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ARCS

Remedial Planning Activities at Selected
Uncontrolled Hazardous Substance Disposal
Sites in the Zone of Regions IX and X

**FINAL 100 PERCENT
CONSTRUCTION PLANS AND SPECIFICATIONS
NEWMARK OU REMEDIAL DESIGN
NEWMARK GROUNDWATER CONTAMINATION
SUPERFUND SITE
SOUTH PLANT PIPELINE**

U.S. Environmental Protection Agency
Contract No. 68-W9-0054

URS Greiner

Team Subcontractors:

Black & Veatch Special Projects Corp.
Shannon and Wilson, Inc.

**FINAL 100 PERCENT
CONSTRUCTION PLANS AND SPECIFICATIONS
NEWMARK OU REMEDIAL DESIGN
NEWMARK GROUNDWATER CONTAMINATION
SUPERFUND SITE
SOUTH PLANT PIPELINE**

**Contract No. 68-W9-0054 / WA No. 54-37-9NJ5
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105**

Prepared by:

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October 1997

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October 3, 1997

Mr. Roy Herzig
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Region IX
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62370.60.41.0139
06.g2

**Subject: Contract No. 68-W9-0054 / WA No. 54-37-9NJ5
Newmark Operable Unit (OU) Remedial Design (RD)
Newmark Groundwater Contamination Superfund Site
South Plants 100 Percent Pipeline Design Submittal**

Dear Mr. Herzig:

Enclosed ARE two copies of the Final Newmark South 100 Percent Pipeline Design Submittal for the Newmark Operable Unit (OU) Remedial Design (RD) work assignment. All comments on the earlier version of the South Design submittal were incorporated.

Thank you for the opportunity to provide EPA with remedial efforts on the Newmark Plume OU. If you have any questions, please do not hesitate to call me at (916) 929-2346.

Sincerely,

URS GREINER, INC. - CALIFORNIA


Dwayne H. Deutscher, P.E.
Site Manager

DD/mam

Enclosure

cc: M. Morkowski, EPA Region IX (SFD-4), w/o encl. J. Stejskal, City of San Bernardino
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**TECHNICAL SPECIFICATIONS
DIVISION 1**

SECTION 01001

SPECIFICATION STRUCTURE

1. GENERAL

a. FORMAT

- i. This specification is organized on the format promulgated by the Construction Specification Institute. (CSI Format)
- ii. This format assigns permanent numbers to all Divisions and Sections and so far as possible assigns all products, processes, activities and construction requirements permanent places in the specifications. A number is assigned which will not change from specification to specification.
- iii. Division, Section and Subsection numbers which are not required are omitted from the Specification.

b. INDEX

- i. All Sections required for a complete Contract appear in the index. Sections not required are omitted.
- ii. Bidders and Contractors should check Sections present against the index to assure the presence of all required Sections of the Contract.

c. ARRANGEMENT

- i. The Project Manual is organized as follows:
 - (1) Procedural and legal documents in the opening Sections.
 - (2) Specifications in Divisions number 1 to 3.
- ii. No attempt has been made in these specifications or plans to segregate work covered by any trade or subcontractor under one specification. Such segregation and establishment of subcontract limits shall be solely a matter of specific agreement between the Contractor and his subcontractors and shall not be based upon an inclusion, segregation or arrangement in or of these specifications. The Contractor and

subcontractor in each case is warned that work included in any subcontract may be divided between several general specifications and that each general specification or subhead of the Technical Specifications may include work covered by two or more subcontracts in excess of any one subcontract.

- iii. The Contractor shall be responsible for all work shown or specified, regardless of location in the Contract Documents.

d. LANGUAGE

- i. These Specifications are written in imperative and abbreviated form.
- ii. This imperative language of the technical sections is directed at the Contractor, unless specifically noted otherwise.
- iii. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases.
- iv. Except as worded to the contrary, fulfill (perform) all indicated requirements whether stated imperatively or otherwise.

* * * END OF SECTION * * *

SECTION 01010

SUMMARY OF WORK

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Coordination: Section 01041.
- B. Construction Schedules: Section 01310
- C. Temporary Water: Section 01515
- D. Protection and Maintenance of Work and Property: Section 01545.

1.2 SCOPE OF WORK

- A. The work covers construction work specifically shown on the Contract Drawings and described herein.

1.3 CONTRACTOR'S DUTIES

- A. Except as specifically noted, provide and pay for:
 - 1. Labor, materials and equipment.
 - 2. Tools, construction equipment, machinery and fuel.
 - 3. Heat and utilities required for construction.
 - 4. Other facilities and services necessary for proper execution and completion of work.
- B. Pay legally required sales, consumer use and other taxes as may be required by law.
- C. Give required notices.
- D. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of work.
- E. Promptly submit written notice to Engineer of observed variance of Contract Documents from legal requirements. It is not Contractor's responsibility to make certain that drawings and specifications comply with codes and regulations.
- F. Enforce strict discipline and good order among employees.
- G. Do not employ:
 - 1. Unfit persons.

2. Persons not skilled in assigned task.

1.4 CONTRACTOR FURNISHED

- A. Labor, materials and equipment required for the project except as noted in the Information for Bidders.
- B. All gates, barricades, fences, handrails, guardrails, and security required by the Contract or by laws and regulations.
- C. Sanitary facilities adequate for all workers and complying with all codes and regulations.
- D. Shelter and drying facilities for workmen.
- E. Guards, marks, shields, protective clothing, rain gear, and other equipment required by law, ordinance, labor contracts, OSHA and other regulations for the maintenance of health and safety.
- F. First Aid Kits and equipment required by law and regulations.

1.5 TYPE AND EXTENT OF WORK

- A. All work incidental and necessary to the completion of the work described herein and shown on the drawings shall be completed under the bid items listed in the Bid Form and no other compensation will be allowed.

1.6 WORK UNDER SEPARATE CONTRACTS

- A. The Owner may award separate contracts. Successful bidders should anticipate the work under these separate contracts as indicated on the drawings. Cooperation between successful bidders for completion of the work as defined in the individual contracts, especially where the work is to be completed in the same general area, is expected of all parties concerned.
- B. Bidders are cautioned to anticipate reasonable delays due to this construction by others under the separate contracts. Changes in soil or water conditions because of construction work performed by others under these separate contracts shall not be the basis for a claim to the Owner.
- C. Contractors shall include allowances in their prices bid to allow for the above factors, delays, inconveniences, etc., and these items will not be a basis for a claim for a time extension and/or additional compensation.
- D. At locations where these separate contracts are joined to form a completed system, the Contractor last completing the work at the point of connection, as determined by the Engineer, shall be responsible for making said connection.

1.7 OWNER FURNISHED PRODUCTS

- A. Owner will furnish all materials called for in the Information for Bidders.

1.8 CONSTRUCT WORK IN STAGES

- A. As required in specifications, agreed with owners and reflected in the contract schedule.

1.9 USE OF PREMISES

A. Limitation:

1. The Contractor shall confine his apparatus, storage of materials, and construction operations to such limits as may be directed by the Owner, and shall not unreasonably encumber the premises with his materials.
2. The Contractor shall enforce any instructions of the Owner regarding signs, advertising, fires, danger signals, barricades, and smoking, and shall require all persons employed on the work to comply with all building, post or institutional regulations while on the premises.
3. The Contractor shall not permit any part of any structure to be loaded with a weight that will damage a structure.

B. Confine operations at site to areas permitted by:

1. Laws.
2. Ordinances.
3. Permits.
4. Contract Documents.
5. Right-of-Way.

* * * END OF SECTION * * *

NEWMARK OU RD SOUTH PIPELINE FINAL 100 PERCENT
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SECTION 01028

CHANGE ORDER PROCEDURE

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Construction Schedule: Section 01310

1.2 INITIATION OF CHANGES

- A. The Owner may order, in writing, changes in the specifications, drawings, materials, timing, location or other alteration of the work as he may deem advisable.
- B. Upon receipt of a change order, signed by the Owner, the Contractor shall immediately cease any actions that may be in conflict and shall proceed with the work directed by the change order.

1.3 PROCEDURE

- A. The Owner or the Engineer may initiate a request for change order cost proposal.
- B. Upon receipt of such a request, the Contractor shall promptly prepare a cost and time proposal, in as much detail as the Owner may request, and forward that proposal to the Engineer and shall immediately cease any actions that may be in conflict if so requested by the Engineer.
- C. The Contractor may at his option and initiative, propose changes which he may deem practical and/or advantageous to himself and the Owner.
- D. If an equitable adjustment can be negotiated, the Owner shall prepare and both Owner and Contractor shall sign a change order in the amount and terms agreed.

1.4 COST REIMBURSEMENT (FORCE ACCOUNT)

- A. If a change order cannot be negotiated or if there is insufficient time to follow the normal change order procedures, the Owner may issue a Notice to Proceed for Cost Reimbursement with a request for lump sum cost proposal.
- B. The Notice to Proceed will have the same contractual status as a change order.
- C. The Contractor may proceed promptly with the changed work directed by the Notice to Proceed and shall maintain records as required.

- D. The Contractor may prepare a proposal as in paragraph 1.3 B and a change order may be negotiated as in paragraph 1.3 D.
- E. A change order shall be executed for the negotiated amount or for the Cost Reimbursement amount as appropriate.

1.5 UNIT PRICE

- A. The Owner may issue a change order for unit price at such prices as are set forth in the Contract.
- B. The Contractor will, upon presentation, affix his signature and proceed with the changed work.

* * * END OF SECTION * * *

SECTION 01041

PROJECT COORDINATION

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Work Under Separate Contracts: Section 01010
- B. Job Site Administration: Section 01043
- C. Field Engineering: Section 01050
- D. Preconstruction Conferences: Section 01210
- E. Progress Meetings: Section 01220
- F. Inspection Services: Section 01420

1.2 POLICY IN PRACTICE

- A. Engineer is the Owner's Advisor and Consultant:
 - 1. Inspection and Testing Laboratories are to furnish data and guidance only and may make no decisions involving changes in the Contract.
 - 2. All job located problems shall be handled through the Resident Engineer or Inspector.
- B. Owner's desires and instructions are to be channeled through the Engineer regarding all phases of the Contract.
- C. Contract related communication from Contractor shall be handled through the Engineer.
- D. Coordination of all subcontractors is the responsibility of the Contractor.
- E. Documents of the Contract are directed to the Contractor and not to the subcontractors involved.
- F. The Contractor is solely responsible for construction methods and the results thereof regardless of any advice, information, methodology or scheduling unless such advice, methodology or scheduling is written into the Contract or given in writing by the Engineer or the Owner.

1.3 COORDINATION OF TRADES AND SUBCONTRACTORS

- A. Coordination is the responsibility of the Contractor. He shall assure coordination with suppliers, electrical contractors, mechanical contractors and all trades to the end that:
1. All necessary equipment, work and structures are scheduled, installed and tested in proper sequence.
 2. He shall assure that electrical and mechanical equipment, wiring and control equipment, piping and plumbing, grading and landscaping and all problems of supply, installation and scheduling are coordinated and that the relations of all elements are carried out in an orderly manner in accordance with the Contract.
 3. Contractor shall coordinate all suppliers of equipment, controls and electrical supplies before submittal of shop drawings.

1.4 COORDINATION OF UTILITIES

- A. Contractor shall schedule and supply utilities as required in the Contract.

1.5 PUBLIC AGENCIES

- A. Contractor shall coordinate his schedule and activities with the Owner, the Engineer and various agencies involved as the necessity arises and as required by the Contract:
1. Power.
 2. Water.
 3. Sewer.
 4. Electrical.
 5. Other Utilities.
 6. Police.
 7. Fire.
 8. Schools.
 9. County.
 10. City.
 11. State.
 12. Other public agencies.

* * * END OF SECTION * * *

SECTION 01043

JOB SITE ADMINISTRATION

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of Work: Section 01010
- B. Project Coordination: Section 01041
- C. Inspection Services: Section 01420
- D. Temporary Water: Section 01515
- E. Protection and Maintenance of Work and Property: Section 01545

1.2 REMOVAL OF DEBRIS, CLEANING, ETC.

- A. The Contractor shall at all times keep the construction area clean and orderly and upon completion of the work shall leave all buildings broom clean and all parts of the work clean and free of rubbish or excess material of any kind.
- B. Upon completion, the site of all work or equipment and material storage areas shall be restored to substantially their original condition.
- C. Miscellaneous debris, rocks, etc., resulting from the work shall be removed and disposed of in a manner satisfactory to the Owner.
- D. The site shall be left in a clean and neat condition.

1.3 TESTS

- A. Where the Specifications require work to be specifically tested or reviewed, it shall not be tested or covered up without timely notice to the Engineer of its readiness for inspection, unless the Engineer waives such notice.
- B. Should any such work be covered up without such notice, approval or consent, it must, if required by the Engineer, be uncovered for examination at the Contractor's expense.
- C. Where work is to be tested, all necessary equipment shall be set up and the work given a preliminary test so that any and all defects may be discovered and repaired prior to calling out the Engineer for the test.

1.4 OWNER MAY DETERMINE PRECEDENCE

- A. Whenever, in his opinion, it is necessary to do so, in order to insure proper completion of the Contract for construction and installation, the Owner shall determine the order of precedence and the time and season at which any portion or portions of the work shall be commenced and carried on.
- B. The Owner may schedule a sequence of the work when it is in locations where the Owner is doing other work by his own forces, or by other contract, or when other work may be affected by work under this Contract, in order that conflict may be avoided and the work under these Specifications be coordinated with that under other contracts or with other work being done in connection with or growing out of operations of the Owner.
- C. Nothing herein contained shall be taken to relieve the Contractor of any of his obligations or liabilities under this Contract.

1.5 COMMENCEMENT OF WORK ON PUBLIC AND PRIVATE RIGHT-OF-WAY

- A. Work shall not be started on any public or private right-of-way until clearance is given the Contractor by the Engineer.
- B. It will be the responsibility of the Contractor to comply with any special requirements of any permits or easements for the project acquired by the Owner.

* * * END OF SECTION * * *

SECTION 01050

FIELD ENGINEERING

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Jobsite Administration: Section 01043.
- B. Inspection Services: Section 01420.
- C. Construction Schedules: Section 01310.

1.2 CONSTRUCTION STAKING BY ENGINEER

- A. Unless otherwise provided the Engineer will stake out locations of the various parts of the work and give such lines and grades as are necessary, in his opinion, for the proper construction thereof.
- B. The Contractor's request for staking shall be in writing and shall outline schedule for staking requirements. Any schedule changes shall be provided in writing.
- C. Request for stakes shall be a minimum of five working days in advance of need to start staking operations.

1.3 GENERAL REQUIREMENTS

- A. The Contractor shall protect and preserve in their original position all stakes, points, or marks set for the work.
- B. If any stakes and markings are destroyed or defaced by the Contractor's operations before their use is ended, the full cost of replacing them will be at the Contractor's expense.
- C. The Contractor shall provide sufficient and safe facilities to enable the Engineer or Contractor's surveyor to set the control points, together with such tools and materials and render such competent assistance as may be reasonably and customarily required.
- D. Working operations shall be suspended at different points for such brief and reasonable time as may be required for giving of lines and grades, taking measurements and making inspections. Such delays shall be considered incidental to the Contract and no additional compensation will be allowed.
- E. Any claim by the Contractor for extra compensation by reason of alterations or reconstruction work allegedly due to error in the Engineer's line and grade, will not be

allowed unless the original control points set by the Engineer still exist, or unless other satisfactory substantiating evidence to prove the error is furnished to the Engineer.

- F. The Contractor shall transfer lines and grades from the points given to his own work at his own expense.
- G. Detailed staking will usually be done after clearing of right of way has been completed.

1.4 REQUIREMENTS FOR PIPELINES

- A. Where line and grade is carried by stringline in the case of pipeline construction, not less than three (3) points shall be in use at one time.
- B. Grades shall be checked by the Contractor and if the points do not line up, the work shall be immediately stopped, and the cause remedied before proceeding with the work. The Contractor shall not receive any additional payment for "standby time" while surveys are being checked.
- C. Other methods of transferring line and grade may be used providing that such methods can be checked by the Engineer at not less than three points in each section of pipe between manholes before backfilling is started. Permission to use any specific method will not relieve the Contractor of his responsibility to meet any requirement of other sections of this Specification.
- D. Line and grade shall be checked for each piece of pipe laid.

1.5 REQUIREMENTS FOR STRUCTURES

- A. Horizontal base line and bench mark will be provided by the Engineer.
- B. Contractor shall lay out the work from these points.

* * * END OF SECTION * * *

SECTION 01070

ABBREVIATIONS AND SYMBOLS

2. GENERAL

2.1 ABBREVIATIONS

- A. Whenever the following abbreviations are used on the plans, specifications, proposals and contracts, they shall be construed to mean the words and terms as listed below.
- B. Duplicate Definitions shall be interpreted in context of use.

<u>A</u>		ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
AASHTO	American Association of State Highway and Transportation Officials	ASME	American Society of Mechanical Engineers
ACI	American Concrete Institute	ASTM	American Society for Testing and Materials
AFBMA	Anti Friction Bearing Manufacturers Association	AWPA	American Wood Preservers Association
AGA	American Gas Association	AWS	American Welding Society
AGC	Associated General Contractors of America	AWWA	American Water Works Association
AGMA	American Gear Manufacturer Association		
AIA	American Institute of Architects	<u>B</u>	
AISC	American Institute of Steel Construction	BTU	British thermal unit
AISI	American Iron and Steel Institute	BTUH	British thermal units per hour
AITC	American Institute of Timber Construction	<u>C</u>	
AMCA	Air Moving and Conditioning Association	C	Centigrade/Celsius
ANSI	American National Standards Institute	CBMA	Certified Ballast Manufacturers Assoc.
APA	American Plywood Association	CFM	Cubic feet per minute
API	American Petroleum Institute	CFS	Cubic feet per second
APWA	American Public Works Association	CPM	Critical path method
AREA	American Railway Engineering Assoc.	CRSI	Concrete Reinforcing Steel Institute
ASAE	American Society of Agriculture Engineers	<u>D</u>	
ASCE	American Society of Civil Engineers	DFP	Douglas Fir Plywood Association
		DIPRA	Ductile Iron Pipe Research Association

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<u>E</u>		KW	Kilowatts
EA	Each	KWH	Kilowatt hours
EEO	Equal Employment Opportunity		
EPA	Environmental Protection Agency (Federal)	<u>L</u>	
		L	Length
		LB	Pounds
<u>F</u>		LF	Linear feet
F	Fahrenheit	LS	Lump Sum
FED SPEC	Federal Specification		
FHWA	Federal Highway Administration		
FPM	Feet per minute		
FT,FT ² ,FT ³	Foot, square feet, cubic feet		
<u>G</u>			
GA	Gage, gauge		
GAL	Gallon		
GALV	Galvanized		
GPD	Gallons per day		
GPH	Gallons per hour		
GPM	Gallons per minute		
<u>H</u>			
HOA	Hand-off-auto		
HP	Horsepower		
HR	Hour		
HSP	Health & Safety Plan		
HT	Height		
Hz	Hertz		
<u>I</u>			
ID	Inside Diameter		
IEEE	Institute of Electrical and Electronics Engineers		
IN,IN ² ,IN ³	Inch, square inches, cubic inches		
IPCEA	Insulated Power Cable Engineers Assoc.		
ISA	Instrument Society of America		
<u>J</u>			
JIC	Joint Industry Conference of Hydraulic Manufacturers		
<u>K</u>			
KV	Kilovolt		
KVA	Kilovolt ampere		
KVAR	Reactive kilovolt amperes		

<u>M</u>		PT	Pint
M	Thousand	PVC	Polyvinyl chloride
MA	Milliamperes		
MBTUH	One thousand British thermal units per hour		
MGD	Million gallons per day		
mg/l	Milligrams per liter		
MIN	Minute		
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry		
MV	Millivolts		
MVA	Megavolt amperes		
<u>N</u>			
NAMM	National Association of Metal Manufacturers		
NBFU	National Bureau of Fire Underwriters		
NEC	National Electrical Code		
NEMA	National Electrical Manufacturers Association		
NESC	National Electric Safety Code		
NFPA	National Fire Protection Association		
NPC	National Plumbing Code		
NPT	National pipe thread		
NRS	Non-rising stem		
NLMA	National Lumber Manufacturers Assoc.		
<u>Q</u>			
OD	Outside diameter		
OECI	Overhead Electric Crane		
OSHA	Occupational Safety and Health Act		
OZ	Ounce		
<u>P</u>			
PCA	Portland Cement Association		
ph	Hydrogen ion concentration		
PH	Phase		
PPM	Parts per million		
PSF	Pounds per square foot		
PSI	Pounds per square inch		
PSIG	Pounds per square inch gauge		

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R

RPM Revolutions per minute

S

SAE Society of Automotive Engineers

SAMA Scientific Apparatus Manufacturers
Association

SCFM Standard cubic feet per minute

SMACNA Sheet Metal and Air Conditioning
Contractors National Association

SQFT Square foot

SQIN Square inch

SQMI Square mile

SSPC Steel Structures Painting Council

U

UBC Uniform Building Code

UL Underwriter's Laboratory

UPC Uniform Plumbing Code

V

V Volt

W

WCLIB West Coast Lumber Inspection
Bureau

WWPA Western Wood Products Asso-
ciation

* * * END OF SECTION * * *

SECTION 01090

REFERENCE STANDARDS

1. GENERAL
 - 1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE
 - A. All Divisions: As referenced
 - 1.2 AUTHORITY
 - A. Contractor is responsible to conform to all codes and regulations legally in effect at the location of the project.
 - B. Contractor shall conform to all requirements and regulations of the authority administering such codes and regulations.
 - 1.3 REFERENCE CODES
 - A. Contractor shall conform to all codes and sections thereof as may be referred to in the specifications.
 - B. Referenced codes are, by such reference, incorporated into this Contract as if set forth herein in full.
 - 1.4 SPECIFICATIONS INCORPORATED BY REFERENCE
 - A. Where Federal, AWWA, ASTM, or any other standard specifications are referred to, or included by reference, the latest issue and/or amendment thereto published at the date of issue of the Advertisement for Bids shall be incorporated in the Contract by said reference as if set forth herein in full.

* * * END OF SECTION * * *

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SECTION 01210

PRECONSTRUCTION CONFERENCES

2. GENERAL

2.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of Work: Section 01010
- B. Project Coordination: Section 01041
- C. Job Site Administration: Section 01043
- D. Progress Meetings: Section 01220

2.2 SCHEDULE

- A. Not more than five days after notice to proceed but earlier if practicable, the Owner will schedule a preconstruction meeting.
- B. Present at the meeting to represent the Contractor shall be at least the official in charge of the project, the project superintendent, a representative with authority to speak for each of his principle subcontractors, and other representatives as he may deem expedient.
- C. The Owner and/or his representatives shall be present as required.
- D. Proceedings of meeting to be recorded and distributed to interested parties.

2.3 AGENDA

- A. Both Owner and Contractor shall be prepared to speak to the following:
 - 1. Name and Field Address of Job Superintendent
 - 2. Emergency Phone and/or operator
 - 3. Date of Construction Start
 - 4. Date of Notice to Proceed
 - 5. Notification of Utilities Concerned, Fire, Police, Schools, etc.
 - 6. Coordination with other contractors
 - 7. Permits: County, City, State Fisheries, Government Agencies as required
 - 8. Inspector: name, authority
 - 9. Field office (location)
 - 10. Shop Drawing Submittals
 - 11. Responsibility for lines and grades
 - 12. Minimum wage rates and posting of wage rate determination
 - 13. Equal employment opportunities and posting of EEO poster. Use of local labor.

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14. Weekly payrolls when required
15. Schedule of Values
16. Periodic monthly payments including date for submittal
17. Construction progress schedule (bar graph or C.P.M.)
18. Safety Requirements and Special Hazards
19. Insurance and Bonds
20. Traffic Control
21. Construction Signs
22. Drawings revised to conform to construction records
23. Beneficial occupancy
24. Retention of Contract records
25. Guarantees and warranties
26. Operation and Maintenance Manuals
27. Non-Discrimination Notice
28. Project Signs
29. Testing
30. Progress Meetings
31. Complaint Procedure
32. Job Photos
33. Other matters concerning construction

* * * END OF SECTION * * *

SECTION 01220

PROGRESS MEETINGS

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of Work: Section 01010
- B. Project Coordination: Section 01041
- C. Construction Schedules: Section 01310
- D. Project Record Documents: Section 01720

1.2 MEETINGS

- A. Hold Called Meetings as progress of Work dictates.
- B. Location of meetings: As designated during preconstruction conference.
- C. Attendance:
 - 1. Engineer and/or his Consultants.
 - 2. Owner (optional)
 - 3. Contractor
 - 4. Other contractors (if any).
 - 5. Subcontractors as pertinent to agenda.
 - 6. Safety Representative (Optional).
 - 7. Representatives of Governmental or other Regulatory Agencies.

1.3 MINIMUM MEETING AGENDA:

- A. Review, approve minutes of previous meeting.
- B. Review work progress since last meeting.
- C. Note field observations, problems and decisions.
- D. Identify problems which impede planned progress.
- E. Review off-site fabrication problems.
- F. Develop corrective measures and procedures to regain planned schedule.

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- G. Revise Construction Schedule as indicated.
- H. Plan progress during next work period.
- I. Coordinate projected progress with other contractors.
- J. Review submittal schedules, expedite as required to maintain schedule.
- K. Maintaining of quality and work standards.
- L. Review changes proposed by Owner for:
 - 1. Effect on Construction Schedule
 - 2. Effect on Completion Date
- M. Complete other current business.

*** END OF SECTION ***

SECTION 01310

CONSTRUCTION SCHEDULES

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Summary of Work: Section 01010
- B. Project Coordination: Section 01041
- C. Field Engineering: Section 01050
- D. Progress Meetings: Section 01220

1.2 GRAPHIC SCHEDULE

- A. The Contractor shall submit within fifteen (15) days after notice of award, a schedule in graphic form showing proposed schedule of anticipated progress to include all major operations and items and time of anticipated completion of major portions of the work.
- B. The Contractor shall revise schedule on a bi-monthly basis and resubmit if there are any substantial deviations from previously submitted data.

1.3 CONTRACTOR TO SCHEDULE WORK

- A. The Contractor shall keep the Engineer informed sufficiently in advance of the time and places at which he intends to work in order that lines and grades may be furnished and the necessary measurements for record and payment may be made with the minimum of inconvenience and delay to both the Engineer and the Contractor.
- B. Requests for stakes shall be made at least five (5) working days prior to the need to commence staking operations. Delays by reason of lack of stakes are deemed a risk to the Contractor and shall not be the basis for claims for additional compensation.
- C. If the schedule of work be such as to handicap the setting of necessary engineering control, the Contractor shall suspend his operations at the particular place in sufficient time for the Engineer to complete his work during normal working hours. Any additional expense to the Contractor arising from temporary suspension of work shall be considered as incidental to the construction and be included in various bid items of the Contract.
- D. Contractor shall review all material shown in the Contract Documents sufficiently in advance of the time of placement so that he can supplement necessary material as required.

Failure to provide additional materials does not constitute grounds for extension of time or request for additional costs.

- E. Contractor shall provide to the owner a list of materials required ten (10) working days prior to requested pickup date.

1.4 FORM OF SCHEDULE (GRAPHIC SCHEDULE)

- A. Prepare in form of horizontal bar chart.
- B. Provide separate horizontal bar column for each trade or work activity.
- C. Order: Chronological order of beginning of each item of work.
- D. Identify each column by distinct graphic delineation.
- E. Horizontal time scale: Identify first work day of each half month.
- F. Scale and Spacing: To allow space for updating.

1.5 SHEET SIZE

- A. Suitable for size and complexity of project.
- B. Preferably multipage 8½ x 11 or 8½ x 14.

1.6 CONTENTS OF SCHEDULES

- A. Provide complete sequence of construction by activity.
- B. Shop Drawings, Project Data and Samples
- C. Product procurement and delivery dates
- D. Dates for beginning, and completion of, each element of construction.
- E. Identify work in phases, or other logically grouped activities.
- F. Provide subschedules to define critical portions of entire schedule.
- G. Provide subschedules for all subcontractors.
- H. Show projected percentage of completion for each item of work as of first day of each month.

1.7 UPDATING AND CHANGES

- A. Show all changes occurring since previous submission of updated schedule.
- B. Indicate progress of each activity, show completion dates.
- C. Include:
 - 1. Major changes in scope
 - 2. Activities modified since previous updating
 - 3. Revised projects due to changes
 - 4. Other identifiable changes
- D. Provide narrative report, including:
 - 1. Discussion of problem areas, including current and anticipated delay factors, and their impact.
 - 2. Corrective action taken, or proposed, and its effect.
 - 3. Effect of change in schedules of other contractors.
 - 4. Description of revisions:
 - a. Effect on schedule due to change of scope
 - b. Revisions in duration of activities
 - c. Other changes that may affect schedule

1.8 SUBMITTALS BY CONTRACTOR

- A. Submit initial schedules within 15 days after date of Notice of Award or prior to starting work.
 - 1. Engineer will review schedules and return review copy within 10 days after receipt.
 - 2. If required by the Engineer resubmit within 7 days after return of review copy.
- B. Submit periodically updated schedules accurately depicting progress to first day of each month.
- C. Submit the number of copies required by Contractor, plus 4 copies to be retained by Engineer.

1.9 DISTRIBUTION BY CONTRACTOR

- A. Distribute copies of reviewed schedules to:
 - 1. Job site file
 - 2. Other contractors

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3. Subcontractors
4. Other concerned parties

B. Instruct recipients to report any inability to comply, and provide detailed explanation, with suggested remedies.

* * * END OF SECTION * * *

SECTION 01410

TESTING LABORATORY SERVICES

2. GENERAL

2.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Project Coordination: Section 01041
- B. Inspection Services: Section 01420
- C. Testing Requirements: Various Sections

2.2 CONTRACTOR WILL PAY FOR SERVICES OF AN INDEPENDENT TESTING LABORATORY FOR:

- A. Soils gradation, moisture density standards determination, and in place density tests per Division 2.
- B. Concrete: Mix design, consistency, air content, yield, compressive test cylinder casting and compression testing per Section 03300.
- C. Other materials and/or workmanship specified in Divisions 2 through 11.

2.3 LIMITATION

- A. Employment of a testing laboratory shall in no way relieve the Contractor of his obligation to perform work in accordance with the Contract.

2.4 QUALIFICATION OF LABORATORY

- A. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".
- B. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection; with memorandum of remedies of any deficiencies reported by inspection.
- C. Testing Equipment:
 - 1. Calibrated at maximum 12 month intervals by devices of accuracy traceable to National Bureau of Standards.
 - 2. Submit copy of certificate of calibration, made by accredited calibration agency.

2.5 LABORATORY DUTIES, AUTHORITY AND LIMITATION

- A. Cooperate with Engineer and Contractor.
- B. Provide qualified personnel promptly on notice.
- C. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards; ASTM, AWWA other recognized authorities, and as specified.
 - 2. Ascertain compliance with requirements of Contract Documents.
- D. Promptly notify Engineer, and Contractor, of irregularities or deficiencies of work which are observed during performance of services.
- E. Promptly submit 2 copies of report of inspections and tests to Engineer, in addition to those required by the Contractor including:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing Laboratory name and address.
 - 4. Name and signature of Inspector.
 - 5. Date of inspection of sampling.
 - 6. Record of temperature and weather.
 - 7. Date of test.
 - 8. Identification of product and specification section.
 - 9. Location in project.
 - 10. Type of inspection or test.
 - 11. Results of test.
 - 12. Observations regarding compliance with Contract Documents.
- F. Perform additional services as required.
- G. Laboratory is not authorized to:
 - 1. Release, revoke, alter, or enlarge on, requirements of Contract Documents.
 - 2. Approve or accept any portion of work.

2.6 RESPONSIBILITIES OF CONTRACTOR

- A. Cooperate with laboratory personnel and provide access to work.

- B. Provide to laboratory, preliminary representative samples of materials to be tested in required quantities.
- C. Furnish copies of mill test reports.
- D. Furnish casual labor and facilities:
 - 1. To provide access to work to be tested.
 - 2. To assist laboratory personnel to obtain and handle samples at the site.
 - 3. To facilitate inspections and tests.
 - 4. For laboratory's exclusive use for storage and curing of test samples.
- E. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.
- F. Laboratory Tests: Where such inspection and testing are to be conducted by an independent laboratory or agency, the sample or samples of materials to be tested shall be selected by such laboratory or agency, or the Engineer, and shipped to the laboratory by the Contractor at his expense.

* * * END OF SECTION * * *

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SECTION 01420

INSPECTION SERVICES

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Job Site Administration: Section 01043
- B. Testing Laboratory Services: Section 01410

1.2 AUTHORITY AND DUTIES OF INSPECTORS

- A. Inspectors are placed on the work to keep the Project Engineer informed as to the progress of the work and the manner in which it is being done; to keep records; act as liaison between the Contractor and the Project Engineer; also to call the attention of the Contractor to any deviations from the Contract Documents, but failure of the Inspector to call to the attention of the Contractor to faulty work or deviations from the Contract Documents shall not constitute acceptance of said work.
- B. The Inspector may reject or accept materials and equipment to be incorporated in the work and such specific items as he is authorized by the Engineer to accept.
- C. When any material has been accepted by the Inspector, it passes from his control to the control of the Contractor and remains there until the job, as a whole, is complete. Since the Inspector cannot control how the material is used, the responsibility for its safety and proper use will be the Contractor's. Until the job is finally completed, the Contractor might do work that changes or modifies work previously done and even though at any given time a piece of work might be well done and acceptable in quality, the responsibility for keeping it in that condition until the job is completed is the sole responsibility of the Contractor. For this reason, it is impossible to accept, finally, any portion of a project until the project as a whole is acceptable and control of said project is withdrawn from the Contractor by final official written acceptance by the Owner.
- D. Since one of the Inspector's primary interests is to see that work on the project progresses expediently and in a workmanlike manner, he may at various times offer suggestions to the Contractor which the Contractor may or may not follow, at his discretion. Such suggestions are never to be considered as anything but suggestions and involve no assumption of responsibility, financial or otherwise, by either the Inspector himself, the Engineer, or the Owner.
- E. Any personal assistance which an Inspector may give the Contractor will not be construed as the basis of any assumption of responsibility in any manner, financial or otherwise, by the Inspector, the Engineer, or the Owner.

- F. The Engineer is not and does not purport to be a Safety Engineer and is not engaged in that capacity by the Owner and shall have neither authority nor responsibility to enforce construction safety laws, rules, regulations, procedures or the safety of persons on and about the construction site.
- G. The presence or absence of an Inspector on any job will be at the sole discretion of the Engineer, and such presence, or absence, of an Inspector will not relieve the Contractor of his responsibility to obtain the construction results specified in the Contract Documents.
- H. The Inspector will not be authorized to approve or accept any portion of the work, to make changes in the work, or to issue instructions contrary to the Contract Documents, such approvals, acceptances, or instructions, when given, must be in writing and signed by the Project Engineer. The Inspector will have authority to reject defective material; however, the failure of the Inspector to reject defective material or any other work involving deviations from the Contract Documents will not constitute acceptance of such work.
- I. Nothing in this subsection shall in any way be so construed as to require or to place responsibility for, the method, manner or supervision of the performance of the work under this Contract upon the Inspector, the Engineer, or the Owner. Such responsibility rests solely with the Contractor.

1.3 EXAMINATION OF MATERIALS

- A. The neglect or failure on the part of the Engineer to condemn or reject substandard material or work shall not imply an acceptance of the materials or work. The Contractor shall furnish, at his own expense, such labor as may be required to enable the Engineer to make a thorough inspection and culling of the materials, and the Contractor shall bear the costs of all laboratory or other testing called for in these Specifications.
- B. Where required by the Specifications, the Engineer will examine certain materials such as masonry materials, concrete, aggregates, etc., at the manufacturer's plant prior to their delivery to the job site. The Contractor shall bear the cost of such material inspection including the Inspector's time, travel time and transportation expense and any other costs incurred, or chargeable to, or by, such material inspection. These inspection costs shall be billed to the Contractor at the Engineer's current billing rate. Transportation expense shall be billed at current rate. All such material inspection charges will be billed directly to the Contractor by the Owner and said costs shall be a lien against the Contractor's work. If the Contractor fails to pay said bill, or bills, by the 30th day of the month billed, such payment may be withheld from monies due the Contractor.

* * * END OF SECTION * * *

SECTION 01515

TEMPORARY WATER

2. GENERAL

2.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Water Lines: Section 02660

2.2 DESCRIPTION OF SYSTEM

A. The Contractor shall make arrangements for and provide all necessary facilities for water supply at his own expense, unless otherwise provided.

2.3 COSTS

A. Pay costs of temporary water services, including costs of installations, maintenance and removal of facilities.

B. Water for grading, construction filling, testing and flushing of the new systems will be available from the existing water distribution system at no cost to the Contractor after obtaining prior permission from the Owner.

C. All water taken from the owners water supply system shall be metered. The meter may be obtained from the Owner on the 5th floor of City Hall. A \$500 refundable deposit is required.

3. PRODUCTS

3.1 MATERIALS

A. Materials may be new or used but must be adequate for purpose required, sanitary and must not violate requirements of applicable codes.

4. EXECUTION

4.1 GENERAL REQUIREMENTS

A. The water utility shall be contacted to determine if sufficient water is available at the particular time before any use.

B. Flushing overnight or excessive wasting will not be permitted.

- C. The Contractor shall use only those hydrants designated by the agency in charge of water distribution and in strict accordance with its requirements for hydrant use.
- D. The Contractor shall use hydrant wrenches only in open hydrants. He shall also make certain that the hydrant valve is open "full", since "cracking" the valve causes damage in the valve. An approved auxiliary valve shall be provided on the outlet line for control purposes. Fire hydrant valves must be closed slowly to avoid a surge in the system which creates undue pressure on the water lines. The Contractor shall carefully note the importance of following these directions.
- E. If one of the Contractor's employees shall knowingly or unknowingly use the wrong wrench on a hydrant and thereby damage the hydrant valve stem, the Contractor will be responsible. He shall immediately notify the water utility so that the damage can be repaired as quickly as possible.
- F. Upon completing the use of the hydrants, the Contractor shall notify the water distribution agency, so that the hydrants may then be inspected for possible damage. Any damage resulting from the use of the hydrants by the Contractor will be repaired by the water agency and the cost thereof shall, if necessary, be withheld from the final payment to the Contractor.
- G. The Contractor shall furnish all connectors, wrenches, valves, and small tools that may be necessary to meet the requirements of the water distribution agency pertaining to hydrant use.
- H. Violation of these requirements will result in fines and will lay the Contractor liable for damage suits because of malfunctioning of damaged fire hydrants, in the event of fire or other emergencies.

4.2 REMOVAL

- A. Completely remove temporary materials and equipment upon completion of construction.

* * * END OF SECTION * * *

SECTION 01545

PROTECTION OF WORK AND PROPERTY

1. GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Temporary Controls: Section 01560

1.2 PUBLIC AND PRIVATE PROPERTY

- A. The Contractor shall protect and maintain all underground or aboveground utilities and structures affected by the work and all lawns, shrubs, trees, fences, rockeries, etc., and parking strips or private property crossed by or adjacent to his operation, and any damage shall be repaired and restored by the Contractor to the satisfaction of the Owner.
- B. The Contractor will be responsible for all damage to roads, highways, ditches, bulkheads, walls, bridges, culverts, utilities, barricades, lights, or other property, caused by the work, whether such damage be at the site of the work or caused by transporting or hauling to or from the work; and he shall repair or replace, or arrange for the repair or replacement of all such damage to the satisfaction of the Owner. Any material damaged by the Contractor's operations shall be replaced with new material.
- C. Whenever construction work under this Contract is undertaken on easement, right-of-way, or franchise, all work shall be confined to the limits of such easement, right-of-way, or franchise, and accomplished so as to cause the least amount of disturbance and a minimum amount of damage.
- D. Completion of work across private property shall be carried out in one continuous operation of construction of the facilities with the immediate restoration and cleanup of the construction area. If the Contractor fails to perform such construction and restoration continuously as herein provided, the Owner may give the Contractor a written notice to so perform, and in event of failure by the Contractor to complete such construction and restoration within 72 hours of such notice, the Owner may complete the installation and restoration on such private property to the extent the Owner deems advisable and the cost of all work, labor, materials, and expenses incurred by the Owner in so doing shall be paid by the Contractor and may be deducted from any monies due or to become due, the Contractor.
- E. Particular care shall be exercised to see that the topsoil from the trench is preserved and replaced in its original location. It shall be the Contractor's responsibility to strip such topsoil from the trench, or construction area, and stockpile it in such a manner that it may be replaced, by him, upon completion of construction.

- F. Wherever it may be necessary for the Contractor to trench through any lawn areas, the sod shall be carefully cut and rolled and replaced after ditches have been water settled, or otherwise properly compacted. All work shall be done in a manner calculated to leave the lawn area clean of earth and debris and in a condition as near as possible to that which existed before work was started.
- G. The Contractor shall not remove, even temporarily, any trees or shrubs which exist on easements across private property or in parking strips, without first having notified the property owners or authorities maintaining same.
- H. Ornamental trees and shrubbery shall be carefully removed with the earth surrounding their roots, wrapped in burlap and replanted in their original positions within 48 hours. Ornamental trees or shrubbery destroyed, or damaged, by the Contractor, whether on public or private property shall be replaced by the Contractor with material of equal quality, and no additional compensation will be allowed for such replacement.
- I. It is expressly understood that the Contractor shall in particular restore all such easements and rights-of-way to a condition equal to its original condition and in a condition satisfactory to the property owners and the Engineer. It is also understood that any private improvements made in public rights-of-way are included in the above category.

1.3 TREES

- A. All existing trees and shrubs which are to be protected and are damaged during construction shall be trimmed or replaced by the Contractor or a certified tree company under permit from the jurisdictional agency or owner and to the satisfaction of said agency and/or owner.
- B. The Contractor shall immediately notify the Engineer and jurisdictional agency and/or owner if any tree which is to be protected is damaged by his operations. If, in the opinion of said agency or the owner, the damage is such that replacement is necessary, the Contractor shall replace the tree at his own expense.
- C. Replacement trees shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay to the owner of said tree a compensatory payment acceptable to the tree owner not to exceed the cost of replacing the tree as determined from quotes obtained by the tree owner from a minimum of two local nurseries. The size of the replacement trees shall be not less than 1-inch diameter nor less than 6 feet in height.
- D. When trimming is permitted, symmetry of the tree shall be preserved. No stubs or splits or torn branches shall be left. Clean cuts shall be made close to trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1-1/2 inches in diameter shall be coated with an asphaltic emulsion material.

1.4 CARE OF EXISTING FACILITIES

- A. The Contractor shall take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, adjoining property, and structures, and to avoid damage thereto, and he shall at his own expense completely repair any damage thereto caused by his operation.
- B. Access for fire fighting equipment shall be maintained at all times.

1.5 SHORING, BRACING, ETC.

- A. The Contractor shall shore up, brace, under-pin, and protect as may be necessary, all foundations and other parts of all existing structures adjoining the site of the Project, which are in any way affected by the excavation or other operations connected with the completion of the work under this Contract.
- B. Whenever any notice is required to be given by the Owner or the Contractor to any adjoining or adjacent land owner or other party before commencement of any work under this Contract, such notice shall be given by the Contractor.
- C. The Contractor shall indemnify the Owner and save it harmless from any damages on account of settlements or the loss of lateral or subjacent support of adjoining property and from all loss or expense and all damages for which the Owner may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

1.6 See the Site-Specific Health and Safety Plan for pipeline installation safety.

1.7 EXISTING UTILITIES/FACILITIES - UNDERGROUND AND OVERHEAD

- A. The Contractor shall protect existing utilities/facilities, both overhead and underground as provided in Section 02760.

1.8 PUBLIC CONVENIENCE REQUIREMENTS

- A. The Contractor shall conduct his operations so as to offer the least possible obstruction and inconvenience to the public and he shall have under construction no greater length or amount of work than he can prosecute properly with due regard to the rights of the public.
- B. Unless otherwise provided, all public traffic shall be permitted to pass through the work with as little inconvenience and delay as possible. Where possible, such traffic shall be routed on new or existing paved surfaces.
- C. Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately by the Contractor at no expense to the Department.
- D. Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners.

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- E. Convenient access to driveways, houses, and buildings along the line of the work shall be maintained and temporary approaches to crossings or intersecting highways shall be provided and kept in good condition. When the abutting property owner's access across the right-of-way line is to be eliminated or to be replaced by other access, the property owner's access shall not be closed until the replacement access facilities are usable.
- F. Water or dust palliative shall be applied as required for the alleviation or prevention of dust nuisance.
- G. In order to expedite the passage of public traffic through or around the work, the Contractor shall install signs, lights, flares, barricades, trench plates, and other facilities for the sole convenience and direction of public traffic.

* * * END OF SECTION * * *