding Machine Operator

Group 4: Screed Operator; Compactor, including Vibratory; Compressor (any power) over 1,250 cu. ft. total capacity; Combination Mixer and Compressor, Gunnite Work; Concrete Mixer Operator, single drum, under five bag capacity; Helicopter Hoist Operator; Floating Equipment Fireman; Lull Hi-lift Operator or similar type; Fork Lift, over 5 ton; Service Oiler (Greaser); Hydra Hammer or similar types; Pavement Breaker; Pump Operator, more than 5 (any size); Locomotive, under 40 tons; Roller Operator, Oiling, C.T.B.

Group 5: Extrusion Machine; Wagner Factor or similar type (without blade); Concrete Batch Plant Quality Control Operator; Power Jumbo, Setting Slip Forms, etc. in tunnels; Slip Form Pumps, Power driven Hydraulic Lifting Device for concrete forms; Hoist, single drum; Elevator Operator; Pulva-mixer or similar types; Chip Spreading Machine Operator; Lime Spreading (on job site); Sweeper (Wayne type) Self-propelled (on job site); Tractor, rubber-tired 50 H.P. flywheel and under; Trenching Machine, maximum digging capacity 3 ft. depth

POWER EQUIPMENT OPERATORS (Cont'd)

Group 6: Asphalt Burner and Reconditioner; Pavement Grinder and/or Grooving Machine (riding type); Cast-in-place Pipe Laying Machine; Maginnis Internal Full Slab Vibrator; Concrete Finishing Machine, Clary, Johnson, Bidwell, Burgess Bridge Deck or similar type; Curb Machine, Mechanical Bars, Curb and/or Curb and Gutter; Concrete Joint Machine; Concrete Planer; Concrete Paving Machine; Concrete Spreader; Loaders, rubber-tired type, 24 cu. yds. and under; Rock Spreaders, self-propelled

Group 7: Roller (any asphalt mix); Belcrete; Pumpcrete Operator (any type); Fuller-Kenyon and similar; Concrete Pump; Grouting Machine; Concrete Mixer, single drum, five bag capacity and over; Tower Mobile Operator; A-Frame Truck, double drum; Boom Truck; Churn Drill and Earth Boring Machine; Hydraulic Backhoe, wheel type 3/8 cu. yds. and under with or without front end attachments 24 cu. yds. and under (Ford, John Deere, Case type); Elevating Grader, Tractor towed requiring Operator or Grader; Pot Rammer; Ballast Regulator; Ballast Tamper, Multiple-purpose; Track Liner; Tie Spacer; Shuttle Car; Locomotive, 40 tons and over

Group 8: Diesel-electric Engineer, Plant, Crusher, Generator, Floating; Batch Plant and/or wet mix, one and two drum; Generator Operator; Belt Loader, Rollman and Ko Cal types; Asphalt Paver Operator

Group 9: Bulldozer; Drill Cat Operator; Side-boom Cat; Compactor, with blade; Concrete Cooling Machine; Chicago Boom and similar types; Lift Slab Machine; Boom type lifting device, 5 ton capacity or less; Cherry Picker or similar type Crane-hoist, 5 ton capacity or less; Grissley Crusher; Crusher Plant; Drill Doctor; Boring Machine; Guardrail Punch and Auger (all types); Surface Heater and Planer; Hydraulic Backhoe, track type 3/8 cu. yds.; Loader, Front End and Overhead, 24 cu. yds. and under 4 cu. yds.; Hammer Operator; Pipe Cleaning, Doping, Bending and Wrapping Machine; Bolt-threading Machine; Drill Doctor (Bit Grinder); H.D. Mechanic and Welder; Machine Tool Operator; Stationary Drag Scraper; Tractor, rubber-tired over 50 H.P. flywheel; Tractor with boom attachment; Trench Machine, maximum digging capacity over 3 ft. depth; Asphalt Plant Operator

Group 10: Bulldozer, twin engine (TC 12 and similar); Cable Plow (any type); Compactor, multi-engine; Jack Operator, Elevating Barges; Barge Operator, self-unloading; Combination H.D. Mechanic - Welder, with dispatcher and/or when required to do both; Rubber-tired Dozers and Pushers (Michigan, Cat, Bough type); Driller - Percussion, Diamond, Core, Cable, Rotary and similar type

Group 11: Mixer Mobile; Concrete Breaker; Crane Operator, 25 tons and under; Combination Guardrail Machines, i.e., Punch, Auger, etc.; Shovel; Dragline; Clamshell, Hoe, etc., under 1 cu. yd.; Grade-aids, under 1 cu. yd.; Mucking Machine (tunnel)

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POWER EQUIPMENT OPERATORS (Cont'd)

- Group 12: Blade Operator; Batch Plant and/or Wet Mix, 1 unit or more; Reinforced Tens Banding Machine (K-17 or similar); Hoist, two or more drums; Elevating Loader, Athey and similar; Piledriver (not crane type); Rubber-tired Scraper, single and twin engine; Single Scraper, with push-pull attachments, self-loader; Paddle Wheel, auger type; Blade mounted Spreaders, Ulrich and similar types; Shield Operator
- Group 13: Blade Operator, finish; Blade, externally controlled by electronic, mechanical hydraulic means; Blade, multi-engine; Concrete Paving Road Mixer; Derrick, under 100 tons; Hoist, Stiff Leg, Guy Derrick or similar, 50 tons and over; Cableway Operator 25 ton and over; Crane, over 25 ton and including 40 tons; Piledriver Operator; Floating Clamshell, etc., under 3 cu. yds.; Floating Crane (Derrick Barge), less than 30 ton; Elevating Grader, operated by Tractor Operator, Sierra, Euclid, or similar; Back Filling Machine; Shovel, etc. 1 cu. yd. and less than 3 cu. yds.; Grade-all, 1 cu. yd. and over; Bridge Crane Operator, Locomotive Crane, Gantry and Overhead
- Group 14: Tower Crane Operator; Rubber-tired Scraper, with Tandem Scrapers, self-loading, Paddle Wheel, auger type, finish and/or 2 or more units
- Group 15: Rock Hound Operator; Loader, 4 cu. yds., but less than 6 cu. yds.
- Group 16: Autograder or "Trimmer"; Tandem Bulldozer, Quad-nine and similar; Automatic Concrete Slip Form Pavers; Concrete Canal Line; Cableway, 25 ton and over; Crane, over 40 ton and including 100 ton; Whirley, 80 ton and under; Floating Clamshell, etc., 3 cu. yds. and over; Floating Crane (Derrick Barge) 30 ton but less than 80 ton; Loader, 6 cu. yds., but less than 12 cu. yds.; Rubber-tired Scraper, with Tandem Scrapers, multi-engine; Shovel, etc., 3 cu. yds. but less than 5 cu. yds.; Wheel Excavator, under 750 cu. yds. per hour
- Group 17: Crane over 100 ton and including 200 ton; Whirley, over 80 ton and including 150 ton; Floating Crane (Derrick Barge), 80 ton, but less than 150 ton; Loader, 12 cu. yds. and over; Shovel, etc., 5 cu. yds. and over; Canal Trimmer
- Group 18: Crane, over 200 ton; Whirley, 150 ton and over; Floating Crane, 150 ton but less than 250 ton; Wheel Excavator, over 750 cu. yds. per hour; Band Wagons, in conjunction with Wheel Excavator
- Group 19: Helicopter, when used in erecting work; Floating Crane, 250 ton and over; Remote controlled earth moving equipment; Underwater equipment, remote or otherwise

TRUCK DRIVERS

- Group 1: Battery Rebuilders; Bus or Manhaul Driver; Concrete Buggies (power operated); Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof; 6 cu. yds. and under; Lift Jitneys, Fork Lifts (all sizes); in loading, unloading and transporting material on job site; Loader and/or Leverman on Concrete Dry Batch Plant (manually operated); Pilot Car; Solo Flat Bed and misc. Body Trucks, 0-10 tons; Truck Tender; Truck Mechanic Tender; Water Wagons (rated capacity) - up to 1,600 gallons
- Group 2: "A" Frame or Hydra-lift Truck with load bearing surface; Lubrication Man, Fuel Truck Driver, Tireman, Wash Rack, Steam Cleaner or combinations; Team Drivers
- Group 3: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof; over 6 cu. yds. and including 10 cu. yds.; Slurry Truck Driver or Leverman; Transit Mix, and Wet or Dry Mix Trucks; 5 cu. yds. and under; Tireman Water Wagons (rated capacity) - 1,600 to 3,000 gallons
- Group 4: Flaherty Spreader Driver or Leverman; Lowbed Equipment, Flat Bed Semi-trailer, Truck and Trailers or doubles transporting equipment or wet or dry materials; Lumber Carrier Driver - Staddle Carrier (used in loading, unloading and transporting of materials on job site); Oil Distributor Driver or Leverman; Water Wagons (rated capacity) - 3,000 to 5,000 gallons
- Group 5: Dumpsters or similar equipment, all sizes; Transit Mix and Wet or Dry Trucks, over 5 cu. yds. and including 7 cu. yds.
- Group 6: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof; over 10 cu. yds. and including 20 cu. yds.; Transit Mix and Wet or Dry Mix Truck, over 7 cu. yds. and including 9 cu. yds.; Truck Mechanic - Welder - Body Repairman; Water Wagons (rated capacity) - 5,000 to 7,000 gallons
- Group 7: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof; over 20 cu. yds. and including 30 cu. yds.; Transit Mix and Wet or Dry Mix Trucks, over 9 cu. yds. and including 11 cu. yds.; Water Wagons (rated capacity) over 7,000 gallons to 10,000 gallons

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TRUCK DRIVERS (Cont'd)

Group 8: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 30 cu. yds. and including 40 cu. yds.; Transit Mix and Wet or Dry Mix Trucks, over 11 cu. yds. and including 15 cu. yds.; Water Wagon (rated capacity) over 10,000 gallons to 15,000 gallons

Group 9: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: Over 40 cu. yds. and including 50 cu. yds.; Transit Mix and Wet or Dry Mix Trucks, over 13 cu. yds. and including 15 cu. yds.

Group 10: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 50 cu. yds. and including 60 cu. yds.

Group 11: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 60 cu. yds. and including 70 cu. yds.

Group 12: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 70 cu. yds. and including 80 cu. yds.

Group 13: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 80 cu. yds. and including 90 cu. yds.

Group 14: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 90 cu. yds. and including 100 cu. yds.

Drivers and Tenders (handling Sacked cement - add \$0.15 per hour)

Winch Truck - takes classification of Truck on which Winch is mounted.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses 29 CFR, 5.3 (a)(1)(ii))

WELDERS; RIGGERS: Rate for craft to which welding and rigging are incidental.

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1. GENERAL

A. LIST OF ARTICLE TITLES

- 1.01 DESCRIPTION OF WORK
- 1.02 FACILITY SUPPLIER
- 1.03 RELATED WORK
- 1.04 REFERENCE STANDARDS
- 1.05 SUBMITTALS
- 1.06 EXTENDED WARRANTY AND PERFORMANCE BOND
- 1.07 OPERATION AND MAINTENANCE
- 1.08 ON-SITE SERVICES
- 1.09 SPARE PARTS
- 1.10 ACCESS AND MAINTENANCE REQUIREMENTS

- 2.01 GENERAL
- 2.02 DESIGN CRITERIA AND PERFORMANCE REQUIREMENTS
- 2.03 MATERIALS AND EQUIPMENT
- 2.04 ELECTRICAL SYSTEM

- 3.01 INSTALLATION
- 3.02 PAINTING
- 3.03 STARTUP AND TESTING
- 3.04 PERFORMANCE TESTING
- 3.05 OPERATOR TRAINING

1.01 DESCRIPTION OF WORK

- A. The sludge composting facility constitutes the major element of Schedule F work. This section specifies a complete facility to compost dewatered waste oxidation ditch sewage sludge with addition of sawdust and recycled compost in one or more, aerated vessel reactors. Equipment and structures include a covered dewatered sludge hopper with outfeed device, an enclosed sawdust storage silo with outfeed device and sawdust unloading facilities, aerated compost reactors with associated outfeed devices and other appurtenances, compost reactor aeration and exhaust blowers, condensate removal and odor control scrubber equipment, materials handling equipment including a conveyor from the adjacent solids handling building, sawdust silo and compost reactor discharge conveyors, a central compost conveyor, a compost lift conveyor, a continuous flow compost mixer, and a mixed compost feed conveyor to the compost reactor. Also included is a complete structure to house equipment, including all mechanical and electrical systems for this structure, and a complete control system for equipment provided.

- B. Equipment list: Provide equipment as specified including the following items identified by equipment number. This equipment list is general and conceptual in nature and is not intended to be complete. It is based on a Taulman Weiss system, and other suppliers may be able to perform the same functions with other equipment.

<u>Equipment No.</u>	<u>Equipment Name</u>
B8-01	Sawdust Feed Blower
B8-02	Compost Aeration Blower 1
B8-03	Compost Aeration Blower 2
B8-04	Compost Exhaust Blower 1
B8-05	Compost Exhaust Blower 2
CON8-01	Sawdust Feed Conveyor
CON8-02	Sawdust Silo Discharge Conveyor
CON8-03	Dewatered Sludge Hopper Feed Conveyor
CON8-04	Dewatered Sludge Hopper Discharge Conveyor 1
CON8-05	Dewatered Sludge Hopper Discharge Conveyor 2
CON8-06	Central Compost Conveyor
CON8-07	Compost Lift Conveyor
CON8-08	Compost Feed Conveyor
CON8-09	Compost Discharge Conveyor
CON8-10	Finished Compost Conveyor
CV8-02	Compost Aeration Control Valve 2
CV8-03	Compost Aeration Control Valve 3
CV8-04	Compost Aeration Control Valve 4
EF8-02	Sludge Hopper Exhaust Fan
FLT8-01	Sawdust Silo Baghouse
DU8-01	Sawdust Silo Outfeed Drive
HDU8-01	Compost Distributor Drive
HDU8-02	Compost Reactor Outfeed Screw Drive
HDU8-03	Compost Reactor Outfeed Drive
MME8-01	Rotary Sawdust Feeder
MME8-02	Sawdust Silo Target Box
MME8-03	Compost Mixer
MME8-04	Compost Distributor
SCW8-01	Sawdust Silo Outfeed Screw
SCW8-02	Dewatered Sludge Hopper Leveling Screw
SCW8-03	Compost Reactor Outfeed Screw
T8-01	Sawdust Silo
T8-02	Dewatered Sludge Hopper
T8-03	Compost Reactor

1.02 FACILITY SUPPLIER

- A. The compost facility shall be furnished by a single supplier who shall be responsible for preparing the detailed design, furnishing the equipment, inspecting construction by the Contractor, check out and start-up of the compost facility.
- B. The composting facility shall be furnished by Purac, Taulman Weiss, or equal.

- C. The supplier shall furnish a paid-in-full license to operate the facility and shall indemnify the Owner and Engineer from any and all actions related to patent rights for the facility.
- D. The supplier shall retain engineers licensed to practice in the State of Oregon to perform the design of the facilities called for in this section of the specifications.
- E. The supplier shall have his own in-house capability to handle engineering and construction coordination. He shall incorporate a quality assurance program to ensure the quality of the finished facility and shall maintain a field service organization for maintenance and assistance after construction.
- F. The Contractor is advised that the drawings depict a facility designed by Taulman Weiss. They are conceptual in nature and are not intended to be sufficiently detailed for construction, however, they are intended to depict a complete and operable facility.

Should the Contractor propose an alternate supplier it is the intent of the drawings and specifications to define minimum standards for equipment type and quality, space requirements, access to equipment, spare/standby equipment, separate sections of the structure for controls, electrical equipment, aeration equipment, and other elements which would be common to any facility.

- G. The Contractor shall submit with his bid, the proposal, designs, and general arrangement of the proposed supplier, as described in Paragraph 1.05A of this section of the specifications.

1.03 RELATED WORK

- A. In the construction of the work described in this specification section, and all other work included in Schedule F, all other divisions and sections of these specifications shall apply.

1.04 REFERENCE STANDARDS

- A. As a minimum, the following standard specifications shall apply. For other applicable standards and the requirements thereof, see Section 01010, Paragraph 1.20.

1. American Society for Testing and Materials (ASTM)

- a. A 36-77A Standard Specification for Structural Steel.

- b. A 263-79 Standard Specification for Corrosion-Resisting Chromium Steel Clad Plate, Sheet, and Strip.
- c. A 570-79 Standard Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality.
- 2. American Iron and Steel Institute (AISI).
- 3. American Gear Manufacturer's Association (AGMA).
- 4. American Petroleum Institute (API).
- 5. American Water Works Association (AWWA).
- 6. Conveyor Equipment Manufacturers Association (CEMA).
- 7. Instrument Society of America (ISA).

1.05 SUBMITTALS

A. Bidders information package:

- 1. The compost facility supplier is required to submit an information package along with the Contractor's bid for the Sludge Composting Facility, Schedule F.

The Engineer will review the suppliers information package and determine if the supplier is qualified to meet the minimum needs and specifications. If the supplier is not qualified, then the Contractor's bid for Schedule F will be rejected as nonresponsive.

Approval as being qualified to offer equipment for the project does not exempt the supplier from meeting the requirements of the project specifications. The project specifications are the final authority for the acceptance of equipment.

Approval of a qualification package does not eliminate the need for shop drawing submittals and approvals during construction nor does it eliminate the requirement that the equipment manufacturers satisfy the performance testing requirements of the technical specifications.

The information package shall include but not be limited to the following:

- a. Explanation and listing of deviations and modifications from the plans and specifications.
- b. Proposed site plan, building floor plans and elevations, and equipment layouts.

- c. Schematic process drawings, comparable to contract drawing CP-01.
- d. Description of proposed equipment, including weights.
- e. Mechanical and process warranties.
- f. Proposed design criteria.
- g. Process calculations with air requirements and mass balance which is basis for bid proposal sawdust/sludge weight ratio.
- h. Operation and maintenance information.
 - 1) Operating sequence
 - 2) Power consumption and power demand calculations which are basis for bid proposal figures.
 - 3) Total O&M manhour and materials cost per year for the sludge composting facilities including but not limited to the following:
 - a) Composting bioreactor.
 - b) Sawdust storage and conveyor system.
 - c) Mixing system for recycle sawdust and sludge.
 - d) Conveyor and feeding system.
 - e) Cure pile aeration system.
 - f) Exhaust gases collection, transporting and treatment system.
 - g) Further dewatering system (if any).
 - h) Control instrumentation system.
 - i) Other support systems.
- i. Provide the following information for all of the supplier's compost facility installations (if more than 5, provide 5 that are currently in operation and have been in operation from 2 to 5 years). Include installations anywhere in the world that can be telephoned:
 - 1) Owner and operator of system
 - 2) Location

- 3) Contact person
 - 4) Telephone number
 - 5) Years in operation
 - 6) Capacity - dry tons of sludge per year
 - 7) Percent feed sludge solids concentration
 - 8) Brief description of system
 - 9) Carbonaceous material
 - 10) Product output, tons per year
- j. Two years of operating and performance data from the most comparable sludge composting facility, designed, commissioned and manufactured by the proposed supplier.
2. Minimum needs: The information package will be evaluated to determine whether the supplier is qualified to meet the following minimum needs:
- a. The facility shall meet the moisture removal, odor removal, pathogenic safety, temperature profile and seed germination requirements described in Paragraph 2.02, Paragraph 3.04 and other portions of Paragraph 11351.
 - b. The compost reactor flow path shall be essentially plug flow with recycle to achieve the solids and hydraulic retention times specified in Paragraph 2.02.
 - c. The ratio of weight of sawdust to sludge dry solids shall be 2.2 or less.
 - d. A statement indicating that a separate performance bond as specified in Paragraph 1.06 will be provided.
 - e. The supplier has previous project of similar size and complexity which compost similar materials. Operational history of project should be included with information package.
 - f. Written evidence indicating the supplier has sufficient financial strength and/or backing to perform the project.
 - g. All regular operation and maintenance work can be done as specified in Paragraph 1.07C.

- h. All regular operation and maintenance work can be done without subjecting the Owner's staff to extreme temperature, humidity, odor or other foul environments.
 - i. The maximum downtime for the composting system shall be as specified in Paragraph 2.01H.
 - j. All exhaust gases from Schedule E DAF tank foul air exhaust, compost reactors, mixing/feeding area and aerated cure piles are collected and transported to a system which removes odor and moisture resulting in effluent gaseous quality meeting odor, opacity and visible moisture removal requirements as specified in this section and as required by the Oregon State Department of Environmental Quality.
 - k. Land requirements for the facility are comparable to those shown on the drawings.
 - l. Facility capacity can be doubled by adding reactors to the south or east utilizing same sawdust system, sludge bin. conveyors, mixers and standby blowers. Roadways can be relocated.
 - m. The compost reactor shall be designed to minimize compaction and maximize porosity of compost inside the reactor.
 - n. The reactor will be designed to minimize piping inside the reactor per Paragraph 2.03D.3.
- B. Licensor review: The suppliers licensor (if any) shall review and approve all preliminary and detailed design submittals for the sludge composting facility, prior to their being submitted to the Engineer for review.
- C. The following submittals shall be provided in accordance with the requirements of Section 01340, Shop Drawings, Product Data, and Samples.
- 1. Preliminary design drawings and specifications.
 - a. Design data for each element.
 - b. Complete process and instrumentation diagrams in accordance with ISA standards.
 - c. Soils investigations, including test borings, related analyses and recommendations as necessary to establish design. Subsurface conditions and interpretations are the sole responsibility of the supplier, subject to Article 4 of the General and Supplemental General Conditions.

- d. Detailed plan view(s) establishing the layout of major equipment and all related service and equipment interties such as roads, conveyors, water or electric service.
 - e. Profile(s) establishing the elevation of major equipment and highest and deepest elements major or minor, such as conveyors, handrails, or piping.
 - f. Specification outline detailed to a subsection basis; include within the outline the basic materials of construction for all major elements of the construction.
 - g. Complete construction documents for all fast-track construction items such as excavation work or foundation work.
2. Detailed design drawings and specifications prepared for all structural, mechanical, electrical, architectural elements and associated civil sitework necessary to place the composting facility in operation as developed in preliminary design submittals.
 3. Complete and comprehensive construction shop drawings for all equipment provided per Section 01340 of the specifications.
 4. The supplier shall submit a detailed description of procedures to be used during the performance tests described in Paragraph 3.04. The procedures shall be submitted at least 60 days before the beginning of the performance tests. The submittal shall describe pre-test calibration of instruments; pre-test measurements; activities to be performed by the Owners personnel, Contractor's personnel and suppliers personnel; schedule of operation and monitoring activities during the test, calculation procedures used to reduce test data, and outline for the performance test report which the supplier will prepare following the test.
 5. Detailed report on performance tests.
 6. One complete set of full size (22 by 34 inch) as-built reproducible drawings and 10 sets of half size, bound as-built drawings black line or good xerox quality.

1.06 EXTENDED WARRANTY AND PERFORMANCE BOND

- A. Extended warranty: The supplier shall provide a written warranty and guarantee that the sludge composting facility will meet all efficiency and performance requirements described in Section 11351. The extended warranty and guaran-

tee shall commence upon the date of substantial completion and shall continue for a period of two years, and for at least one year beyond satisfactory completion of the performance tests specified in Paragraph 3.04.

- B. Bond: The supplier shall provide a separate performance bond for the faithful performance of the warranty and guarantee. The performance bond shall be equal to 50% of the value of Schedule F as required in Paragraph 6 of the Instructions to Bidders. The performance bond shall commence upon the date of Substantial Completion and shall continue for a period of one year and until satisfactory completion of the performance tests specified in Paragraph 3.04.
- C. During the extended warranty and performance bond period the Owner shall perform and document all operation and maintenance (O&M) in accordance with the O&M manual provided by the supplier. The Owner and supplier recognize that the O&M documentation will constitute substantial evidence regarding whether the facility has been operated and maintained correctly.
- D. Response to defective performance: If the Owner believes that the facility is being operated and maintained correctly and that performance is defective, the Owner shall notify the supplier in writing. The written notice shall be delivered to the supplier by Certified/ Registered mail at the address supplied on the bid form or as mutually agreed upon. The supplier shall take corrective action within 7 days of written notice, otherwise the Owner shall have the right to incur allowable costs and take corrective action on his own or with help from others.

Corrective action by the supplier may begin with a work plan to clearly define the defect quickly and efficiently. This work plan shall be performed promptly and thereafter necessary modifications to O&M procedures and the sludge composting facilities shall be made in a timely manner.

- E. Allowable costs: The allowable costs which may be incurred by the Owner against the supplier's warranty or bond shall include the following.
 - 1. Costs for assistance from others to correct deficiencies. This assistance may include costs for consultants to study problems and to design and supervise construction of modifications, and costs for service representatives and contractors to make repairs and modifications.
 - 2. Costs for equipment and materials to correct deficiencies.
 - 3. Incremental costs for handling and disposing of sludge during the period of defective performance.

4. Replacement of overall system as may be required if the system fails to meet the performance requirements as specified in Paragraphs 1.05A2, 2.02 and 3.04.

1.07 OPERATION AND MAINTENANCE

- A. Provide operation and maintenance information with the bidders information package as described in Paragraph 1.05.
- B. Provide complete operation and maintenance data as required by Section 01730, Operating and Maintenance Data.
- C. The sludge composting facility shall be designed such that all regular operation of the facility can be done by one person in 40 hours during a regular 5-day Monday to Friday work week when the facility is loaded at the maximum specified rate. Also there shall be sufficient time available within the 40 hour week for the same person to operate the City-owned, 3-cubic yard front-end loader to transfer compost to and from the cure piles. The sludge composting facility shall be designed such that all regular maintenance of the facility can be done by one person in 20 hours during a regular Monday to Friday work week when the facility is loaded at the maximum specified rate.

1.08 ON-SITE SERVICES

- A. Provide on-site inspection during construction of the facility sufficient to assure conformity with the detailed facility design. Upon completion of the facility, the supplier is required to have a professional engineer registered in the State of Oregon certify that the sludge-composting facility was constructed and completed in accord with the detailed design, change orders and as-built drawings.
- B. Perform complete checkout and startup of the compost facility per Section 01650, except as modified in this section of the specifications. Following successful start-up the supplier shall provide at least one person on site 40 hours per week during the performance test to supervise operation and maintenance and to conduct performance test as described in Paragraph 3.04. The person shall be approved by the Owner.

The supplier shall provide a process engineer and an instrument engineer as well as any mechanical and/or construction labor necessary for adjustment or alterations, during checkout, start-up and the supplier supervised operating period.

- C. Operator training: Operator training shall be provided by the supplier to the Owner's operating and maintenance personnel. The training shall be provided by a combination of mechanical, instrument/electrical and process engineers. The instructor for compost process training shall be approved by

the Owner. All training must be in English or include an acceptable interpreter.

Training of operating and maintenance staff shall include a series of formal training sessions and field training sessions. Topics covered shall include, but not be limited to, plant operation, plant maintenance, safety procedures and contingency operations, and use of the operation and maintenance manuals. The training shall be completed within 3 months of plant startup. The instructor shall be approved by the Owner.

1. Formal training sessions shall be provided for two (2) operators or helpers, two (2) maintenance personnel, one (1) lab technician and one (1) engineer. Formal sessions shall be run on each of the following phases:

- Process description and control parameters
- Mechanical equipment operation
- Mechanical equipment maintenance
- Electrical and instrument control - O&M
- Laboratory testing
- Safety
- Troubleshooting
- Instrumentation calibration and certification

A schedule of training sessions shall be provided for coordination and approval by the Owner's operations and maintenance staff. The formal sessions are to cover at least one (1) week but not exceed two (2) weeks and are to be held at the Newberg Wastewater Treatment Plant conference room. The formal training sessions must be provided prior to any Owner operational or startup assistance in the field. The training sessions must be scheduled to allow time for the plant staff to perform essential operations at the existing plant.

2. Field training for above personnel, as applicable, shall be provided at the composting facility through "hands on" instruction. The field instruction will include operation of all mechanical, electrical and instrument equipment. Field training sessions shall be provided throughout first week of the supplier supervised operating period, and for at least 1 hour per week during the remainder of the supplier supervised operating period.

- D. Follow-up service: The supplier shall provide 12 man days on site, excluding travel time, of on-site servicing by qualified technicians or engineers on at least 6 service calls. The Owner will schedule service calls 2 weeks in advance, except during emergencies. All the service calls will be scheduled within 2 years following the end of the supplier supervised operating period.

The service provided will include, but not be limited to:

Refresher training of operators
 Safety inspections and instruction
 Preventative maintenance instructions
 Efficiency analysis
 Unscheduled maintenance when required on an emergency basis

1.09 SPARE PARTS

A. Provide spare parts as follows:

1. For the Compost Reactor Outfeed Device and Drive - one set of rotor bearings, and one set of replacement seals.
2. For the Compost Mixer - one set of bearings and seals.
3. For Aeration Blowers - spare parts as specified in Section 15152.
4. For Materials Handling Equipment - one idler set for each screw conveyor, one end bearing set for each screw conveyor, five links of drag chain for each type supplied, and belt conveyor spare parts as specified in Section 14550.
5. For hydraulic units: One set of bearings and seals of each size and type, 50 gallons of hydraulic fluid, repair kit for hydraulic pump, repair kit for hydraulic cylinder, and 1 set of spare hoses.
6. Spare parts recommended by the compost facility supplier which are needed to comply with the downtime requirements in Paragraph 2.01H.

B. Furnish any special tools, instruments or accessories required for normal operation and maintenance.

C. Spare parts shall be packaged as specified in Section 01700.

1.10 ACCESS AND MAINTENANCE REQUIREMENTS

A. All items requiring routine inspection and/or maintenance shall be provided with suitable access. Access shall be provided to the roof of the reactors by a UBC stairwell, with grating platforms and landings as required for operation and maintenance.

B. Metal guardrails 42 inches high as shown on the drawings shall be provided at stairwells, platforms, walkways, landings and unprotected floor openings as required by UBC, Section 01716.

- C. Provide appropriate inspection or sight ports to observe enclosed process operations.
- D. Provide lubrication points in readily accessible locations for all equipment requiring lubrication.

2. PRODUCTS

2.01 GENERAL

- A. The construction materials and workmanship for the sludge composting facility (Schedule F work) shall be equivalent in quality to the Schedule E Wastewater Treatment Plant facility. The solids handling building will be used as the primary quality standard used to judge for equivalence in quality. Materials, finishes and details shall match or be as similar as possible features used in Schedule E. This applies to all aspects of the sludge composting facility including civil, architectural, structural, mechanical and electrical work. For example, materials used in sludge composting facility buildings will include hose racks and washdown stations, concrete block interior walls, hollow metal doors with windows and painted interior finishes, since this is the quality standard established by the solids handling building.
- B. In the construction of the work described in this specification section and all other work included in Section F, all other divisions and sections of these specifications and all general and standard drawing details shown in General, Civil, Landscape, Architectural, Structural, Mechanical, Electrical, and Instrumentation Drawings shall apply.
- C. The sludge composting facility shall be provided consistent with all state, county and local building and fire codes. Also the design of all structures shall be based on Zone 2 earthquake loads and for a basic wind speed of 80 mph, exposure B per the UBC as amended by the State of Oregon.
- D. Site plan: The site plan for the sludge composting facility shown on the drawing is based on the Taulman Weiss system. It is expected that Taulman Weiss may slightly revise this site plan and that other suppliers will have different site plans. However, each site plan must meet the following requirements:
 - 1. The land area required for the facilities are comparable to those shown on the drawings.
 - 2. The layout must allow the Owner to double the reactor volume by adding reactors to the south or east utilizing the same sawdust system, sludge bin, conveyors, mixers and standby blowers.
 - 3. Construction of the compost facility structures must not interfere with the soil preload or foundation conditions

for the solids handling building in Schedule E. In particular the sawdust silo and compost building shall be no closer to the solids handling building than shown.

4. Roadways can be removed to the east if necessary to accommodate the compost facility structures. Roadways to the north must not be moved, because the area to the north is reserved for future expansion of the wastewater treatment processes.
- E. The sludge composting facility shall aerobically stabilize dewatered waste oxidation ditch sludge inside one or more reactors. The input material shall undergo the following processes, while contained within the reactors:
 1. Thermophilic, exothermic, biological digestion.
 2. Mesophilic, exothermic, biological digestion.
 3. Physical drying, due to evaporation caused by the air flow through the system.
 4. Sterilization and/or inactivation of seeds and pathogenic organisms by maintaining a temperature of at least 55 degrees C, but less than 80 degrees C, for a minimum of 72 hours continuously. The material shall be pathogenically safe as indicated by salmonella bacteria and described in procedure 912 of the 16th Edition of Standard Methods. The acceptable level of salmonella shall be a median of not more than 1 MPN per gram of solids and 10% of the samples not to exceed 10 MPN per gram of solids.
 5. Removal of obnoxious odors.

The flow path of compost through the reactors shall be essentially plug flow to ensure a minimum of 3 continuous days exposure to temperatures in excess of 55 degrees C. Reactors shall be cylindrical, or rectangular with weatherproof roof or top. Feed material to the compost reactors shall be a mixture of dewatered sludge, wood sawdust, and recycled compost from the reactor. These components shall be thoroughly mixed prior to distribution into the reactors. Outfeed shall be accomplished in a manner to ensure plug flow through the reactors. Atmospheric air shall be delivered to the reactors and evenly distributed in a manner designed to satisfy aeration requirements of the composting mass.

The material discharged from the reactor will be cured outdoors in aerated piles. After this cure period the material shall be dark brown and friable, similar to commercially available peat moss products, with an odor similar to freshly turned woods soil. Upon completion of the cure period the material shall be stabilized to allow 50% or more germination of celery and timothy seeds as described in Paragraph 3.04C.

Outfeed Device

Type	Rotating Screw Auger	Same
Drive	Variable speed	
Capacity		
ton/hr	Minimum range:	Same
	0.8-10	
cf/hr	Minimum range:	Same
	80-1100	

Compost Reactor

Design "hydraulic" retention time HRT, days	Minimum: 14	Same
Design solids retention time SRT, days	Minimum: 60	30
Design compost tempera- ture, degrees C	Maximum: 80 Minimum: 45	Same Same
Depth of Compost, feet	Maximum: 26	Same

Outfeed Device

Type	Rotating screw auger	Same
Drive	Variable speed	Same
Capacity		
Ton/hr	Minimum range: 2-40	Same
cf/hr	Minimum range: 100-2000	Same

Infeed Device

Capacity		
Ton/hr	Minimum range: 2-40	Same
cf/hr	Minimum range: 100-2000	Same

Dewatered Sludge Feed
Conveyor

Type	Belt	Same
Drive	Constant speed	Same
Capacity		
Ton/hr	Minimum: 10	Same
cf/hr	Minimum: 350	Same

Central Compost Conveyor

Type	Screw or drag chain	Same
Drive	Constant speed	Same

Compost Lift Conveyor

Type	Drag chain	Same
Drive	Constant speed	Same

Compost Feed Conveyor

Type	Screw or drag chain	Same
Drive	Constant speed	Same

Finished Compost Conveyor

Type	Screw or drag chain	Same
Drive	Constant speed	Same

Compost Mixer

Type	Continuous	Same
Detention time, minutes	Minimum: 1.0	Same

Sawdust Unloading System

Sawdust Feed Conveyor

Type	Pneumatic	Same
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Capacity

Ton/hr	Minimum: 20	Same
cf/hr	Minimum: 2200	Same

Sawdust Feed Blower

Type	Rotary	Same
Capacity, cfm	Minimum: 2200	Same

Reactor Aeration SystemCompost reactor aeration
blowers

Type	Constant speed rotary positive displacement	Same
Capacity, excluding standby blowers SCFM/1000 CF reactor volume	Minimum: 90	120

Compost reactor exhaust
blowers

Type	Constant speed centrifugal	Same
Capacity, excluding standby blowers SCFM/1000 CF reactor volume	Minimum: 90	120

Aerated Cure Pile Blowers

Capacity, scfh/dry ton of compost	Minimum: 500	Same
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Moisture and Odor Removal System

Type	Submerged diffuser or heat exchanger and odor scrubber	Same
<u>Sources</u>		
- reactor exhaust, SCFM/1000 CF reactor volume	Minimum: 90	120
- compost building foul air exhaust, SCFM	As required	Same
- DAF tank exhaust, SCFM	Minimum: 900	Same
- Aerated cure pile exhaust, scfh/dry ton	Minimum: 500	Same

Aerated Cure Piles

Volume, cubic feet	Minimum: 16,000	Same
Maximum height, ft.	12	Same
Maximum width, ft.	40	Same

2.03 MATERIALS AND EQUIPMENT

- A. Dewatered sludge hopper shall be fabricated of a minimum of 1/4-inch steel plate of sufficient structural strength for imposed loads with stiffeners and bracing as required. Designs shall be in accordance with AISI and ASTM A 283. The hopper shall be ventilated so that foul odors are removed from the hopper area and are exhausted through the odor control system. The hopper shall be provided with leveling screws if necessary to achieve the specified storage volume of sludge. The hopper shall be provided with removable covers, including access and inspection hatches. The hopper shall be provided with screw outfeed device (also referred to as a discharge conveyor on the equipment list) capable of discharging hopper material at a continuous and metered rate. Although the drawings show two discharge conveyors in the sludge hopper, the supplier shall determine how many to provide to assure uniform removal of sludge from the hopper. The outfeed device shall be driven by hydrodynamic variable-speed drive.
- B. Sawdust handling and storage system: Provide a complete system for sawdust truck unloading, pneumatic conveying, storage, and discharge to the compost reactor.

The sawdust handling and storage system shall be in compliance with local fire department regulations.

The pneumatic conveying system shall pick up sawdust by vacuum or suction from an adjacent, outdoor, at-grade truck unloading area and convey it into the sawdust storage silo. Portable apparatus used to pick up sawdust shall include a manually positioned air intake nozzle with density air screening device and flexible intake hose. All other equipment used to convey sawdust shall be permanently installed in the sawdust blower room in the compost building. The portable pick up hose shall be connected to the indoor equipment via a through-wall intake pipe with quick coupling. Sawdust shall be separated from the intake air so that it does not pass through the blower. It shall be separated with a gravity separator, cyclone filter/cyclone, and protecting screen which discharge air into the blower and sawdust into rotating airlock feeders. The blower shall discharge air through injectors which draw sawdust from the air lock feeders and then the sawdust and air shall be blown under high pressure into the sawdust silo target box.

The pneumatic conveying system shall also include protective screens, filling level limit switch, discharge-lock protecting device, pressure safety valve and interconnecting air piping.

Each rotating airlock sawdust feeder shall include safety interlock, hinged knife access door, top knife guard, anti-dusting baffle, subknife wear bar and inlet impact liner. Nameplate motor horsepower shall be as required for the design load of Paragraph 2.02 using less than 95% of nameplate. Motor shall be Type I, TEFC as specified in Section 15030.

The blower shall be a rotary positive displacement air blower with inlet filter, silencer and discharge silencer. The blower shall be Type A as specified in Section 15152. Capacity shall be a minimum of 2200 cfm for a discharge pressure as required. Motor horsepower shall be selected for the material handling capacity indicated in Paragraph 2.02 but no less than 50 hp. Motor shall be Type I, TEFC as specified in Section 15030. Belt drive shall be as specified in Section 15050.

The target box shall be mounted at the top of the sawdust storage silo. It shall include a baghouse filter system to separate sawdust from air used to convey the sawdust into the silo, and it shall include provisions for shaking or otherwise cleaning the bags. The target box shall be constructed of 12-gage galvanized steel and bolted to the top of the sawdust storage silo with structural steel shapes.

The entire pneumatic conveying system shall be supplied by a single supplier, Buhler-Miag (Catalog FS/PN 1502C, Pneumatic Conveying Plants), or equal.

The sawdust storage silo shall be a covered, bolted steel tank conforming to AWWA D103-80, complete with access stair, top handrail, baghouse vent, outfeed screw and discharge conveyor. Tank volume shall be as specified in Paragraph 2.02. Tank materials shall be as follows:

<u>Item</u>	<u>Material</u>
Steel sheets	ASTM A 570 Grade 33
Plate	ASTM A 36
Structural shapes	ASTM A 36
Bolts	API 12B, Appendix A
Gaskets	Nitrite Prefabricated

Tank shall be provided with a 3-foot by 3-foot bolted steel roof hatch with curbed opening. Access stairwell shall be 3-foot-0-inch wide and conform to the requirements of the latest UBC. At the suppliers option the sawdust silo may be moved closer to the compost reactor and linked to the reactor with an access bridge, to avoid the expense of a separate access stair well for the sawdust silo. Handrail shall be as shown on the drawings.

The center discharge screw shall rotate around the bottom of the sawdust silo and withdraw sawdust from the entire silo bottom. Screw auger shall be a minimum of 3/8-inch steel flighting with bolted-on carbon rundum tipped boron steel knives. Center tube shall be 1/2-inch minimum wall thickness. The outfeed screw shall be driven through a right angle gear by a variable-speed drive.

The outfeed screw shall be designed for the loadings indicated in Paragraph 2.02. Nameplate horsepower shall be adequate to drive the screw at these loadings using less than 95% of nameplate but no less than 20 horsepower. Motor shall be explosion-proof as specified in Section 15030. The outfeed drive shall be sized for load at no more than 95% of nameplate but no less than 0.5 hp.

Motor shall be TEFC, Type I as specified in Section 15030. Chain and guard shall be as specified in Section 15050. Sawdust discharge screw shall be Model 198 as manufactured by Laidig, Inc., or equal.

- C. Compost reactor: One or more compost reactors shall be provided and sized by the supplier subject to the limitations in Paragraph 2.02 of this section of the specifications. Paragraph 2.02 allows the compost facility to be sized according to two alternative sets of design criteria. Suppliers who

elect to size the facility according to the Alternative 2 criteria are required to provide supplemental drying and/or dewatering of the sludge, sawdust and/or recycle compost, individually or combined in mixtures. Potential procedures include air drying in the sawdust silo or compost reactor or using sawdust or recycle compost as a filter aid with a high pressure press. The supplier is required to submit performance data from pilot or full scale facilities which show that the supplemental dewatering and/or drying will perform as claimed by the supplier. Also the associated equipment must be standard products in regular production with proven mechanical reliability. Suppliers who size the facility according to the Alternative I criteria are not required to provide supplemental drying or dewatering.

Reactors shall be designed to minimize compaction and maximize porosity of compost inside the reactor, to assure uniform aeration of the compost. In no case shall compaction be more or porosity be less than occurs from natural consolidation with a compost depth of 26 feet.

Reactors shall be sufficiently airtight to prevent compost gases or vapors from escaping the reactor exhaust system and moisture and odor removal system. Seals shall be provided at the filling and unloading points as needed to achieve this level of airtightness. Totally enclosed reactors shall be equipped with pressure and vacuum relief to protect structures.

Other considerations for design shall include but not be limited to superimposed loadings, properties of compost material during filling and withdrawal operations, collapsing and arching of compost materials, temperature differentials between vessel interior and outside ambient air, and between different layers of stored material within the reactor under operating conditions.

The compost reactor shall be of reinforced concrete and/or welded steel construction and provided with infeed distributor, outfeed device, access openings, and miscellaneous appurtenances as specified. Reactors may be of either cylindrical or rectangular configuration.

Reactors shall have watertight membrane at base, sloped to leachate and condensate collection drains with automatic discharge outlets. Vertical reactor shall be provided with a reinforced concrete base structure around the entire perimeter to provide access to the rotating screw outfeed device. The reactor shall be designed with access space to permit maintenance of all bearings and machinery. Reactors shall be designed for the intended service. Steel reactor sides shall be a minimum of 1/4-inch thick and braced and stiffened as required and in accordance with API Standard 650 for steel silo design and construction.

The reactor roof shall be flat or domed and designed of sufficient strength to support imposed loads including mixers, conveyors and other appurtenances as required. Provide an 8-foot by 8-foot opening in the top of reactors with a curb-mounted, bolted plate cover, or equivalent access for emptying the reactor with clamshell or front end loader. Provide a minimum of four, 3-foot diameter sealed inspection ports at reactor bases, with a minimum of two ports per reactor chamber.

The sides of the reactor shall be insulated with a minimum of 3-inch fiberglass board and finished with masonry, metal siding as specified in Section 07400, or 0.018-inch box ribbed aluminum panels painted to match the metal siding.

Reactor infeed and outfeed devices shall produce a uniform plug flow throughout the reactors without dead zones, short circuiting or other detrimental conditions. The infeed distribution shall be designed to distribute raw compost uniformly and without segregation such that the depth of material is within $\pm 7\%$ of the average depth over the entire feed section of the reactor.

Outfeed device shall be a revolving screw designed to remove composted material at a continuous and uniform rate from the entire outfeed section of the reactor. Screw rotation and rate of travel across the reactor shall be variable to achieve the range of discharge rates recommended by the composting facility supplier or the range defined in Paragraph 2.02, whichever is more stringent. Maximum rate of screw rotation shall be 40 rpm to minimize wear. Steel screw flighting shall have a minimum thickness of 1/2-inch with stellite hardened tips and teeth or equivalent welded to the flighting. Stellite thickness shall be a minimum of 0.03 inches. Both sides of the flighting shall be continuously welded to the support pipe. The screw shall be supported by self aligning tapered roller bearings at both ends. Bearings shall be designed for a minimum L-10 life of 100,000 hours. Design of the device shall be such that all bearings are accessible for maintenance without removing compost from the reactor.

The infeed and outfeed devices shall be driven by hydraulic power units. Drives shall be sized for load at no more than 95% of nameplate horsepower.

D. Compost reactor aeration system

1. General: Provide a complete aeration system sufficient to ensure the continuous operation of all biological reactors as an aerobic biological system. The aeration system shall maintain aerobic conditions without developing anaerobic zones or temperature variations greater than 10 degrees C at any cross section of the reactor perpen-

dicular to the direction of material flow. The aeration system shall also remove moisture from the reactors sufficient to achieve the dry solids concentrations limitations in Paragraph 2.02 of this section of the specifications. The system shall operate continuously 7 days/week and 24 hours/day with the exception of loading and unloading which shall not require the interruption of aeration for more than four hours in any twenty-four hour period. The aeration system shall exhaust from the reactors such that condensation of moisture on the reactor walls and roof is minimized to prevent corrosion and rewetting of the compost.

2. Blowers

- a. General: The blowers shall be sized by the supplier with sufficient capacity to meet the requirements described in Paragraphs 2.02B and 2.03D1 without the use of standby blowers. Motors for the blowers shall be as specified in Section 15030, except that motors shall be sized by the supplier for the loads.
- b. Air supply blowers:
 - 1) Provide two identical blowers with variable-speed drives to serve as the lead and standby blowers. Additional blowers may be provided to supplement the lead blower and they may have constant or variable speed drives, but they must be no larger than the standby blower so that if one fails then the standby blower can replace it.
 - 2) The air supply blowers shall be rotary positive displacement Type A as specified in Section 15152 Paragraph 2.02A,B,C,D.3,E,F and G. Motors shall be coupled to blowers directly rather than with V-belt drive, and range of indication for vacuum, pressure and temperature gages shall be selected by supplier.
 - 3) Variable speed drives shall utilize variable frequency controllers as specified in Section 16100, except that the controllers shall be sized by the supplier. Throttling valves, venting or bypassing to the inlet of the blowers shall not be used to regulate flow.
- c. Exhaust blowers: Provide two identical blowers to serve as lead and standby blowers. Additional blowers may be provided to supplement the lead blower but they must be no larger than the standby blower so that if one fails then the standby blower can replace it."

The exhaust blowers shall be centrifugal units with corrosion proof fiber reinforced plastic or stainless steel housings and fan wheels. Blower shaft and hardware shall be stainless steel. The assembled wheel and shaft shall be dynamically and statically balanced. Fan shaft shall be mounted to fan base with two pillow block ball bearings. Fan housing shall have 1 inch diameter drain at lowest point on housing, piped to carry condensation to the plant drain system.

Any compressors, supply blowers or exhaust blowers shall be enclosed in a room or rooms to separate them from other equipment and work areas. Provide silencers and acoustical insulation as specified in Sections 15152 and 09530 of these specifications to maintain noise levels below 90 dbA at 5 feet from each blower and 75 dbA immediately outside the room as measured using a Type I or II sound level meter set for fast response as defined by ANSI S1.4-1971 or most recent edition. The use of removable hoods to control noise will not be allowed because they would restrict access for maintenance.

3. Aeration system piping: Piping shall be designed to minimize piping and piping supports which protrude into the compost inside the reactor because such arrangements can lead to bridging of compost, uneven flow of compost through the reactor and clogging of piping orifices. Piping in the compost shall be stainless steel and of sufficient strength to limit deflection to length divided by 360. Forces on piping inside the reactor are expected to be both vertical and horizontal due to compost travel along the plug flow axis and plastic flow toward the outfeed device.

Piping shall include air supply and exhaust piping inside and outside the reactors necessary to supply and exhaust air in the amount, sequence and pattern selected by the supplier. Piping shall be arranged so that air for the aeration system can be drawn from outdoors or from inside the compost building to supplement the building ventilation system and help carry away foul odors and gases. All exhaust piping and piping within the reactors shall be stainless steel. All piping and ducting that can carry water of condensation shall be stainless steel or otherwise similar durable material. Other piping may be ductile iron, carbon steel or stainless steel. Hot piping to be insulated as necessary to prevent injury to personnel. Piping shall be consistent with Section 15060.

E. Cure pile system

1. General

All compost produced by the compost reactors shall be cured in outdoor cure piles. Compost shall be transferred directly from a compost reactor to a cure pile and it shall remain there undisturbed until curing is complete. The freshest, least cured 16,000 cubic feet of compost in the cure piles shall be aerated with a cure pile aeration system. Thereafter curing shall be completed in the piles with or without aeration at the suppliers option. Curing shall be complete within 10 weeks after compost is removed from a reactor and placed on a cure pile. Compost shall be considered completely cured when it has been aerated as described above and when it passes the germination tests described in Paragraph 3.04.

The cure pile aeration system shall maintain aerobic conditions in aerated cure piles. All foul gases, odors, and steam plumes shall be collected from aerated cure piles and discharged to the moisture and odor removal system. Air flow shall be regulated to maintain temperatures in the piles suitable for compost curing. Also the system shall be designed so that when it is not needed, it can readily be removed from the compost yard and stored for future use.

The system shall include but not be limited to blowers, piping system, electrical system, controls and complete operation and maintenance instructions. The O&M instructions shall describe how to build, operate and remove aerated cure piles. The City's 3 cubic yard front end loader and field elevator are available for transfer of materials to and from the cure piles. The piles shall be no higher than 12 feet and no wider than 40 feet, from toe to toe of the pile. It is anticipated that two or more parallel piles will be used, with service piping running between the piles. As new compost is added to one face of the piles, cured compost will be removed from another face.

2. Piping systems

- a. General: Piping systems shall include both portable and permanent pipes. Permanent pipes shall be installed in the compost storage yard for an air header and condensate drain. The permanent pipes shall be connected to a series of utility vaults spaced at approximately 24 foot centers along a line between adjacent cure piles. Portable pipes shall be used to connect from the permanent pipes in the utility vaults to portable blowers, condensate traps and perforated piping in the cure piles.
- b. Utility vaults: The utility vaults shall each be permanently connected to the air header pipe and condensate drain pipe. Each vault shall also have an

electrical outlet to power portable blowers. The air pipe connected to each vault shall have a convenient air tight coupling system at its end, such as a cam-lock coupling. Fittings shall be provided to cap it or couple it to portable air piping. The condensate drain shall connect to a grated inlet at the base of each vault. Each branch of the condensate drain to the utility vault shall have a minimum diameter of 4 inches. The utility vaults shall have traffic rated lids flush with the pavement so that a front end loader bucket will not catch on it.

Air piping: A separate air intake manifold shall be formed under each 2000 cf of cure pile. The manifold shall be formed with perforated, Schedule 40, steel pipe with a minimum diameter of 4 inches. The steel pipe shall be provided in segments between 5 and 7 feet long and shall be placed on 6 foot centers or closer. The steel pipe segments shall be coupled with flexible plastic pipe. The flexible plastic pipe will be discarded after each use, because it will be destroyed when the piles are removed with the front end loader. Provide a one year supply of flexible plastic pipe for couplings.

Finished compost, wood chips or other materials may be used to create a plenum around the manifold. If chips or other foreign materials are used, a screening device must be provided to separate them from the finished compost.

Solid wall portable pipe shall be used to connect the perforated pipes in the cure piles to the portable field blowers, condensate traps and the air header at the utility vaults. The permanent air header shall be located in the storage yard to efficiently serve the cure piles. The air header shall discharge into the moisture and odor removal system.

- d. Condensate piping: The permanent condensate drain pipe shall connect to the tank drain piping. It shall be the same materials as tank drain piping. The main trunk line of the condensate drain shall have a minimum diameter of 8 inches and cleanouts at each bend and on straight runs every 100 feet. Connections to the utility vault can serve as cleanouts. Portable piping shall be used to connect drainage from condensate traps, blowers and portable air piping to the permanent drains in the utility vaults.

Condensate drain inlets shall also be provided in the compost storage yard in addition to those in the utility vaults as necessary to collect condensate from the aeration system. The inlets shall be provided

with grated inlets and solid removable covers so that the inlets can be sealed off when not in use. The covers shall be traffic rated and shall be flush with the pavement so that a front end loader bucket will not catch on the lip.

3. Blowers: Blowers shall be portable units located in the compost storage yard. They shall be weatherproof and corrosion resistant to compost exhaust gases and condensate. A separate blower shall be provided for each 4000 cubic feet of compost in the aerated cure pile. The blowers shall be suitable for continuous operation and shall have a minimum capacity of 500 scfh per dry ton of compost. The blowers shall have sufficient capacity and pressure for the cure pile depth, moisture and odor removal system and piping selected by the supplier. The blowers shall be driven by Type I process motors. Each blower shall be a centrifugal blower mounted with drive motor on a rigid fabricated steel frame. The frame shall be hot-dip galvanized and it shall be configured so that it can be conveniently moved around the yard with the city-owned 5000 LB capacity forklift. The blower and motor shall be flexibly coupled so that realignment is not necessary after the assembly is moved with the forklift. The blowers shall be equipped with inlet filters and silencers. The silencers shall maintain noise levels below 90 dBA at 5 feet from each blower and below 45 dBA at the nearest property line as measured using a Type I or II sound level meter set for fast response as defined by ANSI S1.4-1971 or most recent edition.
4. Electrical power: The blowers shall be powered by the sludge composting facility electrical system. Portable electric cords shall be used to connect portable blowers to power outlets located in the utility vaults. The power outlets shall be protected from water damage by locating them well above the condensate drain inlet in the vaults, and with other water protection measures, such as waterproof connections if required.
5. Control system: Aeration flows through the cure piles shall be controlled to maintain temperature ranges suitable for compost curing. Provide temperature sensors as needed. Aeration flows may be controlled by starting and stopping each blower independently with a timeclock in each blower control panel. The timer intervals shall be as recommended by the supplier.

Aeration flows shall be independently modulated for each air intake manifold, that is for each 2000 CF of cure pile. At the outlet of each manifold flows shall be modulated with a throttling valve and measured with an orifice plate with pressure taps. A portable flow meter

shall be provided for use with the orifice plates to measure air flows in SCFM based on differential pressure.

- F. Moisture and odor removal system: A system shall be provided to completely scrub visible moisture such as steam plumes from exhaust gases from the compost reactors and aerated cure piles. Also a system shall be provided to remove odors from exhaust gases from compost reactors, aerated cure piles, dissolved air flotation tanks and foul air from the compost building ventilation system. The dissolved air flotation tank exhaust gases will be 900 cfm delivered at nominal pressure 24 hours per day by exhaust fan EF7-08 to the outside wall of the solids handling building adjacent to the dewatered sludge conveyor CON8-01, as shown on the drawings.

Exhaust gases shall be injected into the oxidation ditches deep enough and diffused over a sufficiently broad area to completely scrub out odor and visible moisture. The depth of injection shall be at least 1 meter. The injection/diffusion points shall be located about mid way between the rotor aerators, and an injection point shall be provided in each oxidation ditch so that either ditch can be taken out of service for extended periods of time without affecting odor removal efficiency. Any piping or diffusers within the Schedule E work boundaries shall be supplied, installed and coordinated at the expense of the Schedule F contractor. Piping shall not be routed through areas north of the compost building or headworks which are reserved for future expansion. The exhaust blowers for the reactor and cure pile aeration systems shall be sized for the discharge pressures associated with injecting the exhaust gases into the oxidation ditch. If necessary to achieve the required discharge pressures, rotary positive displacement Type A blowers as specified in Section 15152 may be used for exhaust blowers rather than centrifugal blowers as specified. However, the materials of construction shall be suitable for the corrosion conditions expected in the exhaust gas. Also provisions shall be included to drain away condensate from the exhaust system piping."

G. Materials handling system

1. General requirements

- a. All conveyors of all types shall be suitable for wastewater treatment plant service and environment.
- b. Conveyors shall be constructed with material resistant to abrasion and corrosion by the materials to be transported.
- c. Equipment will be selected for standardization of parts to minimize spare parts inventory.

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- d. Material handling equipment shall be provided with the capacities indicated in Article 2.02 of this specification.
- e. Material handling equipment shall be sized so that at design conditions all loading, unloading and transfer can be accomplished in 40 hours during a regular 5-day Monday to Friday work week, and so that aeration of each reactor chamber is interrupted for no more than 4 hours in any 24-hour period."
- f. All material handling equipment shall be sized so that capacity of any item of equipment is not less than any conveyors or devices supplying that equipment unless storage provisions are incorporated. Material shall not leave the material handling system components except as specified.
- g. All conveyors shall be provided with a motion detector switch to detect under speed or zero speed. Brackets and mounting plates are to be installed by manufacturer. A signal from one motion switch shall stop all associated conveyors.
- h. Motor size shall be per CEMA standards using maximum value for material density. Motors shall be TEFC, Type I as specified in Section 15030.
- i. Exterior conveyors shall be protected from freezing conditions. It must be possible to start up and run the conveyors without special efforts after they have been off during prolonged freezing conditions.
- j. All conveyors shall have local operating stations adjacent to the conveyors and remote controls in the control room.
- k. Material handling equipment will conform to applicable standards as follows:
 - 1) Conveyor Equipment Manufacturers Association
 - a) Belt Conveyors for Bulk Materials - Second Edition
 - Standard No. 502 - 1980, Bulk Material Troughing and Return Idlers.
 - Standard No. 350 - 1981, Screw Conveyors.
 - Standard No. 300 - 1982, Screw Conveyor Dimensional Standards.

Standard No. 550 - 1980, Classification
and Definitions of Bulk Materials.

- 2) American Gear Manufacturers Association:
Anti-friction Bearing Manufacturer's Association.
- 3) Occupational Health and Safety Administration:
American National Standards Institute.

B20.1, Safety Standards for Conveyors and
Related Equipment.

B15.1, Mechanical Power Transmission
Apparatus.

B105.1, Welded Steel Conveyor Pulleys.

2. Belt conveyors

- a. Belt conveyors shall conform to the requirements of
Section 14550, except Articles 2.01, 2.02 and 2.04.
- b. The dewatered sludge feed belt conveyor CON8-01 shall
be supported by a bridge spanning between the solids
handling building and compost building with access
walkway as shown. The conveyor shall be provided with
a belt wash using 120 psig high-pressure wash water
available from the solids handling building. Wash
water piping shall be heat traced and insulated where
exposed to freezing conditions. The belt wash shall
be designed to minimize rewetting the dewatered sludge
carried on the belt.

3. Drag chain conveyor/elevators

- a. Casing and chutes: Casing shall be fabricated from a
minimum of 1/4-inch plate with 1/8-inch cover plates
in sections 10 feet long and shall be dust-tight and
weatherproof. Bottom plates shall be 3/8-inch abra-
sion resistant steel alloy with a hardness of at least
400 BHN but less than that of the conveyor chain.
Each section shall be flanged at ends and have a quick
opening inspection door.

Drive and terminal stations shall be fabricated from a
minimum of 3/16-inch plate and shall have hinged
inspection doors.

- b. Flights and chain: Solid steel flights fastened to
chain link lugs. Chain shall be drop forged and
hardened steel. Hardened pins shall connect links.
Link hardness within the range of 500 to 600 BHN.
Minimum ultimate strength of conveying chain shall be
70,000 pounds.

- c. Constant speed drive assemblies: Drive motors shall be 1,800 rpm as specified in Section 15030, except that motor size shall be selected for maximum bulk density and motor shall be capable of starting a loaded conveyor or elevator from rest. Chain speed shall be less than 65 fpm.

Shaft material shall be AISI C1045. Minimum shaft size shall be 2-7/16 inch. Shafts shall have key sets and keys.

Gear reducers shall be commercially built equipment, using standard ratios. Back stops integral with reducers. Gear reducers shall be selected for AGMA Class II service. Provide split type pillow block bearings with four hole bases, removable caps, and labyrinth grease seals. Minimum B-10 life shall be 60,000 hours. Bearings shall be adapter mounted and self aligning. Provide one (1) fixed and one (1) floating bearing at each shaft.

Fixed type shall be on drive side of drive sprocket. A suitable steel base shall provide alignment between motor, reducer and head shaft.

Provide switch device on tail sprockets. Chain tension shall be achieved by a catenary tension device.

Provide an automatic brake which stops the conveyor in its last position upon power failure.

- d. Variable speed drive assemblies: Hydrodynamic variable drives shall be used.
- e. Drag chain conveyors shall be as manufactured by Jeffrey, Buhler-Miag or equal.

4. Screw conveyors

- a. General: Screw conveyors shall be utilized to transport sawdust, compost, or recycle material as indicated in Paragraph 2.02B.

Design of the conveyors and selection of components shall be in accordance with CEMA Standard No. 300 "Screw Conveyor Dimensional Standards" and CEMA Book No. 350 "Screw Conveyors."

- b. Loading discharge:
 - 1) Loading condition: From regulated output device.
 - 2) Maximum trough loading: 45%.

- 3) Discharge configuration: Standard discharge spout.

c. Screw

- 1) Type: solid helicoid for sawdust, cut flight with lump breaker for compost or recycle.
- 2) Pitch: Standard, single flight, continuous weld on load carrying side of flighting.
- 3) Material: Carbon steel with chromium boride hard facing on load carrying side of flighting.
- 4) Maximum length: 20 feet; screws over 20 feet in length will not be acceptable.
- 5) Pipe: Minimum Schedule 40, seamless ASTM A 106 or A 53.

d. Trough

- 1) Type: U-trough, double formed flange, with feet, CEMA Class II finish.
- 2) Material: Minimum 10 gage carbon steel.
- 3) Trough ends: Standard flanged.
- 4) Discharge: Standard discharge spout, welded to trough.
- 5) Cover: Flanged, 14 gage minimum, carbon steel plate, T-head steel bolts on 6-inch center.
- 6) Inlet: Standard flange.
- 7) Trough end bearings: Outboard bearing (pillow block) type, self-aligning, double row tapered roller bearing with interring and housing seals, flanged, minimum L-10 life of 40,000 hours.
- 8) Seals: Split gland.

e. Drive units

- 1) Drive units: Flange mount screw conveyor drive with seal integral drive shaft, adjustable motor mount which attaches directly to the reducer housing.
- 2) Shaft: C-1045 cold drawn steel, 104,000 PSI, provide shear pin for overload protection.

- 3) Motor: Type I, TEFC, 1,800 rpm, 3-phase power, drives shall be capable of starting screw in fully loaded condition.
 - 4) Load classification: AGMA Class II service.
 - 5) Seal: Lip type.
 - 6) Accessories: OSHA approved belt guard.
4. Compost lift conveyor: The drawings show separate conveyors for the central compost conveyor, compost lift conveyor and compost feed conveyor. At the suppliers option these three conveyors may be provided as a single drag chain conveyor. The layout of the conveyors would have to be revised to minimize length and bends.
 5. Compost discharge conveyor: The drawings show a compost discharge conveyor which transfers compost to the finished compost conveyor. At the suppliers option, a chute of suitable proportions and materials may be used to perform the same function.
 6. Outfeed calibration provisions: The materials handling system shall be provided with discharge points to allow convenient calibration of the outfeed devices from the sludge hopper, sawdust silo and compost reactors.

A container shall be provided for use at the calibration discharge points. The container shall meet the following requirements:

- a. The volume of the container shall be 2 cubic yards or larger if necessary to allow accurate measurement of the volume of material discharged by each outfeed device per unit of time.
- b. There shall be markings in cubic feet and cubic meters to allow convenient reading of the volume of material in the container.
- c. Sawdust can be conveniently transferred from the container into the sawdust silo with the pneumatic sawdust silo feed system.
- d. Compost or sludge can be conveniently transferred from the container into the compost reactor.
- e. The containers shall be movable by two men manually or with the city-owned 5,000 pound forklift truck. At the suppliers option, the container may be designed so that it can be lifted with the city-owned 5,000 pound forklift truck, so that sludge or compost can be

dumped from the container on the central compost conveyor or compost lift conveyor via a special loading chute for transfer into the compost reactor.

7. Provisions for refilling compost reactor: The materials handling system shall be designed so that an empty compost reactor chamber can be refilled with compost from another reactor chamber. If the sludge composting facility has only one reactor chamber, then the materials handling system shall be designed so that the empty chamber can be conveniently refilled with compost from the outdoor cure piles. The method of refilling may utilize a portable field elevator which the city plans to purchase and 3 cubic yard front end loader. The elevator has a ground level flat loading section about 9 feet long and a 30 degree inclined section about 30 feet long which dumps at a fixed height of 14 feet. The elevator is as manufactured by Thomas Welding and Machine, Chico, California or equal. Any modifications to the elevator to adapt it for this function shall be provided at the compost facility suppliers expense. Also the supplier must provide any other transfer hopper, chutes, doors or other facilities needed to allow the elevator to transfer compost to an appropriate conveyor, such as the finished compost conveyor, central compost conveyor or compost lift conveyor.
- H. Compost mixer: The compost mixer shall be a horizontal solids mixing unit with single or twin, internal, cylindrical, steel shaft(s) with paddles that mix and move product from charging end to discharge end. The mixer shall blend dewatered sludge, recycled compost and sawdust into a uniform mixture with a porous fluffy texture, not a paste-like or lumpy texture, so that the material can be uniformly aerated in the reactor chambers. The mixer shall be sized to mix the full range of sludge, compost and sawdust flows described in Paragraph 2.02 and as required for the mixture selected by the supplier. The mixer shall be sized to accomplish all mixing in 40 hours during a regular 5-day Monday to Friday work week and so that aeration of each reactor chamber is interrupted for no more than 4 hours in any 24 hours period. The material of construction shall be ASTM A 283 Grade D. The main shaft shall be mounted on self aligning antifriction bearings. The motor shall be as specified in Section 15030, except motor size shall be determined by the supplier. The motor shall drive a base mounted Falk, or equal, speed reducer coupled to the mixer. The mixer shall have two hinged access cleanout doors. Safety switches on doors shall prevent mixer operating when doors are open. Manufacturers standard stuffing boxes shall be provided for main shaft. Mixer shall be Littleford KM series, McClanahan equivalent, or equal.

The mixer shall be mounted inside a fully enclosed weather proof enclosure with sufficient room inside for all operation and maintenance.

The enclosure may be sided and roofed with an metal sheeting identical to that used on vertical reactors, if the enclosure is on top the reactor. Alternatively, the enclosure must be in the compost building or another comparable building if it is at ground level.

I. Compost building:

1. General: Provide a compost building to house the sludge composting facility equipment and support the compost reactor. The compost building is shown schematically on the drawings. The ground slab shall be set at elevation 166 and the upper floor slab at elevation 183 to match the adjacent solids handling building.
2. Structural and architectural: The base structure shall be of cast-in-place concrete. The roof shall be a system of cast-in-place beams and slabs. Concrete columns shall be provided in a logical grid for spanning and supporting the compost reactor.

Exterior concrete walls shall have recessed rustication lines and finish matching that of the solids handling building. Interior walls shall be 8-inch concrete masonry units.

The roof surface shall have a concrete topping over a waterproof membrane. A continuous perimeter gutter shall be provided to drain through flush mounted floor drains at 30-foot-0-inch intervals.

The interior of the building shall be partitioned into rooms as shown. The walls and ceiling of all blower rooms shall be acoustically treated as described in Paragraph 2.03D.2 of this specification.

Room floor finish shall be sloped to floor drains throughout at a minimum slope of 1/8-inch per foot with a maximum run between floor drains of 32-foot-0-inch. Trench drains shall be provided adjacent to each conveyor, for the full length, for convenient washdown of the floors.

Doors and windows shall be provided as shown. Single or double personnel doors shall be hollow metal with half glass and matching hollow metal door frames. Provide an 8-foot-0-inch wide rolling service door with electrical motor operator in the general location shown.

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3. Mechanical

- a. Equipment shall be located in the general locations shown on equipment pads with a minimum of 3 feet access space on 3 sides for routine inspection.
- b. Hose racks and washdown stations shall be located no more than 50 feet from each conveyor transfer point.
- c. Provide a utility sink inside the building for hand-washing and clean up.
- d. Ventilation system: Provide a ventilation system for the compost building which performs the following functions:
 - 1) Provide a minimum of 4 air changes per hour, or more if required by the Uniform Building Code or to maintain a work environment free of excessive steam, humidity, foul odors or other foul gases.
 - 2) Collects foul gases from the sludge hopper and conveys the gases to the odor removal system.
 - 3) Collects foul gases released inside the building during filling or unloading of the compost reactors and conveys the gases to the odor removal system.
 - 4) Collects dust laden air at the points where dust is released, such as at any unenclosed conveyor transfer points, and removes the dust in compliance with government regulations with a self cleaning filter system.
- e. Heating and cooling: The control room shall be provided with a thermostatically controlled heating and ventilating system to maintain a constant temperature of 68 degrees F. Other equipment spaces shall be provided with a heating and ventilating system to maintain temperature within the range of 50 to 80 degrees F. Heat shall be provided with electric resistance heaters or waste heat from the compost facility.

J. Laboratory equipment for composting facility

- 1. Moisture analyzer: Provide a microwave solids analyzer with built-in balance for rapid determination of moisture content of a sample of sludge, sawdust or compost as manufactured by the CEM Corporation, Indian Trails, North Carolina, Model AVC-80, or equal.

2.04 ELECTRICAL SYSTEMS

A. General: Provide a complete electrical system for the sludge composting facility including but not limited to power supply and distribution, communications, lighting and controls.

B. Power

1. Primary electrical service for the sludge composting facility is provided at the Schedule E solids handling building control room at switchboard SWB-7B. An 800 ampere circuit breaker, mounted in the switchboard will be provided by Schedule E. If a larger circuit breaker is required, the Schedule F contractor will be responsible for all associated costs and coordination of the change with the Schedule E contractor.

Conduit, but no wiring, will be provided by the Schedule E contractor from SWB-7M to a manhole at the Schedule E-F boundary east of the solids handling building. The Schedule F contractor shall provide any additional conduit, pull boxes, hardware and all conductors to provide electrical service to the sludge composting facility.

2. Standby electrical service is provided at the solids handling building control room at panel P4-751 similar to primary service. The standby service is 480/277 V, 100 amp, 3 phase. It is intended for lighting and control systems, not for process operation. No standby electrical service facilities for process operation are required, since power outages are expected to be 8 hours or less, and to occur less than once per year.
3. Provide a switchboard in the compost building with a kilowatt-hour and demand meter similar to GE type VM 65. Provide all current transformers and mounting bases required. The meter shall measure all electrical power used at the sludge composting and will be used during performance tests described in Paragraph 3.04 to determine 30 day average kWh power use and maximum 30 minute average kW power demand.
4. Wiring in all sawdust storage and handling areas shall conform to Section 502 of the National Electrical Code for wiring in hazardous locations.

C. Communications: Install intercom components provided by Schedule E. Install conduit and cable from solids handling to compost building for intercom connection. Mount wall speaker and intercom in the control room or an accessible location as directed by the Engineer.

D. Lighting: Provide lighting systems which meet the following levels, maintained per Illuminating Engineering Society (IES) standards:

1. Control rooms: 70 foot candles.
2. Process areas: 50 foot candles.
3. Exterior door lighting: Similar to Schedule E.
4. Exterior yard lighting: None required.

Lighting systems shall be similar to those used throughout Schedule E for similar areas.

E. Control system

1. General: The supplier shall include as part of the sludge composting facility a complete integrated analog control system for the compost reactors and material handling system.

The supplier shall be responsible for its design, operation and proper integration with the mechanical and electrical components of the facility. All automatically controlled equipment and devices shall have a manual override on the compost control panel. The control system shall include, but not necessarily be limited to the following:

- a. All instruments, mounting hardware and all items of control as indicated on the drawings and specifications and as required by the supplier for proper operation and control of his system.
- b. Instrument manifold piping, isolation valving, pulsation dampeners, diaphragm isolators, and other auxiliaries required for instrumentation and control loops.
- c. All control panels, field-mounted panels and sub-panels except those panels that are indicated as being furnished under other sections of these specifications.
- d. Service must be available for all control equipment by manufacturer and Engineer approved service organization within 300 miles.

2. Process controls

a. Aeration system control

- 1) The control system will automatically vary air flow to the aeration supply piping and from the aeration exhaust piping by varying the variable speed air supply blowers and by throttling the constant speed exhaust blowers to maintain operator selected set point(s). The set point(s) shall be for one or more of the following parameters selected by the composting facility supplier: concentration of oxygen or carbon dioxide in the reactor exhaust gas or temperature. Set points shall be adjustable through thumb wheel switches. The blower controls shall prevent speed hunting or surging, and shall maintain a negative pressure where exhaust gases are drawn from the reactor.
- 2) Aeration supply piping: Where sequenced operation of aeration grids is required by the supplier, the sequentially operated valves shall be automatically controlled by the programmable controller on a temperature feed back or timed sequence at the operators option. Set points for timed sequences shall be adjustable through thumb wheel switches.

b. Conveying operations

- 1) Controls for conveyor CON8-01 shall be coordinated with the Schedule E contractor. Schedule F shall provide a signal to Schedule E when a high level alarm occurs at the dewatered sludge hopper. Schedule E will use this signal to shut down conveyor CON8-01 and associated equipment in a timed sequence. Remote controls to automatically start and stop conveyor CON8-01 shall be provided as part of Schedule E. All local controls, power supply, and devices to interface with the Schedule E remote controls shall be provided as part of Schedule F. The Schedule E and F contractors shall each provide the controls, conduits, wires and connections up to the interface boundary between Schedules E and F. They shall then work together to fully connect the conveyor power and controls at the interface boundary.
- 2) The control system shall properly sequence the start up and shut down of all compost facility conveyors (except CON8-01), blowers, discharge devices, dampers, gates, hydraulic motors and

other equipment necessary for the following conveying operations. For each operation there shall be selector switches, status lights, start up and shut down buttons for sequenced operation, halt buttons for immediate stopping of all equipment in the conveying operation and reset buttons to resume conveying interrupted by a halt button or by equipment failure.

- (a) Conveying operation No. 1, filling reactors: The control system shall start, stop, actuate or otherwise operate equipment necessary to initiate filling of each reactor chamber, fill it for a preset time interval with a mixture of sawdust, dewatered sludge and recycle compost from the reactor, and then stop the filling and resume normal composter operation. Equipment shall be operated in a logical, timed sequence, and the status of the equipment shall be verified as correct with motion, pressure and limit switches prior to initiating the flow of materials. After the status is verified (such as transfer conveyor on, blower off, gate open, etc.) the variable rate feed conveyors are activated in a timed sequence so that materials arrive at the mixer simultaneously. The feed rates of the materials shall be determined by operator selected thumbwheel settings to control mix proportions by volume. Material feeding to the reactor shall stop automatically when the operator selected time interval, set on a thumbwheel switch, expires; when one of the materials runs out or otherwise stops flowing; or when the reactor chamber is full. Each transfer conveyor will be stopped automatically only after the material has been removed from it. The control system will automatically resume normal aeration of the reactor, if aeration was shut down for the conveying operation.
- (b) Conveying operation No. 2, transfer of product compost: The control system shall start, stop, actuate or otherwise operate equipment necessary to initiate transfer of product compost from each reactor chamber to the truck loading bay, transfer compost for an operator selected time interval at an operator selected rate, and then stop the transfer and resume normal composter operation. Operator settings shall be made with thumbwheel switches. Each conveyor

will be stopped automatically only after material has been removed from it.

- (c) Conveying operation No. 3, recycle: The control system shall start, stop, actuate or otherwise operate equipment necessary to recycle the entire contents of each reactor chamber. This operating mode would be used to completely turn over and redistribute a reactor chamber's contents to eliminate hot spots or wet spots in the reactor. The sequence of operation shall include sufficient aeration to maintain aerobic conditions inside the reactor.
3. The control system shall include individual subsystems and elements as described below.
- a. Analog recording system
 - 1) Provide panel mounted analog strip chart multipen recorders in swing out chassis which display at least 12 inches by 12 inches of charts. Recorders shall have multiple chart speeds including 0.5 and 1.0 inches per hour. Recorders shall continuously scan and update readings at 60 seconds per point. Provide high and low alarm contacts for each point which are fully adjustable from 0 to 100% of span. Data shall be plotted to scale in a logical order with different color ink pads and engraved print wheel(s) to identify each point differently. Provide signal conditioners, converters and transmitters as required to interface with programmable controller and alarm annunciator.
 - 2) Provide one recorder to indicate and record exhaust gas oxygen concentrations from 0 to 25% or carbon dioxide concentrations from 0 to 5% depending on the gas analyzer provided. A multipen recorder may be used to record oxygen data from multiple sampling points or reactor chambers.
 - 3) Provide one multi point recorders to indicate and record temperature data from thermocouples in compost and exhaust gases for each reactor chamber. Use different colors for each position (20, 40, 60 80%) along reactor length.
 - 4) An approved electronic data logger with video displays will be considered as an alternate analog recording system, provided data is recorded and stored separately for future

reference and hard copy printouts can be made of video displays.

b. Alarm system

- 1) Provide an alarm annunciator on the control panel. Operate from either NO or NC field contacts. Acknowledge and lamp test buttons shall be provided. Annunciator shall have solid state circuitry, and audible alarm with volume control as specified in Section 17100. Operational sequence shall be as follows:

<u>Contact Condition</u>	<u>Action</u>	<u>Lamps</u>	<u>Audible Alarm</u>
Normal		Off	Off
Alarm		Flash	On
Alarm	Acknowledge	Steady On	Off
Normal		Off	Off

- 2) Provide alarm horn outside control room.
- 3) Provide 6 spare windows in annunciator with no inscriptions.
- 4) Alarm list
 - a) High temperature (for each reactor chamber)
 - b) Low temperature (for each reactor chamber)
 - c) High level (for each hopper and vertical reactor chamber)
 - d) Low level (for each hopper and vertical reactor chamber)
 - e) Low exhaust O₂ or high exhaust CO₂, depending on the gas analyzer provided (for each reactor chamber)
 - f) Compressor failure (for each compressor)
 - g) Blower failure (for each blower)
 - h) High pressure (for each reactor aeration system blower)
 - i) Low pressure (for each reactor aeration system blower)

- j) Conveyor failure (for each conveyor)
- k) Solids handling area
- 5) Provide separate alarm output terminals for each alarm at annunciator for future use by Owner.
- 6) Provide output signals for a general "compost area" alarm and sludge hopper high level alarm to a junction box at Schedules E and F interface for use by Schedule E contractor in annunciators in solids handling building and operations building control room.
- 7) Provide "solids handling area" alarm using signal provided by Schedule E contractor at junction box at Schedule E and F interface.

c. Temperature monitoring system

- 1) The exhaust gas temperature from each reactor chamber shall be monitored with a thermocouple and the signal shall be transmitted to the compost control panel where it shall be indicated, recorded and be available to control process aeration.
- 2) The temperature of compost in each reactor chamber shall be monitored with at least 8 thermocouples in the compost. A total of at least 16 thermocouples shall be used in all the reactor chambers combined.

Reactor chambers with 8 thermocouples shall have 4 along the center and 4 along the side of the chamber at the 20, 40, 60 and 80% points along the direction that material travels through the reactor. Reactor chambers with 16 thermocouples shall have 4 along the center of each quadrant located at the 20, 40, 60 and 80% points. Thermocouples shall be mounted so that they do not interfere with filling or emptying the reactor, thermocouples shall be mounted so that they can be conveniently removed or replaced for maintenance without emptying the reactor chambers. Thermocouple signals shall be transmitted to the compost control panel where they shall be recorded and indicated and be available to control process aeration. Thermocouple locations shall be approved by the Engineer.

- d. Level monitoring system: Material levels shall be monitored in all hoppers, and in all vertical reactor chambers with level sensors. Level sensors shall be constructed of materials and have performance characteristics suitable for the service. Level sensors shall sense full range of vessel, with non-interacting and individually adjustable zero and span. System accuracy shall be $\pm 1.0\%$. Level sensor signals shall be transmitted to the compost control panel where they shall be indicated and used to control materials handling conveyors. Level indicators in control panel shall include high and low level alarm contacts fully adjustable from 0-100% of span.

The level sensor shall lower a weighted probe via a cable, and detect the material level due to slack in the cable. The units shall sense the full range of depths possible in the hopper or chamber. The unit shall continually update depth readings during filling or discharge operations and shall completely retract the probe automatically prior to filling or discharge operations. Include a switch for manual actuation or retraction. Mount unit on a 10 inch pipe flange to accommodate 9 inch probe removal and an aluminum adapter flange for mounting transmitter and sensor. Unit shall operate on 120 volt, single phase power supply and shall be suitable for anticipated probe atmosphere of 160 degrees F and saturated air. House in a NEMA 4 enclosure with conduit connections. Use Delta Controls Series 830 or equal.

- e. Exhaust gas monitoring system: Exhaust gas from each reactor chamber shall be monitored for either oxygen or carbon dioxide concentrations at the suppliers option. The analyzers sensitivity shall be $\pm 0.1\%$ of full scale. The analyzers meter readouts accuracy shall be $\pm 2\%$ of full scale.

The range of the analyzer shall be appropriate for the full range of concentrations which will occur in the exhaust gases. This is expected to be 0-25% for oxygen and 0-5% for carbon dioxide.

An oxygen analyzer shall be a polarographic analyzer, Teledyne Model 326, Beckman Model 7003, or equal. the analyzer shall be supplied with 12 months of operating supplies. The analyzer shall be designed such that it can operate for a minimum of one month without recharge or replenishment of consumed materials. A complete gas calibration system shall be provided with the oxygen analyzer. It shall include premixed bottled standardized gases with wall rack, pressure regulators, valves and associated accessories and an auto switching system. The switching system shall be

designed so that the operator can push buttons to switch from sample gas and back again to calibration gas to test analyzer performance.

A carbon dioxide analyzer shall be an infrared analyzer, Beckman Model 865, or equal. The analyzer shall be equipped with a complete calibration system so that the analyzer can be calibrated as recommended by the manufacturer.

Analyzers shall be provided with a complete sample collection system, including heat traced sample tubing, 1/2 inch diameter minimum, sloped to drain, moisture removal system, condensate drains, filters, flow control as needed for the analyzer, and sealed sample pumps.

The analyzers, calibration devices, and sampling equipment shall be preassembled in a floor mounted panel to consolidate overall responsibility for them. The panel shall be located within the compost building in any room at the suppliers option, which has adequate temperature control and air quality, except a blower room.

Gas concentration signals will be transmitted to the compost control panel where they will be indicated, recorded and where they will be available to control process aeration.

Individual analyzers may be used for each reactor chamber or a single analyzer may be used to sequentially analyze exhaust from each reactor chamber. If a single analyzer is used to monitor multiple chambers, the sampling system must be designed to assure representative exhaust gases are always blowing past the analyzer sample selector system, and the strip chart recorder data scanning interval must be adjusted to allow sufficient time, no more than 5 minutes, to obtain an accurate analysis of each sample.

- f. Pressure monitoring system: Pressure shall be monitored on the intake and discharge sides of each reactor aeration supply and exhaust blower. Pressure shall be monitored by means of electronic pressure transmitters with 4-20 ma outputs. The signals shall be displayed at the compost control panel where they shall be indicated and used to control process aeration. Pressure indicators in control panel shall include high and low pressure alarm contacts fully adjustable from 0-100% of span.

- g. The flow of aeration air and exhaust air to and from each reactor chamber shall be separately monitored. Flows shall be monitored with flow tubes and sensors which measure differential pressure across the flow tube as a function of flow.

The flow tubes shall be of the insert type capable of producing a high differential with minimum head loss. The flow tube shall be sized for the full range of flows. Its accuracy shall be $\pm 1\%$ of rate. The flow tube shall be Fischer and Porter Series 10F1060, or equal.

The differential pressure sensors shall be electronic, shall produce and indicate a current signal proportional to differential pressure. Accuracy shall be $\pm 0.25\%$ of span. The differential pressure sensor shall be Fischer Porter type 50DPF Delta-P cell or equal.

The materials of construction shall be as recommended by the manufacturer for corrosion resistance and for the full range of operating temperatures and pressures.

Signal converters shall be provided as required to convert the differential pressure sensor signals to SCFM, corrected for normal operating pressure, temperature and specific gravity for the associated gas.

The flow rates shall be indicated in SCFM at the compost control panel.

- h. Controllers: Electronic indicating controllers and electronic manual loading stations shall be provided as required by equipment furnished. These shall offer remote set point input and local set point signals, respectively. The output signal shall be 4-20 ma for both devices, with the manual loading station manually adjustable for full output span.
- i. Programmable controller (PC): Programmable controllers or microprocessors shall be used to control automatic functions and sequencing. The programmable controllers (PC) shall accept 4-20 ma and other signals, from process variable transmitters. Where PC does not have capability of directly receiving other generated signals, provide conditioners, transmitters, and/or converters as required for necessary input. PC shall be programmed by supplier to accomplish specified control function. The PC shall be protected from damage by manual operation of system. Device shall either retain program on power failure, or shall be diskette or cassette loaded. Provide battery

backup, if required, to maintain program during brown-outs. Mount PC within control panel. The programmable controller shall have a portable CRT with keyboard for programming and troubleshooting, disable, enable to allow system to function if external field contacts fail to operate properly, and memory protection feature to prevent unauthorized changes to program.

- j. Miscellaneous transducers and signal isolation devices: In the development of the control system schematics and equipment tabulations, it is recognized that it may be necessary to furnish transducers and/or isolation devices that have not been detailed. Supplier shall, as part of his detail system design, include all such devices as may be required for proper operation of the system.

These devices shall be of all solid state design with isolated input and output. All electronic components shall be mounted on laminated epoxy glass circuit boards. Units shall be designed to plug into a common motherboard with plug-in isolated 24V DC power supply.

- k. The system supplier shall construct a free standing, walk-in rear access instrument and control panel for the mounting of the instrumentation and control system. Provide subpanels as required.

All operator controls and status information must be accessible from the front of the panels. Other panel components shall be mounted inside the panel. Provide a graphic display on the panel showing system components and flow patterns with indicators for status. Status information displayed on the panel shall include positions of automatic gates and valves, run status of moving equipment, speed of variable speed units and other status as recommended by the supplier or required in these specifications.

3. EXECUTION

3.01 INSTALLATION

- A. The compost system supplier shall provide sufficient on-site inspection of construction to ensure installation of all structures and equipment as specified and as described in Paragraph 1.08 in this section of the specifications.

3.02 PAINTING

- A. Painting shall be as recommended by the compost facility supplier or consistent with the quality standards established in Section 09900, whichever is more stringent.

3.03 STARTUP AND TESTING

- A. Startup and testing will be performed per Section 01650 and Paragraph 1.08 of this section of the specifications. The Owner will supply sludge, sawdust and power for facility startup. Approximately 3,000 lb/day of dewatered sludge on a dry solids basis will be available approximately 2 to 4 months after startup of the Schedule E wastewater treatment plant. Startup of the treatment plant is required to occur within 2 years after Notice to Proceed is given on Schedule E. The Engineer will provide the Schedule F contractor with 1 month advance notice in writing of when sludge will be available for start-up of the sludge composting facilities.

Notice to Proceed on Schedule E is expected to be given in the last quarter of 1985, so sludge should be available for startup of Schedule F facilities in the first quarter of 1988. In the event that sludge is not available by April 1, 1988, then the Schedule F contract time, warranty and bond periods will be extended for the number of days that sludge availability is delayed beyond April 1, 1988 up to a maximum of 365 days. Also in the event of such delay, the Schedule F contractor will be paid the sum of \$500/month and shall have no other claim against the Owner as a result of such delay.

In the event that sludge availability is delayed more than 365 days beyond April 1, 1988, then further time extensions and payments to the Schedule F contractor will be made. The contract time will be extended equal to the number of days that sludge availability is delayed, and the bond and warranty times will be extended until satisfactory completion of the performance tests. A change of contract price will be negotiated with the Schedule F contractor to compensate him for extra costs incurred beyond April 1, 1989. The change of contract price will be negotiated as described in Article 11 of the General Conditions."

The Schedules E and F contractors shall coordinate their efforts on startup and testing.

3.04 PERFORMANCE TESTING

A. General

1. The supplier shall submit a detailed description of performance test procedures at least 60 days before beginning the performance test period, as required by Paragraph 1.05C4. The Contractor will notify the Engineer when the system is operating in the steady state mode required for the first performance test. Upon receipt of this notice the Engineer will set a date for beginning the performance test period.

2. The system will be considered in compliance with the performance test requirements when the arithmetic average of the data taken each month meets the specified limits.
3. During the performance test the regular plant staff will operate and maintain the sludge composting facility under the supervision of the supplier. The plant will be operated and maintained as described in the O&M manual provided by the supplier. No extra operation and maintenance will be allowed by the suppliers personnel which would refine system performance beyond what can be achieved with normal 40 hour per week operation and 20 hour per week maintenance.
4. Other plant staff will assist the supplier with the performance tests and laboratory work to the extent that this can be coordinated with their regular responsibilities at the plant.
5. The supplier shall provide at least one person on site 40 hours per week throughout the performance test to supervise plant operation and maintenance and to conduct and supervise the performance test. If additional labor is required for the performance test, then it shall be provided by the supplier.
6. The supplier shall provide all equipment and supplies necessary for performance testing except the sludge, sawdust, power and chemicals used to enhance the composting or supplemental dewatering processes. The supplier will be allowed to use Owner's treatment plant laboratory to the extent that this can be coordinated with other plant laboratory work. The supplier shall certify that all instruments used for the performance test are properly calibrated.
7. Performance testing shall take place following substantial completion.
8. The supplier shall program operation of the sludge composting facility during the performance test period to simulate performance under peak sludge loading conditions. This may require a variety of operating modes and transition periods between operating modes, because peak sludge loads will not be available at startup. The program shall be arranged to minimize transition periods and maximize the time that performance test data can be collected.
9. The facility shall be operated in a mode which achieves the design HRT and SRT as nearly as possible. To accomplish this it may be necessary to operate only one reactor chamber partially full, depending on the sludge quantities available. The system shall be started up in this mode. When the system is operating at steady state

in this mode, the test period may begin. The system shall be operated in this mode for 2 months minimum and tested for compliance with the requirements for pathogenic safety, seed germination, moisture content, sawdust use, infeed uniformity, outfeed uniformity, temperature profile and chemical use.

10. Following testing in the above mode, the facility shall go through a rapid transition period to a mode in which all reactor chambers are full with compost. Compost from the storage yard shall be transferred into the reactors to expedite the transition as much as possible.
 11. The system shall be operated in the "full" mode for 2 months, minimum. When the reactors are full, the system shall be tested for compliance with all of the same requirements as in the first operating mode plus the requirements for electrical power use, electrical power demand, and odor removal.
- B. Pathogenic safety testing: Composite samples of compost shall be taken from the discharge of the reactor and tested for pathogenic safety. This sampling and testing shall be performed at least once each week during the performance test. Also, compost removed from the reactor during the performance test shall be placed in aerated cure piles for the specified time interval and then sampled and tested for pathogenic safety. This sampling and testing shall be performed at least once each week. Pathogenic safety shall be evaluated as indicated in Paragraph 2.01E.4 of this section of these specifications.
- C. Seed germination testing: Composite samples of finished compost shall be taken from representative cure piles, for testing of seed germination. The cure piles shall be consistent with Paragraph 2.03E of this section of the specifications. This sampling and testing shall be performed at least once each week during the performance test.
1. Germination tests shall be run on both Celery and Timothy seeds. Germination procedures shall be consistent with the Rules for Testing Seeds of the Association of Official Seed Analysts (AOSA), latest edition. Fresh seeds with a germination percentage of at least 90% shall be utilized. Each compost sample shall be tested with four replicates of each type of seed. There shall be 100 seeds per replicate. For comparative purposes, and to confirm the viability of the seeds, control tests shall be run using standard AOSA substrata.
 2. A stable compost material will have a germination rate of at least 50% of the rate observed in standard substrata. Germination counts shall be based on the final count day recommended by the AOSA.

3. Compost shall be prepared for use as germination media as recommended by the AOSA. As a minimum each material shall be screened through a 1/4-inch mesh screen to remove large particles, and the water content shall be adjusted to a standard level.
 4. The seed germination test will be performed by a recognized horticultural authority acceptable to both the Owner and company.
- D. Moisture content testing: Composite samples shall be taken from the mixture fed into the reactor and from the discharge of the reactor and tested for moisture content. This sampling and testing shall be performed at least once each week during the performance test. Moisture content shall be measured using procedures in the 16th Edition of Standard Methods.
- E. Electrical power use testing: Electrical power use shall be measured and totalized continuously during the performance test while the system is operated in a ~~mode with the reactors completely full~~. ~~Power use per pound of sludge dry solids processed shall be calculated, and compared to the power use rates listed in the bid proposal for determination of operation and maintenance compensation payments.~~ Sufficient data shall be collected to allow calculations to be accurate within +3%.
- F. Electrical power demand testing: The peak electrical power demand shall be monitored ~~and compared to the peak demand listed in the bid proposal for determination of operation and maintenance compensation payments.~~ This monitoring shall be continuous during the performance test while the system is operated in a mode with the reactors completely full.
- G. Sawdust use testing: Dry solids weight of sawdust used during the performance test shall be monitored. The sludge/sawdust ratio shall be calculated and compared to the ratio listed in the bid proposal for determination of operation and maintenance compensation payments. Sufficient data shall be collected to allow calculations to be accurate within +3%.
- H. Odor removal testing: Gas samples shall be taken from the odor scrubber inlet and outlet and tested for NH₃ and H₂S emissions. The sampling and testing shall be performed at least once each week during the performance test while the system is operated in a mode with the reactors completely full. Sampling and testing procedures shall be as outlined in EPA standard methods. The average emissions from the odor scrubber outlet and at least 80% of the individual tests are required to meet EPA/DEQ NH₃ and H₂S emission standards.
- I. Infeed device testing: The depth of material over the entire feed section of the reactor shall be monitored and at least

once each week during the performance test. A contour map shall be prepared each time to illustrate the surface contours at the feed section. The depth of the material in each feed section shall be $\pm 7\%$ of the average depth.

- J. Outfeed device testing: The discharge rates of the outfeed devices for the sawdust silo, dewatered sludge hopper and ~~compost-reactor~~ shall be monitored at least once each week during the performance test. Each time the outfeed device shall be operated at 10%, 40%, 70% and 100% of full range, and the discharge rates shall be within $\pm 5\%$ of the rate settings at the controls.
- K. Temperature profile testing: The temperature profiles in the reactors shall be monitored continuously during the performance test using the permanently installed temperature monitoring system. The temperature shall be checked to verify that material in the reactor is maintained at a temperature of 55 degrees C for at least 72 hours continuously, that temperatures are held below 80 degrees C and that temperature variations are less than ± 10 degrees C at any cross section of the reactor perpendicular to the direction of flow.
- L. Chemical use testing: The cost of chemicals used to enhance composting or supplemental dewatering shall be monitored during the performance test. The ratio of chemical costs/LB sludge dry solids shall be calculated and compared to the ratio listed in the bid proposal for determination of operation and maintenance compensation payments. Sufficient data shall be collected to allow calculations to be accurate within $\pm 3\%$.
- M. The supplier shall document performance test results in a detailed report.
- N. The aforementioned testing will be used for routine tests to determine if the system performs satisfactorily after the Owner's acceptance."
- O. Downtime: During the performance test period, the sludge composting facility shall operate for 4 independent periods of 30 days each with no downtime. The 30 day periods shall take place while the facility is operated in the design HRT/SRT mode or "full" mode as described in Paragraph 3.04A.9 and 11. If downtime occurs part of the way through a 30 day interval, then the clock for that interval shall be reset to 0 and the test shall resume, including all associated monitoring when steady state conditions are reestablished."

3.05 OPERATOR TRAINING

- A. The sludge composting facility supplier shall provide for complete operator training including classroom instruction in process principles, operating techniques and all maintenance procedures per Paragraph 1.08 of this section of the specifications.

End of Section

N10010367

Solids retention time of compost reactor =

$$SRT = \frac{V \left(\frac{D_m + D_p}{2} \right) \left(\frac{S_m + S_p}{(2)(100)} \right)}{X_p}$$

- B. The sludge composting facility shall be designed to compost waste oxidation ditch sludge according to the following design criteria and operating conditions. The supplier shall note that some numbers are shown on a 7-day week basis, and the supplier shall adjust these numbers to a 5-day week basis so that all conveying transferring and mixing can be accomplished in a normal 40-hour 5-day work week per Paragraph 1.07C.

The Owner can deliver sludge to the waste sludge hopper in the composting facility at rates up to 9,800 lb sludge dry solids per day, or at a reduced rate. This allows the Owner to feed sludge into the composting facility in 5 days per week when sludge production is at the maximum specified rate. Also it allows the Owner to feed sludge in less than 5 days per week or at a reduced rate when sludge production is less than the maximum specified rate.

<u>Feed Sludge</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
Type	Waste oxidation ditch activated sludge	Same*
Dry solids loading rate Xc, tons/day (7-day week)	Minimum range: 1.5-3.5	Same
Total solids concentration Sc, percent	Minimum range: 15-20	Same
Volatile solids concentration, percent	Minimum: 60	Same

* Same means the same as for Alternative 1.

Compost Amendment

Type	Commercial sawdust	
Total solids concentration Sa, percent	Minimum weekly average: 60 Minimum: 50	Same
Sawdust/sludge ratio lb dry solids/lb dry solids	Maximum: 2.2	1.1

Recycle Compost (from reactor)

Total solids concentration Sr, percent	Minimum: 38	Same
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Raw Compost Mixture

Total solids concentration Sm, percent	Minimum: 32	33
--	-------------	----

Product Compost
(as removed from reactor)

Design total solids concentration Sp, percent	Minimum: 38	Same
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Dewatered Sludge Hopper

Minimum Volume, excluding freeboard, cf	1200	Same
---	------	------

Minimum freeboard, feet	2	
-------------------------	---	--

Outfeed Device

Type	Rotating Screw Auger	Same
Drive	Variable speed	
Minimum number	1	
Capacity, ton/hr, each	Minimum range: 5-20	Same
cf/hr, each	Minimum range: 160-650	Same

Sawdust Storage Silo

Minimum Volume, cf	11,000	5500
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- F. Dewatered sludge: The dewatered waste oxidation ditch sludge fed to the compost facility will include various chemicals added at the wastewater treatment plant. Alum and soda ash may be used to polish the wastewater treatment plant effluent and polymers may be used to enhance sludge dewatering in the dissolved air flotation tanks and belt filter presses. The waste sludge, including the above mentioned chemicals will be delivered to the sludge composting facility dewatered to a minimum of 15% total solids concentration.
- G. Sawdust: The wood sawdust to be mixed with the waste sludge shall have the following characteristics:
1. The sawdust shall be from cutting or recutting wood, shavings, ground or hammermilled wood all from untreated lumber.
 2. Sawdust shall be from fir, hemlock, spruce or other coniferous species including up to 50% by volume of bark. Any combination of cedar, ponderosa pine, redwood, alder, oak and other hardwoods may be included in amounts not to exceed 15% by volume of each truck load delivered.
 3. Sawdust shall be well graded with a maximum particle size of 1/4 inch, clean and free from sanding dust, rot, burned material, sand, grit, other objectionable material and have a minimum dry solids content of 50% and a minimum weekly average dry solids content of 60%.
- H. Downtime: The sludge composting facility shall be designed so that no more than 14 days/year of scheduled downtime are required such as for maintenance and inspection.

The sludge composting facility shall be designed and provided with sufficient standby and backup components and/or spare parts so that downtime does not exceed the limits required for the performance tests as described in Paragraph 3.04.

The sludge composting facility shall be considered down under the following conditions:

1. When the reactor aeration, exhaust or odor control systems are unable to achieve the performance described in Paragraph 2.01D.1 or 2.03F due to breakdowns or shutdowns.
2. When sludge is hauled off site uncomposted or incompletely composted due to breakdowns or shutdowns of the material handling system, outfeed devices, infeed devices, mixers or reactor chamber(s).
3. When the reactors cannot accept all the sludge from the treatment plant up to the specified allowable maximums.

2.02 DESIGN CRITERIA AND PERFORMANCE REQUIREMENTS

A. Sludge composting facility design criteria are defined as follows:

V = volume occupied by composting material in reactor, cf

Xc = dry solids in dewatered sludge fed to reactors on a 7-day week basis, lb/day

Xa = dry solids in compost amendment (sawdust) on a 7-day week basis, lb/day

Xr = dry solids in compost recycled from reactor outlet on a 7-day week basis, lb/day

Xp = dry solids in product compost from reactor on a 7-day week basis, lb/day

Xm = Xc + Xa + Xr = dry solids in mix fed to reactor on a 7-day week basis, lb/day

Sc = Dry solids concentration in dewatered sludge, %

Sa = Dry solids concentration in sludge amendment (sawdust), %

Sr = Dry solids concentration in recycle compost, %

Sp = Dry solids concentration in product compost, %

Sm = Dry solids concentration in mix fed to reactor, %

Dm = Density of mix fed to composter, in place, at inlet of reactor, lb/cf

Dp = Dr = Density of compost in place, and undisturbed at outlet end of reactor, lb/cf

"Hydraulic" retention time of compost reactor =

$$\text{HRT} = \frac{V}{\frac{(100 X_m)}{(S_m D_m)} + \frac{(100 X_r)}{(S_r D_r)} + \frac{(100 X_p)}{(S_p D_p)}}$$

Tabby - This is an
original ^{"ONLY"} copy that has ^{10/12/92}
Bud Johnson's initials. It
should be given to Peggy for
inclusion in permanent file.

CONTRACT
CHANGE
ORDER

Distribution to:
OWNER ☒
CONTRACTOR ☒
FIELD ☒

CONTRACT
DOCUMENTS

PROJECT: City of Newberg
(name, address) Newberg, Oregon

CHANGE ORDER NUMBER: 2
INITIATION DATE: October 12, 1992

TO (Contractor):

E.P.A. PROJECT NO.: C-410494-03

ASHBROOK-SIMON-HARTLEY
11600 East Hardy
Houston, Texas 77093
Attn: Harold W. Johnson

CONTRACT FOR: Construction of
Sanitary Sewerage System Improvements
Schedule "F" - Sludge Composting Facility
CONTRACT DATE: May 16, 1986

You are directed to make the following changes in this Contract:

Contract is hereby amended as follows:

Scope of Work is hereby changed as defined in the attached document entitled
"Contract Change Order No. 2, Scope of Work", including referenced plans and
specifications, all incorporated herein.

Not valid until signed by both the Owner and General Contractor.

Signature of Owner and General Contractor indicates agreement herewith, including any adjustment in the Contract
Sum and/or Contract Time.

The Original Contract Sum was	\$ 2,824,000.00
Net Change by previously authorized Change Orders (No. 1: 3/31/88)	\$ 10,266.00
The Contract Sum prior to this Change Order was	\$ 2,834,266.00
The Contract Sum will be increased by this Change Order No. 2	\$ 222,614.00
The new Contract Sum including this Change Order will be	\$ 3,056,880.00
The Contract Time will be increased by	(90) Days
The Date of Final Completion as of the date of this Change Order therefore is	March 2 May 15 , 1994

ASHBROOK-SIMON-HARTLEY

Contractor

11600 East Hardy

Address

Houston, Texas 77093

CITY OF NEWBERG, OREGON

Owner

414 E First Street

Address

Newberg, Oregon 97132

By

Harold W. Johnson

By

Duane R. Cole

Date

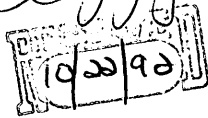
October 16, 1992

Date

October 21, 1992

CONTRACT
DOCUMENTS

Reggy S



CONTRACT
CHANGE
ORDER

Distribution to:
OWNER
CONTRACTOR
FIELD

☒
☒
☒

PROJECT: City of Newberg
(name, address) Newberg, Oregon

CHANGE ORDER NUMBER: 2
INITIATION DATE: October 12, 1992

TO (Contractor):

E.P.A. PROJECT NO.: C-410494-03

ASHBROOK-SIMON-HARTLEY
11600 East Hardy
Houston, Texas 77093
Attn: Harold W. Johnson

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The new Contract Sum including this Change Order will be \$ 3,056,880.00
The Contract Time will be increased by (90) Days
The Date of Final Completion as of the date of this
Change Order therefore is

~~May 15~~ March 2, 1994

ASHBROOK-SIMON-HARTLEY

Contractor

11600 East Hardy

Address

Houston, Texas 77093

CITY OF NEWBERG, OREGON

Owner

414 E First Street

Address

Newberg, Oregon 97132

By

Harold W. Johnson

By

Quane R. Cole

Date

October 16, 1992

Date

October 21, 1992



ASHBROOK-SIMON-HARTLEY

Ashbrook-Simon-Hartley
Suite 124
500 Southland Drive
Birmingham, Alabama 35226
Telephone 205/823-5231
FAX 205/823-6820

TELEFAX TRANSMITTAL

DATE: OCTOBER 16, 1992

TOTAL PAGE(S)

**TO: BILL TUTKA
CITY OF NEWBERG
503-538-5393**

FROM: EARL CAPPS, CONTRACT MANAGER

**CC: BERT TEITZEL
DUANE COLE**

SUBJECT: CITY OF NEWBERG, OREGON COMPOST FACILITY IMPROVEMENTS

=====

Attached Draft of Change Order #2 revised for the Composting Facility Project.

The increase in price is per Ken Blackwood's memo of 10-05-92, Alternate #1.
Specifications are per past discussions between Ken Blackwood and Newberg.

Time has been reduced to 90 days for execution on or before 10-21-92.

The price has been reduced by \$11,000.00 for execution on or before October 21, 1992.

We await your response.

EC/dsg

p.s. Hard copies out tonight via Federal Express.



CITY OF NEWBERG, OREGON
CONSTRUCTION OF SANITARY SEWERAGE SYSTEM IMPROVEMENTS
SCHEDULE "F" SLUDGE COMPOSTING FACILITY
CONTRACT CHANGE ORDER NO. 2

Scope of Work:

1. Removal and scrapping of the following equipment (See Drawing G09-1):
 - a. Recycled/Finish Compost Conveyor CON8-08
 - b. Recycled Compost Mixer Feed Conveyor CON8-09
 - c. Recycled Compost Hopper T8-09
2. Removal of platform and stairs to the Recycled Compost Hopper and necessary modifications to the remaining stairs to the dewatered sludge hopper.
3. Furnish and install one recycle bin complete with: live bottom controlled by a variable frequency drive unit; collector screw; removable bin side panel to lower lift-over height to 7'-0" ; and a three-sided roofed enclosure to keep rain out of the bin. The sides of the enclosure will be similar in color and style to that used on the reactors. A roll-up canvas curtain will be provided to keep rain out of the bin when it is not being used. (See Drawings G01C and LBB.)
4. Furnish and install Transfer Screw Conveyor SC-03 to transfer recycle from the bin collector screw to the mixer.
5. Modification of the discharge end of the Tunnel Reactor® to eliminate the discharge conveyor. Reactors will be constructed as shown on drawings S001-01 to S001-08 and A001-01 to A001-03. The discharge end of each reactor will be closed with a roll-up door. These doors will be motor operated and remotely controlled so the loader operator can operate either door while on the loader. The doors should remain closed except when removing discharged material from a reactor. When a door opens, a roof fan turns on to bring in fresh air and a flashing warning light turns on to warn people to stay clear. Rubber seals will be provided at the end of each reactor to minimize the escape of process air into the discharge area of the reactor.
6. Equipment will conform to the enclosed specifications which are listed below:
 - a. Live Bottom Bin Specification
 - b. Screw Conveyor Specification
 - c. Rolling Service Doors (from Newberg Schedule E)
 - d. Variable Frequency Drive Specification
7. All electrical, instrumentation and control equipment and labor required as a result of these modifications.
8. All engineering, project administration and field management required to complete the change order modifications.

LIVE BOTTOM BIN SPECIFICATION

1. GENERAL

- 1.1 The bin shall be furnished with related supports, bracing, live bin bottom with screw feeders, collecting screw, motors, and drives. Shop drawing submittals for the bin shall indicate the empty weight of each bin with all appurtenances and accessories, and the fully loaded weight of each bin.
- 1.2 Motors for screw feeders (three per bin) will be 10 Hp.
- 1.3 The bin walls shall have a negative slope and constructed of structurally reinforced and welded steel plate conforming to ASTM.A36, with a minimum plate thickness of 1/4". Design and construction shall comply with the latest revisions of AISC and AWS. All interior surfaces shall be seal welded in conformance with AWS D1.0-69. The nominal internal dimensions shall be 12'-0" long x 7'-8" wide at the base. The top of bin elevation shall be as shown on the Contract Drawings. An access door must be provided for removal of screw feeders.
- 1.4 The live bottom troughs housing the screw feeders shall be fabricated from a minimum 1/4" steel plate. One end of the housing shall support the drive shaft, drive sprocket, and motion gears. The other end shall support the collector screw housing which will be 90 degrees to the screw feeders.
- 1.5 The screw feeders shall be fabricated from 1/4" thick, 9" diameter 1/2 pitch flights X 360 BHN steel mounted on a tapered cone and a Schedule 80 pipe.
- 1.6 Three screw feeders per drive interconnected by gears to transmit motion to the 2 slave screw feeders. A drive chain with a sprocket ratio of 3 to 1 shall connect the reducer with one of the screw feeders. Since there are nine screw feeders, there will be three drives. Speed sensors will be mounted to each slave screw feeder. Tapered pipe to extend full length of bin hopper.
- 1.7 The collecting screw shall be fabricated from 1/4" thick, 9" diameter flights (360 BHN steel) X full pitch. Ends shall have quick links and a speed sensor on one shaft end. The drive end shall have a Class I shaft-mounted speed reducer with a motor mount with V-belt drive and guard.
- 1.8 The bin will be located outdoors and all equipment shall be designed for outdoor service.
- 1.9 Bin and live bottom hopper will be sealed to prevent leakage of liquid from the compost product.

2. A. C. MOTORS

- A. Motors shall be 460 volt, 3 phase, 60 Hz, 1800 RPM and totally enclosed, fan cooled (TEFC) NEMA B Design with Class F insulation with 1.15 service factor and designed for hostile environment service.

3. GEAR REDUCERS

- 3.1 Drive reducers shall be Class I service. The thermal horsepower ratings for these units shall be in excess of the connected motor horsepower when operating continuously in an ambient temperature of 110° F. No external oil coolers are permitted. Ship with rust preventive "Motor Store" for long time storage.
- 3.2 Furnish drive with slide base and chain guard.

4. COATINGS

Paint system for bins shall be as follows:

4.1 All Surfaces:

- Surface preparation: sandblast to SSPC-SP10
- First coat: 66-1211 Epoxoline Primer 3.0 - 5.0 mils
- Second coat: 66-color Hi-Build Epoxoline 4.0 - 6.0 mils; color to be determined by Owner.

- 4.2 Coatings listed are by Tnemec Company, Inc. Equivalent coatings by other manufacturers are acceptable subject to approval.

SCREW CONVEYOR SPECIFICATION

1. GENERAL

- 1.1 Screw conveying equipment includes screw conveyor, drive, end shafts, support bearings, trough assembly, trough cover drive unit, and all appurtenances necessary for a complete installation.
- 1.2 Design and size the screw conveyors to handle the materials stated in the conveyor schedule, and in accordance with CEMA standards 300 and 350, except as modified herein.
- 1.3 All screw conveyors shall have 1/4" thick sectional flights constructed of abrasive resistant steel. Flights shall be continuously welded to the shaft. A reversing flight end disc of the same diameter as the screw shall be welded at the end of the screw. The shaft shall be minimum of Schedule 80 heavy duty pipe and of adequate size to support the flights over the entire length of the screw conveyor without intermediate bearings. Where splices are necessary, the screw design shall be such that quick removal of a conveyor screw section may be effected without disturbing other components. The pipe sections shall be bushed at the ends, and hole drilled for the coupling bolts.
- 1.4 Conveyor will be sealed to prevent the leakage of liquid from the compost product.

2 DRIVES

- 2.1 All drive coupling and tail shafts shall be the same diameter and shall be the largest standard size for the pipe furnished. All coupling shafts shall be hardened steel with jig-drilled coupling bolt holes per CEMA standards. Coupling bolts shall be forged in high sheer strength steel with self locking units. Bolt dimensions shall conform with CEMA Standard No. 300.
- 2.2 The conveyor drive and thrust end bearing shall be located at the discharge end of the conveyor. The bearings shall be the self-aligning roller bearing pillow block type equipped with easily accessible alemite grease fittings.
- 2.3 All screw conveyors shall be driven by a shaft mount speed reducer. Speed reducers shall be Class I service.
- 2.4 The drive shall be sized to start with the screw conveyor in a fully loaded condition.
- 2.5 Motion detectors shall be provided. The devices shall be installed complete with all hardware and brackets required for a complete installation.

- 2.6 Chain drives shall be covered with 14 gauge galvanized steel guards. Guards shall be removable without removal of bolts.
- 2.7 Motor brackets shall be rigidly mounted with clearance over the trough end for easy removal of the trough cover without disassembling any part of the drive. Drive units shall be designed or arranged so the oil seals on the speed reducer will retain the lubricant properly, the oil supply will properly lubricate the gearing, the oil level gauge will not be rendered inoperative, and the oil filler and drain openings are convenient for servicing.

3 COATINGS

Conveyor trough, ends and cover shall be hot dipped galvanized per ASTM 123 specifications.

- B. Show diagrams of all wiring connections to power operators, switches and controls.
- C. Indicate pertinent dimensioning, general construction, component connections and details, anchorage methods, hardware locations, and installation details.
- 1.05 DELIVERY
- A. Deliver doors and related equipment in manufacturer's packaging complete with installation instructions. No scratched, dented or marred doors will be accepted for use in the project.

2. PRODUCTS

2.01 ROLLING SERVICE DOORS

- A. General: Provide electrically operated overhead rolling service doors as shown on plans. Face mount on walls.
1. Design: Doors to withstand 20 pounds per square foot wind pressure. Maximum allowable door deflection in a horizontal position is 1/120 of door width.
- B. Materials
1. Curtains
- a. Interlocking galvanized steel slats of hot-dipped copper bearing strips with 1.25 ounces per square foot zinc coating.
- b. Steel slats of minimum thickness 22 gage and of flat slat design.
- c. Each end of alternate slats to be fitted with malleable iron endlocks to act as wearing surface in guides and to maintain slat alignment.
- d. Bottom of curtain to have two galvanized steel reinforcing angles.
2. Counter balance assembly: Helical torsion springs with a 25% safety factor, mounted on shaped cast anchors supported by a continuous solid torsion rod. Mechanism to be permanently lubricated and enclosed within a steel pipe shaft. Deflection of shaft not to exceed 0.03-inch per linear foot. Spring tension adjusting wheel to be accessible from outside the bracket plate.
3. Brackets: 1/4-inch steel plate with self-aligning ball bearings for suspension of the counter balance assembly.

4. Guides: Galvanized structural steel angles minimum 3/16-inch thick.
5. Hood: Galvanized steel, minimum 24-gage with intermediate brackets to prevent sagging. Provide an internal neoprene weather stripping baffle on the hood to prevent dust passage through hood.
6. Locking
 - a. Provide self-locking gearing for motor operated doors.
7. Finish: Doors to be painted with finish system specified in Section 09805. Provide can of touch-up paint for making field repairs.
8. Motor operation
 - a. Electric operator: Wall mounted type with emergency hand chain hoist for manual operation in case of power failure. Chain hoist both mechanically and electrically interlocked to prevent motor operation when chain hoist is engaged.
 - b. Motor shall be high starting torque, instant reversing type. Reduction provided through high efficiency, worm-type gear reducer running in an oil bath and of sufficient capacity and size as recommended by the manufacturer to operate the door at an average speed of 8 to 12 inches per second. Provide 3-phase, 60-hertz, 460-volt, 1-1/2-hp motor. Motor to be totally enclosed to protect the windings from dirt, dust and metal filings. Motor shall be capable of being removed for service without affecting the limit switch adjustments or chain hoist operation.
 - c. Clutch unit shall have a centrifugal clutch to transfer motion to the curtain without shock and automatically free driving motor prior to stalling to avert overload damage to unit.
 - d. Brakes: Spring set, solenoid operated, disc brakes totally enclosed to protect against dust and moisture.
 - e. Limit switch: Positive gear driven limit switch, totally enclosed to control the open and close limits of door travel.
 - f. Overload device: Provide an overload device to disconnect motor from power source in case of excessive motor heat or current overload and automatically reset when motor temperature returns to normal.

- g. Starter: A combination reversing contactor, mechanically and electrically interlocked and enclosed in a NEMA enclosure suitable for the environment.
- h. Secondary control circuit shall be 24-volt, NEC Class II control voltage wiring panel, providing for added control device attachment without removing the operator from its mounting position.
- i. Push button station: Provide 3-button, surface-mounted control stations with "open," "stop," and "close" buttons and key operators where shown on electrical drawings. Enclosure shall be suitable for the environment - W.P., explosion-proof, etc.
- j. Safety edge: Provide electric operated safety edge bottom bar which will upon contact with obstruction, stop door and return to open position.

2.02 BI-PARTING SLIDE DOOR

A. Acceptable door manufacturers and models

- 1. American Metal Door Co., Inc., Series 3700 Industrial Door.
- 2. Clark Industrial Doors - "Model DHS-3321D."
- 3. Mesker Industries Inc. "Model BE-SL Easy Glide."

B. Door description

- 1. Double horizontal sliding door with monorail cutout.
- 2. Door panel: 18-gage galvanized steel face sheets with honeycomb core. Shop apply primer coat which is compatible with special coating designated in Section 09805. Field paint finish coats. See Section 09805, Special Metal Finish.
- 3. Door track assembly: "J" type box track with ball bearing pendant type 4 wheel hangers, concealed guide roller, and door stops.
- 4. Door operator: Overhead electrically controlled door operator for 460-volt, 3-phase, 60-Hz power supply. Provide manual safety release for emergency door operation during a power failure. Provide proper motor amperage according to size and weight of doors.
- 5. Door controls: Provide pushbutton control of door operators for "open" and "close" positions. Provide two control stations, each located on opposite side of wall.

SECTION 16483.2

VARIABLE FREQUENCY CONTROLLERS FOR MULTIPLE MOTOR MACHINE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Variable Frequency Controller
- B. Starters for each motor
- C. Enclosure for A & B above

1.02 REFERENCES

- A. NFPA 70 - National Electric Code
- B. Nema ICS 3.1 - Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems.

1.03 SUBMITTALS

- A. Shop Drawings: Include front and side views of enclosures with overall dimensions and weights shown; conduit entrance locations and requirements; and nameplate legends.
- B. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.
- C. Manufacturer's Installation Instruction: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory protection, examination, preparation, installation, and starting of Product.

1.04 OPERATION AND MAINTENANCE DATA

- A. Operation Data: Include instructions for starting and operating controllers, and describe operating limits that may result in hazardous or unsafe conditions.
- B. Maintenance Data: Include routine preventive maintenance schedule.

1.05 SUBMITTALS

- A. **Manufacturer:** Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.06 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.**

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Accept controllers on site in original packing. Inspect for damage.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to motor control center components, enclosure, and finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- | | | |
|----|----------------|---------------------------------------|
| A. | Baldor | Model ID12450 (See 2.02) |
| B. | IDM | Model CIMRG3U4037 (See 2.02) |
| C. | Eaton | Model AF-504203-0480 (See 2.02) |
| D. | Substitutions: | As approved by Simon Waste Solutions. |

2.02 DESCRIPTION

- A. Model Number given is for basic unit and does not necessarily include required features listing in B - P following.
- B. Provide Variable Speed Frequency Controller sized to provide power to three 460 Volt 60 Hz 10 Horsepower 1.15 SF motors operating under constant torque conditions.

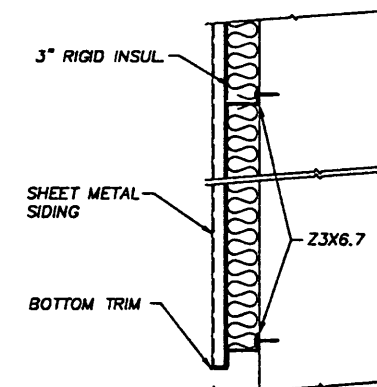
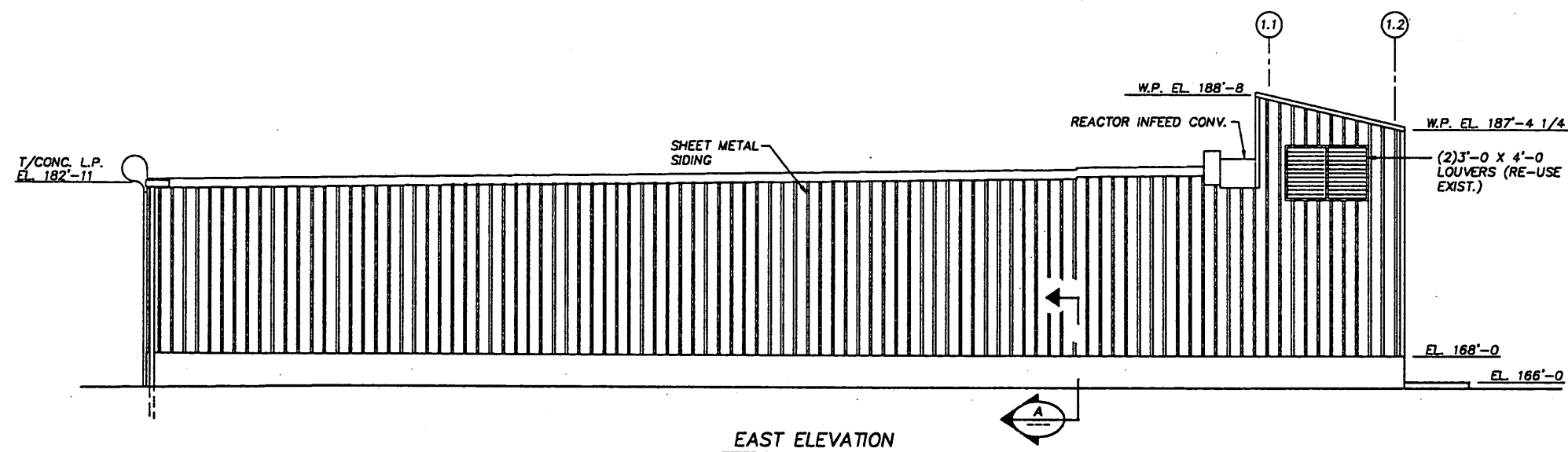
- C. Provide a motor starter complete with properly sized overload and overcurrent devices for each motor.
- D. Provide Nema 12 enclosure with B and C mounted inside.
- E. Provide hand-off-auto switch which is accessible without opening enclosure.
- F. Provide start-stop switch(es) which is (are) accessible without opening enclosure.
- G. Provide manual speed control potentiometer which is accessible without opening enclosure.
- H. Provide main power disconnect which must be operated before opening door, but which has a defeat mechanism to allow access by qualified personnel.
- I. Provide a process follower input for a 4-20 mA signal.
- J. Provide indication of voltage frequency and current output without having to open enclosure door.
- K. Provide Variable Frequency Controller with pulse width modulated output technology.
- L. Provide output frequency range of 0 to 70 Hertz.
- M. Provide 200% peak overload current capability.
- N. Provide separate acceleration/deceleration rates.
- O. Provide coast to stop.
- P. Provide controller trip under following conditions:
 - 1. over voltage
 - 2. over current (each phase)
 - 3. under voltage
 - 4. control power failure
 - 5. control over temperature
 - 6. motor overload

2.03 RATINGS

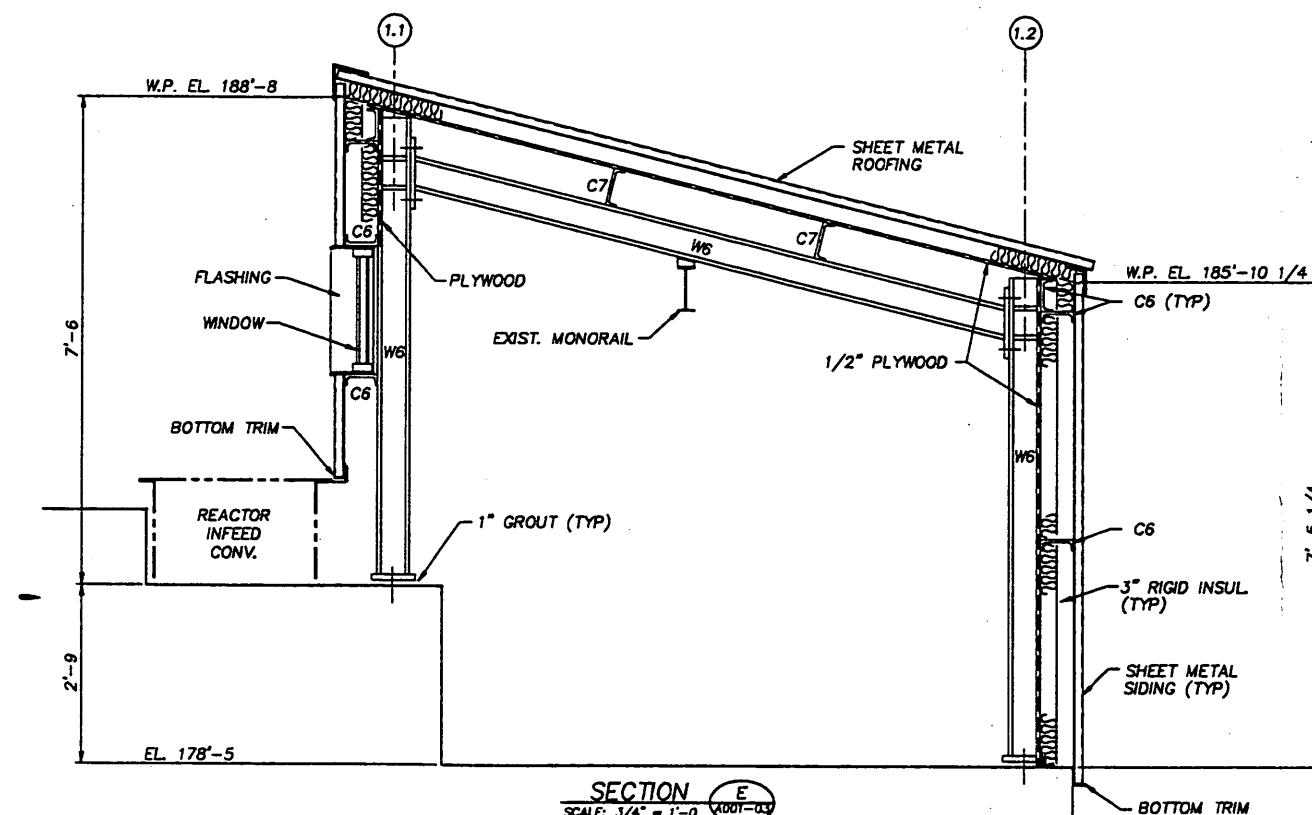
- A. Rated Input Voltage: 480 volts, three phase, 60 Hertz.

- B. Motor Nameplate Voltage: 460 volts, three phase, 60 Hertz.
- C. Displacement Power Factor: Between 1.0 and 0.95, lagging over entire range of operating speed and load.
- D. Operating Ambient: 0 degrees C to 40 degrees C.

END OF SECTION



SECTION A
SCALE: 1 1/2" = 1'-0"



SECTION E
SCALE: 3/4" = 1'-0" A001-03

SECTION SHOWS EXIST. PENTHOUSE REASSEMBLED
ON THE NEW REACTOR STRUCTURE

NOTES:

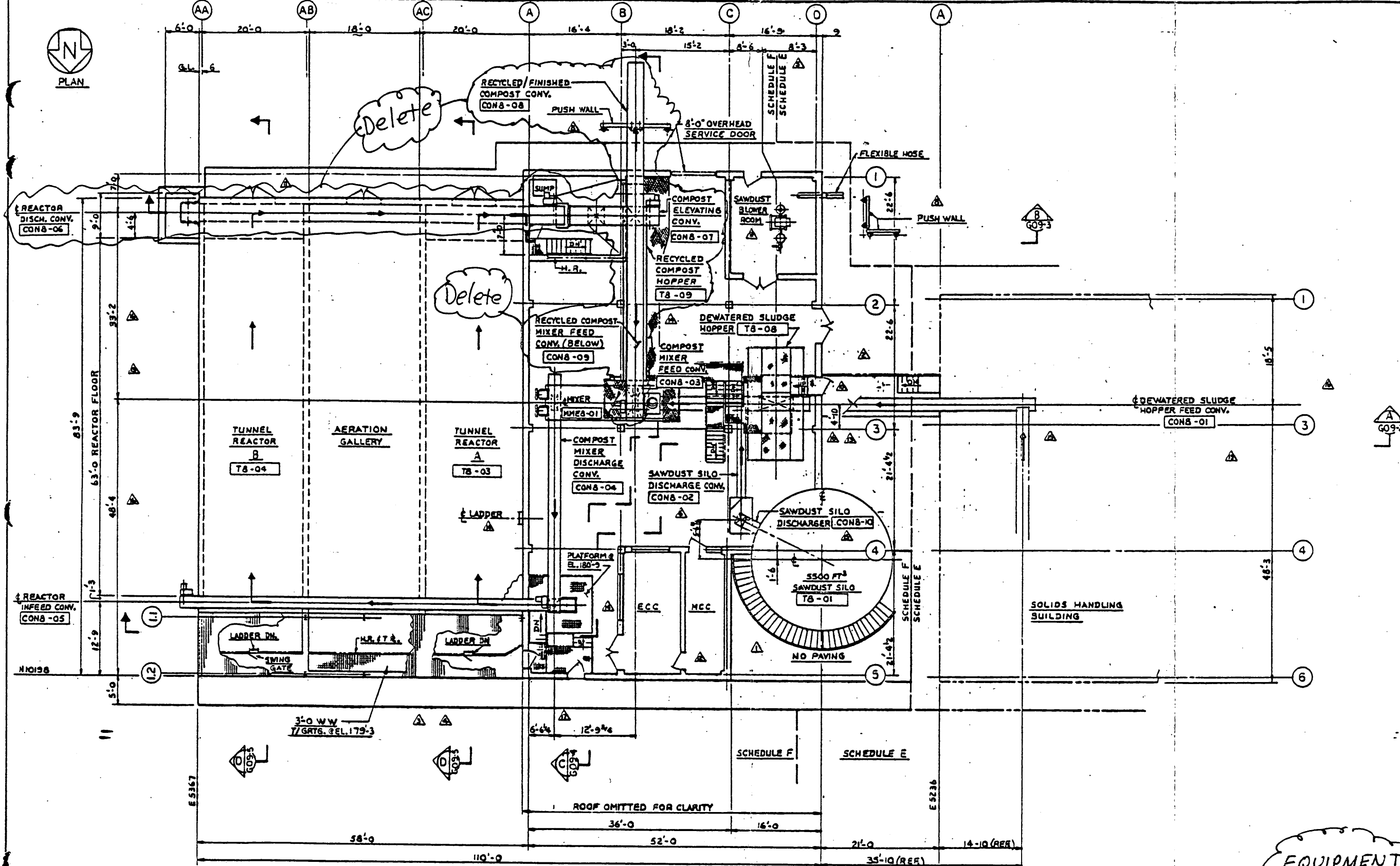
1. REUSE EXIST. SIDING, INSULATION, Z's, AND TRIM
AS MUCH AS PRACTICAL

PRELIMINARY

[illegible]

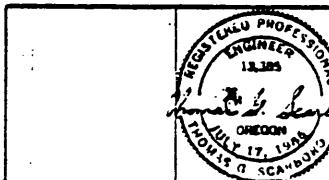
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 ASHBROOK-SIMON-HARTLEY HOUSTON, TX • BIRMINGHAM, AL		BUILDING ELEVATIONS		PROJECT NUMBER 9209	
DRAWN K.BLAIR/POD CHECKED APPROVED SCALE 3/16"=1'-0" DO NOT SCALE	DATE 5/28/25	SLUDGE COMPOSTING FACILITY NEWBERG SEWERAGE SYSTEM IMPROVEMENTS CITY OF NEWBERG, OREGON		DRAWING NUMBER A001-02	R



EQUIPMENT
DELETED

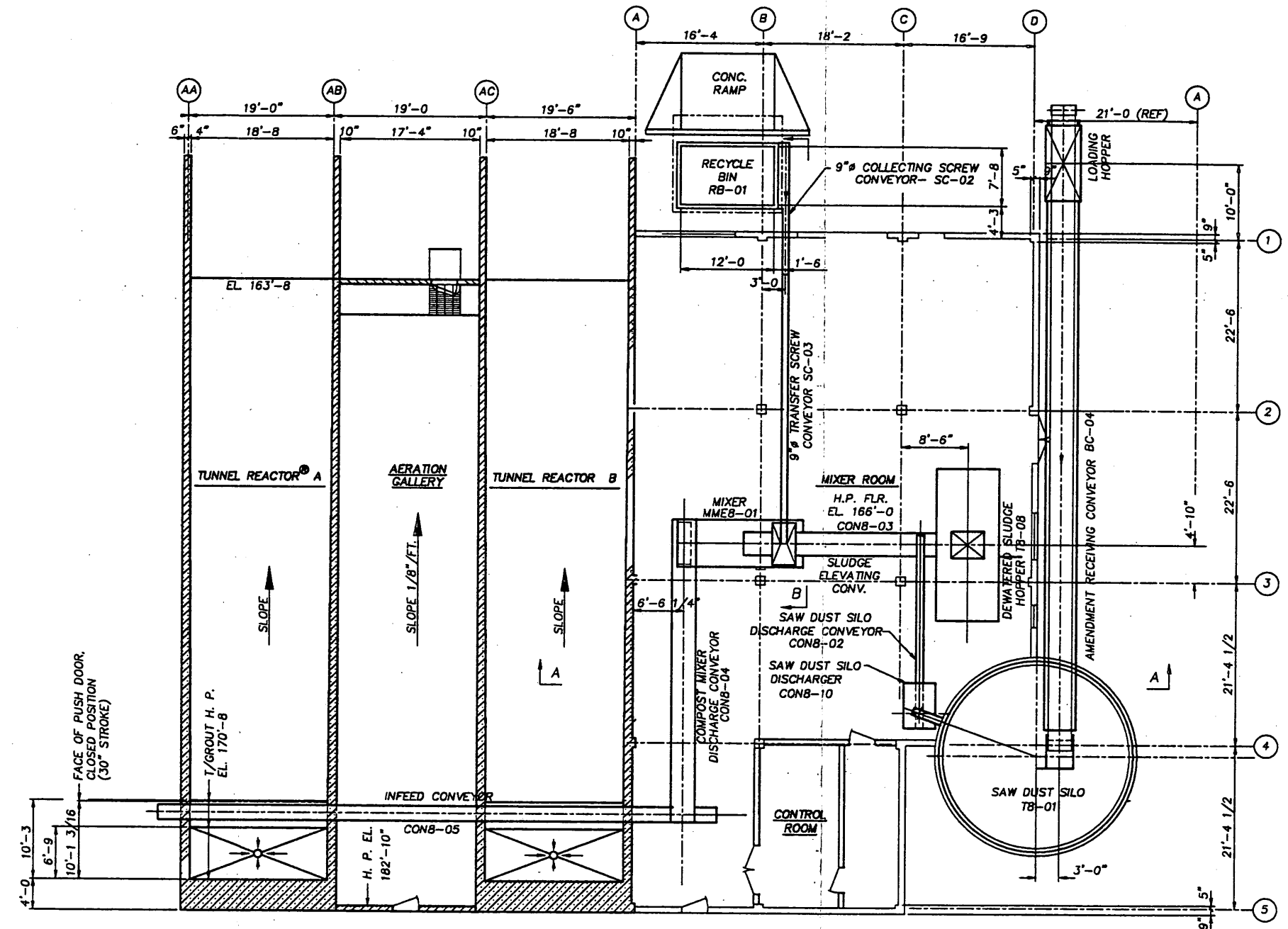
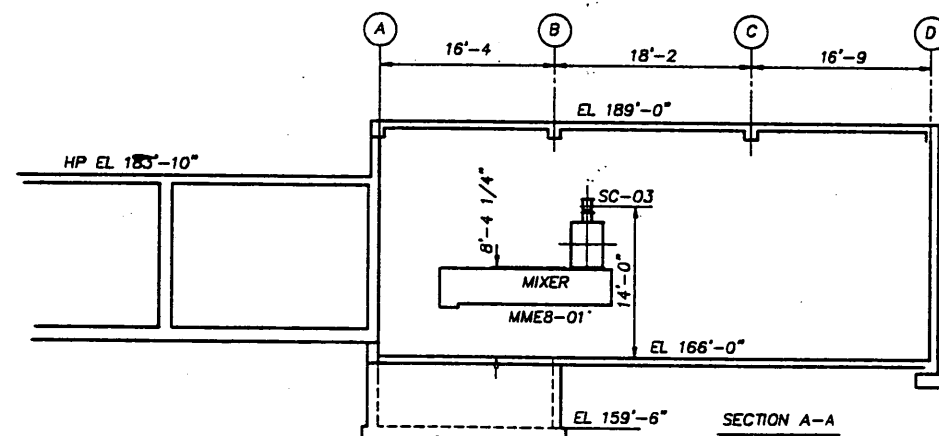
C.S. 12/1/87	UPDATED	K
C.S. 12/1/87	REVISED DIMS.	J
C.S. 12/1/87	REVISED DIMS.	H
C.S. 12/1/87	REVISED EQUIPMENT NOS	G
C.S. 12/1/87	ADDED LADDER	F
C.S. 12/1/87	REV. DIMS. & ADDED PLATFORMS	E
C.S. 12/1/87	ADDED REACTOR DRT, HANDRAIL & RELOC. WALL	D
C.S. 12/1/87	ADDED RUSH WL. & BLOWER RM. PL. & PLATFORM	D
C.S. 12/1/87	WAS 27'-0" & ADDED 21'-0" DIM	C
C.S. 12/1/87	RELOCATED SAWDUST DISCHARGE CONV.	B
C.S. 12/1/87	REV. PLATFORM & RELOCATED SLUDGE HOPPER	B
C.S. 12/1/87	REV. PLATFORM	A
C.S. 12/1/87	REV. & RELOCATED SLUG & ADDED BRIDGE	A



NO.	DATE	REVISION DESCRIPTION
610-1		AERATION & ODOOR CONTROL - PLAN & SEC.
609-5		MATERIAL HANDLING SYS. SEC. D
609-4		MATERIAL HANDLING SYS. SEC. C
609-3		MATERIAL HANDLING SYS. SEC. B
609-2		MATERIAL HANDLING SYS. SEC. A

ASHBROOK-SIMON-HARTLEY
300 SOUTHLAND DRIVE • SUITE 120 • BIRMINGHAM, AL 35228

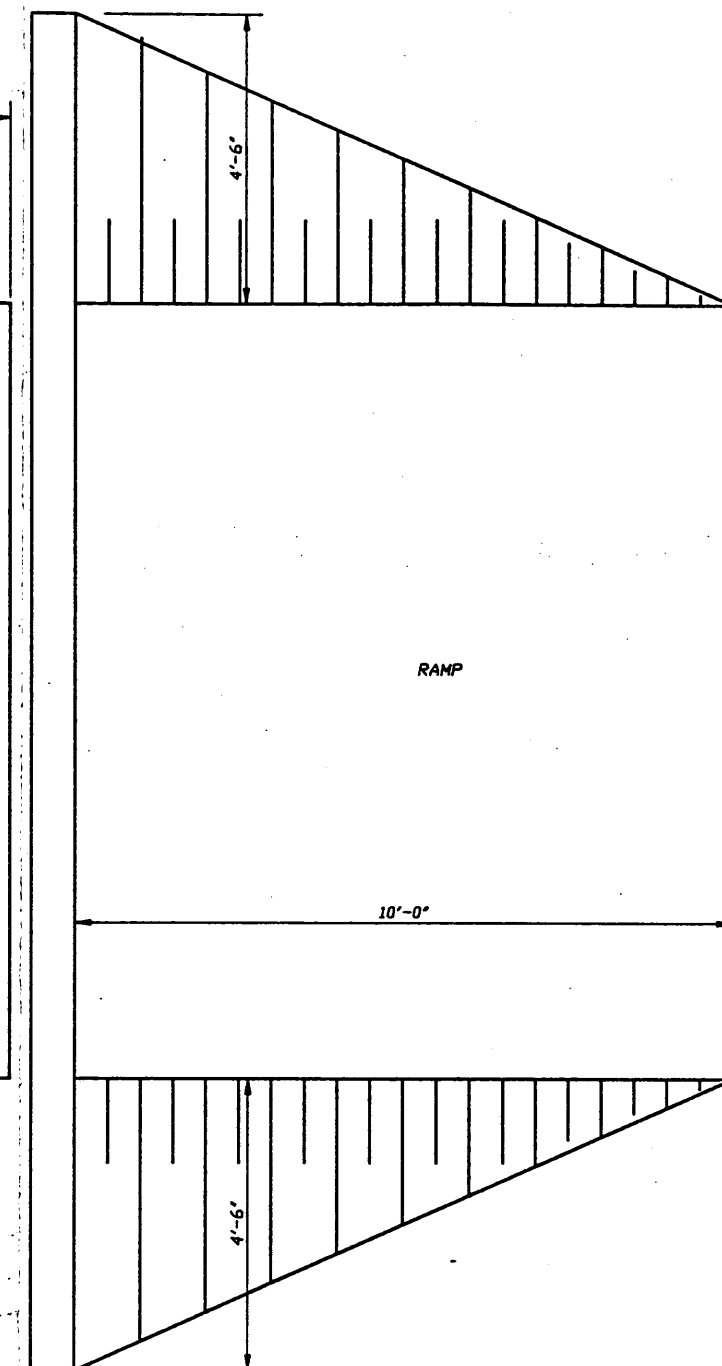
THIS DRAWING IS THE PROPERTY OF ASHBROOK-SIMON-HARTLEY AND SHALL BE LOANED ONLY IN CONNECTION WITH THE PROJECT. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.	DATE	12/1/87
DESIGNED BY	C.S.	
CHECKED BY	T.G.S.	
APPROVED BY	T.G.S.	
SCALE	1/8"=1'-0"	
DO NOT SCALE		
MATERIAL HANDLING SYSTEM (PLAN)		
SLUDGE COMPOSTING FACILITY		
NEWBERG SEWERAGE SYSTEM IMPROVEMENTS		
CITY OF NEWBERG, OREGON		
KRAMER CHIN & MAYO, INC.		
PROJECT NUMBER	8601	
DRAWING NUMBER	G09-1	
REV.	K	



PRELIMINARY

[illegible]

 ASHBROOK-SIMON-HARTLEY HOUSTON, TX • BIRMINGHAM, AL		PROJECT NUMBER	
DATE	GENERAL ARRANGEMENT REACTOR AREA REBUILD NEWBERG, OREGON	9209	
DRAWN K.BLAKWOOD 1/7/75		DRAWING NUMBER	REV
CHECKED		G-01C	
APPROVED			
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NO. OF SETS			

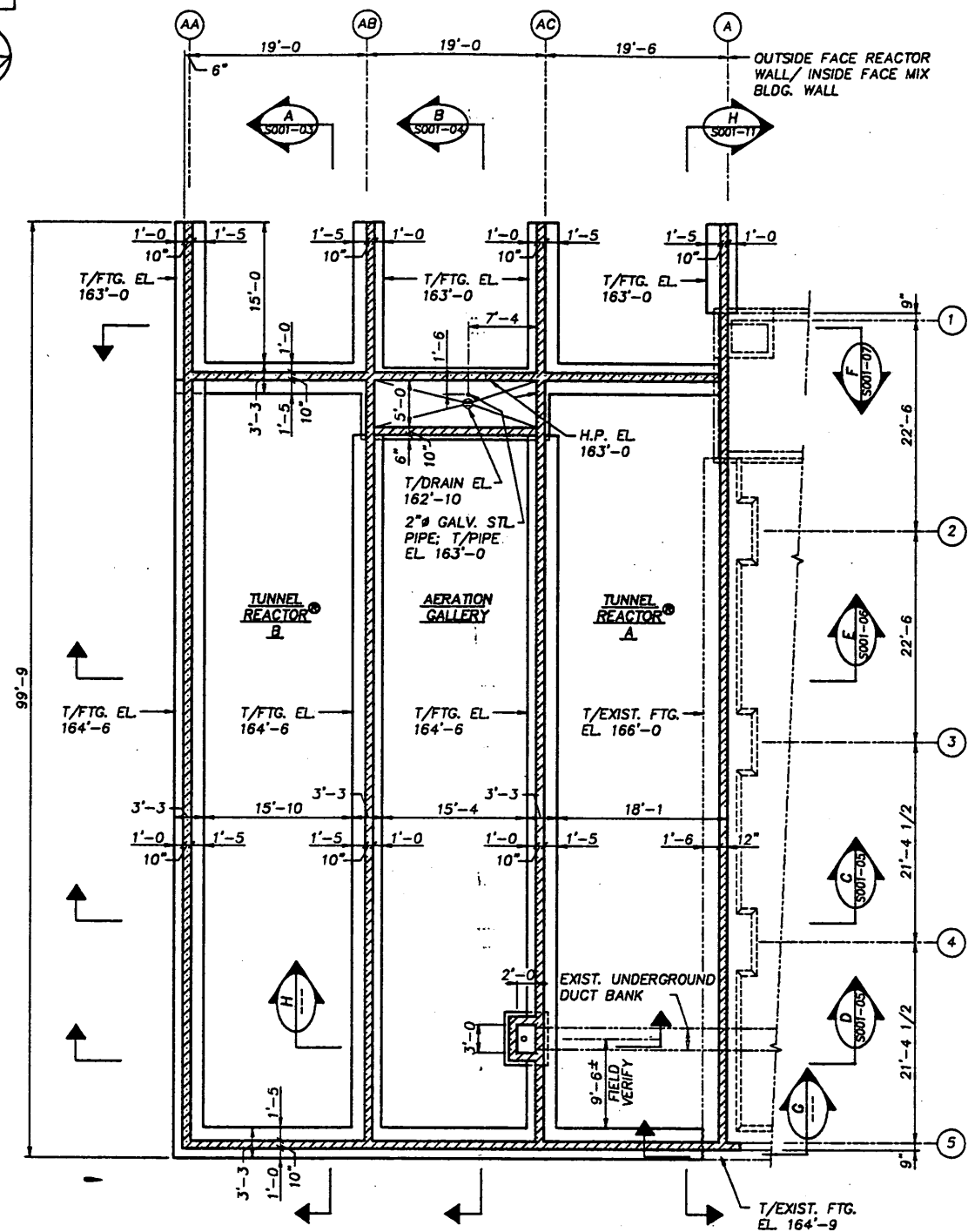


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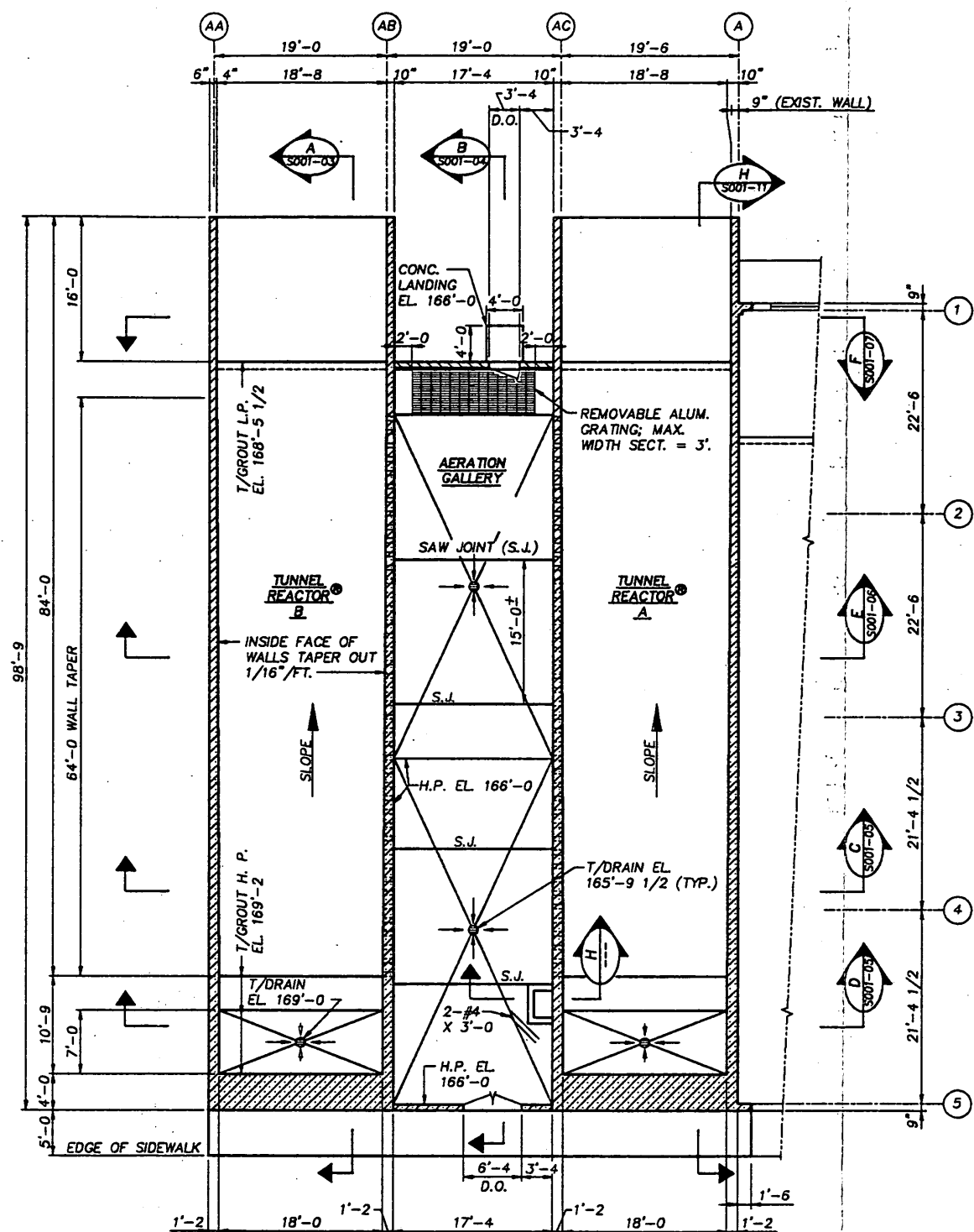


PROJECT NUMBER	9209
DRAWING NUMBER	LBB

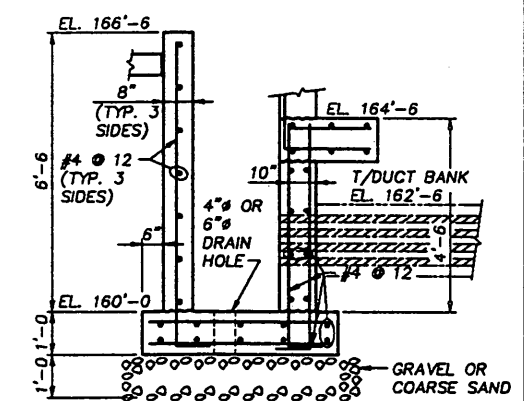
BY	CO	DATE	REVIEW DESCRIPTION



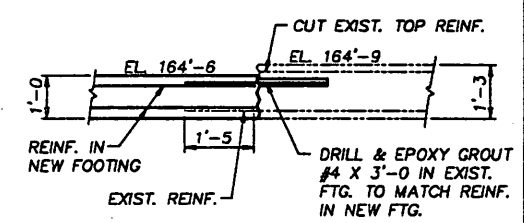
FOUNDATION PLAN



FLOOR PLAN



SECTION H
SCALE: 1/2" = 1'-0"
NOTE: CONDUIT IN DUCT BANK ARE EMBEDDED IN SAND.

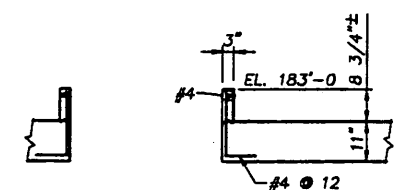
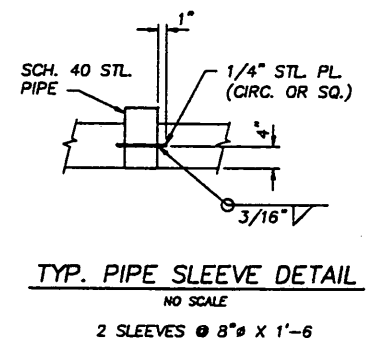
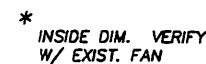


SECTION G
SCALE: 1/2" = 1'-0"

PRELIMINARY

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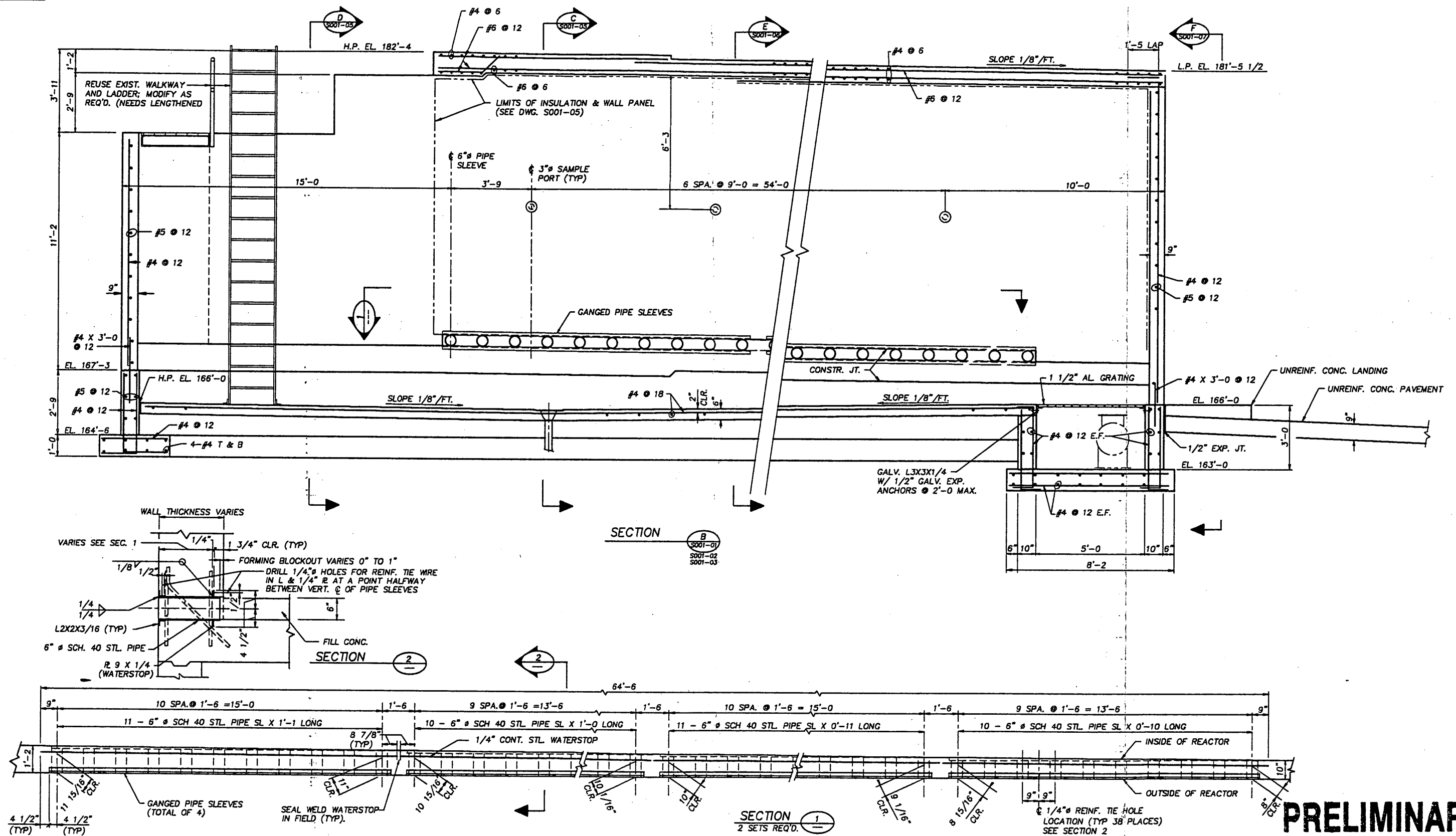
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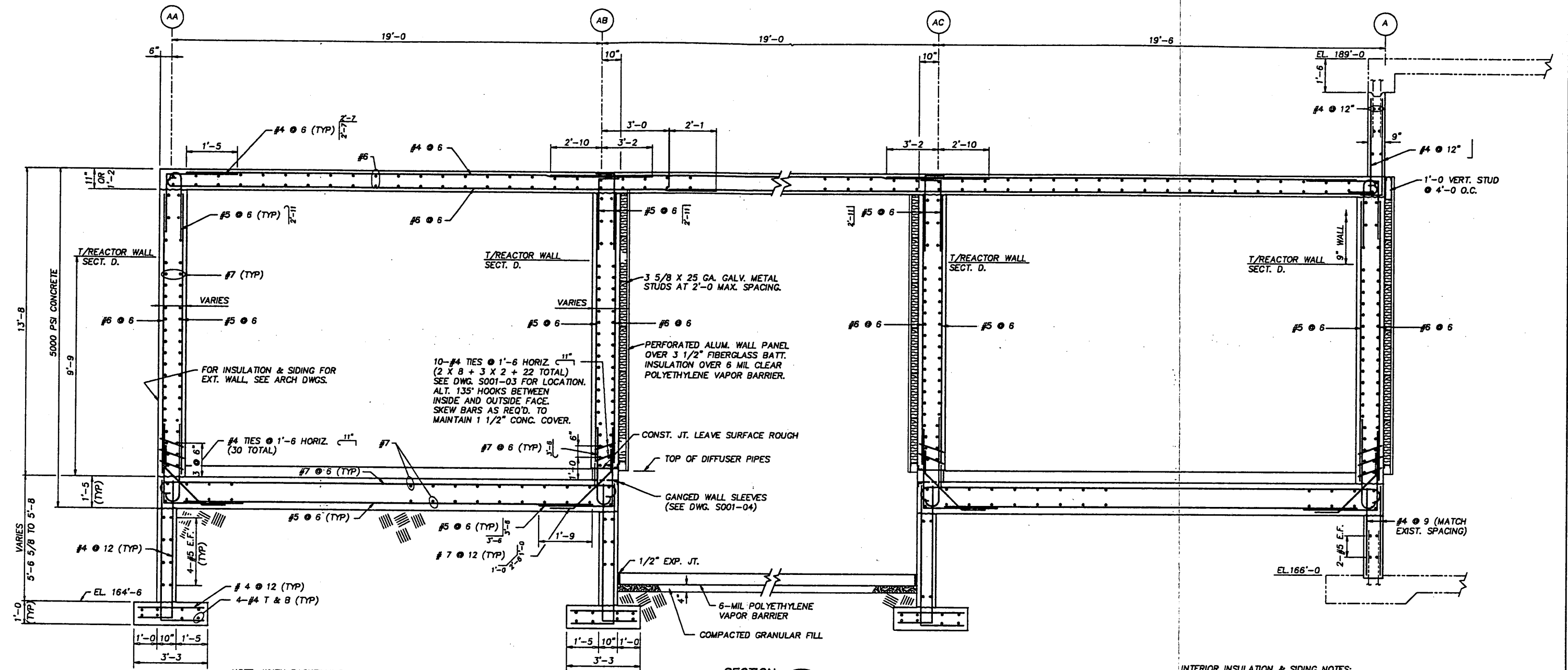
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HARTLEY AND MUST
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ASHBROOK-SIMON-HARTLEY
HOUSTON, TX • BIRMINGHAM, AL

SECTION THRU AERATION GALLERY

SLUDGE COMPOSTING FACILITY
NEWBERG SEWERAGE SYSTEM IMPROVEMENTS
CITY OF NEWBERG, OREGON

PROJECT NUMBER	
9209	
DRAWING NUMBER	REVISION
S001-04	A



NOTE: WHEN BACKFILLING & COMPACTING NEAR PERIMETER WALLS IN THIS AREA, THE WALLS SHOULD BE BRACED AND/OR RELATIVELY LIGHT EQUIPMENT SHOULD BE USED WITHIN 5' OF THE WALLS TO PREVENT MOVEMENT OF THE WALLS.

SECTION C

S001-01
S001-02
S001-03

SECTION D

S001-01
S001-02
S001-03

- INTERIOR INSULATION & SIDING NOTES:

1. INSTALL 6 MIL CLEAR POLYETHYLENE VAPOR BARRIER ON WALL BEFORE ATTACHING METAL STUDS.
2. ATTACH METAL STUDS TO WALL WITH 'RAWL UTE SPIKES', OR EQUAL, AT 16" SPACING. WHERE TOP STUD CANNOT BE ATTACHED TO BOTTOM OF ROOF SLAB, USE 1'-0" LONG VERTICAL SECTIONS AT 4'-0" CENTERS UNDER TOP STUD TO PREVENT SAGGING.
3. STUDS SHALL BE USED TO BOX THE INSULATION AT ALL PERIMETER EDGES OF SIDING.
4. REUSE EXISTING UNDAMAGED WALL PANELS AS MUCH AS PRACTICAL. ASH WILL PROVIDE ADD'L. WALL PANELS IF REQ'D.
5. PANEL EDGE TO BE CUT SQUARE WITH A MATCHING TRIM PIECE ADDED AT TOP TO MATCH SLOPE.

PRELIMINARY

[illegible]

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REACTOR CROSS SECTION

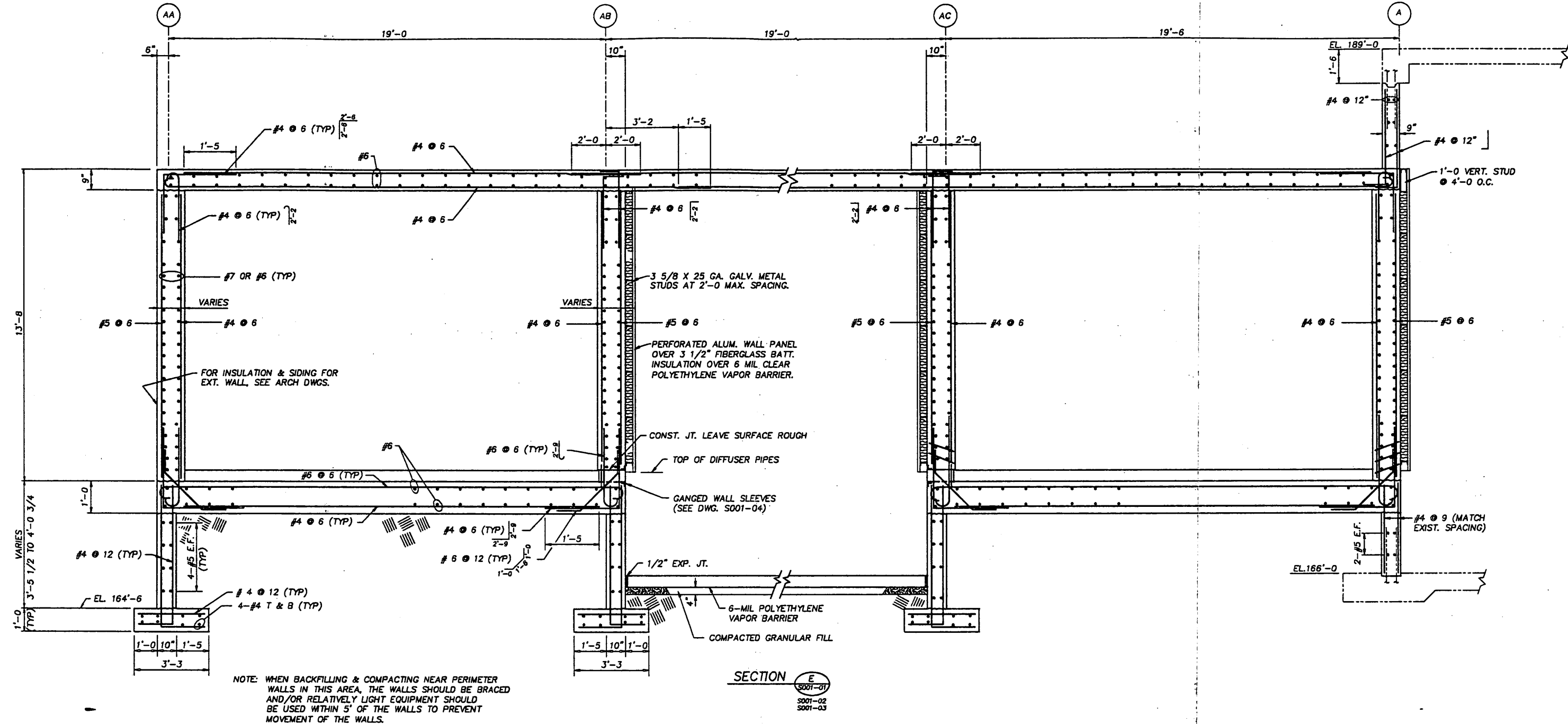
PROJECT NUMBER

9209

SLUDGE COMPOSTING FACILITY
NEWBERG SEWERAGE SYSTEM REBUILD
CITY OF NEWBERG, OREGON

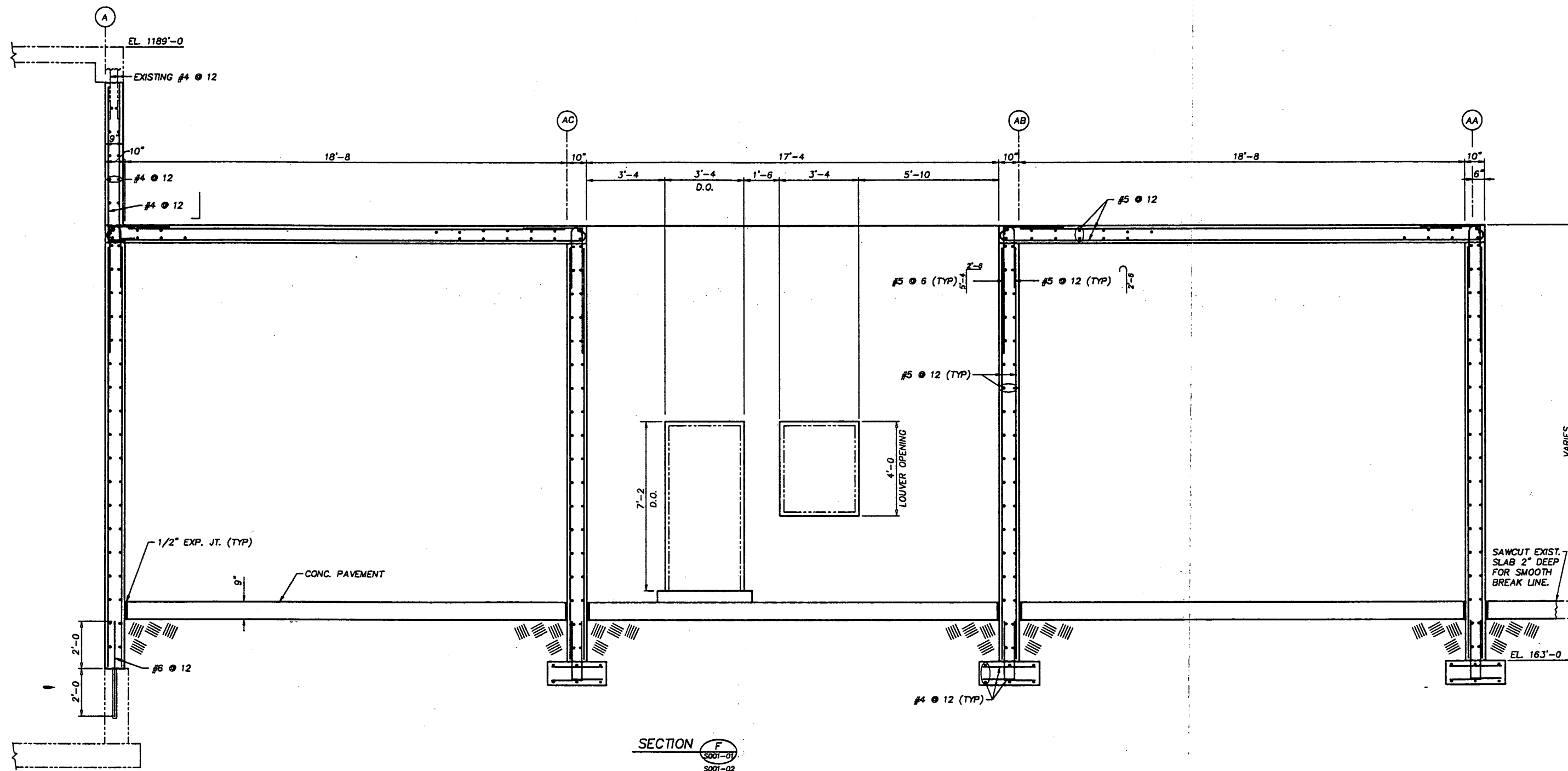
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01-05	A
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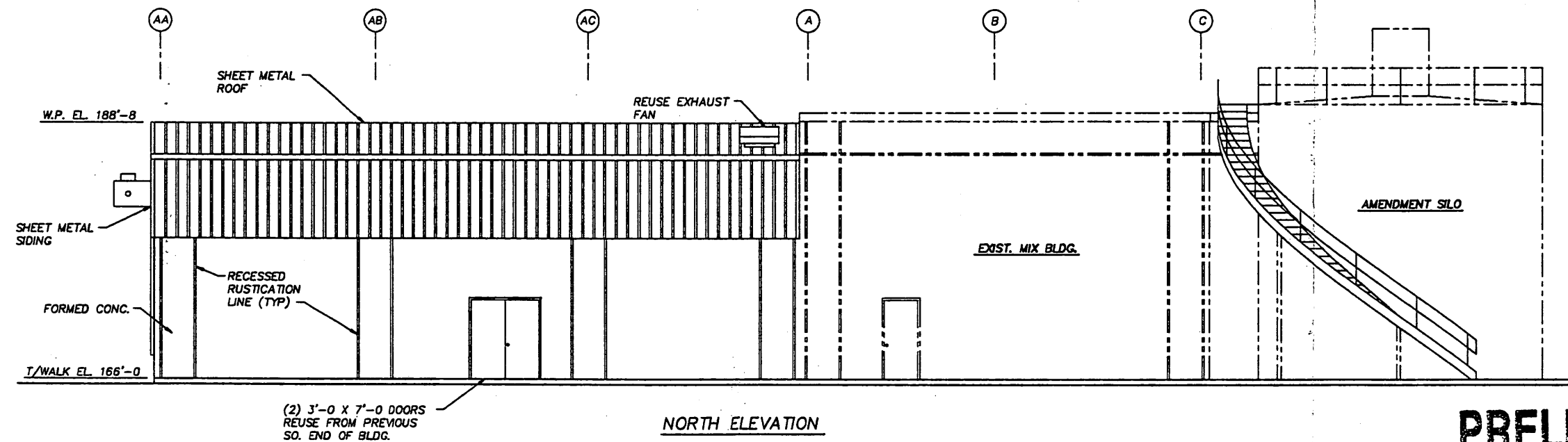
PRELIMINARY

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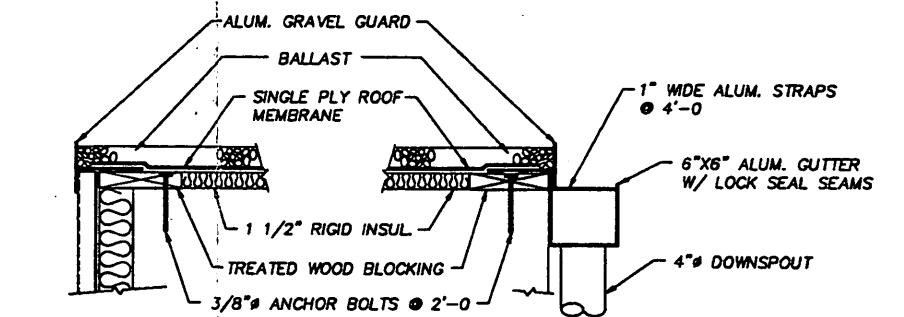
PRELIMINARY

										THIS DRAWING IN DESIGN AND DETAIL IS THE PROPERTY OF ASHBROOK-SIMON- HARTLEY AND MUST BE USED ONLY IN CONNECTION WITH A-S-H PROJECTS ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.		ASHBROOK-SIMON-HARTLEY HOUSTON, TX • BIRMINGHAM, AL		DISCHARGE END SECTION		PROJECT NUMBER 9209									
										DRAWN K. BLACKWOOD 6/3/92		DATE		SLUDGE COMPOSTING FACILITY NEWBERG SEWERAGE SYSTEM REBUILD CITY OF NEWBERG, OREGON		DRAWING NUMBER S001-07									
										CHECKED K. BLACKWOOD															
										APPROVED															
										SCALE 1/2"=1'-0															
										DO NOT SCALE															

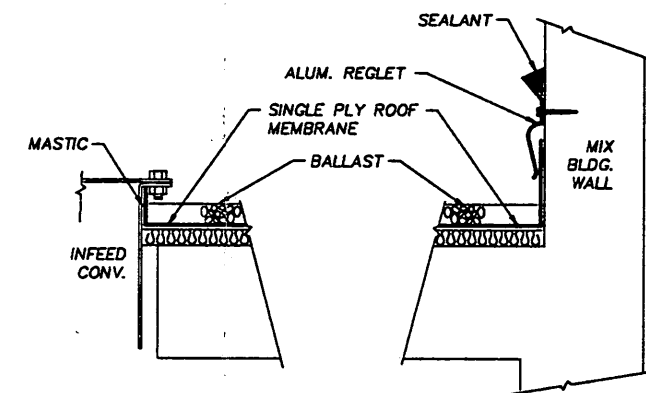


PRELIMINARY

										 ASHBROOK-SIMON-HARTLEY HOUSTON, TX • BIRMINGHAM, AL									
										BUILDING ELEVATIONS									
										PROJECT NUMBER 9209									
										DRAWING NUMBER A001-01									
										REV A									
										SLUDGE COMPOSTING FACILITY NEWBERG SEWERAGE SYSTEM IMPROVEMENTS CITY OF NEWBERG, OREGON									
										SCALE 3/16"=1'-0"									
										NO. NOT SCALE									
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SECTION B
SCALE: 1 1/2" = 1'-0"



SECTION 0
SCALE: 1 1/2" = 1'-0"

PRELIMINARY

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ASHBROOK-SIMON-HARTLEY
HOUSTON, TX • BIRMINGHAM, AL

		DATE		PROJECT NUMBER	
DRAWN: K. BLACKWOOD		6/30/82		9209	
CHECKED				DRAWING NUMBER	
APPROVED				REV	
SCALE: 1/8"=1'-0"				A001-03	
DO NOT SCALE				A	

STOEL RIVES BOLEY
JONES & GREY

ATTORNEYS AT LAW
SUITE 2300
STANDARD INSURANCE CENTER
900 SW FIFTH AVENUE
PORTLAND, OREGON 97204-1268

Telephone (503) 224-3380
Telecopier (503) 220-2480
Cable Lawport
Telex 703455

Writer's Direct Dial Number

See also legal file
30012-00601

CITY OF NEWBERG
CITY RECORDER INDEX NO. 1409

(503) 294-9387

July 14, 1992

VIA FEDERAL EXPRESS - Airbill No. 7989076821

Mr. Terrence D. Mahr
City Attorney
City of Newberg
414 E First Street
Newberg, Oregon 97132

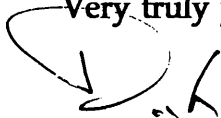
Re: City of Newberg, Oregon v. Ashbrook-
Simon-Hartley Corp., et al.
USDC Civil No. 90-1173-FR

Dear Terry:

Enclosed please find copy of letter dated July 13, 1992, from Irving Stern, together with a check in the amount of \$130,771.

Please call if you have any questions.

Very truly yours,



Richard E. Alexander

REA:mmf

Enclosures

PDX3-552.1 19684 0001

HARRY DOW (1899-1985)
MELVIN A. DOW
EDMUND L. COGBURN
BERNARD O. DOW
ABRAHAM P. FRIEDMAN
VINCENT L. MARINO
PAUL M. EASTERWOOD
JOHN M. HELMS
GEORGE A. RUSTAY
B. EDWARD WILLIAMSON
IRVING C. STERN
K. GREGORY ERWIN
BRUCE W. MERWIN
KENNETH H. KATES
WARREN A. HOFFMAN
BARRY E. PUTTERMAN
JEFF D. LEFKOWITZ
IRENE KOPELMAN CRUDEN
KAY CARNLEY VICKERS
MICHAEL J. MAZZONE

DOW, COGBURN & FRIEDMAN, P. C.

ATTORNEYS AT LAW
SUITE 2300 THE COASTAL TOWER
9 GREENWAY PLAZA
HOUSTON, TEXAS 77046
AREA CODE 713
626-5800
TELECOPIER 940-6099

J. W. BEVERLY
KEVIN B. CRAWFORD
P. RANDALL CRUMP
BRENDA L. EDDY
LAUREN GAYLE FRIEDMAN
KEVIN P. HANRATTY
TAMMIE H. HELLINGER
DEREK J. LISK
MARALENE MARTIN
THOMAS J. McCAFFREY
DAVID L. PYBUS
SCOTT J. THOMAS
OF COUNSEL
CLARENCE A. WEST

July 13, 1992

BY FEDERAL EXPRESS

Mr. Richard Alexander
Stoel, Rives, Boley, Jones & Grey
900 S.W. Fifth Avenue, Suite 2300
Portland, Oregon 97204-1268

RE: Ashberg/Newberg

Dear Dick:

I am pleased to provide you with the signature page of our agreement containing facsimile signatures of Ashbrook, Simon, and Federal. I am also enclosing a check from Simon Waste Solutions in the amount of \$130,771.00 as per the settlement agreement. It may take some time to get the hard copies of our agreement from all the parties, but I will endeavor to do so. In the meantime, this should conclude the transaction for all ostensible purposes so we can get on with the task of rebuilding or repairing the reactors.

Please let me know if your understanding of the above is different from mine. With best wishes, I remain

Sincerely yours,



Irving C. Stern

ICS/em
encs.

0471375\6043000\ltrale12.ics

RECEIVED
STOEL RIVES BOLEY JONES & GREY
900 S.W. Fifth Avenue
Portland, Oregon 97204
m 7/14/92

MEMORANDUM SIRHAN HARTLEY TO

STERN, IRVING P.03

SENT BY: DOW COBBURN-FRIEDMAN 7-7-92 11:11AM (DOW COBBURN-FRIEDMAN) ... 7139406099

12. This constitutes the entire agreement between the parties, superseding all oral or written prior or contemporaneous agreements, and shall not be modified except by a document and signed in writing by the parties.

13. It is understood that this Agreement is not binding on Ashbrook until and if it has been approved by Federal Insurance Company and Elton Engineering, P.L.C.

CITY

CITY OF NEWBERG

APPROVED AS TO FORM
CITY OF NEWBERG

By Thomas W. Mah
City Clerk

By Elton Engineering
Elton
Mayor

By Robert A. Ford
City Manager

APPROVED:

APPROVED BY NOTARY PUBLIC
By Robert A. Ford
Notary Public

APPROVED
FEDERAL INSURANCE COMPANY

By Robert A. Ford

APPROVED
ELTON ENGINEERING, P.L.C.

By A. G. [Signature]

1075A 0324 1 000 000 0000

REFERENCE	TRANSACTION DATE	GROSS AMOUNT	DEDUCTIONS	NET AMOUNT
04/16/92 SETTLEMENT AGREEMENT AND CONTRACT AMENDMENT	04/16/92	130,771.00	0.00	130,771.00

Simon Waste Solutions, Inc.

P.O. Box 16297
Houston, Texas 77222-6297

CHECK
AMOUNT

130,771.00

Simon Waste Solutions, Inc.

P.O. Box 16297
Houston, Texas 77222-6297

FIFTH THIRD BANK OF MIAMI VALLEY
P.O. BOX 1117, PIQUA, OHIO 45356-1117
56-219/422

CHECK NUMBER

3221

DATE

07/06/92

CHECK AMOUNT

***\$130,771.00**

PAY
TO THE
ORDER OF

CITY OF NEWBERG

Ronald J. Ferman
Earl Ray
AUTHORIZED SIGNATURE

⑈003221⑈ ⑆042202196⑆

725 33447⑈

REFERENCE	TRANSACTION DATE	GROSS AMOUNT	DEDUCTIONS	NET AMOUNT
04/16/92	04/16/92	130,771.00	0.00	130,771.00
SETTLEMENT AGREEMENT AND CONTRACT AMENDMENT				
Simon Waste Solutions, Inc.			CHECK AMOUNT	130,771.00
P.O. Box 16297 Houston, Texas 77222-6297				

Simon Waste Solutions, Inc.
P.O. Box 16297
Houston, Texas 77222-6297

FIFTH THIRD BANK OF MIAMI VALLEY
P.O. BOX 1117, PIQUA, OHIO 45356-1117
56-219/422

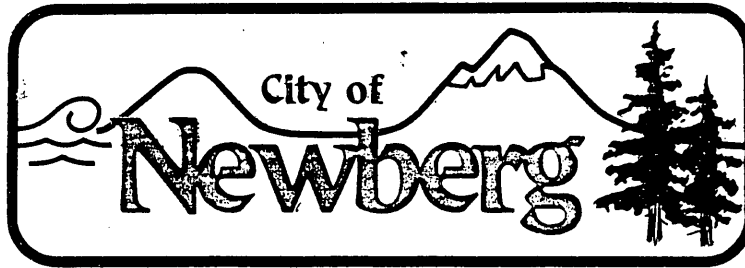
CHECK NUMBER
3221
DATE
07/06/92
CHECK AMOUNT
***\$130,771.00**

PAY
TO THE
ORDER OF

CITY OF NEWBERG

Randall J. Herman
Earl Rayner
AUTHORIZED SIGNATURE

⑈003221⑈ ⑆042202196⑆ 725 33447⑈



(503) 538-9421
FAX (503) 538-5393

414 E. First St.
Newberg, Oregon 97132

April 21, 1992

Mr. Richard Alexander
STOEL, RIVES, BOLEY, JONES & GREY
900 SW Fifth Avenue, Suite 2300
Portland, Oregon 97204

Re: Ashbrook Settlement Documents

Dear Dick:

Enclosed are the two originals of the Settlement Agreement and contract amendment. The City signed the Agreement on Monday, April 20, 1992. I did not place that in the Agreement, but that blank does need to be filled in. For our records, we need a final executed copy. As soon as receive that, I will place the Resolution which is Exhibit "F" upon the Council's agenda. When the appropriate time arises, we will place the necessary funds into the account and make an accounting to Ashbrook.

Please let me know if there are any further questions. The Ashbrook people did show up on Monday, April 20th, and they are out at the plant today. Please let me know if you need anything further from us. I still hope that we can get together and share an evening. Thanks again for all of your help and for your guidance during this entire affair.

Very truly yours,

Terrence D. Mahr
City Attorney

TDM:prh
Enclosure
TDM/ASH.DA



Home of Old Fashioned Festival

SETTLEMENT AGREEMENT AND CONTRACT AMENDMENT

THIS AGREEMENT made this _____ day of April, 1992, by and between CITY OF NEWBERG (hereinafter "City"), and ASHBROOK-SIMON-HARTLEY CORP. (hereinafter "Ashbrook").

RECITALS:

City and Ashbrook entered into a contract (hereinafter "the Contract") dated May 19, 1986, for the Sludge Compost Facility in Newberg, Oregon (hereinafter "Facility"); and

Certain disputes arose between the parties resulting in litigation being instituted; and

Without admitting any liability with respect to any of the issues in dispute, the parties desire to resolve such disputes as herein provided.

NOW, THEREFORE, IT IS AGREED:

1. Ashbrook agrees to demolish, design, rebuild and complete construction of the Facility as specified in Exhibit A and in accordance with the Contract Documents as defined in Exhibit B, all at no cost to City, except for those circumstances permitting additional compensation for reimbursement of costs under the terms of the Contract Documents and for those reimbursed costs pursuant to paragraph 7. Ashbrook will have sole responsibility for the design and construction of the rebuild and completion of the Facility according to the Contract Documents.

2. Ashbrook agrees to perform the work relating to the equipment as specified in Exhibit C, at no cost to City. If the parties agree to delete any of the

work relating to the equipment in Exhibit C, City shall be entitled to a credit for the estimated cost of the work relating to such equipment as described on Exhibit C. This credit shall be applied to the cost of any changes (improvements) under paragraph 7.

3. The Engineer for the Facility will be designated by the City. Until such designation, if any, the City's Public Works Director will act as the Engineer.

4. The work will be commenced immediately upon execution of this Agreement by all parties. It will be substantially completed within 396 calendar days from the date the work is to commence. The work shall be finally completed (including the satisfactory completion of all performance tests) 488 calendar days from the date the work is to commence. The work shall proceed in general accordance with the schedule on Exhibit D.

5. Ashbrook agrees to pay City upon execution of this Agreement the amount of \$130,771.00. City acknowledges receipt of such payment.

6. Ashbrook guarantees all labor, materials and equipment and other work performed by Ashbrook will be free of defects and in accordance with the Contract, as modified herein, for a period of one year from Substantial Completion.

7. It is recognized by the parties that the City may make certain changes (improvements) during the course of the rebuild of the Facility. In the event any changes are made, City agrees to pay Ashbrook for such changes in accordance with the Contract Documents and the rates outlined in Exhibit E.

City further agrees, upon the ordering of any additional work to be performed by Ashbrook under the terms of the Contract Documents, to place the amount due for such work in the separate interest-bearing City account in the

Local Government Investment Pool specified in Exhibit F ("Escrow Account"), within ten (10) days from the date such work is ordered. Any interest earned on such sums will accrue to the City until Ashbrook is entitled to be paid for such work pursuant to the terms of the Contract.

City will notify Ashbrook within ten (10) days of all such deposits in the Escrow Account. In the event such deposit is not made, Ashbrook may suspend work until it is made.

8. The parties agree that the amount of \$171,876 (\$140,126 in retainage and \$31,750 (see letter agreement as to \$3,516 Ashbrook claim) in other amounts earned) is currently held by the City as the balance of the original Contract Price for the Facility. City agrees to place such funds in the Escrow Account. The balance of the Contract Price will be paid at the time final payment is due. Ashbrook will be entitled to interest earned on the retainage from February 24, 1992 until final payment is due.

Ashbrook is not entitled to any further payment for the rebuild and completion of the Contract, except for those circumstances permitting additional compensation for reimbursement of costs under the terms of the Contract Documents and for those reimbursed costs pursuant to paragraph 7.

9. Ashbrook agrees that the Facility, when completed, shall meet the performance standards specified in Exhibit G. Except as modified by Exhibit G, all performance standards from the Contract shall remain in full force and effect. Compliance with the performance standards shall be determined pursuant to the performance testing procedures specified in Exhibit H.

10. City releases Ashbrook from any obligation to pay life cycle costs pursuant to the Contract, as those costs are defined in paragraphs 8 and 9 of the Contract Bid Form.

11. In the event Ashbrook, during performance of the Contract, as amended, requests a response from the City on any issue relating to the Facility or Contract Documents, City will respond to such request within fifteen (15) days. In the event such information is necessary for construction to proceed and in the event City fails to so respond, Ashbrook may suspend performance until City responds to such request.

12. Except as modified herein, the Contract Documents for the Facility remains in full force and effect. Ashbrook agrees to complete the Facility according to the Contract Documents as amended by this Agreement. All bonds and guarantees remain in full force and effect, and apply to the completion of the work under this Agreement.

13. Except for the obligations of the parties under this Agreement, the parties each release the other and their officers, agents and employees from any and all claims of any kind as of the date hereof.

14. The parties agree to dismiss the litigation pending in the United States District Court for the District of Oregon with prejudice and without costs.

15. In the event there are any disputes on the Project with respect to Ashbrook's work or the parties are unable to agree upon the amount to be paid to Ashbrook for any new improvements to be performed by Ashbrook, Ashbrook shall proceed with the work in accordance with written instructions issued by Owner and perform such disputed work as follows:

A. Ashbrook will proceed in accordance with such instructions and perform all such work for all disputed items with an individual cost of less than \$50,000 so long as the total aggregate amount for all disputes, whether for one dispute or multiple disputes, does not exceed \$100,000. In the event that any single dispute exceeds \$50,000 or the total aggregate amount for all disputes, whether for one dispute or multiple disputes, exceeds \$100,000, Ashbrook will continue with the work pending a resolution of the dispute if City deposits in the Escrow Account an amount equal to the disputed amount as agreed upon by the parties.

B. In the event the parties cannot agree to the disputed amount to be placed in the Escrow Account, the parties will select one of the parties on Exhibit I solely to determine the amount in dispute and to be placed in the Escrow Account. Such decision will be based solely on documentation forwarded by the parties within three (3) working days of the date of the dispute. The decision will be made as soon as possible after receipt of all documentation. Ashbrook will proceed with the work while the amount placed in escrow is being determined and continue with the work so long as the disputed amount, as determined by such third party, is placed in escrow by the City within five (5) days of receipt of any such decision.

C. The party selected will only determine the amount to be placed in escrow while the work proceeds. City will notify Ashbrook within ten (10) days of all such deposits in the Escrow Account. In the event such deposit is not so made, Ashbrook may suspend work until it is made.

16. In the event of any dispute between the parties, it shall be determined by litigation unless the parties otherwise agree.

17. In the event of any dispute arising out of or relating to this Agreement, the prevailing party will be entitled to its reasonable attorney fees and expenses at trial and upon any appeal.

18. This constitutes the entire settlement agreement between the parties, supersedes all oral or written prior or contemporaneous agreements, and shall not be modified except by a document and signed in writing by the parties.

19. It is understood that this Agreement is not binding on Ashbrook until and if it has been approved by Federal Insurance Company and Simon Engineering, P.L.C.

CITY : CITY OF NEWBERG

APPROVED AS TO FORM:
CITY OF NEWBERG

By: Terrance D. Mahan
City Attorney

By: Elvern Hall
Elvern Hall
Mayor

By: Duane R. Cole
Duane Cole
City Manager

ASHBROOK : ASHBROOK-SIMON-HARTLEY CORP.

By: _____

Title: _____

APPROVED:

FEDERAL INSURANCE COMPANY

By: _____

APPROVED:

SIMON ENGINEERING, P.L.C.

By: _____

DEMOLITION, REDESIGN AND REBUILD

Ashbrook shall demolish the existing two tunnel reactors and aeration gallery area of the Facility. As a part of the demolition, Ashbrook will attempt to salvage and reuse equipment and materials if such salvaged equipment and materials comply with the Contract specifications. Ashbrook shall then design and rebuild this portion of the Facility structure, including the installation of all related aeration, mechanical and electrical equipment. The design of the rebuild of the two new tunnel reactors will be in accordance with Ashbrook's latest (1992) design criteria. Ashbrook shall perform this demolition, design and rebuild at no cost to the City.

1. Demolition: The existing concrete tunnel reactors and aeration gallery will be demolished. This includes demolishing the roof, four walls, floor, push walls and footings. The structural steel penthouse, lighting, electrical control panels and items, aeration piping, aeration blowers, and any other equipment and concrete embeds will be saved, refurbished and re-used if at all possible.

2. Concrete Structural Re-Design: The criteria for the concrete structural redesign of the two new tunnel reactors will be as follows:

- a. ACI Standard 350R-89 shall be the primary standard used with ACI 318, for design items not covered by ACI 350R. Where conflicts occur, ACI 350R-89 shall control.
- b. The Z-Factor of 115 shall be used. This is the factor for sanitary exposure; which is defined as, watertight structure, pH > 5.0, sulfates < 1500 ppm.
- c. The design life is 50 years.
- d. Minimum ratio of shrinkage and temperature reinforcing shall be as shown on Figure 2.5 of ACI 350R-89.
- e. Minimum specified 28-day compressive strength of concrete shall be 5,000 psi.
- f. The service load hydraulic line pressure to all of the rams for the reactor door shall be 1,900 psi. The design shall make provisions for possible short durations of hydraulic line pressures up to 115 percent of this value - using higher allowable stresses.

ADDENDUM TO STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

ARTICLE I - DEFINITIONS

- A. CHANGE THE DEFINITION OF CONTRACT DOCUMENTS to include (i) those contract documents defined in Article 1 of the Standard General Conditions of the Construction Contract, (sometimes hereafter referred to as "Old Documents") and to also include (ii) the Settlement Agreement between OWNER and CONTRACTOR, dated April 3, 1992, along with Exhibits and Schedules attached thereto, this Addendum, the Addendum to Supplemental Conditions, and the specifications and designs to be written and drawn pursuant to the Settlement Agreement, (all sometimes hereinafter referred to as "New Documents"). Should a conflict arise from the provisions of the Old Documents and from the provisions contained in the New Documents, then the provisions of the New Documents shall prevail.
- B. CHANGE THE DEFINITION OF ENGINEER to read:
"ARCHITECT/ENGINEER/OWNER." Whenever "ENGINEER" is called out in the contract documents, it shall mean ARCHITECT/ENGINEER/OWNER or its designee.

ARTICLE 2

- A. In Paragraph 2.6.3, beginning on the seventh line, delete the words "overhead and profit" and add the words "general and administrative overhead charges, and engineering fees charged in accordance with the engineering fee schedule attached to the Settlement Agreement between OWNER and CONTRACTOR",...

ARTICLE 3 - PRELIMINARY METHODS

- A. In Paragraph 3.2, delete the first sentence and revise it to state as follows: "It is the intent of the Contract Documents to describe a project to be constructed in accordance with the Contract Documents, and the plans and specifications to be designed as the project proceeds, as per the Settlement Agreement between OWNER and CONTRACTOR."
- B. In Paragraph 3.2, on the sixth line, after the words "the intended result", insert "as specified in the Settlement Agreement and in accordance with the plans and specifications to be designed"...

EXHIBIT "B"

- C. In Paragraph 3.6, add the words, "or KCM" after the word "Engineer" in the seventh line and add the following:

"OWNER acknowledges that CONTRACTOR has a proprietary right to the ownership and re-use of the plans, specifications and contract documents prepared by CONTRACTOR and its consultants, subcontractors, vendors, material men and suppliers including all drawings related thereto, for utilization in connection with this project, or any other project. CONTRACTOR and OWNER acknowledge that OWNER has a non-exclusive rights to use plans, specifications and contract documents, including drawings prepared by CONTRACTOR and its consultants, subcontractors, vendors, material men and suppliers for this specific project only."

ARTICLE 5 - BONDS AND INSURANCE

- A. In Paragraph 5.12, on the third line, after the second reference to the word "OWNER", delete the words "as trustee for the insureds, as their interests may appear" and insert the words "and CONTRACTOR."
- B. In Paragraph 5.12, on the sixth line, immediately after the word "OWNER", insert the words "and CONTRACTOR."
- C. In Paragraph 5.13, delete the entire paragraph and insert the following:

"OWNER and CONTRACTOR shall adjust and settle any loss with the insurers."

- D. Add 5.13(a): "Notwithstanding anything contained hereinabove in Paragraphs 5.12 and 5.13, CONTRACTOR may pursue actions against its insurers in connection with past failures of the Newberg facility, and OWNER waives any right to any of the proceeds recovered as a result of CONTRACTOR's efforts to pursue such claims."

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

- A. In Paragraph 6.7.3, prior to the first sentence, insert the following:

"OWNER and CONTRACTOR acknowledge that the Newberg project was originally designed for a Taulman Weiss system. The system being installed pursuant to the new contract documents is an Ashbrook system. All references below to

EXHIBIT "B"

proposed substitutes shall refer to the Ashbrook system and not the Taulman Weiss system."

- B. Delete the last two sentences of 6.7.3 and insert the following:

"CONTRACTOR shall be under no obligation to reimburse OWNER for any charges of ENGINEER or anyone employed by ENGINEER for evaluation of any proposed substitutes."

- C. Paragraph 6.11, delete the entire paragraph.

- D. In Paragraph 6.14.2, add the following sentence:

"Any costs incurred by CONTRACTOR, resulting from changes in laws and regulations which become effective after the date of the Settlement Agreement between OWNER and CONTRACTOR shall be borne by OWNER. Such costs are to be incorporated in a subsequently issued change order following negotiations by OWNER and CONTRACTOR as to the effect of such changes."

- E. In Paragraph 6.15, delete the word "CONTRACTOR" in the first line, and insert the word "OWNER." Insert the word "Oregon" before the word "sales"; add the word "and" before the word "use"; delete the phrase "and other similar".

- F. In Paragraph 6.16, add the following sentence at the end of the paragraph:

"CONTRACTOR may use the existing buildings on the project site to house its offices and CONTRACTOR may use OWNER's facilities for water, existing telephone lines, heat, toilet and electrical power."

- G. In the Paragraph immediately after Paragraph 6.20.3, and prior to 6.21, which commences "CONTRACTOR shall comply with all applicable laws", on the twentieth line, immediately after the word "liable", delete the following: "and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR." Insert the following before the last sentence: "OWNER and CONTRACTOR shall each be respectively responsible for the percentage of damage attributable to their own fault and/or acts of negligence, whether in whole or part. OWNER's and CONTRACTOR's responsibility for their respective acts of negligence or fault may be determined to be less than 100% and more than 0%,

EXHIBIT "B"

as appropriate under the circumstances, taking into account the parties' comparative fault or negligence."

- H. In Paragraph 6.26, add the following sentence to the end of the paragraph: "Notwithstanding anything contained herein to the contrary in Paragraph 6.26, in the event OWNER desires new improvements as per the Settlement Agreement and New Documents, then the ENGINEER must approve the shop drawings and plans prior to the commencement of such work by the CONTRACTOR, and such review and approval by ENGINEER shall constitute review and approval by OWNER, and an acknowledgment by OWNER that, to the extent the design (and any installation in conformance with such design) of such new improvements affect the performance of the other systems installed on the project, CONTRACTOR will not be responsible for the effect of such modifications and changes to the performance of the systems being installed on the project site, so long as CONTRACTOR advises ENGINEER of any adverse effect CONTRACTOR is aware of, or in the exercise of reasonable care, should be aware of as a result of such modifications and changes."
- I. In Paragraph 6.28, add the following sentence to the end of the paragraph: "In the event OWNER has requested new improvements, OWNER will be responsible for engineering fees and other fees related thereto. Engineering fees shall be charged in accordance with Exhibit "E" attached to the settlement documents executed by OWNER and CONTRACTOR."
- J. In Paragraph 6.30, delete the following words from the last four lines of the paragraph: "regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by law and regulations regardless of the negligence of any such party." In lieu of such deletion, immediately after the word "liable", insert the following: "...except to the extent that such claim, damage, loss or expense is attributable to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or to anyone whose acts either of them may be liable."

ARTICLE 8 - OWNER'S RESPONSIBILITIES

- A. In 8.1, delete the entire paragraph and state the following: "OWNER may communicate directly with CONTRACTOR, or may do so through the ENGINEER."

EXHIBIT "B"

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

- A. In Paragraph 9.10, on the first line, immediately after the word "ENGINEER", insert "and CONTRACTOR." Delete the remaining paragraph after the first sentence.
- B. In Paragraph 9.11, delete the first sentence. On the ninth line, after the phrase "ENGINEER in writing", insert a period and delete the remainder of the paragraph.
- C. Delete Paragraphs 9.12 and 9.13.

ARTICLE 10 - CHANGES IN THE WORK

- A. In Paragraph 10.4.3, delete the remainder of the paragraph following "changes in the contract price or contract time." Also delete the carryover paragraph of 10.4, which appears immediately after Paragraph 10.4.3.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

- A. In Paragraph 11.2, on the sixteenth line, after the words "shall be determined", delete the words "by ENGINEER."
- B. In Paragraph 11.4, on the fourth line, after the words "such costs shall", delete the remainder of the paragraph and insert the following: "be in amounts which include only the following items:"
- C. In Paragraph 11.4.1, add the following sentences to the end of the paragraph: "Notwithstanding anything contained hereinabove in Paragraph 11.4.1, engineering services for new improvements performed by CONTRACTOR will be charged in accordance with the schedule of hourly engineering charges attached to the Settlement Agreement executed by OWNER and CONTRACTOR."
- D. In Paragraph 11.5, on the second line, delete the colon, add a comma after the words "the following" and then add the following words: "unless applicable as a part of the cost of the work for new improvements which OWNER may request, as per the Settlement Agreement executed by OWNER and CONTRACTOR."
- E. In Paragraph 11.6 on the second line, immediately after the word "overhead", delete the words "and profit."

EXHIBIT "B"

- F. In Paragraph 11.8, insert the following words at the beginning of the first sentence: "Except for the work related to new improvements which OWNER may request pursuant to the settlement documents executed between OWNER and CONTRACTOR." On the fifth line, after the word "allowances", delete the words "as may be acceptable to ENGINEER."
- G. In the paragraph preceding 11.9.1, which is a carryover and continuation of Paragraph 11.8, on the top of Page 24, add the following at the end of the paragraph: "Appropriate change orders shall also be issued to reflect actual amounts due CONTRACTOR on account of work which falls into the category of new improvements, and the contract price shall be correspondingly adjusted, as required by the Settlement Agreement executed by OWNER and CONTRACTOR."

ARTICLE 12 - CHANGE OF CONTRACT TIME

- A. In Paragraph 12.1, delete the first sentence and insert the following: "The contract time shall be that stated in the Settlement Agreement executed by OWNER and CONTRACTOR, and thereafter, may only be changed by a change order or a written amendment."

ARTICLE 13 - WARRANTY AND GUARANTEE. TESTS AND INSPECTIONS: CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

- A. In Paragraph 13.1, in the second line, after the word "OWNER", delete the words "and ENGINEER". On the third line, after the words "Contract Documents", insert "as newly defined in this Addendum".
- B. In Paragraph 13.11, add a new sentence follows: "In the event a dispute exists between ENGINEER/OWNER and CONTRACTOR regarding defective work, then ENGINEER/OWNER and CONTRACTOR shall resolve such dispute in accordance with the remedies provisions provided for in the Settlement Agreement executed by OWNER and CONTRACTOR."
- C. In Paragraph 13.12, add a new sentence as follows: "Any disputes between OWNER and CONTRACTOR regarding such defective work and the costs associated therewith shall be governed by the remedies provisions of the Settlement Agreement executed by OWNER and CONTRACTOR."

EXHIBIT "B"

- D. In Paragraph 13.13, add the following provisions: "In the event a dispute exists between OWNER and CONTRACTOR regarding the cost of such defective work, then OWNER and CONTRACTOR shall comply with the remedies provisions contained in the Settlement Agreement executed by OWNER and CONTRACTOR."
- E. In Paragraph 13.14, add the following: "In the event CONTRACTOR and OWNER dispute any costs associated with OWNER's correction of such defective work, then in that event, OWNER and CONTRACTOR shall be governed by the remedies provisions of the Settlement Agreement executed by OWNER and CONTRACTOR."
- F. Notwithstanding anything to the contrary in Paragraphs 13.11 through 13.14, in the event of any defects in CONTRACTOR's work, CONTRACTOR will be responsible for all costs of repair or replacement and the cost of disposal of sludge (provided such disposal is done in a reasonably cost-effective way and CONTRACTOR is provided a credit for any expenses not incurred by City as a result of such defects, repair or replacement) and all other direct costs, arising out of such defects. CONTRACTOR will not be responsible for lost profits of OWNER or other consequential or punitive damage.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

- A. In Paragraph 14.1, on the first line, after the word "values", insert the words "and the costs and engineering fees associated with new improvements." On the second line, after the words "Paragraph 2.9", insert the words "and the Settlement Agreement and New Documents as it may be applicable for the costs of new improvements."
- B. In Paragraph 14.4, add the following sentence at the end of the paragraph: "CONTRACTOR reserves the right to seek additional funds from OWNER if CONTRACTOR disagrees with ENGINEER's recommendation."
- C. In the carryover of Paragraph 14.7, which immediately precedes Paragraph 14.8, insert the following sentence at the end of the paragraph: "CONTRACTOR reserves the right to dispute OWNER's refusal to make payment due to OWNER's setoff."
- D. In Paragraph 14.8, delete the last sentence in its entirety and add the following: "In the event ENGINEER refuses to issue a Certificate of Substantial Completion, CONTRACTOR reserves the right to dispute

EXHIBIT "B"

the ENGINEER's refusal to issue such definitive certificate of substantial completion.

- E. In the event of a dispute between OWNER and CONTRACTOR arising out of the issues in Articles 14A-D, the parties will be governed by the remedies provisions in the Settlement Agreement executed between OWNER and CONTRACTOR.

ARTICLE 16 - ARBITRATION

- A. Delete Paragraphs 16.1, 16.2, 16.3, 16.4 and 16.5.

ADDENDUM TO SUPPLEMENTARY CONDITIONS

1. In Paragraph 5.3, delete the insertion of Paragraph 5.3.8 and insert the following: "5.3.8 During the term of the contract, the CONTRACTOR shall, at its own expense, procure, maintain and furnish evidence of the following insurance coverage:"
2. Add the following sentence to the end of 6.28.1: "Notwithstanding anything contained hereinabove in 6.28.1, with respect to new improvements which OWNER requests, and to the extent such new improvements affect the efficiency or performance of the equipment being furnished, then CONTRACTOR shall be relieved of any claims under the contract on account of any failures or any partial failures or inefficiency or insufficiency or lack of performance of any part of the project affected by such new improvements so long as CONTRACTOR advises ENGINEER of any adverse effect CONTRACTOR is aware of or, in the exercise of reasonable care, should be aware of, as a result of such new improvements."
3. In Paragraph 14.4, delete "thirty days" and reinsert the original period of "ten days after presentation."
4. Delete Paragraph 14.8.1.
5. In Paragraph 14.11.1, add the following: "CONTRACTOR reserves the right to dispute any such costs. In the event CONTRACTOR disputes such costs, any payment by CONTRACTOR of such costs shall not be due to the OWNER until said dispute is resolved by agreement or decided by a court of competent jurisdiction."

EXHIBIT "B"

6. In Paragraph 15.6, on the ninth line after the words "material or labor", insert the following: "(unless CONTRACTOR is exercising a reasonable right of offset in connection with a claim CONTRACTOR has against subcontractors)." On the sixteenth line, after the words "the employment and", delete the remainder of the sentence and add "after affording to CONTRACTOR ten (10) days to cure any complaints (that are capable of being cured) or to commence to cure any other complaints within such ten (10) days, then if CONTRACTOR does not take the necessary steps to cure such complaints, OWNER may transfer the employment for said work from the CONTRACTOR to the Surety."
7. Add the following sentence at the end of the second paragraph of 15.6: "In the event CONTRACTOR does not agree with OWNER's decision to terminate employment and withhold any further payments to CONTRACTOR, then and in that event, OWNER and CONTRACTOR shall be governed by the remedies provisions contained within the Settlement Agreement executed by OWNER and CONTRACTOR."
8. In Paragraph 16.1, delete the entire paragraph.

EXHIBIT "B"

EQUIPMENT

DESCRIPTION OF WORK

- | | | |
|-----|---|--|
| 1. | Amendment Silo | Overhaul drive unit, check level switches and check operation. |
| 2. | Amendment Metering Screw Conveyor | Overhaul drive unit, check level switches and check operation. The capacity of this conveyor shall be adequate to provide at least a 3 to 1 sludge to sludge ratio. |
| 3. | Sludge Belt Conveyor from Dewatering Building | Overhaul drive unit, check level switches and check operation. |
| 4. | Sludge Bin | Clean unit, overhaul drive unit, check bearings, level switches and check operation. Replace shaft seals for all feeders and leveling screws. Provide gasket seal around chain guard where presently welded. |
| 5. | Recycle Bin | Clean, rehabilitate and check for operation. |
| 6. | Drag Chain Conveyor to Mixer and the Drag Chain Conveyor from Mixer to In-Feed Drag Chain | Clean, rehabilitate and check for operation. |
| 7. | T.B. Discharge Drag Chain Conveyor | Clean unit, overhaul drive unit, oil chains and check bearings. |
| 8. | Discharge Drag Chain Elevating Conveyor | Clean unit, overhaul drive unit, oil chains and check bearings. |
| 9. | Compost Outfeed | Clean unit, overhaul drive unit, oil chains and check bearings. |
| 10. | Mixer | Clean unit, overhaul drive unit and check bearings. Replace mixing paddle shaft seals. |
| 11. | Cure Fans | Clean units, overhaul drive unit, check operation. |
| 12. | Air Conditioning Unit on Roof | Clean units, overhaul drive unit, check operation. |
| 13. | MCC Room | Clean, check starters, breakers and fuses. Provide elapsed time meters. |
| 14. | Upstairs Control Room | Clean, check starters, breakers and fuses. |
| 15. | Main Control Room including computer system | Clean, check circuits and boards including control console and computer, and replace if necessary. |
| 16. | Aeration Blowers | Recondition by factory authorized service center personnel. Reconditioning shall include new bearings, new shaft seals, restoration of the coating system to "like new" condition. |
| 17. | Exhaust Blowers | Replace with multi-stage centrifugal blowers as proposed by ASH. |
| 18. | Aeration Heaters and Exhaust Piping | Replace as required. |
| 19. | Control Valves | Replace with new valves, as required. |
| 20. | Hydraulic Unit and Hydraulic Cylinders | Recondition by factory authorized service center personnel. The hydraulic components shall be disassembled, cleaned, inspected and rebuilt as required. |

EXHIBIT "C"

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|-----|--|---|
| 21. | Instruments, Transmitters and Actuators in Gallery | Replace with comparable operating system to that currently being installed in other ASH facilities with automatic aeration control. |
| 22. | Wiring to Aeration Gallery | Remove and replace as appropriate for new equipment sizes and instrumentation. |
| 23. | Infeed Drag Chain | Replace with double strand drag chain as proposed by ASH. |
| 24. | Amendment Fill System | Replace with hopper and conveyor as proposed by ASH. To meet the 20-ton per hour specifications. |
| 25. | Odor Control Diffuser | Lower to the original depth as proposed. |
| 26. | Modem Installation | As described in ASH proposal of 11/19/91. |

Definitions of terms used in above descriptions are as follows:

Clean units. Remove all compost, sludge, amendment, or sludge mixture from the unit; visually inspect the unit for signs of corrosion and coating system failures; resurface and re-coat any affected areas; and lubricate all moving parts not specifically indicated for reconditioning.

Overhaul Drive Unit. Drive motors shall be removed and sent to a motor shop (or on-site if factory authorized service can be properly performed there), for megger testing and disassembled for bearing inspection and drying of the windings, as required, and certification by the motor shop that the resulting motor is "like new" condition. V-belts should be replaced. Gear motors shall be removed and sent to a factory-authorized service center (or on-site if factory authorized service can be properly performed there), the gear oil drained, the housing disassembled for a visual inspection of the gears and bearings for signs of corrosion, the unit assembled and filled with oil, and the resulting gear motor certified to meet design specifications.

Check Bearings. It is assumed that the bearings referred to here are other than those found on the drive unit since these bearings are covered above. Because checking the bearings will require that the bearing housings be disassembled and the bearings removed, bearings shall be replaced at this time. This will eliminate any ambiguity in determining what is acceptable condition and the risk of accepting bearings with flat spots that will ultimately shorten bearing life and potentially damage equipment.

Check Operation. All equipment shall have their operation checked, but only after the prescribed reconditioning of the work is complete. This operational check shall follow the same procedures as the original start-up and testing requirements.

All equipment regardless if it is new or reconditioned shall have a one-year warranty from the time the facility is complete and accepted by the City.

Other Miscellaneous Items Outstanding.

1. The mix room floor does not slope to a drain and puddles water. ASH shall provide an acceptable solution to this.

EXHIBIT "C"



Exhibit "D"

[illegible]

TOTAL F.02

ASHBROOK HOURLY RATES

Work performed is based on cost plus overhead. These rates apply to time actually devoted to the job and to required travel.

Expenses for travel are billed at cost.

Prices do not include state or local taxes.

For 8 hours per day and 40 hours per week normal working hours, Monday through Friday, hourly rates for Ashbrook engineering staff are:

Category 1 -	Manager of Engineering, Project Manager	\$90/Hr.
Category 2 -	Project Engineer	\$80/Hr.
Category 3 -	Electrical/Instrumentation and Controls Engineer	\$75/Hr.
Category 4 -	Structural Engineer	\$70/Hr.
Category 5 -	Mechanical/Materials Handling Engineer	\$65/Hr.
Category 6 -	Civil/Process Engineer	\$60/Hr.
Category 7 -	Designer/Drafter	\$50/Hr.
Category 8 -	Technical Assistant	\$40/Hr.
Category 9 -	Secretarial	\$35/Hr.

Other Staff Hourly Rates

Purchasing Manager	\$50/Hr.
Purchasing Expeditor	\$35/Hr.
Quality Control Inspector	\$40/Hr.
Project Site Superintendent	\$60/Hr.
Estimator	\$55/Hr.

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Exhibit "E"

the facility is operated at steady state. If down time occurs part of the way through the 60 day test period, then the clock shall be reset to zero and the test shall resume, including all associated monitoring when steady state conditions are reestablished.

EXHIBIT "H"

4

~~Approved List of Arbitrators~~

~~For mediation and/or arbitration, the following organizations
will be used to settle disputes:~~

1. Process Disputes:

Camp, Dresser & McKee Engineers
Boston, MA

Burgess & Niple, Ltd. Engineers
Columbus, Ohio

Malcolm Pirnie Engineers
New York, New York

Hazen & Sawyer Engineers
Raleigh, North Carolina

Garnett Fleming Engineers
Harrisburg, PA

2. Structural Disputes:

CRSS Infrastructure Group
Portland, Oregon

URS Corp.
Portland, Oregon

Rust International Corp.
Portland, Oregon

Klein & Hoffman, Inc.
Philadelphia, PA

James Montgomery Engineers
California

Malcolm Pirnie Engineers
New York, New York

Consoer, Townsend & Associates
Chicago, Illinois

3. Material Handling/Equipment Disputes:

CRS Sirrine Engineers
Greenville, South Carolina

Karl W. Schmidt & Assoc.
Denver, Colorado

FEECO International
Green Bay, Wisconsin

Welf & Associates, Inc.
St. Paul, Minnesota

Jacobson, Inc.
Minneapolis, Minnesota

4. Electrical and Instrumental Disputes:

Rust International Corp.
Portland, Oregon

Cone Hazzard & Nall, Inc.
Birmingham, Alabama

Consoar, Townsend & Assoc.
Chicago, Illinois

Malcolm Pirnie Engineers
New York, New York

Hazen & Sawyer Engineers
Raleigh, North Carolina