

ATTACHMENT “J”

TECHNICAL SPECIFICATIONS

FAGATOGO FLOOD DAMAGED WATERLINE



**American Samoa Power Authority
Engineering Services Division
Water Department**

**FAGATOGO FLOOD DAMAGED WATERLINE
GENERAL CONDITION
SUPPLIMENTARY CONDITIONS
TECHNICAL SPECIFICATIONS**

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UTU ABE MALAE
Executive Director

TABLE OF CONTENTS

GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT.....1

DEFINITIONS 1

ABBREVIATIONS..... 1

CONTRACT DOCUMENTS3

INTENT.....3

ALTERATION3

VERBAL STATEMENT AND AGREEMENTS3

DOCUMENTS TO BE KEPT ON THE JOB SITE.....4

OWNERSHIP OF DRAWINGS4

DUTIES OF CONTRACTOR.....4

SUPERCEDURE.....4

REPRESENTATIONS.....4

CONTRACTOR’S LOCAL ADDRESS4

CONTRACTOR COMPOSITION.....5

CONTRACTOR STATUS5

ASSIGNMENT.....5

SUBCONTRACTORS.....5

COVENANT AGAINST CONTINGENT FEES.....5

PROHIBITED INTEREST.....5

KICKBACKS PROHIBITED6

COVENANT AGAINST COLLUSION.....6

REPORTS, RECORDS, DATA AND DRAWINGS6

INSURANCE.....7

INDEMNITY8

PAYMENT OF TAXES.....8

LAW, PERMITS AND LICENSES.....9

SUPERINTENDENT.....9

ENGINEER’S FIELD OFFICE.....9

ENGINEER’S DIRECTION10

EMPLOYEES10

DISCREPANCY WITH LOCAL OR FEDERAL LAW.....10

HOURS OF WORK.....10

EQUAL OPPORTUNITY10

SAFETY REQUIREMENTS11

PROTECTION OF WORK AND/OR PROPERTY13

MATERIALS AND WORKMANSHIP.....13

PNRS CONDITIONS.....13

THE ENGINEER.....14

REJECTED MATERIAL.....14

UNNOTICED DEFECTS.....14

RIGHT TO RETAIN IMPERFECT WORK15

SHOP DRAWINGS15

DETAILED DRAWINGS AND INSTRUCTIONS.....15

WARRANTY OF TITLE.....16

SUBSTITUTION OF MATERIALS.....16

TESTS SAMPLES AND INSPECTIONS16

ROYALTIES AND PATENTS17

DEFECTIVE WORK.....17

CONTRACT TERM17

COMMENCEMENT OF THE WORK.....17

SCHEDULES AND PROGRESS REPORTS17

NIGHT WORK18

ASPA'S RIGHT TO PERFORM WORK.....	18
TERMINATION FOR CONVEINANCE.....	19
TERMINATION FOR CAUSE.....	19
TERMINATION FOR DEFAULT.....	20
TERMINATION FOR NATIONAL EMERGENCIES	21
ASPA'S RIGHT TO RE-CONTRACT WORK.....	21
SUSPENSION OF THE WORK	21
EXAMINATION OF EXISTING FACILITIES.....	22
DIFFERING SITE CONDITIONS	22
UNFORSEEN DELAYS.....	22
FAILURE TO COMPLETE THE WORK IN THE TIME AGREED UPON	23
DISPUTES	23
JURISDICTION	24
OTHER CONTRACTS.....	24
USE OF PREMISES.....	24
ENVIRONMENTAL CONTROLS.....	25
WATER POLLUTION CONTROLS	25
WASTE MATERIAL DISPOSAL	25
USE OF PREMISES.....	25
SUBSTANTIAL COMPLETION DATE.....	26
ASPA'S USE:	26
PAYMENT.....	26
GENERAL.....	26
GUARANTEE OF STRUCTURES	26
CONTRACTORS' AND MANUFACTURERS' COMPLIANCE WITH SAMOAN SAFETY, OSHA AND OTHER CODE REQUIREMENTS	27
SUBSTITUTION OF MATERIALS.....	27
MATERIALS AND EQUIPMENT OF FOREIGN MANUFACTURE	27
CORRECTION OF DEFECTIVE WORK AFTER FINAL ACCEPTANCE	27
RELEASE OF LIENS AND CLAIMS	28
FINAL PAYMENT.....	28
NO WAIVER OF RIGHTS.....	29
MEASUREMENT DEFINITIONS.....	29
THIRD PARTY BENEFICIARY	29
PROHIBITION AGAINST INTEREST IN THIS CONTRACT.....	29
FORCE MAJEURE	30
NOTICES	30
MISCELLANEOUS	31
ASSIGNMENT.....	31
AMENDMENTS	31
RELATIONSHIP OF THE PARTIES	31
ENTIRE AGREEMENT.....	31
SEVERABILITY.....	31
SECTION HEADINGS, NUMBERS AND LETTERS	31
FURTHER ASSURANCES.....	31
EXECUTION IN COUNTERPARTS	31
WAIVER.....	31
AUTHORITY.....	32
CONFLICTS	32
SUPPLEMENTARY CONDITIONS.....	33
GENERAL FEDERAL DAVIS-BACON WAGES	33
SECTION 01010 - SUMMARY OF WORK	41
PART 1 – GENERAL	41

<i>GENERAL PROVISIONS</i>	41
<i>GENERAL INTENTION</i>	41
<i>CONTRACT</i>	41
<i>SEQUENCE</i>	41
<i>COOPERATION, COORDINATION, SUPERVISION, SCHEDULING</i>	41
SECTION 01070-CUTTING AND PATCHING	42
PART 1 - GENERAL.....	42
<i>GENERAL PROVISIONS</i>	42
<i>QUALITY ASSURANCE</i>	42
<i>SUBMITTALS</i>	42
PART 2-PRODUCTS	42
<i>MATERIALS</i>	42
<i>PAYMENT COSTS</i>	42
PART 3-EXECUTION	42
<i>CONDITIONS</i>	43
<i>PREPARATION PRIOR TO CUTTING</i>	43
<i>PERFORMANCE</i>	43
SECTION 01085 APPLICABLE STANDARDS	44
PART 1-GENERAL	44
<i>GENERAL PROVISIONS</i>	44
<i>DESCRIPTION</i>	44
<i>QUALITY ASSURANCE</i>	44
SECTION 01200– PROJECT MEETINGS	45
PART 1 – GENERAL	45
<i>GENERAL PROVISIONS</i>	45
<i>DESCRIPTION</i>	45
<i>QUALITY ASSURANCE</i>	45
<i>SUBMITTALS</i>	45
PART 3 – EXECUTION	45
<i>MEETING SCHEDULE</i>	45
<i>MEETING LOCATION</i>	45
<i>PRE-CONSTRUCTION MEETING</i>	45
<i>PROJECT MEETINGS</i>	46
SECTION 01300– SUBMITTALS AND SUBSTITUTIONS.....	47
PART 1 – GENERAL	47
<i>GENERAL PROVISIONS</i>	47
<i>DESCRIPTION</i>	47
<i>QUALITY ASSURANCE</i>	47
<i>SUBMITTALS</i>	48
PART 2 – PRODUCTS.....	48
<i>SUBMITTAL SCHEDULE</i>	48
<i>SHOP DRAWINGS AND COORDINATION DRAWINGS</i>	48
<i>MANUFACTURER’S LITERATURE</i>	49
<i>SAMPLES</i>	49
<i>COLORS AND PATTERNS</i>	49
<i>SUBSTITUTIONS</i>	49
PART 3 – EXECUTION.....	50
<i>IDENTIFICATION OF SUBMITTALS</i>	50
<i>COORDINATION OF SUBMITTALS</i>	50
<i>TIMING OF SUBMITTALS</i>	50
<i>ENGINEER/ENGINEER’S REVIEW</i>	50

SECTION 01310–CONSTRUCTION SCHEDULE.....	52
PART 1 – GENERAL	52
GENERAL PROVISIONS.....	52
DESCRIPTION	52
QUALITY ASSURANCE.....	52
SUBMITTALS	53
PART 2 – PRODUCTS	53
CONSTRUCTION ANALYSIS.....	53
MATERIALS STATUS REPORT	54
PART 3 – EXECUTION.....	55
PRELIMINARY ANALYSIS	55
CONSTRUCTION SCHEDULE.....	55
MATERIALS STATUS REPORT.....	55
PERIODIC REPORTS	55
SECTION 01500– TEMPORARY FACILITIES AND CONTROL.....	57
PART 1 – GENERAL	57
GENERAL PROVISIONS.....	57
DESCRIPTION	57
PRODUCT HANDLING	57
JOB CONDITIONS.....	57
PART 2 – PRODUCTS	57
UTILITIES.....	57
CONTRACTOR’S FACILITIES	58
ENCLOSURES.....	58
PROJECT SIGNS.....	58
FENCING OF THE CONSTRUCTION AREA.....	58
PART 3 - EXECUTION.....	59
MAINTENANCE AND REMOVAL	59
SECTION 01710– CLEANING.....	60
PART 1 - GENERAL.....	60
GENERAL PROVISIONS.....	60
DESCRIPTION	60
QUALITY ASSURANCE.....	60
PART 2 – PRODUCTS	60
CLEANING MATERIALS AND EQUIPMENT	60
COMPATIBILITY.....	60
PART 3 – EXECUTION.....	60
PROGRESS CLEANING.....	60
FINAL CLEANING	61
SECTION 02220- EXCAVATING, FILLING, AND GRADING	63
PART 1 GENERAL	63
GENERAL PROVISIONS.....	63
DESCRIPTION	63
JOB CONDITIONS.....	63
PART 2 PRODUCTS.....	63
FILL MATERIAL – GENERAL.....	63
FILL MATERIAL.....	63
PART 3 EXECUTION.....	64
GENERAL.....	64
FINISH EXCAVATION AND LINES.....	64
EXCAVATING.....	64
PREPARATION OF SUBGRADE.....	64

EXCESS WATER CONTROL.....	65
FILL AND COMPACTION.....	65
GRADING.....	66
EXCAVATING FOR FOOTINGS.....	66
PLACING OF GRANULAR CUSHION.....	66
TRENCHING.....	66
FOUNDATIONS FOR PIPES.....	67
BEDDING FOR PIPES.....	68
BACKFILL FOR PIPES.....	68
EXCAVATION, TRENCHING AND BACKFILL FOR PIPELINES.....	69
PART 1 – GENERAL.....	69
SUMMARY.....	69
REFERENCES.....	69
DEFINITIONS.....	69
SUBMITTALS.....	70
QUALITY ASSURANCE.....	70
PART 2 – PRODUCTS.....	71
BEDDING, HAUNCHING AND INITIAL BACKFILL MATERIAL.....	71
FINAL BACKFILL MATERIAL.....	71
SLURRY MIX.....	71
PART 3 EXECUTION.....	71
GENERAL.....	72
EXCAVATION.....	72
TRENCHING.....	72
BEDDING.....	73
HAUNCHING AND INITIAL BACKFILL.....	73
FINAL BACKFILL.....	74
REMOVAL OF NUISANCE WATER.....	75
LOCATE EXISTING UTILITIES.....	75
UTILITY CONFLICTS.....	75
WATER DISTRIBUTION MAINS.....	77
PART 1 – GENERAL.....	77
SECTION INCLUDES.....	77
RELATED SECTIONS.....	77
REFERENCES.....	77
SUBMITTALS.....	78
DEFINITIONS.....	78
QUALITY ASSURANCE.....	79
DELIVERY, STORAGE, AND HANDLING.....	79
ACCEPTANCE.....	79
PART 2 – PRODUCTS.....	79
WATER PIPE.....	79
GATE VALVES.....	80
BUTTERFLY VALVES.....	80
COMBINATION AIR/VACUUM RELIEF VALVE.....	80
GATE VALVE BOX.....	80
FIRE HYDRANT.....	80
FLUSH HYDRANT.....	81
BLOW-OFF HYDRANT.....	81
WARNING TAPE.....	82
AIR RELEASE VALVE ASSEMBLIES.....	82
COMBINATION AIR VALVE.....	82
STEEL PIPE ENCASEMENT.....	82
TRACER WIRE AND BOX.....	82

<i>ACCESSORIES</i>	82
PART 3 – EXECUTION	82
<i>EXAMINATION</i>	83
<i>DELIVERY, STORAGE AND HANDLING</i>	83
<i>PREPARATION</i>	83
<i>BEDDING</i>	83
<i>INSTALLATION - WATER MAIN</i>	83
<i>VALVE, VALVE BOX AND MARKER INSTALLATION</i>	85
<i>FIRE HYDRANT INSTALLATION</i>	86
<i>FLUSH HYDRANT INSTALLATION</i>	86
<i>WARNING TAPE INSTALATION</i>	86
<i>PIPELINE MARKER POST INSTALLATION</i>	86
<i>PRESSURE AND LEAKAGE TESTING</i>	86
<i>FLUSHING WATER MAINS</i>	88
<i>DISINFECTION OF WATER MAINS</i>	88
<i>TRACING WIRE INSTALLATION</i>	90
<i>CONNECTION TO EXISTING WATER MAINS</i>	90
VALVES, FITTINGS AND APPURTENANCES	92
PART 1 GENERAL	92
<i>SCOPE OF WORK</i>	92
<i>SUBMITTAL REQUIREMENTS</i>	92
<i>OPERATING AND MAINTENANCE INSTRUCTIONS</i>	92
PART 2 MATERIALS	92
<i>GENERAL</i>	92
<i>GATE VALVES</i>	93
<i>CHECK VALVES</i>	93
<i>SERVICE SADDLES</i>	93
<i>CORPORATION STOPS</i>	94
<i>VALVE BOXES</i>	94
<i>WATER METERS</i>	94
<i>FIRE HYDRANTS</i>	94
<i>METER BOXES</i>	95
<i>BACTERIOLOGICAL SAMPLING STATION</i>	95
PART 3 PERFORMANCE	95
<i>INSTALLATION OF VALVES, GATES, AND METERS</i>	95
<i>INSTALLATION OF VALVE BOXES</i>	95
<i>INSTALLATION OF TAPPING SLEEVES AND SERVICE SADDLES</i>	95
<i>INSTALLATION OF FIRE HYDRANTS</i>	96
GALVANIZED GABION (TERRA AQUA “OR APPROVED EQUAL)	97
<i>SCOPE:</i>	97
<i>DEFINITION:</i>	97
<i>FABRICATION:</i>	97
<i>MESH FORMATION:</i>	97
<i>NON-RAVELING:</i>	97
<i>GABION FILL:</i>	98
<i>ASSEMBLING AND PLACING:</i>	98
<i>TOLERANCES:</i>	98
<i>MINIMUM STRENGTH REQUIREMENTS OF TERRA AQUA DOUBLE TWISTED MESH GABIONS</i>	98
<i>MATERIAL DATA:</i>	98
<i>ROCK FOR GABION WALL</i>	99

GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

DEFINITIONS

Contract contains legally binding provisions governing the Contractor and the Contractor's work during the construction and warranty period. Certain definitions pertaining to measurements and measurement quantities are set forth in a separate section below. Wherever in the Contract Documents the following terms are used, the intent and meaning shall be interpreted as follows:

ABBREVIATIONS

Whenever in these Contract Documents the following abbreviations are used, the intent and meaning shall be interpreted as follows:

“AASHTO” means the American Association of State Highway and Transportation Officials.

“ACI” means the American Concrete Institute.

“AISC” means the American Iron and Steel Construction.

“AISI” means the American Iron and Steel Institute.

“ANSI” means the American National Standards Institute.

“API” means the American Petroleum Institute.

“ASCE” means the American Society of Civil Engineers.

“ASME” means the American Society of Mechanical Engineers.

“ASTM” means the American Society for Testing Materials.

“AWS” means the American Water Society.

“AWWA” means the American Water Works Association.

“FED. SPEC.” means the Federal Specifications.

“IEEE” means the Institute Of Electrical and Electrical Engineers, Inc.

“NEC” means the National Electrical Code.

“NEMA” means the National Electrical Manufacturers' Association.

“NESC” means the National Electric Safety Code.

“NEPA” National Fire Protection Association.

“OSHA” means the Occupational Safety and Health Act (Federal And State)

“SSPC” means the Steel Structures Painting Council.

“UBC” means the Uniform Building Code.

“UL” means the Underwriters' Laboratories, Inc

“AS APPROVED,” unless otherwise qualified, shall be understood to be followed by the words “by the Engineer and/or the Procurement Manager.”

“AS SHOWN,” AND “AS INDICATED” shall be understood to be followed by the words “on the technical specifications or drawings.”

“BIDDER” means the person or persons, partnership, firm, or corporation that submitted a proposal or bid for the work contemplated under the IFB.

“CONTRACT” means the written agreement governing the performance of the work and the furnishing of labor, materials, incidental services, tools and equipment in the construction of the work. It includes supplemental agreements amending or extending the work contemplated and which may be required to complete the work in a substantial and acceptable manner. Supplemental agreements are written agreements covering alterations, amendments or extensions to the contract and include contract change orders.

“CONTRACT DOCUMENTS” has the same meaning as set forth in Section 4 of the instruction to bidders.

“CONTACTOR” means the person or persons, partnership, firm or corporation who enters into the contract awarded to it by the American Samoa Power Authority pursuant to a solicitation.

“CONTRACTING OFFICER,” means the ASPA Procurement Manager.

“DAYS,” unless otherwise specifically stated, will be understood to mean calendar days.

“ENGINEER” means the ASPA engineer, whose decisions concerning the acceptability of material and work shall be final.

“GOVERNMENT,” OR “ASG” means the American Samoa Government.

“NOTICE”, or the requirement to notify means a written communication delivered in person or by certified or registered mail to the individual, or to a member of the firm, or to an officer of the corporation for whom it is intended. Certified or registered mail shall be addressed to the last business address known to he/she who gives the notice

“OR EQUAL,” shall be understood to indicate that the “equal” product is the same or better than the product named in function, performance, reliability, quality and general configuration. Determination of equality in reference to the project design requirements will be made by the engineer. Such “equal” products shall not be purchased or installed by the Contractor without the engineer’s written approval.

“OWNER” means the American Samoa Power Authority.

“PLANS” means the drawings, plans, profiles, cross sections, elevations, details and other supplementary drawings or reproductions thereof, signed by the engineer, which show the location, character, dimensions and details of the work to be performed. Plans may either be bound in the same book as the balance of the contract documents or bound in separate sets and are a part of the contract documents, regardless of the method of binding.

“SPECIFICATIONS” means the terms, provisions and requirements contained herein. Where standard specifications, such as those of ASTM, ASSHTO, etc., have been referred to, the applicable portions of such standard specifications shall become a part of these contract documents.

“SUBSTANTIAL COMPLETION,” means that degree of completion of the project or a defined portion of the project, sufficient to provide ASPA, at its discretion, the full-time use of the project or defined portion of the project for the purposes for which it was intended.

“WORK,” means all material, labor, tools and all appliance, machinery, transportation and appurtenances necessary to perform and complete the contract, and such additional items not specifically indicated or described which can be reasonably inferred as belonging to the item described or indicated as required by good practice to provide a complete and satisfactory system or structure. as used herein, “provide” shall be understood to mean “provide complete in-place”, that is, “furnish and install”.

"WORK SITE," means the location of at which the Contractor, including but not limited to the Contractor's employees, performs the tasks and responsibilities related to the completion of the contract.

CONTRACT DOCUMENTS

INTENT

The contract documents are complementary, and what is called of by one shall be as binding as if called for by all. The intent of the contract documents is to include all work (except specific items to be furnished by the ASPA) necessary for completion of the contract. Materials or work described in words which so applied have a well-known technical and trade meaning shall be held to refer to such recognized standards. Any discrepancies or omissions found in the contract documents shall be reported to the engineer immediately. The engineer will clarify discrepancies or omissions, in writing within a reasonable time.

ALTERATION

This contract may be amended at any time during the term hereof, with or without additional consideration, provided, however, no amendments or other variation of this contract shall be valid unless in writing and signed by the Contractor and ASPA. ASPA, without invalidating the contract, may order changed in the work within the general scope of the contract by altering, adding to, or deducting from the work, the contract being adjusted accordingly. All such work shall be executed under the conditions of the original contract, except as specifically adjusted at the time of ordering such change. In giving instructions, the engineer may order minor changes in the work not involving extra cost and not inconsistent with the purposes of the project, but otherwise, except in an emergency endangering life or property, additions or deductions from the work shall be performed only in pursuance of an approved changed order from ASPA, signed by ASPA's chief executive officer. If the work is reduced by alterations, such action shall not constitute a claim for damages based on loss anticipated profits.

VERBAL STATEMENT AND AGREEMENTS

No oral statements of any person whosoever shall in any manner or degree, modify or otherwise affect the terms of the contract. The Contractor is advised that ASPA assumes no responsibility for any of its officers or agents prior to the execution of this contract, unless such understandings or representations by ASPA are expressly stated in writing in this contract. The Contractor shall thoroughly examine and become familiar with all of the various parts of the contract documents and determine the nature and location of the work, the general and local conditions, all other matters which can in any way affect the work under this contract. Failure to make an examination necessary for this determination shall not release the Contractor from the obligations of this contract. The Contractor warrants that no verbal agreement or conversation with any officer, agent, or employee of ASPA, or with the engineer either before or after the

execution of this contract, has affected or modified any of the terms or obligations herein contained.

DOCUMENTS TO BE KEPT ON THE JOB SITE

The Contractor shall keep one copy of the contract documents on the job site, in good order, available to the engineer and to his representatives. The Contractor shall maintain on the job site, and make available to the engineer upon request, one current marked up set of the drawings that accurately indicate all approved variations in the completed work. This set of marked up drawings shall be used by the Contractor along with field notes and other appropriate data for the preparation of the final "as built" drawings.

OWNERSHIP OF DRAWINGS

All plans, drawings, technical specifications and copies thereof furnished by the engineer are his property. They are not to be used in other work and, with the exception of the signed contract set, are to be returned to him/her on request at the completion of the work. Any reuse of these materials without specific written verification or adaptation by the engineer will be at the risk of the user and without liability or legal expense to the engineer or the project's design firm.

DUTIES OF CONTRACTOR

Within the term provided, and in accordance with the provisions of this Contract, the Contractor shall faithfully and competently be responsible for accomplishing the duties and tasks (the "Work") as set forth in the Contract Documents.

SUPERCEDURE

If the contract is preceded by a letter of dispatch of intent, a notice of award, or a notice to proceed, anticipating the execution of the contract, then such aforementioned letter, dispatch, notice, or directive and all rights and obligations of the parties there under are superseded and merged into the contract. All acts of the Contractor and ASPA under said letter, dispatch, notice, or directive shall be deemed to have been under the contract. The American Samoa power authority ("ASPA") will make no payment under the award until the formal contract has been prepared and executed by ASPA and the Contractor.

REPRESENTATIONS

In order to induce ASPA to enter into this contract, Contractor makes the following representation(s): Contractor has familiarized itself with the nature and the extent of the contract documents, work site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance, or furnishing of the work. Contractor is duly licensed to perform the work as required by local laws and regulations.

CONTRACTOR'S LOCAL ADDRESS

The Contractor must provide and maintain a post office address within the territory of American Samoa and file the same with the engineer. Any written notice that is required or desirable shall be served on the Contractor personally, delivered to his representative on the site, left at the last known place of residence or business of the Contractor, and/or sent through the mails to previously mentioned local post office address. All notices addressed in compliance with the said directions of the Contractor and properly mailed shall become effective when so mailed or at the time of delivery by any of the above methods.

CONTRACTOR COMPOSITION

The term "Contractor," whenever used herein, refers to and means the parties or party (individual, co-partnership, corporation or joint-venture) who or which shall have duly entered into a contract with ASPA to perform the work described in the contract documents. If the Contractor hereunder is comprised of more than one legal entity, Contractor expressly agrees that each such entity shall be jointly and severally liable hereunder. Within thirty (30) days after receipt of notice to proceed or award of contract, the Contractor shall provide the engineer with a copy of any supplemental documents, which set forth in detail exactly how the contract will be sponsored, managed and controlled. The Contractor shall also provide, on or before this time, power(s) of attorney or other acceptable documents that attest to the authority and right of designated representatives to commit and sign documents for the Contractor.

CONTRACTOR STATUS

It is agreed that the Contractor shall be an independent contractor of ASPA in the performance of this contract. The relationship of the parties hereto shall in no event be deemed or construed to be that of employer and employee of principal and agent, or of any other relationship other than the Contractor as an independent Contractor.

ASSIGNMENT

Neither party to the contract shall assign the contract or sublet it as a whole, without the written consent of the other, nor shall the Contractor assign any monies due or to become due to it hereunder without the previous written consent of ASPA.

SUBCONTRACTORS

The Contractor agrees that it shall fully indemnify and hold harmless ASPA for the acts and/or omissions of its subcontractors, and of persons either directly or indirectly employed by such subcontractors. Nothing contained in the contract documents shall create any contractual relationship between any subcontractor and ASPA. ASPA shall not be liable to or pay any subcontractor for Contractor's failure to pay said subcontractor.

COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure the contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bonafide employees or bonafide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, ASPA shall have the right to annul this contract without liability or, at its discretion, to deduct from the contract price of considerations, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

PROHIBITED INTEREST

No official of ASPA who is authorized in such capacity and on behalf of ASPA to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction, or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly integrated personally in this contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for ASPA who is authorized in such capacity and on behalf of ASPA to exercise any legislative, executive, supervisory, or other similar functions in

connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply Contractor, subcontract, insurance contract, or any other contract pertaining to the project.

KICKBACKS PROHIBITED

ASPA may, by written notice to the Contractor, terminate the contract for cause if ASPA finds that any payment, gratuity (in the form of entertainment, gifts, or otherwise), or offer of employment was made by or on behalf of the Contractor to any ASPA employee, his/her representatives, family members, partners or assigns, any employee of the united states, any employee of the American Samoa government, including members of the FONO of American Samoa; with a view toward securing an agreement or securing favorable treatment with respect to obtaining or performance of this contract in the event that ASPA terminates the contract under this subsection, ASPA shall be entitled to:

Pursue the same remedies against the Contractor which ASPA could pursue in the event of a breach of contract by the Contractor; and

Recover the full amount of such payment gratuity from the person so employed by ASPA.

The rights and remedies of ASPA provided for in this subsection shall not be exclusive and are in addition to any other rights and remedies provided by law or under the Contract Documents.

COVENANT AGAINST COLLUSION

The Contractor warrants that neither it nor any of its employees have directly or indirectly entered into any secret or non-secret agreement, participated in any collusion, or otherwise taken any action in restraint of competition in connection with the bid or proposal submitted. For breach or violation of this warranty, ASPA shall have the right to annul this Contract without liability or in its discretion to pursue the same remedies against the Contractor that ASPA could pursue in the event of breach of contract by the Contractor, and as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages.

REPORTS, RECORDS, DATA AND DRAWINGS

The Contractor shall submit to ASPA such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as ASPA may request concerning work performed or to be performed under the contract. The Contractor shall submit to ASPA an electronic copy of "as built" drawings either in AutoCAD 2010 at the end of the construction period. These drawings shall represent a complete and accurate record of the actual work accomplished and shall be based upon first hand observations by the project superintendent or his designated representative. A detailed survey of all in-place structures shall be conducted and this data incorporated into said drawings. The Contractor shall include the following items in the "as built" drawings:

Project location and site (community and project description and number);

Name of project engineer, inspector and Contractor;

North arrow and scale;

Legend;

Requests for partial payments will not be approved if a set of marked drawings are not kept current, and request for final payment will not be approved until the drawings are delivered to the Engineer.

The Contractor agrees that ASPA, the Comptroller General of the United States, or the Secretary of the Interior, or any of their duly authorized agents or representatives, shall, until the expiration of three years after final payment under the Contract shall have access to and the right to examine any directly pertinent books, document, papers, and records of the Contractor involving transactions related to the Contract.

The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that ASPA, the Comptroller General of the United States, or the Secretary of the Interior, or any of their duly authorized agents or representatives, shall, until the expiration of three years after final payment under the subcontract, shall have access to and the right to examine any directly pertinent book, documents, papers and records of such subcontractor, involving transactions related to the Contract.

INSURANCE

The Contractor shall obtain the insurance coverage designated herein and pay all costs associated therewith. Such insurance shall be for the coverage, amounts and limits as set forth in subsection below. Before commencing the Work under the Agreement, the Contractor shall furnish ASPA with certificates of insurance showing the type, amount, class of operations covered, effective dates and date of expiration of policies. The Contractor's public/general liability and automobile liability policies shall name ASPA as an additional insured. The Contractor's insurance shall be maintained for the full period of this Agreement.

In the case of a breach of any provision of this section, ASPA, at its option, may take out and maintain, at the expense of the Contractor, such insurance as ASPA may deem proper and may charge the Contractor with such amounts due. Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's responsibility for payments of damages resulting from its operations under this Agreement.

Requirements:

The Contractor shall maintain during the term of this Agreement such insurance as follows:

1. Workmen's Compensation. The Contractor shall maintain such statutory amounts of workmen's compensation insurance as are set forth in the American Samoa Code Annotated and American Samoa Administrative Code.
2. Employer's Liability. The Contractor shall maintain employer's liability insurance in the amount of Five Hundred Thousand Dollars (\$500,000.00 USD).
3. Public/General Liability. Public/General liability shall include coverage for wrongful death claims, and shall not exclude coverage for explosion, collapse or underground exposure.
4. Bodily/personal injury. The Contractor shall maintain public/general liability insurance covering third party bodily/personal injury for Five Hundred Thousand Dollars (\$500,000.00 USD) per person/per occurrence with an aggregate of One Million Dollars (\$1,000,000.00 USD).

5. Property damage. The Contractor shall maintain public/general liability insurance covering property damage for One Hundred Thousand Dollars (\$100,000.00 USD) per person/per occurrence with an aggregate of Two Hundred Thousand Dollars (\$200,000.00 USD).
6. Automobile Liability
 - i. Bodily/personal injury. The Contractor shall maintain automobile liability insurance covering third party bodily/personal injury for Five Hundred Thousand Dollars (\$500,000.00 USD). Per person/per occurrence with an aggregate of One Millions Dollars (\$1,000,000.00 USD).
 - ii. Property damage. The Contractor shall maintain automobile liability insurance covering property damage for One Hundred Thousand Dollars (\$100,000.00 USD) per person/per occurrence with an aggregate of Two Hundred Thousand Dollars (\$200,000.00 USD).
7. Builder's Risk Insurance. Unless otherwise modified in the Supplementary Conditions, the Contractor shall secure and maintain during the life of the Contract Builders Risk Insurance coverage for 100 percent of the Contract amount. Such insurance shall not exclude coverage for earthquake, landslide, flood, collapse, or loss due to the results of faulty workmanship, and shall provide for losses to be paid to the Contractor and ASPA as their interests may appear.

The above policies shall protect the Contractor from claims for damages for personal injury, including accidental death, as well as from claims for direct property damage, which may arise from negligent operations under this Agreement, whether such operations are by itself or by ASPA employees.

When the construction is to be accomplished within a public or private right-of-way requiring special insurance coverage, the Contractor shall conform to the particular requirements and provide the required insurance. The Contractor shall include in his liability policy all endorsements that the said authority may require for the protection of the authority, its officers, agents and employees. Insurance coverage for special conditions, when required, shall be provided as set forth in the Supplementary Conditions.

INDEMNITY

The Contractor shall indemnify, defend and hold harmless ASPA, its directors, officers, employees and agents from and against any and all claims and demand whatsoever, including costs and attorney's fees, resulting from Contractor's negligent acts or omissions, or any other tortuous conduct, in connection with performance of this Contract, Contractor shall indemnify, defend and hold harmless ASPA, its directors, officers, employees and agents from and against any and all claims and demands whatsoever, including costs and attorneys fees, under the doctrine of strict liability as it may be applied by a court of competent jurisdiction to Contractor's performance under this Contract.

PAYMENT OF TAXES

The Contractor shall pay and shall assume exclusive liability for all taxes levied or assessed on or in connection with its performance of the Contract, whether before or after acceptance of the work, including but not limited to federal payroll taxes or assessments, and Government of

American Samoa income and excise taxes. The Contractor may be required to show that all taxes due or accrued to American Samoa have been paid or guaranteed before leaving American Samoa.

LAW, PERMITS AND LICENSES

The Contractor shall keep itself fully informed of all local and federal laws and regulations that affect in any manner the work set forth in the Contract Documents. The Contractor shall at all times comply with said laws and regulation, and protect and indemnify ASPA, its directors, officers, agents, representatives, and employees against any claim or liability arising from or based on the violation of any such laws or regulations. All permits licenses and inspection fees necessary for prosecution and completions of the work shall be secured and paid for by the Contractor, unless otherwise specified.

SUPERINTENDENT

During the term of the Contract, the Contractor shall keep English speaking, competent supervisory personnel. The Contractor shall designate in writing, before starting work, an authorized representative acceptable to the Engineer who shall have complete authority to represent and act for the Contractor. The residential address and telephone number of the authorized representative shall be made available to the Engineer for emergency communication during off-hours. The Contractor shall give efficient supervision to the work, using his best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques and procedures, and for providing adequate safety precautions and coordinating all portions of the work under the Contract.

ENGINEER'S FIELD OFFICE

Contractor shall provide, maintain, and subsequently remove as its property a field office as specified below, for the exclusive use of Engineer and its representatives.

Engineer's field office, equipped as specified below, shall be available for Engineer's use prior to the start of work at project site, and shall remain on the site for 30 days after final acceptance of all work. The field office shall be located where directed by the Engineer; leveled, blocked, tied down, and skirted as directed; and, relocated, when necessary, and approved.

Contractor shall maintain field office in good repair and acceptable appearance. Provide daily cleaning service, maintenance, and replenishment, as applicable, of paper towels, paper cups, soap, tissue paper, and bottled water service.

Provide gravel or crushed rock under and around the field office to a minimum distance of 10 feet. Provide sanitary facilities in compliance with local health authorities.

Field office shall be trailer-type mobile structure or approved equal with the following features and equipment, new or like new in appearance and function:

Security guard screens on all windows.

Toilet and washbasin in separate compartments

Insulated double walls, floor, and roof.

Self-contained, window air conditioner.

Fluorescent ceiling lights.

ENGINEER'S DIRECTION

The superintendent or other duly authorized representative of the Contractor shall represent the Contractor in all directions given to the Contractor by the Engineer. Directions of major importance will be confirmed in writing. Any direction will be so confirmed, in each case, on written request from the Contractor.

EMPLOYEES

The Contractor shall employ American Samoa labor to the fullest extent possible. It shall be responsible for hiring its own labor. It shall be the responsibility of the Contractor to ascertain that any foreign recruitment complies in full with all applicable laws may subject it to termination of the Contract for cause or withholding of amounts payable to the Contractor. The Contractor shall employ only competent, skillful workers to do the work, and whenever any person shall appear to be incompetent or to act in a disorderly or improper manner; such person shall be removed from the work. Such removal shall not be the basis of any claim for compensation of damage against ASPA. In connection with the performance of work under his Contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor. Contractor shall, at all times, provide competent, suitable personnel to survey and layout the work and perform construction as required by the Contract. Contractor shall at all times maintaining proper discipline and order at the work site.

DISCREPANCY WITH LOCAL OR FEDERAL LAW

If any discrepancy or inconsistency is discovered between any provision of the Contract Documents and any law, ordinance, regulation, order decree of the American Samoa or United States government, the Contractor shall forthwith report the same to the Engineer in writing. The Contractor shall at times observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees, and shall protect and indemnify ASPA, its directors, officers, agents, representatives and employees against any claim or liability arising from or based upon the violation of any such law, ordinance, regulation, order or decree, whether by the Contractor or by its employees. Particular attention is called to prevailing wage and overtime compensation.

HOURS OF WORK

The Contractor shall schedule all work to be performed during the period from 6:00 a.m. to 6:00 p.m., Monday through Friday and, if permitted, on Saturday. No work will be permitted on Sunday or holidays without specific approval of ASPA. The Contractor may be permitted to work at night, if it can satisfactorily demonstrate the need, in order to maintain the required progress or protect the work from the elements. If permitted to work at night, the Contractor shall provide sufficient and satisfactory lighting and other facilities therefore. For night work, if any be performed, the Contractor shall receive no extra payment, but compensation shall be considered as having been included in the price stipulated for the work. The Contractor shall, however, be charged for such additional inspection and administrative costs as ASPA may incur.

EQUAL OPPORTUNITY

This subsection is applicable unless the Contract is exempt under the rules, regulations, and relevant orders of the Secretary of Labor (41CFR, ch. 60). During the performance of the Contract, the Contractor agrees as follows:

The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and election for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Engineer setting forth the provisions of this subsection.

The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Engineer, advising the labor union or workers' representative of the Contractor's commitments under this subsection, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and of the rules, regulations, and relevant orders of the Secretary of Labor.

The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

- A. In the event of the Contractor's noncompliance with this subsection, or with any of the said rules, regulations, orders, the Contract may be cancelled, terminated, or suspended, in all or in part, and the Contractor may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- B. The Contractor will include the provisions of this subsection in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the government may direct as a means of enforcing such provisions, including sanctions for noncompliance.

SAFETY REQUIREMENTS

The Contractor shall be solely and completely responsible for safety conditions on the site where work is to be performed, including that safety of all persons and property during the term of the Contract. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to United States Department of Labor, Occupational Safety, and

Health Act (“OSHA”) and other applicable laws. Contractor shall become thoroughly familiar with governing safety provisions and shall comply with the obligations set forth therein. Contractor shall develop and maintain for the duration of the Contract, a safety program that will effectively incorporate and implement required safety provisions. Contractor shall appoint a qualified employee who is authorized to supervise and enforce compliance with the safety program. The Engineer’s duty to conduct construction review of the Contractor’s performance is not intended to include a review or approval of the adequacy of Contractor’s safety supervisor, safety program, or safety measures taken in, on, or near the construction site.

As part of the safety program, Contractor shall maintain at its office or other well-known place at the site of the work, safety equipment applicable to the work as prescribed by the governing safety authorities and articles necessary for giving first-aid to the injured. Contractor shall do all work necessary to protect the general public from hazards, including, but not limited to, surface irregularities and/or unramped grade changes in pedestrian sidewalk or walkway, and trenches or excavations in roadway. Barricades, lanterns, and proper signs shall be furnished in sufficient amount to safeguard the public and the work. Contractor shall construct and maintain satisfactory and substantial temporary chain link fencing, solid fencing, railing, barricades or steel plates, as applicable, at all openings, obstructions, or other hazards in streets, sidewalks, floors, roofs, and walkways. Such barriers shall have adequate warning lights as necessary or required for safety. The Contractor shall comply with Owner’s safety rules while on the Owner’s property.

If death or serious injuries or damages are caused, the accident shall be reported immediately by telephone or messenger to the Engineer. In addition, Contractor shall promptly report to ASPA in writing 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 claim is made by anyone against the Contractor or any subcontractor on account of accident, Contractor shall promptly report the claim to ASPA in writing, giving full details of the claim.

The Contractor’s tools and equipment used on the work shall be furnished in sufficient quantity and of a capacity and type that will safely perform the work specified, and shall be maintained and used in a manner that will not create a hazard to person or property, or cause a delay in the progress of work.

The Contractor will comply with the rules and regulations of the Territory authorities regarding closing or restricting the use of public streets or highways. No public or private road shall be closed, except by written permission of the proper authority. The Contractor will make every effort to avoid obstruction to traffic and normal commercial pursuits. Where traffic will pass over backfilled trenches before they are paved, the Contractor will maintain the top of the trench to allow normal vehicular traffic to pass over and provide temporary access driveways when required. Contractor agrees that its cleanup operations shall follow immediately after backfilling. When flagmen and guards are required by regulation or when deemed necessary for safety, the Contractor will furnish them with appropriate apparel and other traffic control devices. Traffic control procedures and devices used on all rights-of-way shall meet the requirements of the applicable current laws and regulations for traffic control. Contractor will notify the fire and police departments before closing any street or portion thereof and notify said departments when the streets are again passable for emergency vehicles. The Contractor shall leave it night emergency telephone number or numbers with the police department, so that

contact may be made easily at all times in case of barricade and flare trouble or other emergencies.

The Contractor shall perform all work in a fire safe manner. The Contractor shall furnish and maintain on site adequate firefighting equipment capable of extinguishing incipient fires. The Contractor shall comply with applicable American Samoa and United States fire prevention laws and regulations. Where these regulations do not apply, the Contractor agrees to follow the applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPS No.241).

PROTECTION OF WORK AND/OR PROPERTY

The Contractor shall at all times safely guard ASPA's property from damage or loss. The Contractor shall at all times safely guard and protect from damaging its own work. All loss or damages arising from any unforeseen obstruction or defects which may be encountered in the prosecution of the work, or from the action of the elements, shall be sustained by the Contractor.

MATERIALS AND WORKMANSHIP

Unless otherwise specified in the Contract Documents, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, supplies, transportation and other facilities or incidentals necessary for the furnishing, performance, testing, start-up, execution and completion of the work. Contractor shall additionally furnish all fuel, power, light, telephone, water sanitary facilities, temporary facilities, and any other facilities or incidentals necessary for the furnishing, performance, testing, start-up, execution and completion of the work. Unless otherwise specified in the Contract Documents, all materials shall be new, and both workmanship and materials shall be of good quality. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the applicable supplier or industry standards. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials. All work shall be done and completed in a thoroughly workmanlike manner notwithstanding any omission from the Technical Specifications or the Drawings, and it shall be the duty of the Contractor to call the Engineer's attention to apparent errors or omissions and request instructions before proceeding with the work. All work performed by the Contractor after it learns or should have learned of an error or omission in the Technical Specifications or Drawings without notifying the Engineer will be at the Contractor's own expense. The Engineer may, by appropriate instructions, correct errors and omissions, and these instructions shall be as binding upon the Contractor as though contained in the original Technical Specifications or Drawings. All defective work or materials shall be removed from the premises by the Contractor, whether in place or not, and shall be replaced or renewed as the Engineer may direct. All materials and workmanship of whatever description shall be subjected to the inspection of and rejection by, the Engineer if not in conformance with the Technical Specifications. Contractor shall repair or replace, at Contractor's sole expense, every portion of the work that is damaged or destroyed prior to the final completion of the work and caused in whole or in part by the acts or omissions of the Contractor.

PNRS CONDITIONS

The Contractor shall inform ASPA upon discovery of any historic artifacts or properties found at the construction site(s). Contractor must ensure that any excess dirt, cinder, spoils, concrete, pavement and/or drilling materials, must be properly disposed of. Any other uses of these

materials shall require a separate land use permit. Associated costs shall be borne by the Contractor and shall be incidental to the undertaking of the scope of this project. The Contractor shall make every effort to prevent soil erosion and the escape of debris to the ocean. The Contractor shall not leave the project site in condition that would cause soil erosion in the future. The Contractor shall identify a staging area acceptable to the ASPA and the PNRS. Any other work not within the scope of this project conducted at this site shall require a separate land use permit application.

THE ENGINEER

Authority of the Engineer

- A. The Engineer shall be ASPA's representative during the construction period. His authority and responsibility shall be limited to the provisions set forth in these Contract Documents. The Engineer shall have the authority to reject work and materials whenever such rejection may be necessary to ensure execution of the Contract in accordance with the intent of the Contract Documents.
- B. Duties and Responsibilities of the Engineer
- C. The Engineer will make periodic visits to the site of the project to observe the progress and quality of the work and to determine, in general, if the work is proceeding in accordance with the intent of the Contract Documents. He shall not be required to make comprehensive or continuous inspections to check quality or quantity of the work, and he shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work. Visits and observations made by the Engineer shall not relieve the Contractor of his obligation to conduct comprehensive inspections of the work and to furnish materials and perform acceptable work, and to provide adequate safety precautions in conformance with the intent of the Contract.
- D. The Engineer will make decisions, in writing, on all claims of ASPA or the Contractor arising from interpretation or execution of the Contract Documents. Such decision shall be necessary before the Contractor can receive additional money under the terms of the Contract. Changes in work ordered by the Engineer will be made in compliance with section entitled "Alterations."
- E. One or more inspectors may be assigned to observe the work and to act in matters of construction under this Contract. It is understood that such inspectors shall have the power to issue instructions and make decisions within the limitations of the authority of the Engineer. Such inspection shall not relieve the Contractor of his obligations to conduct comprehensive inspections of the work, and to provide adequate safety precautions in conformance with the intent of the Contract.

REJECTED MATERIAL

Any material condemned or rejected by the Engineer or his authorized inspector because of non conformity with the Contract Documents shall be removed at once from the vicinity of the work by the Contractor at his own expense, and the same shall not be used on the work.

UNNOTICED DEFECTS

Any defective work or material that may be discovered by the Engineer before the final acceptance of work, or before final payment has been made, or during the guarantee period, shall be removed and replaced by work and materials which shall conform to the provisions of the Contract Documents. Failure on the part of the Engineer to condemn or reject based on inferior work or materials shall make such deductions in the final payment therefore as may be just and reasonable.

RIGHT TO RETAIN IMPERFECT WORK

If any part or portion of the work done or material furnished under this Contract shall prove defective and not in accordance with the Technical Specifications and Drawings, and if the imperfection in the same shall not be of sufficient magnitude or importance as to make the work dangerous or unsuitable, or if the removal of such work will create conditions which are dangerous or undesirable, ASPA shall have the right and authority to retain such work but shall make such deductions in the final payment therefore as may be just and reasonable.

SHOP DRAWINGS

After execution of the Contract, the Contractor shall submit, in quadruplicate, to the Engineer for his review, such shop drawings, electrical diagrams, and catalog cuts for fabricated items and manufactured items (including satisfactory identification of items, units and assemblies in relation to the Drawings and Technical Specifications). Unless otherwise approved by the Engineer, shop drawings shall be submitted only by the Contractor, who shall indicate by a signed stamp on the shop drawings, or the other approved means, that the Contractor has checked the shop drawings, and that the work shown is in accordance with Contract requirements and has been checked for dimensions and relationship with work of all other trades involved. The practice of submitting incomplete or unchecked shop drawings for the Engineer too correct for finish will not be acceptable, and shop drawings which, in the opinion of the Engineer, clearly indicate that they have not been checked by the Contractor will be considered as non complying with the intent of the Contract Documents and will be returned to the Contractor for resubmission in the proper form.

When the shop drawings have been reviewed by the Engineer, two sets of submittals will be returned to the Contractor appropriately stamped. If major changes or corrections are necessary, the shop drawings may be rejected and one set will be returned to the Contractor with such changes or corrections indicated, and the Contractor shall correct and resubmit the shop drawings in quadruplicate, unless otherwise directed by the Engineer. No changes shall be made by the Contractor to resubmitted shop drawings other than those changes indicated by the Engineer.

The review of such shop drawings and catalog cuts by the Engineer shall not relieve the Contractor from responsibility for correctness of dimensions, fabrication details and space requirements, or for deviations from the Contract Drawings or Specification, unless the Contractor has called attention to such deviations in writing by a letter accompanying the shop drawings and the Engineer approves the change or deviation in writing at the time of submission; nor shall review by the Engineer relieve the Contractor from the responsibility for errors in the shop drawings. When the Contractor does call such deviations to the attention of the Engineer, the Contractor shall state in his letter whether or not such deviations involve any deduction or extra cost adjustment.

DETAILED DRAWINGS AND INSTRUCTIONS

The Engineer will furnish, with reasonable promptness, additional instructions by means of Drawings or otherwise, if, in the Engineer's opinion, such are required for the proper execution of the work. All such Drawings and instructions will be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom.

WARRANTY OF TITLE

No material, supplies, or equipment for the work shall be purchased subject to any chattel mortgage security agreement or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies and equipment installed or incorporated in the work and agrees upon completion of all work to deliver the premises together with all improvements and appurtenances constructed or placed thereon by it to ASPA free from any claim, lien, security interest, or charge and further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any work covered by the Contract shall have any right to a lien upon the premises or any improvements or appurtenances thereon, provided that this shall not preclude the Contractor from installing metering devices and other equipment of ASPA, the title of which is so commonly retained by ASPA. The provisions of this section shall be inserted by the Contractor into all subcontracts, and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

SUBSTITUTION OF MATERIALS

Except for ASPA-selected equipment items, and items where no substitution is clearly specified, whenever any material, article, device, product, fixture, form, type of construction, or process is indicated or specified by patent or proprietary name, by name of manufacturer, or by catalog number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the material or process desired. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other manufacturers where fully suitable in design. The Contractor may, in such cases, submit complete data to the Engineer, within thirty (30) days following the award of the Contract, for consideration of another material, type, or process which shall be substantially equal in every respect to that so indicated or specified. Substitute materials shall not be used unless approved by ASPA in writing. The Engineer will be the sole judge of the substituted article or material.

TESTS SAMPLES AND INSPECTIONS

The Contractor shall furnish, without extra charge, the necessary test pieces and samples, including facilities and labor for obtaining the same, as requested by the Engineer. When required, the Contractor shall furnish certificates of tests of materials and equipment made at the point of manufacture by a recognized testing laboratory. The Engineer, and authorized ASPA agents, and their representatives shall at all times be provided safe access to the work wherever it is in preparation or progress, and the Contractor shall provide facilities for such access and for inspection, including maintenance of temporary and permanent access. If the Technical Specifications, the Engineer's instructions, or any laws or regulations require any work to be specially tested or approved, the Contractor shall give timely notice of its readiness for inspection. Inspections to be conducted by the Engineer will be promptly made, and where practicable, at the source of supply. If any work should be covered up without approval or consent of the Engineer, it shall, if required by the Engineer, be uncovered for examination at the Contractor's expense. Re-examination of questioned work may be ordered by the Engineer, and,

if so ordered, the work shall be uncovered by the Contractor. If such work is found to be in accordance with the Contract Documents, ASPA will pay the cost of reexamination and replacement. If such work is found to be not in accordance with the Contract Documents, the Contractor shall correct the defective work, and the cost of reexamination and correction of the defective work shall be paid by the Contractor.

ROYALTIES AND PATENTS

The Contractor shall pay all royalty and license fees, unless otherwise specifies. The Contractor shall defend all suits or claims for infringement of any patent rights and shall defend, indemnify and hold harmless ASPA from any such suits or claims.

DEFECTIVE WORK

The Contractor warrants and guarantees to ASPA that all work will be in accordance with the Contract Documents and will not be defective. Contractor hereby agrees to make, at its own expense, all repairs or replacements necessitated by defects in materials or workmanship, supplied under the Contract, which become evident to ASPA within one (1) year after the date of final acceptance of the work or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents. If defective work is found, Contractor shall promptly, without cost to ASPA and in accordance with ASPA's written instructions, promptly either correct such defective work, or if it has been rejected by ASPA, remove it from the work site and replace it with non-defective work. The Contractor further assumes responsibility for a similar guarantee for all work and materials provided by the subcontractors or manufacturers of all work and materials provided by the subcontractors or manufacturers of packaged equipment components. The Contractor also agrees to defend, indemnify and hold harmless ASPA from and against liability of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from ASPA. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk or loss of damage, ASPA 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.

CONTRACT TERM

The term for this contract is not to exceed One Hundred Eighty (180) calendar days.

COMMENCEMENT OF THE WORK

Before work shall be started and materials ordered, the Contractor shall meet and consult with the Engineer to discuss the materials, equipment and all arrangements for prosecuting the work. Work shall not commence until the Contractor receives the Notice of Proceed in writing from ASPA.

SCHEDULES AND PROGRESS REPORTS

Prior to starting work, the Contractor shall accept ASPA's Milestone Schedule or submit to the Engineer its own progress schedule for acceptance showing approximately the dates on which each part or division of the work is expected to be started and finished, including an estimated timeline for use of the materials. ASPA's Milestone Schedule for purposes of progress payments

("Milestone Payments") to the Contractor shall determine ASPA's payment duties, unless the Engineer determines in writing that the Contractor's progress schedule shall be considered the official Milestone Schedule.

The Contractor shall also forward to the Engineer, at the end of each month, an itemized report of the delivery status of major and critical items of purchased equipment and material, including the status of shop drawings and the status of shop and field fabricated work. These progress reports shall indicate the date of the purchase order, the current percentage of completion, estimated delivery and cause of delay, if any.

The Contractor's progress schedule must conform to the calendar days set forth for the completion of the work and shall be subject to modification by the Engineer. The Engineer shall be advised in advance by the Contractor when construction work is scheduled and the days when no construction work will take place. If the Contractor fails to notify the Engineer in advance of a the day or days when no construction work will be done, the Contractor will be charged the cost of inspection for that day or days and such charges may be deducted from any payment due the Contractor. If the completion of any part of the work or the delivery of materials is behind the approved schedule, the Contractor shall submit in writing a plan acceptable to the Engineer for bringing the work up to schedule.

ASPA shall have the right to withhold Milestone Payments for the work if the Contractor fails to prosecute the work in accordance with the Milestone Schedule. It is expressly understood and agreed that the time of beginning, rate of progress and time of completion of the work are the essence of the Contract. The work shall be prosecuted at such time, and in or on such part or parts of the project as may be required, to complete the project as contemplated in the Contract Documents and the approved Milestone Schedule.

NIGHT WORK

The Contractor may be required to prosecute the work at night if, at any time, the Engineer deems it necessary for the progress of the work, or if emergencies arise, and the Contractor shall promptly comply with any such requirements made in writing by the Engineer. The Contractor will also be permitted to work at night if it shall satisfy the Engineer of the need therefore in order to maintain the required progress or protect the work from the elements. If ordered or permitted to work at night, the Contractor shall provide sufficient and satisfactory lighting and other facilities therefore. For night work, if any be performed, the Contractor shall receive no extra payment, but compensation shall be considered as having been included in the price stipulated for the work.

ASPA'S RIGHT TO PERFORM WORK

If in the opinion of the Engineer the Contractor neglects to prosecute the work in a timely manner or in accordance with the Milestone Schedule, or neglects or refuses at its own cost to perform and/or replace work rejected by the Engineer, then ASPA shall notify the Contractor and its surety of the condition, and after ten (10) days' written notice to the Contractor and the Surety, and without prejudice to any other right or remedy which ASPA may have under the Contract Documents, including the section entitled "ASPA's Right to re-Contractor Work," and take over that portion of the work which has been neglected or improperly executed and make good the deficiencies and deduct its costs thereof from the payments then or thereafter due the Contractor.

TERMINATION FOR CONVEINANCE

ASPA may terminate the Contract in whole or, from time to time, in part, if the Chief Executive Officer (the "CEO") determines that a termination is in the best interest of ASPA. In such case, the CEO shall terminate the Contract by delivering to the Contractor a two-week notice of termination specifying the extent of termination and the effective date. Within two weeks of termination, the Contractor shall cease its prosecution of the work, turn over to ASPA all data and other materials acquired for purposes of the Contract, and submit to ASPA a claim for materials acquired for purposes of the Contract, and submit to ASPA a claim for materials and/or labor supplied prior to termination. ASPA shall pay the Contractor an equitable price for materials purchased and labor expended by the Contractor prior to termination, provided that such price not to exceed a fair proportion of the original Contract price.

After receipt of a notice of termination issued pursuant to this section, and except as directed by the CEO, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due under this section:

Stop the supply and delivery of goods and labor as specified in the notice;

Place no further orders for goods, materials, services, labor or facilities, except as necessary to complete any continued portion or portions of the Contract;

Terminate all subcontracts to the extent they relate to the supply and delivery of goods terminated;

Assign to ASPA, as directed and approved by the CEO, all right, title, and interest of the Contractor under the subcontracts terminated, in which case ASPA shall have the right to settle or to pay any termination settlement proposal arising out of those terminations;

With approval or ratification to the extent required by the CEO, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this section;

Complete performance of the supply and delivery of goods not terminated;

Take any action that may be necessary or that the CEO may direct, for the protection and preservation of the goods related to the Contract that is in the possession of the Contractor and in which ASPA has or may acquire an interest; and

Submit a final termination settlement proposal to the CEO in the form and with the certifications prescribed by the CEO. The Contractor shall submit the proposal promptly upon notice of termination, but no more than one (1) month from the effective date of termination, unless extended in writing by the CEO upon written request of the Contractor within this one (1) month period. However, if the CEO determines that the facts justify it, a termination settlement proposal may be received and acted on after one (1) month or any extension. If the Contractor fails to submit the proposal within the time allowed, the CEO may determine, on the basis of information available, the amount, if any, due to the Contractor because of the termination and shall pay the amount determined.

TERMINATION FOR CAUSE

ASPA may discharge the Contractor and terminate the Contract at any time when ASPA shall determine that it has sufficient cause arising from (a) Contractor's dereliction or unsatisfactory

performance of a duty, (b) Contractor's failure to perform the work in accordance with the provisions of the Contract Documents, (c) misrepresentation by the Contractor, or (d) conviction of the Contractor or any of its directors and/or officers of a felony. If ASPA terminates the Contractor for cause prior to completion of the Contractor's duties, in addition to any other rights or remedies granted ASPA in the Contract Documents and at law, ASPA shall require repayment by the Contractor of all advanced payments or Milestone Payments made and may require delivery of any partially completed work. ASPA shall finish the remaining work to be performed by whatever method ASPA may deem expedient and the Contractor shall not be entitled to receive any further compensation. In the event that the cost, including additional managerial and administrative services, to ASPA to complete the work exceeds the contract price, such excess costs shall be paid by the Contractor.

TERMINATION FOR DEFAULT

If the Contractor refuses or fails to perform any provision of the Contract or Contract Documents with such diligence as will ensure its completion within the time specified in the Contract or any extension thereof, otherwise fails to timely satisfy any provision set forth in the Contract Documents, or commits any other substantial breach of the Contract Documents, ASPA may notify the Contractor in writing of the delay or non-performance, and if not cured within ten (10) days or any longer time specified in writing to ASPA, ASPA shall terminate the Contractor's right to proceed under the Contract or such part of the Contract Documents as to which there has been delay or a failure to properly perform. In the event of termination in whole or in part under this section, ASPA may procure similar supplies, materials and/or services in a manner and upon terms deemed appropriate by ASPA, as further set forth in the section entitled "ASPA's Right to Re-contract Work". Notwithstanding termination of the Contract and subject to any directions from ASPA, the Contractor shall take timely, reasonable, and necessary action to protect and preserve property in the possession of the Contractor in which ASPA has an interest.

Payment for completed work shall be at the sole discretion of ASPA. Payment for the protection and preservation of property shall be in an amount agreed upon by the Contractor and ASPA. ASPA may withhold from amounts due the Contractor such sums as ASPA deems to be necessary to protect ASPA against loss because of outstanding liens or claims of former lien holders and to reimburse ASPA for the excess costs incurred in procuring similar goods, material and/or services.

Except with respect to defaults of subcontractors, the Contractor shall not be in default by reason of any failure in performance of the Contract in accordance with its terms if the Contractor has notified ASPA within ten (10) days after the cause of the delay and the failure arises out of causes such as acts of God, acts of the public enemy, acts of ASPA and any other ASPA entity in its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes or other labor disputes, freight embargo, or unusually severe weather. If the failure to perform is caused by the failure of a subcontractor to perform or to make progress, and if such failure arises out of causes similar to those set forth above, the Contractor shall not be deemed to be in default, unless the supplies and/or services to be furnished by the subcontractor were reasonably obtainable from other sources in sufficient time to permit the Contractor to meet the Contract requirements.

If, after notice of termination for default, it is determined for any reason that the Contractor was not in default under the provisions of this section, the rights and obligations of the parties shall,

be the same as if the notice of termination had been issued pursuant to the subsection entitled "Termination for Convenience."

The rights and remedies provided in this subsection are in addition to any other rights and remedies provided by law or under the Contract Documents.

TERMINATION FOR NATIONAL EMERGENCIES

ASPA shall terminate this Contract or portion thereof by written notice when the Contractor is prevented from proceeding with this Contract as a direct result of an Executive Order of the President or Governor of American Samoa with respect to the prosecution of war or in the interest of national defense. ASPA shall not be liable for any claims for loss of anticipated profits.

ASPA'S RIGHT TO RE-CONTRACT WORK

If (a) ASPA determines that the Contractor has abandoned the work, (b) the Contractor is adjudged to be bankrupt, (c) the Contractor makes a general assignment, with ASPA's approval, for the benefit of the Contractor's creditors, (d) a receiver is appointed on account of its insolvency, (e) the Contractor, on more than one working day, refuses or fails to supply enough properly skilled workers or proper materials, (f) the Contractor fails to make prompt payment to subcontractors for materials or labor, (g) the Contractor disregards the laws or regulations of American Samoa or the United States, or (h) ASPA finds that the Contractor is in material breach of any provision of the Contract Documents or any laws or regulations, then ASPA may, without prejudice to any other right or remedy provided to ASPA under the Contract Documents or at law, and after giving the Contractor and its surety ten (10) days' written notice of its intent to terminate for default, terminate the employment of the Contractor in accordance with this section and the section entitled "Termination for Default" and take possession of the premises and of all materials, tools and appurtenances thereon and finish the work by whatever method ASPA may deem expedient. In such case, the Contractor shall not be entitled to receive any further compensation. In the event that the cost, including additional managerial and administrative services to ASPA to complete the work exceeds the contract price such excess costs shall be paid by the Contractor.

SUSPENSION OF THE WORK

ASPA shall have the authority to suspend the work wholly, or in part, for such period or periods as it may deem necessary, due to severe weather or such other conditions as are considered by ASPA to be unfavorable to the prosecution of the work. ASPA shall also have the authority to suspend the work for such time as is necessary due to the failure on the part of the Contractor to carry out orders given by ASPA or any other Contract (collectively all of the above shall constitute a "Foreseeable Suspension").

In the event that the Contractor is ordered by ASPA to suspend the Work for a Foreseeable Suspension, the period of shutdown shall be computed from the effective date of ASPA's order to suspend work to the effective date of ASPA's order to resume the Work. ASPA shall, at its sole discretion, determine whether a contract amendment is appropriate, whose determination will not be unreasonable. In the event that the Contractor is ordered by ASPA to suspend the Work for some unforeseen cause not otherwise provided for in this Agreement and over which the Contractor has no control (an "Unforeseen Suspension"), the period of suspension shall be computed from the effective date of ASPA's order to suspend work to the effective date of

ASPA's order to resume the Work (the "Suspension Period"). In the event of an Unforeseen Suspension, ASPA and the Contractor shall execute an appropriate contract amendment extending the term of this Contract to account for the Suspension Period.

No provision of this section shall be construed as entitling the Contractor to compensation for delays due to inclement weather, for suspension made at the request of the Contractor, or for any other delay.

EXAMINATION OF EXISTING FACILITIES

After the Contract is executed and before the commencement of work, the Contractor and Engineer shall make a thorough examination of all existing building, structures, and other improvements in the vicinity of the work, as applicable, which might be damaged by construction operations. Periodic examinations of existing buildings, structures, and other improvements in the vicinity of the work shall be made jointly by authorized representatives of the Contractor, Engineer, Owner, and the affected property owners. The scope of the examination shall include cracks in structures, settlement, leakage, and similar conditions. Records in triplicate of all observations shall be prepared by the Contractor and each copy of every document shall be signed by the authorized representatives of the Owner and Contractor and signed in the manner specified above. One signed copy of every document and photograph will be kept on file in the office of the Engineer. These records and photographs are intended for use as indisputable evidence in ascertaining whether, and to what extent, damage occurred as a result of the Contractor's operatives and are for the protection of the adjacent property owners, the Contractor, and the Owner.

DIFFERING SITE CONDITIONS

The Contractor shall promptly, and before such conditions are disturbed, notify the Engineer in writing of: (a) subsurface or latent physical conditions at the site differing materially from those indicated in the contract, or (b) unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as being work of the character provided for in the Contract. The Engineer shall promptly investigate the conditions, and if he/she finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under the Contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made by ASPA and the Contract shall be modified in writing accordingly. No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required above. No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

UNFORSEEN DELAYS

If the Contractor is delayed in the progress of the work by any act or neglect of ASPA, or by strikes, lockouts, fire, unusual weather conditions, or unavoidable casualties, the Contractor shall, within 48 hours of the start of the delay give notice to the Engineer of the cause of the delay and estimate the possible time extension involved. Within seven (7) days after the conclusion of the delay, the Contractor shall give notice to the Engineer of any actual time extension requested as a result of the aforementioned occurrence. No extension of time will be granted to the Contractor for delays occurring to parts of the work that have no measurable impact on the completion of the total work under the Contract, nor will extension of time be

granted for delays to parts of work that are not located on the critical path if the Critical Path Method ("CPM") is used for scheduling the work. No extension of time will be considered for weather conditions normal to the area in which the work is being performed. Unusual weather conditions, if determined by the Engineer to be of a severity that would stop all progress of work, may be considered as cause for an extension of Contract completion time.

The Engineer may order the Contractor to suspend the work that may be subject to damage in climatic conditions. When delay is caused by an order to suspend work given on account of climatic conditions which, in the opinion of the Engineer, could have been reasonably foreseen, and for damage that could have been forestalled by diligent and reasonable action on the part of the Contractor, the Contractor will not be entitled to any extension of time on account of such order. The Contractor shall maintain all drainage ways through the work open and clear for drainage and store water flow. The Contractor's attention is directed to the average annual rainfall in American Samoa which is approximately 200 inches.

Delays in delivery of equipment or material purchased by the Contractor or his subcontractors (including ASPA selected equipment) shall not be considered as a just cause for delay. The Contractor shall be fully responsible for the timely ordering, scheduling, expediting, delivery and installation of all equipment and materials.

Within a reasonable period after the Contractor submits to the Engineer a written request for an extension of time, the Engineer will present his written opinion to the Contractor as to whether an extension of time is justified, and, if so, his recommendation as to the number of days for time extension. The Engineer will make the final decision on all requests for extension of time.

In no event shall the Contractor be entitled under the Contract to collect or recover any damages, loss or expense incurred by any delay other than as caused by ASPA.

FAILURE TO COMPLETE THE WORK IN THE TIME AGREED UPON

It is agreed by the parties to the Contract that time is of the essence, and that in case all the work is not completed before or upon the expiration of the term of the Contract, damages will be sustained by ASPA, and it is therefore agreed that the Contractor will pay to ASPA the amount stipulated in the Contract Documents. A late penalty of Two Hundred Dollars (\$200.00) per day shall be assessed by ASPA and shall be payable by the Contractor for each day the Contractor fails to successfully complete the Work before or upon the expiration of the term of the Contract. The parties explicitly agree that payment and acceptance of any late penalties shall not constitute accord and satisfaction of the Contractor's failure to complete the Work within the term of this Contract. In addition, ASPA will have the right to charge to the Contractor and to deduct from the final payment for the work the actual cost to ASPA of engineering, inspection, construction, review, and other overhead expenses, which are directly chargeable to the Contract and which accrue during the period of such delay.

In the event that the Contractor fails to complete the work within the term of the Contract, ASPA may then relet the Contract for the unfinished portion of the work, or complete it by Force Account. Such reletting or doing said work by Force Account shall not relieve the original Contractor or its Sureties from liabilities on their bonds, or relieve the Contractor of its responsibilities set forth in the Contract Documents for all portions of this work completed by the Contractor.

DISPUTES

Except as otherwise provided in the Contract, any dispute concerning a question of fact arising under the Contract or the Contract Documents which is not disposed of by agreement, shall be decided by the Engineer, who shall reduce his/her decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Engineer shall be final and conclusive unless, within thirty (30) days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Engineer a written appeal addressed to ASPA's Chief Executive Officer ("CEO"). The decision of the CEO or his/her duly authorized representative for the determination of such appeals shall be final and conclusive. This provision shall not be pleaded in any suit involving a question of fact arising under the Contract as limiting judicial review of any such decision to cases where fraud by such official or his representative or board is alleged; provided, however, that any such decision shall be final and conclusive, unless the same is fraudulent or capricious or arbitrary or so grossly erroneous as necessarily to imply bad faith or is not supported by substantiating evidence. In connection with any appeal proceeding under this section, the Contractor shall be afforded an opportunity to be heard by the CEP and to offer evidence in support of its appeal. After a final decision by the CEO of a dispute hereunder, and during any further appeals to a court of competent jurisdiction, the Contractor shall proceed diligently with the performance of the Contract and in accordance with the CEO's decision. This section does not preclude considerations of questions of law in connection with decisions provided for above.

JURISDICTION

This Contract shall be construed according to the laws of American Samoa. All disputes under this Contract and all judicial proceedings shall be brought in the High Court of American Samoa. The Contractor hereby appoints the Treasurer of the American Samoa Government as agent for service within the jurisdiction, if an agent of the Contractor cannot be found in American Samoa after a reasonable search.

The Treasurer of American Samoa is hereby appointed agent of the Contractor for service of process in all judicial proceedings. At the time of service of papers upon the agent above-referenced, ASPA shall also cause confirming copies to be posted in the U.S. Mail, certified mail, properly stamped and addressed to the Contractor's address of record.

OTHER CONTRACTS

ASPA reserves the right to let other Contracts in connection with the work. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs. If any part of the work under the Contract depends on the prior acceptable completion of work by others under separate Contract(s), the Contractor shall inspect and promptly report to the Engineer any defects in such work that would adversely affect the satisfactory completion of the work under the Contract. The Contractor's failure to so inspect and report shall constitute acceptance of the work by others as being suitable for the proper reception and completion of the work under this Contract, excluding, however, those defects in the work by others that occur after the satisfactory completion of the work specified hereunder.

USE OF PREMISES

The Contractor shall confine its equipment, the storage of materials, and the operation of its workers to limits shown on the Functional Specifications and/or Drawing, and shall not

unreasonably encumber the premises with its materials. The Contractor shall provide, at its own expense, the necessary rights-of-way and access to the work which may be required outside the limits of ASPA's property or acquired right-of-way. The Contractor shall not load or permit any part of a structure to be loaded with a weight that will endanger its safety.

ENVIRONMENTAL CONTROLS

The Contractor, in executing the work, shall maintain affected areas within and outside project boundaries free from environmental pollution that would be in violation of applicable laws. The Contractor shall not impair the operation of existing water systems and shall maintain original site drainage whenever possible.

WATER POLLUTION CONTROLS

The Contractor, in executing the work, shall comply with all applicable laws prohibiting the pollution of marine waters, lakes, wetlands, streams, or river waters. Prior to commencing excavation and construction, the Contractor shall obtain the Engineer's approval of the Contractor's detailed plans showing procedures intended to handle and dispose of groundwater, and storm water flow, including dewatering pump discharges. Dewatering pump discharges shall be conveyed to an existing storm water outfall. The Contractor shall comply with the procedures outlined in the U.S. Environmental Protection Agency manuals entitled "Guidelines for Erosion and Sedimentation Control Planning and Implementation," "Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," and "Erosion and Sediment Control-Surface Mining in Eastern United States."

WASTE MATERIAL DISPOSAL

The Contractor shall comply with all ASPA and ASEPA pollution control, solid waste and landfill requirements, regulations and laws. The Contractor shall not burn or bury rubbish or waste materials on the premises. The Contractor shall not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is specifically prohibited. The Contractor shall provide acceptable containers for collection and disposal of waste materials, debris, and rubbish. The Contractor shall, prior to transporting any materials to the premises, submit to and obtain approval by the Engineer of all planned routes of passage. Routes shall be developed to minimize the impact of the additional traffic on the functioning of the transportation in American Samoa.

USE OF PREMISES

The Contractor shall at all times, keep the work site free from waste, materials, and rubbish caused by his operations, including all materials, tools, equipment, machinery and surplus. Should it become necessary for ASPA to remove any of the aforementioned materials from its facilities, ASPA may do so and charge all costs incurred thereof to the Contractor. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the work site, or a safe storage facility not adjacent to the work site. The Contractor shall not unreasonably encumber the work site with materials or equipment. Contractor shall be fully responsible for any damage to the work site or areas contiguous thereto resulting from the performance of the work. During the progress of the work, Contractor shall keep the work site 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 work site as well as the removal of all tools, construction equipment, machinery, and surplus material, and shall leave the work site clean.

SUBSTANTIAL COMPLETION DATE

The Engineer may, at his/her sole discretion, issue a written notice of substantial completion for the purpose of establishing the date that ASPA will assume the responsibility for the cost of operating such equipment. Said notice shall not be considered as final acceptance of any portion of the work or relieve the Contractor from completing the remaining work within the specified time and in full compliance with the Contract Documents.

ASPA'S USE:

ASPA shall have the right to take possession of and use any completed or partially completed portions of the work. Such use shall not be considered as final acceptance of any portion of the work, nor shall such use be considered as cause for an extension of the Contract completion time, unless authorized in writing by ASPA.

If, after installation, the operation or use of the materials or equipment to be furnished under this Contract proves to be unsatisfactory to ASPA, ASPA shall have the right to operate and use such materials or equipment until it can, without damage to ASPA, be taken out of service for correction or replacement. Such period of use of the defective materials or equipment pending correction or replacement shall in no way decrease the guarantee period required for the acceptable corrected or replaced items of materials or equipment.

PAYMENT

In consideration of the faithful performance of the work prosecuted in accordance with the provisions of these Contract Documents, ASPA promises to pay to the Contractor, the total contract amount.

GENERAL

In consideration of the faithful performance of the work prosecuted in accordance with the provisions of these Contract Documents, the American Samoa Power Authority (ASPA) will pay the Contractor in United States dollars for all such work on the basis of percentage of completion for lump sum items and unit price for all other items

GUARANTEE OF STRUCTURES

The Contractor shall guarantee the work done under this Contract against leaks, breaks, malfunctions, or other unsatisfactory conditions due to defective equipment, materials, or workmanship for a period of 1 year from the date of his acceptance of the final payment under the Contract. Any repair work or replacement required, in the opinion of the Engineer, shall be done immediately by the Contractor at his own expense.

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use or occupancy of the premises by ASPA shall constitute an acceptance of work not done in accordance with the Contract nor relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting there from which shall appear within a period of 1 year from the date of final acceptance of work. ASPA will give notice of observed defects with reasonable promptness.

ASPA may make such repairs, if, within 5 days after mailing of a notice in writing to the Contractor or to his agent, the Contractor shall neglect to make or undertake with due diligence the aforesaid repairs; provided, however, that if, in the opinion of the Engineer, delay would cause serious loss or damage, repairs may be made without notice being sent to the Contractor, and the Contractor shall pay the cost thereof.

CONTRACTORS' AND MANUFACTURERS' COMPLIANCE WITH SAMOAN SAFETY, OSHA AND OTHER CODE REQUIREMENTS

The completed work shall include all necessary permanent safety devices, such as machinery guards and similar ordinary safety items required by the federal (OSHA) industrial authorities and applicable local and national codes. Further, any features of the work (including ASPA-select equipment) subject to such safety regulations shall be fabricated, furnished and installed in compliance with these requirements. Contractors and manufacturers of equipment shall be held responsible for compliance with the requirements included herein. Contractors shall notify all equipment suppliers and subcontractors of the provisions of this Article.

In selecting and/or approving equipment for installation in the project, ASPA and Engineer assume no responsibility for injury or claims resulting from failure of the equipment to comply with applicable national, Samoan and local safety codes or requirements or the safety requirements of a recognized agency, or failure due to faulty design concepts, or defective workmanship and materials.

SUBSTITUTION OF MATERIALS

Except for ASPA-selected equipment items, and items where no substitution is clearly specified, whenever any material, article, device, product, fixture, form, type of construction, or process is indicated or specified by patent or proprietary name, by name of manufacturer, or by catalog number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the material or process desired. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other manufacturers where fully suitable in design, and shall be deemed to be followed by the words "or equal". The Contractor may, in such cases, submit complete data to the Engineer, within 35 days following award of Contract, for consideration of another material, type, or process, which shall be substantially equal in every respect to that so indicated or specified. Substitute materials shall not be used unless approved in writing. The Engineer will be the sole judge of the substituted article or material.

MATERIALS AND EQUIPMENT OF FOREIGN MANUFACTURE

Foreign-made materials and equipment proposed for use on this Contract shall meet with the full intent and purpose of these Contract Documents; and documentation substantiating compliance with the specified requirements shall be submitted in English to the Engineer for review and approval prior to the Contractor's purchase and delivery to the project site. The ready availability of manufacturer's services and replacement parts for maintenance purposes shall be described and warranted. Bidders shall notify prospective suppliers of foreign-made material of this requirement, and the requirement for correcting defective workmanship and materials for a period of one year following final acceptance of the work under this Contract.

CORRECTION OF DEFECTIVE WORK AFTER FINAL ACCEPTANCE

The Contractor hereby agrees to make, at his own expense all repairs or replacements necessitated by defects in materials or workmanship, supplied under terms of this Contract, which become evident within 1 year after the date of final acceptance of the work or within 1 year after the date of substantial completion established by the Engineer for specified items of equipment, or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents. The Contractor further assumes responsibility for a similar guarantee for all work and materials provided by subcontractors or manufacturers of all work and materials provided by the subcontractors or manufacturers of packaged equipment components. The Contractor also agrees to hold ASPA harmless from liability of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from ASPA. If the Contractor fails to make the repairs and replacement promptly, ASPA may do the work, and the Contractor and his Surety shall be liable for the cost thereof.

RELEASE OF LIENS AND CLAIMS

Before ASPA pays the Contractor the final payment for the work, the Contractor shall sign and deliver to ASPA a release of liens or claims sworn to under oath and duly notarized. The release shall state that the Contractor has satisfied all claims and indebtedness of every nature in any way connected with the work, including (but not limiting the generality of the foregoing) all payrolls, amounts due to subcontractors, accounts for labor performed and materials furnished, incidental services, liens and judgments. If any lien or claim remains unsatisfied after all payments to the Contractor are made, the Contractor shall refund to ASPA all monies that the latter may be compelled to pay in discharging such a lien or claim, including all costs and attorney's fees. In addition to the above, final payment will not be made until the Contractor has filed with ASPA the following:

Consent of the surety for final payment;

Satisfactory evidence by affidavit or otherwise that the Contractor's debts resulting from the Contract have been fully paid or satisfactorily received;

Tax clearance from the American Samoa Government that all delinquent taxes levied or allowed under Territorial statutes have been paid; and

A properly executed non-gratuity affidavit.

FINAL PAYMENT

Upon completion of all the work under the Contract, the Contractor shall notify the Engineer, in writing, that it has completed the Contract and requests final payment. If the work has been completed as provided in the Contract Documents, the Engineer will recommend acceptance of the completed work and submit a final estimate for the amount due the Contractor under this Contract. Upon approval of this final estimate by ASPA and compliance with provisions in the section entitled "RELEASE OF LIENS OR CLAIMS," and other sections or provisions of the Contract Documents as may be applicable; ASPA shall pay to the Contractor all monies due it under the provisions of these Contract Documents.

The acceptance by the Contractor of the final payment shall release ASPA, its directors, officers, employees, agents and representative from any and all liability to the Contractor for every act or omission of ASPA relating to or arising out of the Contract or the work performed. No payment, however, final or otherwise, shall operate to release the Contractor or its sureties from

obligations under the Contract Documents, the Payment Bond, and any other bonds and/or warranties as provided for in the Contract Documents.

NO WAIVER OF RIGHTS

Neither the inspection by the Engineer, nor any order by ASPA for payment of money, nor any payment for, or acceptance of, the whole or any part of the work by the Engineer, nor any extension of time, nor any possession taken by ASPA or its employees, shall operate as a waiver of any provision of the Contract Documents, or any power therein reserved to ASPA, or any right to damages therein provided, nor shall any waiver of any breach of the Contract Documents be held to be a waiver of any other or subsequent breach.

MEASUREMENT DEFINITIONS

This Section includes specifications for measurement as they apply to the Work, and includes provisions applicable to lump sum prices, measurement by volume and unit prices as indicated.

Work to be paid for at a Contract price per unit measurement, as indicated in the Contract Documents, will be measured by the Engineer in accordance with United States Standard Measures.

A. LUMP-SUM MEASUREMENT

Lump-sum measurement will be for the entire item, unit of work, structure, or combination thereof, as specified and as indicated in the Bid Schedule of the Bid Form.

B. MEASUREMENT BY VOLUME

Measurement by volume will be by the cubic dimension indicated in the Schedule. Method of volume measurement will be by the unit volume in place or removed as shown on the Contract Drawings as specified.

When material is to be measured and paid for on a volume basis and it is impractical to determine the volume by the specified method of measurement, or when requested by the Contractor in writing and accepted by the Engineer in writing, the material may be weighed in accordance with the requirements specified for weight measurement. Such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities will be accepted.

C. LINEAR MEASUREMENT

Linear measurement will be by the linear dimension listed or indicated in the Contract Documents. Unless otherwise indicated, items, components, or work to be measured on a linear basis will be measured at the centerline of the item in place.

THIRD PARTY BENEFICIARY

This Contract is not intended to create in the public or any member thereof a third party beneficiary or to authorize anyone not a party to this Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this Contract.

PROHIBITION AGAINST INTEREST IN THIS CONTRACT

No member of or delegate to the Congress of the United States or FONO of American Samoa shall be admitted to any share or any part of this Contract or to any benefit to arise from the

same; provided that the foregoing provision of this contract is made with a corporation for its general benefit. No employee of ASPA who exercises any functions or responsibilities in connection with the carrying out of the project to which this Contract pertains shall have any private interest, direct or indirect, in this Contract.

FORCE MAJEURE

Neither party shall be construed to be in default with respect to any obligation hereunder if performance of such obligation is prevented by uncontrollable forces. The term uncontrollable forces is deemed for the purpose of this Contract to mean any cause beyond the control of the party affected, including, but not limited to, flood, earthquake, severe storm, drought, lightning, fire, war, riot, civil disturbance, labor disturbance, sabotage, or restraint by a court order or other regulatory agency, which by exercise of due diligence and foresight such party could not reasonably have been expected to avoid. Any party rendered unable to fulfill any obligation by reason of uncontrollable forces shall exercise due diligence to remove such inability with all reasonable dispatch. Nothing contained herein shall be construed to obligate a party to settle a strike against its will.

NOTICES

All notices and correspondence required to be sent to either party hereunder shall be delivered personally or by certified or registered mail and addressed as follows and deemed effective when so mailed (subject to the right to designate a different address by notice similarly given):

IF TO CONTRACTOR: _____

Pago Pago, American Samoa 96799

IF TO ASPA: _____

Executive Director
American Samoa Power Authority
P.O. Box PPB
Pago Pago, American Samoa 96799

MISCELLANEOUS

ASSIGNMENT

The Contractor shall neither assign nor subcontract any portion of this Agreement without the express written approval of ASPA.

AMENDMENTS

This Contract may be amended at any time during the term hereof, provided, however, that no amendments or other variation of this Contract shall be valid unless in writing and signed by the Contractor and a duly authorized representative of ASPA.

RELATIONSHIP OF THE PARTIES

The relationship of the parties hereto shall in no event be deemed or construed to be that of employer and employee or of principal and agent, or of any other relationship other than as an independent Contractor providing the services specified in this Contract.

ENTIRE AGREEMENT

This Contract and all documents incorporated herein constitute the entire agreement between the parties and supersede any oral or written understandings or agreements.

SEVERABILITY

Each part of this Contract is intended to be severable. In the event that any part of this Contract is found by the High Court of American Samoa to be illegal or unenforceable, such provision or provisions shall be severed or modified to the extent necessary to render it enforceable, and as so severed or modified, this Contract shall continue in full force and effect.

SECTION HEADINGS, NUMBERS AND LETTERS

The section headings and section numbers and letters in this Contract are for reference purposes only and shall not affect in any way the meaning or interpretation of this Contract.

FURTHER ASSURANCES

In addition to the instruments and documents to be made, executed and delivered pursuant to this Agreement, the parties hereto agree to make, execute and deliver or cause to be made, executed and delivered, to the requesting party such other instruments and to take such other actions as the requesting party may reasonably require to carry out the terms of this Contract and the transactions contemplated hereby.

EXECUTION IN COUNTERPARTS

This Contract may be executed in any number of counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same agreement.

WAIVER

Any waiver at any time by ASPA of its rights with respect to this Contract, or with respect to any other matter arising in connection with this Contract, shall be deemed a waiver of that specific

instance only and shall not be deemed a waiver with respect to any other matter arising thereafter in connection with this Contract.

AUTHORITY

Each party represents and warrants that it has the necessary corporate and/or legal authority to enter into this Contract and to perform all of its duties and obligations imposed by this Contract. Each party further represents that the individuals executing this Contract on their respective behalf have been duly authorized to do so and that such execution creates a valid, binding and legally enforceable obligation of each party.

CONFLICTS

In the event a court of competent jurisdiction finds that a conflict exists between two or more provisions of the Contract Documents, the provisions of the Contract shall first prevail, followed by the Notice to Bidders, Instruction to Bidders, Technical Specifications, Drawings and then Bid Form, in that order.

SUPPLEMENTARY CONDITIONS

GENERAL FEDERAL DAVIS-BACON WAGES

The following shall supplements shall modify, delete, and or add to the General Conditions. Where any article, paragraph, or sub paragraph in the General Conditions is supplemented by one of the following paragraphs, the provisions of such article, paragraph, or sub paragraph shall remain in effect and supplemental provisions shall be considered as added thereto. Where any article, paragraph in the General Conditions is amended, voided, or suspended by any of the following paragraphs, the provisions of such article, paragraph or sub paragraph not so amended, voided, or superseded shall remain in effect.

Federal Labor Standards Provisions. For Federally Assisted Construction Contracts. United States Department of Labor. CFR Code of Federal Regulations Pertaining to ESA. (Federal Davis-Bacon Wages). Title 29, Chapter I, Part 5, Subpart A (29 CFR 5.5)

Section Name: Contract provisions and related matters.

(a) The Recipient shall assure that the sub recipient(s) insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the applicable FY appropriation requirements, the following clauses:

(1) Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in Sec. 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time

actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably

anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding.

The loan or grant recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency or SRF program) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and Basic Records

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the SRF program if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the SRF program. The payrolls submitted shall set

out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the SRF program if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the SRF program, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the loan or grant recipient or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written

notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) APPRENTICES AND TRAINEES

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If

the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements.

The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the SRF program may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination

Debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be

awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) Contract Work Hours and Safety Standards Act. The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Sec. 5.5(a) or 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The government may withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in Sec. 5.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the

contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the loan or grant recipient and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

Minimum Wage. The minimum wage in American Samoa for the construction industry was set at \$4.60 per hour on May 25, 2008, for Federally Assisted Construction Projects. Any changes in minimum wage during the term of this contract must be complied with at no increase in the contract sum. The Act also provides for additional increases in the minimum wage of \$0.50 an hour each year on May 25.

SECTION 01010 - SUMMARY OF WORK

PART 1 – GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

GENERAL INTENTION

Complete replacement of damaged waterline / construction of gabion wall for Fagatogo Flood Damaged Waterline Project located in the Village Fagatogo American Samoa. Work includes additions of office spaces as shown in the contract drawing.

The Work Includes: All Work as described in the General Intention. This Summary of Work shall become a part of the Contract.

The Contractor will be responsible for reading these specifications and he shall become familiar with the drawings. All items mentioned in the specifications and that appear on the drawings, shall be required to be installed as if specifically mentioned in this section.

CONTRACT

Contract may be awarded to only one Contractor depending on the outcome of the bid

SEQUENCE

Contractor may use any sequence of operations he chooses compatible with completion dates noted in the Specifications, and other limitations required by the Contract Documents.

COOPERATION, COORDINATION, SUPERVISION, SCHEDULING

General Contractor is responsible for expediting coordination and scheduling all work, and for proper notifications to Owner's Representative and/or agencies responsible for code compliance

SECTION 01070-CUTTING AND PATCHING

PART 1 - GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

Work Included: This Section establishes general requirements pertaining to cutting (including excavating), fitting, and patching of the Work required to:

Make the several parts fit properly.

Uncover Work to provide for installation, inspection or both of ill-timed Work.

Remove and replace Work not conforming to requirements of the Contract Documents.

Remove and replace defective work.

QUALITY ASSURANCE

Perform all cutting and patching in strict accordance with pertinent requirements of these Specifications and, in the event no such requirements are determined, in conformance with the ENGINEER's written direction.

SUBMITTALS

Request for the Engineer's Consent:

Prior to cutting which affects structural safety, submit written request to the ENGINEER for permission to proceed with cutting.

Should conditions of the Work, or Schedule, indicate a required change of materials or methods for cutting and patching, so notify the ENGINEER and secure his written permission prior to processing.

PART 2-PRODUCTS

MATERIALS

For replacement of Work removed, use materials that comply with the pertinent Sections of these Specifications.

PAYMENT COSTS

The extent of cutting and patching of below slab/grade is shown on the drawings; the cost for such work shall be included in the lump sum price. Contractor performs all other cutting and patching needed to comply with the Contract Documents at no additional cost to the Owner.

PART 3-EXECUTION

CONDITIONS

A. Inspection:

1. Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, backfilling, and patching.
2. After uncovering the Work, inspect conditions affecting installation of new Work.

B. Discrepancies:

If uncovered conditions are not as anticipated, immediately notify the ENGINEER and secure needed directions.

Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

PREPARATION PRIOR TO CUTTING

Provide all required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work

PERFORMANCE

Perform all required excavation and backfilling as required under pertinent Sections of these Specifications. Perform cutting and demolition by methods that will prevent damage to other portions of the Work and will provide proper surfaces to receive installation of repair and new work. Perform fitting and adjustment of products to provide finished installation complying with the specified tolerances and finishes.

SECTION 01085 APPLICABLE STANDARDS

PART 1-GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

A. Work Included:

1. Throughout the Contract Documents, reference is made to codes and standards that establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics.
2. Where materials or workmanship are required by these Contract Documents to meet or exceed the specifically named code or standard, it is the Contractor's responsibility to provide materials and workmanship that meet or exceed the specifically named code or standard.
3. It is also the Contractor's responsibility, when so required by the Contract Documents or by written request from the ENGINEER, to deliver to the ENGINEER all required proof that the materials or workmanship, or both, meet or exceed the requirements of the specifically named code or standard.

B. Related Work Described Elsewhere:

1. Specific naming of codes or standards occurs on the Drawings and in other Sections of these Specifications.

QUALITY ASSURANCE

Familiarity with Pertinent Codes and Standards: In procuring all items used in this Work, it is the Contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this Work meet or exceed the specified requirements.

Rejection of Non-Complying Items: The Engineer reserves the right to reject items incorporated into the Work that fail to meet the specified minimum requirements. The Engineer further reserves the right, and without prejudice to other recourse, the Engineer may take, to accept non-complying items subject to an adjustment in the Contract Amount as approved by the Engineer and the Owner.

SECTION 01200– PROJECT MEETINGS

PART 1 – GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

A. Work Included:

1. To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.

B. Related Work Described Elsewhere:

1. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings contents.

QUALITY ASSURANCE

Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

SUBMITTALS

Agenda Items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.

Minutes: The Engineer will compile minutes of each project meeting and will furnish the Contractor.

PART 3 – EXECUTION

MEETING SCHEDULE

Except as noted below for Preconstruction Meeting contractor will hold project meetings weekly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

MEETING LOCATION

To the maximum extent practicable, meetings will be held at the job site.

PRE-CONSTRUCTION MEETING

Schedule the Preconstruction Meeting as soon as possible after the Owner has issued Notice to Proceed. Provide attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.

A. Minimum Agenda: Distribute data on and discuss:

1. Organizational arrangement of Contractor's forces and personnel and those of subcontractors, materials suppliers and Engineer
2. Channels and procedures for communications
3. Construction Schedule, including sequence of critical work
4. Contract Documents, including distribution of required copies of original Documents and revisions
5. Processing of Shop Drawings and other data submitted to the Engineer for review
6. Processing of field decisions and Change Orders
7. Rules and regulations governing performance of the work
8. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters

PROJECT MEETINGS

A. Attendance:

To the maximum extent practicable, assign the same person to represent the Contractor at project meetings throughout progress of the work. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.

B. Minimum Agenda:

1. Review, revise as necessary and approve minutes of previous meeting.
2. Review progress of the Work since last meeting, including status of submittals for approval.
3. Identify problems that impede planned progress.
4. Develop corrective measures and procedures to regain planned schedule.
5. Complete other current business.

SECTION 01300– SUBMITTALS AND SUBSTITUTIONS

PART 1 – GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

A. Work Included:

1. Wherever possible throughout the Contract Documents, the minimum, acceptable quality of workmanship and materials has been defined by manufacturer's name and catalog number, reference to recognized industry and government standards, or description of required attributes and performance.
2. To ensure that the specified products are furnished and installed in accordance with design intent, procedures have been established for advance submittal of design data and for their review by the ENGINEER.
3. Make all submittals required by the Contract Documents, revise and resubmit as necessary to establish compliance with the specified requirements.

B. Related Work Described Elsewhere:

Individual requirements for submittals are described in pertinent other Sections of these Specifications.

QUALITY ASSURANCE

Coordination of Submittals: Prior to each submittal carefully review and coordinate all aspects of each item being submitted and verify that each item and the submittal for it conforms in all respects with the requirements of the Contract Documents. Affixing the Contractor's signature to each submittal certifies that this coordination has been performed.

A. Certificates of Compliance:

1. Certify that all materials used in the Work comply with all specified provisions thereof. Certification shall not be construed as relieving the Contractor from furnishing satisfactory materials if, after tests are performed on selected samples the material is found not to meet specified requirements.
2. Show on each certification the name and location of the Work, name and address of Contractor, quantity and date or dates of shipment or delivery to which the certificate applies and name of the manufacturing or fabricating company. Certification shall be in the form of letter or company-standard forms containing all required data. An officer of the manufacturing or fabricating company shall sign certificates.

3. In addition to the above information all laboratory test reports submitted with Certificates of Compliance shall show the date or dates of testing, the specified requirements for which testing was performed and results of the test or test

SUBMITTALS

A. Submittals Schedule:

1. Within 35 days after award of Contract and before any items are submitted for approval submit to the ENGINEER two copies of the schedule.
2. Certificates of Compliance:
3. Upon completion of the Work and as a condition of its acceptance submit to the ENGINEER all Certificates of Compliance.

B. Procedures:

Make submittals in strict accordance with the provisions of this Section.

PART 2 – PRODUCTS

SUBMITTAL SCHEDULE

A. General:

Compile a complete and comprehensive schedule of all anticipated submittals during progress of the Work. Include a list of each type of item for which Contractor's drawings, Shop Drawings, Certificates of Compliance, material samples, guarantees or other types of submittals are required. Upon approval by the ENGINEER this schedule will become part of the Contract and the Contractor will be required to adhere to the schedule except when specifically otherwise permitted.

B. Coordination:

Coordinate the schedule with all necessary Subcontractors and materials suppliers to ensure their understanding of the importance of adhering to the approved schedule and their ability to so adhere.

C. Revisions:

Revise and update the schedule on a monthly basis as necessary to reflect conditions and sequences. Promptly submit revised schedules to the ENGINEER for review and comment.

SHOP DRAWINGS AND COORDINATION DRAWINGS

A. Shop Drawings:

B. Scale and Measurement:

Make all Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.

C. Type of Prints Required:

Submit all Shop Drawings in the form of six (6) copies shall be submitted for review, blue line or black line print of each sheet.

D. Reproduction of Review Shop Drawings:

Printing and distribution of review Shop Drawings for the Engineer's use will be by the ENGINEER. All review comments of the ENGINEER will be shown on the sepia transparency when it is returned to the Contractor. The Contractor shall make and distribute all copies required for his purposes.

MANUFACTURER'S LITERATURE

A. General:

Where contents of submitted literature from manufacturers include data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review.

B. Number of Copies Required:

Submit six (6) copies of all required shop drawings, product data, etc..

SAMPLES

A. Accuracy of Samples:

Samples shall be of the precise article proposed to be furnished.

B. Number of Samples Required:

Unless otherwise specified submit samples in the quantity that is required to be returned plus two (2) that will be retained by the ENGINEER.

C. Reuse of Samples:

In situations specifically so approved by the ENGINEER, the Engineer's retained sample may be used in the construction as one of the installed items.

COLORS AND PATTERNS

Unless the precise color and pattern is specifically described in the Contract Documents and whenever a choice of color or pattern is available in a specified product, submit accurate color and pattern charts to the ENGINEER or review and selection.

SUBSTITUTIONS

A. Approvals Required:

1. The Contract is based on the standards of quality established in the Contract Documents.
2. All products proposed for use, including those specified by requirement attributes and performance shall require approval by the ENGINEER before being incorporated into the Work.
3. Do not substitute materials, equipment, or methods unless the ENGINEER has specifically approved such substitution for this Work.

B. "Or Equal":

Where the phrase "or equal" or "equal as approved by the ENGINEER" occurs in the Contract Documents. Do not assume that materials, equipment, or methods will be approved or are equal

unless the item has been specifically approved for this Work by the ENGINEER. The decision of the Engineer shall be final.

PART 3 – EXECUTION

IDENTIFICATION OF SUBMITTALS

Consecutively number all submittals. Accompany each submittal with a letter of transmittal containing all pertinent information required for identification and checking of submittals.

COORDINATION OF SUBMITTALS

A. General:

1. Prior to submittal for approval, use all means necessary to fully coordinate all materials including, but not necessarily limited to:
2. Determine and verify all interface conditions, catalog numbers and similar data.
3. Coordinate with other trades as required.
4. Clearly indicate all deviations from requirements of the Contract Documents.

B. Grouping of Submittals:

Unless otherwise specified make all submittals in groups containing all associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying with the provisions of the Contract Documents and the Contractor shall be strictly liable for all delays so occasioned.

TIMING OF SUBMITTALS

A. General:

Make all submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery.

B. Engineer's Review Time:

In scheduling, allow at least 10 calendar days for review by the ENGINEER following his receipt of the submittal.

C. Delays:

Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the Contract completion date.

ENGINEER/ENGINEER'S REVIEW

A. General:

Review by the ENGINEER shall not be construed as a complete check, but only that the general method of construction and detailing is satisfactory. Review shall not relieve the Contractor from responsibility for errors that may exist.

B. Authority to Proceed:

The notations "Reviewed, no exceptions noted" or "Reviewed, exceptions noted" authorize the Contractor to proceed with fabrication, purchase, or both, of the items so noted subject to the revisions, if any, required by the Engineer's review comments.

C. Revisions:

Make all revisions required by the ENGINEER. If the Contractor considers any required revision to be a change, he shall so notify the ENGINEER provided for under "Changes" in the General Conditions. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed or approved by the ENGINEER.

D. Revisions After Approval:

When a submittal has been reviewed by the ENGINEER, re-submittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

SECTION 01310-CONSTRUCTION SCHEDULE

PART 1 – GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

A. Work Included:

To assure adequate planning and execution of the work so that the work is completed within the number of calendar days allowed in the Contract, and to assist the ENGINEER in appraising the reasonableness of the proposed schedule and in evaluating progress of the work, prepare and maintain the schedules as described in this Section.

B. Definition:

"Day" used throughout the Contract, unless otherwise stated, means "calendar day".

QUALITY ASSURANCE

A. Qualifications of Scheduling Personnel:

1. Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule data, in analyzing by use of Critical Path Method or PERT, and in preparation and issue of periodic reports as required below.
2. Reference Standards: Perform all data preparation, analysis, charting, and updating in accordance with all recommendations contained in the current edition of "CPM In Construction" manual of Associated General Contractors, or in accordance with other standards approved by the ENGINEER.

B. Reliance upon approved schedule:

1. The construction schedule as approved by the ENGINEER will be an integral part of the Contract, and will establish interim contract completion dates for the various activities.
2. Should any activity not be completed within 15 days after the stated scheduled date, the ENGINEER should have the right to order the Contractor to expedite completion of the activity by whatever means the ENGINEER deems appropriate and necessary, without additional compensation to the Contractor.
3. Should any activity be 30 or more days behind schedule, the ENGINEER shall have the right to perform the activity or have the activity performed by whatever method the ENGINEER deems appropriate.
4. The Contractor shall reimburse cost incurred by the ENGINEER in connection with expediting construction activity under this Article to the ENGINEER.

5. It is expressly understood and agreed that failure by the ENGINEER to exercise the option to either order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered precedent setting for any other activities.

SUBMITTALS

A. General:

Comply with the provisions of Section 01300 – SUBMITTALS AND SUBSTITUTIONS.

B. Preliminary Analysis:

Within ten days after receipt of Notice to Proceed, submit one reproducible copy and four prints of a preliminary Construction Schedule, plus four prints of proposed forms for Materials Status Reports, prepared in accordance with Part 3 of this Section.

C. Periodic Reports:

1. On the first working day of each month, submit four prints of the Construction Schedule updated as described in Part Three of this Section.
2. Accompanying each periodic submittal of Construction Schedule submit four prints of the Materials Status Reports updated as described in Part Three of this Section.

PART 2 – PRODUCTS

CONSTRUCTION ANALYSIS

A. Diagram:

Graphically show the order and interdependence of all activities necessary to complete the Work, and the sequence in which each activity is to be accomplished, as planned by the Contractor and his project field superintendent in coordination with all Subcontractors whose work is shown on the diagram. Activities shown on the diagram shall include, but are not necessarily limited to:

1. Project mobilization;
2. Submittals and approvals of Shop Drawings and Samples;
3. Procurement of equipment and critical materials;
4. Fabrication of special material and equipment, and their installation and testing;
5. Final cleanup;
6. Final inspection and testing;

All activities by the ENGINEER that affect progress, required dates for completion, or both, for all and for each part of the work

The detail of information shall be such that duration times of activities shall normally range from one to 15 days. The selection and number of activities shall be subject to the Engineer's approval.

Show on the diagram, as a minimum for each activity, preceding and following event numbers, description of each activity, cost, and activity duration in calendar days. Submit diagram on a sheet 75 cm (30") high by the width required.

B. Mathematical Analysis:

Furnish a mathematical analysis of the diagram by manual or computer aided means, including a tabulation of each activity. Show the following information as a minimum for each activity:

1. Preceding and following event number;
2. Activity description;
3. Estimated duration of activities;
4. Earliest start date (by calendar date);
5. Latest start date (by calendar date);
6. Earliest finish date (by calendar date);
7. Latest finish date (by calendar date);
8. Slack or float (in calendar days);
9. Monetary value of the activity;
10. Percentage of activity completed;
11. Contractor's earnings based on portion of activity completed.

The means used in making the mathematical analysis shall be capable of compiling the total value of completed and partially completed activities, and be capable of accepting modifications approved for time and logic adjustment.

C. Periodic Reports:

1. If computer-aided means are used, list the activities in computer printout sorts as follows:
2. By the preceding event number from lowest to highest, and then in order of the following event number;
3. By the amount of float, then in order of preceding event numbers, and then in order of succeeding event numbers;
4. In order of preceding event numbers, and then in order of succeeding event numbers (show the dollar amount and dollars spent to date for each activity);
5. Other sorts requested by the Engineer, for which the Contractor will be reimbursed in accordance with the General Conditions provisions for "Changes".

MATERIALS STATUS REPORT

A. Format:

The Contractor's standard materials status report form will be acceptable if, in the Engineer's judgment, it provides sufficient pertinent data to determine that materials procurement flow is adequate for all needs of the Work.

- B. Content:
1. Show at least the following information:
 - i. Item description, listed in accordance with Specifications Section number in which the item is called for
 - ii. Purchase Order number and date of issue
 - iii. Vendor name
 - iv. Date shipped, and shipping means utilized
 - v. Estimated date of arrival at job site
 - vi. Actual date of arrival at job site, and receiving report number

C. Data Processing:

Process the data by manual or computer-aided methods, but to a degree of promptness and accuracy assuring complete display of all pertinent current information at date of each periodic report.

PART 3 – EXECUTION

PRELIMINARY ANALYSIS

A. Contents

1. Show all activities of the Contractor under this Work for the period between receipt of Notice to Proceed and submittal of Construction Schedule.
2. Show the Contractor's general approach to remainder of the Work.
3. Show cost of all activities scheduled for performance before submittal and approval of the Construction Schedule.

B. Submittal

Submittal shall be in accordance with submittal requirement.

CONSTRUCTION SCHEDULE

As soon as practicable after receipt of Notice to Proceed, complete the construction analysis as required. Meet with the ENGINEER, review contents of proposed Construction Schedule, and make all revisions agreed upon.

MATERIALS STATUS REPORT

As soon as practicable after receipt of Notice to Proceed, meet with the ENGINEER, review contents of proposed Materials Status Reports, and make all revisions to format agreed upon.

PERIODIC REPORTS

A. Construction Schedule Contents:

1. Report actual progress by updating the mathematical analysis

2. Note on the summary report, or clearly show on a revised issue of affected portions of the detailed diagram, all revisions causing changes in the detailed program.
3. Revise the summary report as necessary for clarity.
4. Show activities or portions of activities completed during the reporting period, and their actual value.
5. State the percentage of Work actually completed as scheduled as of the report date, and the progress along the critical path in terms of days ahead of or behind the allowable dates.
6. If the Work is behind schedule, also report progress along other paths with negative slack.
7. Include a narrative report which shows, but is not necessarily limited to:
8. A description of the problem areas, current and anticipated;
9. Delaying factors, and their impact;
10. An explanation of corrective actions taken or proposed
11. Show the date of latest revision. Submit in accordance with the provisions of section 01300-Submittal.

B. Materials Status Report:

1. On the letter of transmittal, accompanying periodic reports, on an accompanying summary sheet, or by other means acceptable to the ENGINEER, clearly indicate those items the deliveries of which are critically overdue or otherwise hazardous to maintenance of the approved schedule.
2. Submit in accordance with the provisions of section 01300-Submittal

C. REVISIONS

Make only those revisions to approved Construction Schedule and approved Materials Status Reports as are approved in advance by the ENGINEER.

SECTION 01500– TEMPORARY FACILITIES AND CONTROL

PART 1 – GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

A. Work Included:

1. Temporary facilities and controls required for this Work include, but are not necessarily limited to:
2. Temporary utilities such as water, electricity and telephone
3. Field offices and sheds
4. Sanitary facilities
5. Enclosures such as tarpaulins, barricades, and canopies
6. Fencing of the construction area
7. Haul roads.

B. Related Work Described Elsewhere:

1. Except that all equipment furnished by Subcontractors shall comply with all requirements of pertinent safety regulations, the ladders, planks, hoists, and similar items normally furnished by the individual trades in execution of their own portions of the work are not part of this Section.
2. Permanent installation and hook-up of the various utility lines are described in pertinent other Sections of these Specifications.

PRODUCT HANDLING

Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout progress of the work.

JOB CONDITIONS

Make all required connections to existing utility systems with minimum disruption to services in the existing utility systems, when disruption of the existing service is required, do not proceed without the ENGINEER's approval and, when required, provide alternate temporary service.

PART 2 – PRODUCTS

UTILITIES

A. General:

All temporary facilities shall be subject to the Engineer's approval.

B. Water:

1. Furnish and install all necessary temporary water lines and water supply and, upon completion of the Work, remove all such temporary facilities.
2. The Contractor will furnish all water needed for construction, at no cost to the Owner.

C. Electricity:

1. Furnish and install all necessary temporary wiring and, upon completion of the work, remove all such temporary facility.
2. Furnish and install area distribution boxes so located that the individual trades may use 30m (100') maximum length extension cords to obtain adequate power and artificial lighting at all points where required for the work, for inspection and for safety.
3. The Contractor shall make arrangements for and pay for all temporary electrical power required for construction.

D. Telephone:

1. Make all necessary arrangements and pay all costs for operation and installation of telephone service to the Contractor's office at the site.

CONTRACTOR'S FACILITIES

A. Field Office:

1. Provide a field office building and sheds adequate in size and accommodation for all Contractor's Offices, supplies and storage.
2. Within the Contractor's facilities, provide enclosed space adequate for holding weekly project meetings. Furnish with all required tables, chairs, and utilities.
3. The entire facility, including furniture, will remain the property of the Contractor and shall be removed from the site after completion of the work.
4. Sanitary Facilities: Provide temporary sanitary facilities in the quantity required, for use of all personnel. Maintain in a sanitary condition at all times.

ENCLOSURES

Furnish, install, and maintain for the duration of construction all required scaffolds, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms, and other temporary construction necessary for proper completion of the work in compliance with all safety and other regulations.

PROJECT SIGNS

Allow no signs or advertising of any kind on the job site except as specifically approved in advance by the ENGINEER.

FENCING OF THE CONSTRUCTION AREA

A. General:

1. Furnish and install temporary fence around construction areas on the site

B. Construction:

1. The temporary fence shall consist of woven wire mesh not less than 1.82 m (72") in height, complete with metal posts and all required bracing and with truck and pedestrian gates as required.

PART 3 - EXECUTION

MAINTENANCE AND REMOVAL

Maintain all temporary facilities and controls as long as needed for the safe and proper completion of the Work. Remove all such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the ENGINEER

SECTION 01710– CLEANING

PART 1 - GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

A. Work Included:

Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

B. Related Work Described Elsewhere:

In addition to standards described in this Section, comply with all requirements for cleaning up as described in various other Sections of these Specifications.

QUALITY ASSURANCE

A. Inspection:

Conduct daily inspection, and more often if necessary, to verify that requirements of cleanliness are being met.

B. Codes and Standards:

In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

PART 2 – PRODUCTS

CLEANING MATERIALS AND EQUIPMENT

Provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

COMPATIBILITY

Use only the cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the Engineer.

PART 3 – EXECUTION

PROGRESS CLEANING

A. General:

1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.

2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the ecology.

B. Site:

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary, inspect all arrangements of materials stored on the site.
3. Maintain the site in a neat and orderly condition at all times.

C. Structures:

1. Weekly, and more often if necessary, inspect the structures and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary, sweep all interior spaces clean. "Clean", for the purpose of this sub-program, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and hand-held broom.
3. As required preparatory to installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using all equipment and materials required to achieve the required cleanliness.
4. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which finish materials have been installed. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from all foreign material that, in the opinion of the ENGINEER may be injurious to the finish floor material.

FINAL CLEANING

A. Definition:

Except as otherwise specifically provided, "clean" (for the purpose of this Article) shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaning using commercial quality building maintenance equipment and materials.

B. General:

Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as required.

C. Site:

Unless otherwise specifically directed by the ENGINEER, broom clean all paved areas on the site and all public paved areas directly adjacent to the site. Completely remove all resultant debris.

D. Structures:

1. Exterior: Visually inspect all exterior surfaces and remove all traces of soil, waste material, smudges, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure. In the event of stubborn stains not removable with water, the ENGINEER may require light sandblasting or other cleaning at no additional cost to the Owner.
2. Interior: Visually inspect all interior surfaces and remove all traces of soil, waste material, smudges, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. Remove all paint dropping, spots, stains, and dirt from finished surfaces. Use only the specified cleaning materials and equipment.

E. Timing:

Schedule final cleaning as approved by the ENGINEER to enable the Owner to accept a

SECTION 02220- EXCAVATING, FILLING, AND GRADING

PART 1 GENERAL

GENERAL PROVISIONS

The General Conditions of Construction Contracts and Special Provisions preceding these specifications shall govern this section of the work.

DESCRIPTION

A. Work Included:

Excavation, filling, and grading for this Work includes, but is not necessarily limited to:

1. Excavating for footings and foundations;
2. Filling and backfilling to attain indicated grades;
3. Trenching and trench backfilling;
4. Rough and finish grading of the site.

B. Related Work Described Elsewhere: Testing laboratory services

JOB CONDITIONS

A. Dust Control:

1. Use all means necessary to control dust on and near the Work and on and near all off-site other areas if such dust is caused by the Contractor's operations during performance of the Work or if resulting from the condition in which the Contractor leaves the site.
2. Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors and concurrent performance of other work on the site.

B. Protection:

1. Use all means necessary to protect all materials of this Section before, during and after installation and to protect all objects designated to remain.
2. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Project Engineer and at no additional cost to the Owner.

PART 2 PRODUCTS

FILL MATERIAL – GENERAL

All fill material shall be subject to the approval of the Project Engineer.

FILL MATERIAL

All fill material shall have a plasticity index of 15 or less and shall be free from organic matter and other deleterious substance.

PART 3 EXECUTION

GENERAL

A. Familiarization:

Prior to all work of this Section, become thoroughly familiar with the site, the site conditions, and all portions of the Work falling within this Section.

B. Backfilling Prior to Approvals:

1. Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of this Section prior to all required inspections, tests, and approvals.
2. Should any of the work be so enclosed or covered up before it has been approved, uncover all such work at no additional cost to the Owner.

C. After the work has been completely tested, inspected, and approved, make all repairs and replacements necessary to restore the Work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.

FINISH EXCAVATION AND LINES

Accurately set all finish elevations and lines. Carefully preserve all data and monuments set and, if displaced or lost, immediately replace to the approval of the Project Engineer and at no additional cost to the Owner.

EXCAVATING

A. Depressions:

Where depressions result from, or have resulted from, the removal of surface or subsurface obstructions, open the depression to equipment working width and remove all debris and soft material as directed by the Project Engineer.

B. Other Areas:

Excavate to grades shown on the Drawings. Where excavation grades are not shown on the Drawings, excavate as required to accommodate the installation.

C. Overexposing:

Backfill and compact all over-excavated areas as specified for fill below, and at no additional cost to the Owner.

PREPARATION OF SUBGRADE

A. Scarifying:

After the site has been cleared, stripped, and excavated to within six inches of the specified depths for re-compaction, scarify the exposed surface to a minimum depth of six inches, thoroughly moisture-condition, and compact to the requirements specified for fill below.

B. Leveling:

Remove all ruts, hummocks, and other uneven surfaces by surface grading prior to placement of fill.

EXCESS WATER CONTROL

A. Unfavorable Weather:

Do not place, spread, or roll fill material during unfavorable weather conditions. Do not resume operations until moisture content and fill density are satisfactory to the Project Engineer.

B. Flooding:

Provide berms or channels to prevent flooding of subgrade. Promptly remove all water collecting in depression.

C. Softened Subgrade:

Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and re-compact as specified for fill and compaction below.

D. Dewatering:

1. Provide and maintain at all times during construction, ample means and devices with which to remove promptly and dispose of all water from every source entering the excavations or other parts of the Work.
2. Dewater by means that will ensure dry excavations and the preservation of the final lines and grades of bottoms of excavations.

FILL AND COMPACTION

A. Filling:

After subgrade, compaction has been approved by the Project Engineer spread approved fill material in layers not exceeding eight inches in un-compacted thickness.

B. Moisture-Conditioning:

Water or aerate the fill material as necessary, and thoroughly mix to obtain a moisture content at or within 3% of optimum which will permit proper compaction.

C. Compaction, General:

Compact each soil layer to at least the specified minimum degree. Repeat compaction process until plan grade is attained.

D. Degree of Compaction Requirements:

1. Structural Fill: Densify all structural fill, including re-compacted existing fill and backfill, to a minimum degree of compaction of 95%.
2. Pavement Areas: Compact the upper six inches of fill in pavement areas to a minimum degree of compaction of 95%.

E. Jetting:

Jetting is prohibited unless specifically authorized by the Project Engineer for densification of cohesionless material.

GRADING

A. General:

Except as otherwise directed by the Project Engineer, perform all rough and finish grading required to attain the elevations shown on the Drawings.

B. Grading Tolerance:

Rough Grade: Building and parking areas: Plus or minus 0.1 foot

C. Finish Grade:

1. Parking areas: Plus or minus 0.05 foot
2. Landscaped areas: Plus or minus 0.05 foot

D. Treatment After Completion of Grading:

After grading is completed and the Project Engineer has finished his inspection, permit no further excavating, filling, or grading except with the approval of and inspection of the Project Engineer.

E. Erosion Prevention:

Use all means necessary to prevent erosion of freshly graded areas during construction and until permanent drainage and erosion control measures have been installed.

EXCAVATING FOR FOOTINGS

A. Preparation:

To minimize differential settlement, it is essential that earth surfaces upon which footings will be placed be undisturbed natural earth or shall be compacted to the approval of the Project Engineer and in accordance with the compaction requirements established in this Section of these Specifications.

B. Excavating:

Excavate to the established lines and grades. Cut off bottom of trenches level, and remove all loose soil. Where soft spots are encountered, remove all defective material and replace with lean concrete at no additional cost to the Owner.

PLACING OF GRANULAR CUSHION

Carefully place the specified granular cushion in areas to receive concrete slabs on grade, uniformly attaining the thickness indicated on the Drawings, and providing all required transition planes.

TRENCHING

A. General:

Perform all trenching required for the installation of items where the trenching is not specifically described in other Sections of these Specifications. Make all trenches open vertical construction with sufficient width to provide free working space at both sides of

the trench and around the installed item as required for caulking, joining, backfilling, and compacting.

B. Depth:

Trench as required to provide the elevations shown on the Drawings. Where elevations are not shown on the Drawings, trench to sufficient depth to give a minimum of 30 inches of fill above the top of the pipe, measured from the adjacent finished grade.

Where trench excavation is inadvertently carried below proper elevations, backfill with material approved by the Project Engineer, and then compact to provide a firm and unyielding subgrade and/or foundation to the approval of the Project Engineer and at no additional cost to the Owner.

C. Trench Bracing:

1. Properly support all trenches in strict accordance with all pertinent rules and regulations.
2. Brace, sheet, and support trench walls in such a manner that they will be safe and that the ground alongside the excavation will not slide or settle, and that all existing improvements of every kind, whether on public or private property, will be fully protected from damage.
3. In the event of damage to such improvements, immediately make all repairs and replacements necessary to the approval of the Project Engineer and at no additional cost to the Owner.
4. Arrange bracing, sheeting, and shoring to not place stress on any portion of the completed Work until the general construction thereof has proceeded far enough to provide sufficient strength.

D. Removal of Trench Bracing:

Exercise care in the drawing and removal of sheeting, shoring, bracing, and timbering to prevent collapse and caving of the excavation faces being supported.

E. Grading and Stockpiling Trenched Material:

Control the stockpiling of trenched material in a manner to prevent water running into the excavations. Do not obstruct surface drainage, but provide means whereby storm and wastewaters maybe diverted into existing gutters, other surface drains, or temporary drains.

FOUNDATIONS FOR PIPES

F. General:

Grade the trench bottoms to provide a smooth, firm, and stable foundation throughout the length of the pipe.

G. Foundation Material:

Place a minimum of six inches of the specified material in the bottom of the trench.

H. Sub-Surface Conditions:

1. In areas where soft, unstable materials are encountered, remove the unstable material and replace it with material approved. Make sufficient depth to develop a firm foundation for the item being installed.
2. If the need for such over-excavation has been occasioned by an act or failure to act on the part of the Contractor, make the over-excavation and replacement at no additional cost to the Owner.

I. Shaping:

1. At each joint in pipe, recess the bottom of the trench as required into the firm foundation in such a manner as to relieve the bell of the pipe of all load and to ensure continuous bearing of the pipe barrel on the firm foundation.
2. Accurately shape all pipe subgrade and fit the bottom of the trench to the pipe shape. Use a drag template shaped to conform to the outer surface of the pipe if other methods do not produce satisfactory results.

BEDDING FOR PIPES

A. General:

Place the specified material in the trench, simultaneously on each side of the pipe for the full width of the trench, to a maximum depth of three feet and a minimum of one foot above the outside diameter of the pipe barrel.

B. Densification:

1. Densify the bedding material after placing by thoroughly saturating with water and vibrating with jetting equipment and a concrete vibrator stinger, at maximum intervals of two feet along both sides of the pipe.
2. Take special care to provide firm bedding support on the underside of the pipe and fittings for the full length of the pipe.

C. Alternate Bedding:

Other bedding procedures and materials may be used if prior written approval has been obtained.

BACKFILL FOR PIPES

Using On-Site Materials: After the pipe has been thoroughly bedded and covered, spread the on-site material in uniform lifts of not more than eight inches in un-compacted thickness, and then compact as specified in this Section. Repeat the spreading and compacting procedure until adjacent grade level is attained.

EXCAVATION, TRENCHING AND BACKFILL FOR PIPELINES

PART 1 – GENERAL

SUMMARY

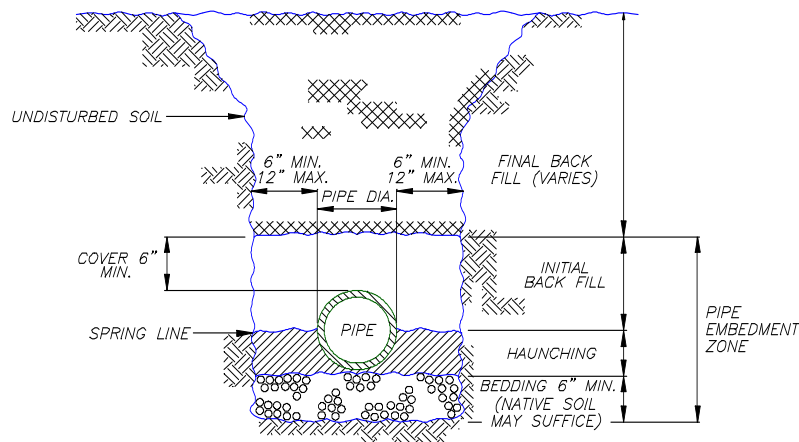
This section includes excavation, trenching and backfill necessary for the construction of the facilities as indicated on the plans including, but not limited to: water mains and service lines, sewer mains and service lines, valves and concrete manholes and related appurtenances.

REFERENCES

- A. ASTM D698 – Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12-in. Drop [Standard Proctor Test].
- B. ASTM D1556 – Test Method for Density of Soil in Place by the Sand-Cone Method
- C. ASTM D2216 – Test Method for Laboratory Determination of Water Content of Soil, Rock and Soil-Aggregate Mixtures
- D. ASTM D2487 – Classification of Soils for Engineering Purposes [Unified Soil Classification System].
- E. ASTM D2774 – Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping
- F. ASTM D2922 – Test Method for Density of Soil and Soil Aggregate and Rock in Place by Nuclear Methods (Shallow Depth)
- G. ASTM D3017 – Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
- H. OSHA 1926 – Occupational Safety and Health Standards for the Construction Industry

DEFINITIONS

- A. Bedding, Haunching and Initial Backfill zones as defined herein and on the standard thermoplastic pipe trench detailed drawing below.



- B. Native, and Import and Select/Engineered Material Definitions:
1. Native Material: Soils excavated from the trench in the immediate vicinity of current pipe installation activities.
 2. Import Material: Soils transported from a soil pit stockpile at a location other than the location where trench excavation is taking place.
 3. Select/Engineered Fill: Soil specified in the plans or specifications or by the Project Engineer to meet permit conditions or selected applications.
 4. Soil Materials as summarized in the table below and further defined in ASTM D2487:

USCS Group	Description
GW	Well-Graded Gravel, with less than 5% fines
GP	Poorly-Graded Gravel, with less than 5% fines
SW	Well-Graded Sands, with less than 5% fines
SP	Poorly-Graded Sands, with less than 5% fines
GW-GM or GW-GC	Well-Graded Gravel, with 5-12% fines
GP-GM or GP-GC	Poorly-Graded Gravel, with 5-12% fines
SW-SM or SW-SC	Well Graded Sands with 5-12% fines
SP-SM or SP-SC	Poorly Graded Sands with 5-12% fines

SUBMITTALS

- A. Submit the result of ASTM 698 standard proctors, including proctor curve, for each soil type encountered and used on the job.
- B. Submit all compaction test results in writing within 5 days of being performed.
- C. Submit gradation curves for imported fill for project engineer review and approval prior to placement.

QUALITY ASSURANCE

- A. Compaction Testing Qualifications: Tests must be performed by a firm or professional regularly engaged in soil testing for engineering purposes. The individual on site shall be certified to operate nuclear density equipment.
- B. Locations: Provide compaction test results at locations as designated by the Project Engineer.
- C. Frequency:

Excavation, Trenching and Backfilling in an Established, Traveled Roadway: once per 100-feet along the pipeline (minimum).

Excavation, Trenching and Backfilling outside of an Established, Traveled Roadway once per 300-feet along the pipeline (minimum).

At each location, provide enough tests to demonstrate compliance with the compaction requirements for both the pipe embedment zone and the final backfill zone.

If testing reveals inadequate compaction, retest at that location after remedying the non-compliance with the specifications.

PART 2 – PRODUCTS

BEDDING, HAUNCHING AND INITIAL BACKFILL MATERIAL

- A. Imported Bedding, Haunching and Initial Backfill Materials: Use one of the following materials.
- B. USCS (ASTM D2487) soil types GP, GW, SP, SW (coarse grained soils with less than 5% fines) and GP-GM, GP-GC, GW-GM, GW-GC, SP-SM, SP-SC, SW-SM, SW-SC, with maximum particle sizes limited to 3/4-inch, utilized as stipulated in Part 3 - Execution.
- C. Native bedding, native haunching and native initial backfill material:
Use in accordance with the restrictions of Part 3 – Execution.
Free from particles greater than 1-inch in dimension.

FINAL BACKFILL MATERIAL

- D. General:
 - 1. Free from soil chunks larger than 4-inches in dimension.
 - 2. Free from stones or rocks larger than 4-inches in dimension.
 - 3. Free from organic materials.
 - 4. Free from frost chunks.
 - 5. Free of Toxic Waste or Hazardous Chemicals per American Samoa Environmental Protection Agency Requirements. Certified if possible.
- E. Imported Final Backfill for Wet Conditions:
Types GW, GP, SW, SP (coarse grained soils with less than 5% fines) or GW-GC/GM, GP-GC/GM, SW-SC/SM, SP-SC/SM (coarse grained soils with 5-12% fines).
Otherwise meeting the general requirements of Article 2.02 Paragraph A.

SLURRY MIX

General: Conform to American Samoa ASPA of Public Works Standard Specification for Construction of Local Streets and Roads as applicable.

PART 3 EXECUTION

GENERAL

- A. Conform to applicable safety laws, including, but not limited to, OSHA 29 CFR Part 1926.
- B. Obtain all permits from the appropriate road agencies for construction within road right of way.
- C. Repair damage resulting from settlement, slides, cave-ins, water pressure, and other causes.
- D. Provide traffic control and other temporary provisions in accordance ASPA of Public Safety, and PNRS Encroachment Permit Conditions.

EXCAVATION

- A. Remove brush, trees and stumps from excavation and site.
- B. Strip and stockpile existing topsoil.
- C. Maintain surface drainage away from trenching or excavation.
- D. If existing soil cannot provide uniform and stable bearing support along the length of the pipe, or if the existing soil contains stones greater than 1-inch in dimension, then over-excavate 6-inches below bottom of pipe.
- E. If trench is more than 5' in depth, the contractor must conform to OSHA guidelines on Trench Safety and Shoring. In addition the contractor must conform to all other State and County requirements for Trench Safety and Shoring.
- F. Contractor will be responsible for disposal of excavated materials during excavation. Contractor must identify, with approval from the Project Engineer or the American Samoa Environmental Protection Agency, the construction disposal site before construction can begin.

TRENCHING

- A. Total Bottom Width: As indicated on plans.
- B. Depth: Provide minimum cover as specified, or depths shown on plans.
- C. Top Width: As needed to meet safety requirements, but minimize the width where possible.
- D. Trench Walls: Keep trench walls vertical in the pipe embedment zone.
- E. Length of Open Trench:
 - 1. Unless authorized by the Project Engineer in writing, the length of trench excavation in advance of pipe being laid shall not exceed 200-feet during active construction.
 - 2. All trenches must be backfilled during non-work hours, or alternately, up to 20-feet of trench can be left open during non-work hours if the trench is completely barricaded and fenced.
 - 3. If open trenches in excess of this specification result in the wetting of moisture-sensitive stockpiled materials, such that the moisture content makes it impossible

to meet compaction requirements, the contractor shall provide imported material that complies with these specifications and haul away the wet materials at no expense to the project or the Owner.

BEDDING

General:

- A. Where over excavation is necessary, install a minimum of 6-inches of imported bedding.
- B. Level and form the bottom of the trench to provide uniform bearing support along the length of the pipe.
- C. Compaction of Imported Bedding: Meet the following density requirements based on standard proctor (ASTM D698):

Location	Percent of Max. Dry Density Required
Areas of Recent Fill or Embankment	95%
Areas Traveled By Vehicular Traffic, Rights-of-Way	90%
Unimproved Surfaces or Fields	80%

HAUNCHING AND INITIAL BACKFILL

A. General

- 1. Provide complete and uniform bearing and support for the pipe, including allowance for bell holes.
- 2. Work material under the pipe haunches and around the pipe to ensure full pipe support.
- 3. Place material in lifts no greater than 6-inches thickness in loose measure.
- 4. Install initial backfill to a depth of 6-inches over the crown of the pipe.

B. Material Usage:

Rigid Pipe (Ductile Iron):

- 1. Dry Trench and Site Conditions: Use native material free from particles greater than 1-inch in dimension.
- 2. Wet Trench Conditions: Imported Material.
- 3. Plastic Pipe: Imported Material
- 4. If deemed necessary by the Project Engineer, and as required by road owner use imported material for PVC and Polyethylene pipe in accordance with ASTM D 2774 and/or road owner requirements.

Pipe Diameter	Maximum Particle Size
4 inch and under	½ inch
6-8 inch	¾ inch
10-16 inch	1 inch
16 inch and larger	1-1/2 inch

C. Compaction of Haunching and Initial Backfill:

1. Compact haunching material and initial backfill using walk-behind vibratory plate compactor or manual hand-tamping tools
2. Ensure no contact between compacting equipment and the pipe.

D. Prohibited Compaction Equipment for Haunching and Initial Backfill:

1. hoe-pack
2. hydro-hammer
3. rammer-tamper
4. vibratory rollers
5. Prevent movement of the pipe during placement or compaction of material.
6. Meet the following density requirements based on standard proctor (ASTM D698):

Location	Percent of Max. Dry Density Required
Areas of Recent Fill or Embankment	95%
Areas Traveled By Vehicular Traffic, Rights-of-Way	90%
Unimproved Surfaces or Fields	80%

FINAL BACKFILL

A. General:

1. If moisture content of the native soil results in the inability to meet compaction requirements (due to fines), use imported material that meets Article 2.02 B.

2. Waste or haul away material not meeting the requirements at contractor's expense.
3. Conform to Section 02705 – Road Restoration for backfill requirements under roadways.
4. Repair any trenches improperly backfilled or where settlement occurs, then refill and compact.

A. Compaction:

5. Install 2-feet of total fill over the pipe crown before subjecting the trench to hydro-hammers, hoe-packs, or vehicular traffic.
6. Backfill in lifts to meet compaction requirements throughout the full depth of backfilled trench.
7. Compact to the following requirements (Densities as a percent of Standard Proctor):

Location	Maximum Lift	Percent of Max. Dry Density Required
Under Roadways or Surfaces Traveled by Vehicular Traffic	12-inches	95%
Areas of Recent Fill or Embankment	12-inches	90%
Rights-of-Way	12-inches	90%
Unimproved Surfaces or Fields	24-inches	80%

- vii. Use smaller lifts if necessary to meet the in-place density requirements.

REMOVAL OF NUISANCE WATER

- A. Control site drainage, springs and runoff, and prevent water from adversely affecting trenching locations.
- B. Remove nuisance water entering the trenches. Water that can be removed through the use of sump or trash pumps will not be considered dewatering.
- C. Keep trenches free from standing water until the facilities are in place, the end plugged against the entrance of water, and backfill has been placed and compacted.

LOCATE EXISTING UTILITIES

- A. Field locates all existing underground utilities.
- B. Contact ASPA Water Division and Wastewater Division 48-hours in advance of work in areas needing utility location service.

UTILITY CONFLICTS

- C. Protect existing utilities from damage during excavation and backfilling operations.

- D. Provide temporary support for existing water, gas, telephone, power, or other utility services that cross the trench until backfilling of trench is complete.
- E. Compact backfill to 95% of maximum density under disturbed utilities.
- F. Coordinate the repair of existing utilities, regardless of whether they were properly located.
- G. Damage to existing utilities properly located through “Utility Locate” programs will be the responsibility of the Contractor to repair, at no cost to the American Samoa Power Authority.
- H. Damage to existing utilities improperly located by “Utility Locate” programs shall be at the expense of the “Utility Locate” service or the owner of the damaged utilities.
- I. Fair compensation will be negotiated for repairs to Village water and sewer utilities that were improperly located. However, if the Contractor neglects to request a Village utility locate in accordance with the Contract requirements, no compensation will be made to the Contractor.
- J. Water and sewer parallel and perpendicular crossings:
 - 1. Maintain a 10-foot horizontal separation (O.D. to O.D.) for parallel mains.
 - 2. Upon approval by the Engineer, water and sewer mains may be installed in parallel as close as 5-feet, provided all of the following conditions:
 - i. Vertical separation is 18 inches (O.D. to O.D.)
 - viii. Water main is above the sewer main.
 - ix. Sewer pipe is constructed to withstand 150 psi static pressure without leaking.
 - x. Maintain a minimum 18-inch vertical separation (O.D. to O.D.) for perpendicularly crossing mains.
 - xi. Place water pipe over sewer pipe.
 - xii. Lay pipe with joints equidistant from the point of crossing.
- K. If it is impossible to meet any of the above separation distances and deviations, and specific provisions are not indicated on the plans, bring the matter to the attention of the Project Engineer for resolution.

WATER DISTRIBUTION MAINS

PART 1 – GENERAL

SECTION INCLUDES

This section includes water pipe, gate valves, hydrants, preparation, bedding, installation, and disinfection.

RELATED SECTIONS

- A. Section 02110 - Site Clearing
- B. Section 02315 - Excavating, Trenching and Backfilling
- C. Section 02316 - Rock Removal
- D. Section 03300 - Cast-in-Place Concrete

REFERENCES

- E. ANSI/AWWA C104/A21.4 – Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water
- F. AWWA C105 – Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.
- G. ANSI/AWWA C110/A21.10 – Ductile Iron and Gray Iron Fittings, 3 Inch Through 48 Inch, for Water and Other Liquids
- H. ANSI/AWWA C111/A21.11 – Rubber-Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings
- I. ANSI/AWWA C150/A21.50 – Thickness Design of Ductile Iron Pipe
- J. ANSI/AWWA C151/A21.51 – Ductile Iron Pipe, Centrifugally Cast, for Water or Other Liquids
- K. ANSI/AWWA C153/A21.53 – Ductile Iron Compact Fittings, 3 Inch through 16 Inch, for Water and Other Liquids
- L. ANSI/AWWA C502 – Dry Barrel Fire Hydrants
- M. AWWA C503 – Wet-Barrel Fire Hydrants
- N. AWWA C504 – Rubber-Sealed Butterfly Valves
- O. ANSI/AWWA C509 – Resilient Seat Gate Valves for Water and Sewerage Systems
- P. ANSI/AWWA C515 – Reduced Wall, Resilient Seated Gate Valve for Water Supply Service
- Q. ANSI/AWWA C600 – Installation of Ductile Iron Water Mains and Their Appurtenances
- R. ANSI/AWWA C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

- S. ANSI/AWWA C651– Disinfecting Water Mains
- T. ANSI/AWWA C900 – Polyvinyl Chloride (PVC) Pressure Pipe, 4 Inch through 12 Inch, for Water Distribution
- U. AWWA C901 – Polyethylene (PE) Pressure Pipe, Tubing, and Fittings, ¾ inch through 3 inch, for Water.
- V. ASTM D 1785 – Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- W. ASTM D 2241 – Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR).
- X. ASTM D 2466 – Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
- Y. ASTM D 2855 – Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
- Z. ASTM D 2239 – Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.
- AA. ASTM D 3139 – Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
- BB. ASTM F 477 – Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- CC. Standard Methods for Examination of Water and Wastewater
- DD. NSF 60 - Drinking Water Treatment Chemicals
- EE. NSF 61 - Drinking Water System Components

SUBMITTALS

- A. Water Main and Fittings
- B. Special Anchoring Retainer Glands
- C. Gate Valves and Boxes
- D. Fire Hydrants and Flush Hydrants
- E. Warning Tape
- F. Tracing wire, Box and Splice Materials
- G. Method of Disinfection
- H. Water Testing Lab
- I. Method of Connection to Existing Distribution System
- J. Method of Pressure Testing
- K. Pressure Test Certification Forms

DEFINITIONS

- A. Fully Restrained: Pipe installed with or including:
 1. Certalok C900 joined pipe (or equal)
 2. Pipe with Flanged connections
 3. Pipe with mechanical joints

QUALITY ASSURANCE

- A. Water testing shall be done by the AS-EPA certified laboratory.
- B. Pipe: Perform work in accordance with manufacturer's recommended procedures.
- C. Valves: Mark manufacturer's name and pressure rating on valve body.
- D. Pressure testing shall be done in accordance with the Project Engineer's requirements in Section 3.11.

DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and protect products to site.
- B. Deliver and store valves in shipping containers with labeling in place.

ACCEPTANCE

- A. Work covered by this section will not be accepted until the backfilling and testing connected with the work has been completed satisfactorily.
- B. Any section of water main that is found defective in material, alignment, or joints before acceptance shall be corrected to the satisfaction of the Project Engineer.

PART 2 – PRODUCTS

WATER PIPE

- A. Manufacturers: Certainteed, Diamond Plastics, Johns Manville, PW Pipe, or approved equal.
- B. PVC Pipe: AWWA C900, elastomeric-gasket couplings, Class 100, 150, or 200 as shown on the drawings or bid schedule.
- C. Fittings: AWWA C111, rubber-gasket joints, Ductile-Iron Joints: ASTM D3139 compression gasket ring.
- D. Trace Wire: Magnetic detectable conductor, plastic covering, imprinted with "Water Line" in large letters.
- E. PVC Pipe: ASTM D2241, SDR-21 or 26 as shown on the drawings or bid schedule
Fittings: ASTM D2466, PVC.
Joints: ASTM D2855, solvent weld.
- F. Ductile Iron Pipe: AWWA C151, pressure class 350, centrifugally cast in metal molds or sand-lined molds, or C104, cement-mortar lining, as shown on the drawings or bid schedule.
 - 1. Fittings: Ductile iron, standard thickness.
 - 2. Joints: AWWA C111, rubber-gasket joints with rods.
 - 3. Jackets: AWWA C105 polyethylene encasement, double layer, half lapped, ½-inch polyethylene tape.
- G. Joint Thrust Restraint

1. Concrete Thrust Blocks:
 - i. One part Portland cement, 2 ½ part of fine aggregate, 3 ½ parts coarse aggregate and just enough water for a workable consistency.
 - xiii. #4 Epoxy coated rebars.
2. Spatial Anchoring Retainer Glands for Mechanical Joints:
 - i. EBAA Iron Series 2000PV
 - xiv. Romac Industries Grip Ring

GATE VALVES

- A. Manufacturers: American Darling, Mueller, Clow, or Waterous, or equal.
- B. Meet or exceed either AWWA C509 or C515, resilient seated gate valves 2 inch through 12 inch NPS, ductile iron body, trim, non-rising stem with square nut, single wedge, mechanical joint, flanged, or slip-on ends as specified in drawings, control rod, and extension box.
- C. Furnish one valve key per contract or delivery order as applicable.

BUTTERFLY VALVES

- A. AWWA C504, rubber seated, iron body, bronze disc, resilient replaceable seat, water or lug ends, ten position lever handle.
- B. Valve Type: Float operated, with operating pressures up to 1200 kPa, equal to APCA Air Release model 143C.
- C. Valve Box: Concrete water meter box equal to Christy B-9 or San Diego.

COMBINATION AIR/VACUUM RELIEF VALVE

APCO, Combination Air Valve, 100 kPa, 150 psi, C.I., Model 140C single body, double orifice, cast iron.

GATE VALVE BOX

- A. Manufacturer: Tyler Pipe or equal.
- B. Two piece slip style valve box
- C. ¼-inch nominal diameter
- D. Length: Sufficient for depth of bury indicated on plans
- E. Cover: Locking with pentagon nut and clearly marked as “water”
- F. Acceptable Products: Equal to the following
- G. Tyler Pipe 6855 valve box and lid
- H. Rich 920 or 925 valve box and lid
- I. Cast iron and of the sliding type, sized for use with the appropriate valve. Box shall extend from the body of the valve to the finished grade.

FIRE HYDRANT

- A. Conform to AWWA C502, dry-barrel or C503 wet-barrel, as specified in drawings.
- B. Bury length is to the nearest 6-inches from the bottom of the connecting pipe to the ground line of the hydrant.
- C. Use two hose (2½ inch) and one pumper outlet (4 1/2 inch) nozzles with threads conforming to National Fire Protection Association (NFPA) 1963 for National Standard Fire Hose Coupling Screw Threads
- D. The size of the hydrant is designated by the nominal diameter of the main valve opening. In no case shall the diameter of the main valve opening be less than 4 inches.
- E. Inlet connection is 6 inch flanged or hub connection.
- F. The direction of rotation of the operating nut to open the hydrant is left (counterclockwise).
- G. Paint the exterior of the hydrant traffic or safety yellow.
- H. The outlet nozzle cap and chain is bronze.
- I. Equipped with break off Flange and check valve (Model/LBI 400A)
- J. Furnish two hydrant wrenches per contract or delivery order as applicable.
- K. Furnish two traffic safety flange repair kits including all couplings, flanges, gaskets and connections necessary to replace a broken safety flange.

FLUSH HYDRANT

- A. Manufacturer: James Jones Company, Model J342, J344HP, or equal.
- B. Conform to AWWA C503, wet-barrel.
- C. Hydrant of bronze material.
- D. Inlet connection is 2 inch or 4 inch flanged or hub connection.
- E. Use one hose (2 1/2 inch) nozzle with threads conforming to National Fire Protection Association (NFPA) 1963 for National Standard Fire Hose Coupling Screw Threads.
- F. Bury length is to the nearest 6 inches from the bottom of the connecting pipe to the ground line of the hydrant.
- G. The direction of the rotation of the operating nut to open the hydrant is left (counterclockwise).
- H. Paint the exterior of the hydrant traffic or safety yellow.
- I. The outlet nozzle cap and chain is bronze.
- J. Furnish two hydrant wrenches per job-site.
- K. Galvanized Pipe Schedule 40 ASTM A120, Scotch Rap 50 per drawing.
- L. Use Teflon compound on all joints.

BLOW-OFF HYDRANT

- A. Manufacturer:

1. Kupferle foundry Company
2. Substitutions will be permitted
3. Sizes: 4-8 inches

WARNING TAPE

Supply detectable warning tape that is a minimum of 2 inches wide, blue or striped blue, and have a printing that warns of a water line below.

PIPELINE MARKER POSTS

Posts: Equal to Carsonite composite utility marker CUM-375, blue color.

AIR RELEASE VALVE ASSEMBLIES

- A. Valve Material: Cast iron
- B. Valve Type: Float operated, equal to APCO Air Release model 143C.
- C. Valve Box: Concrete water meter box equal to Christy B-9 or San Diego 37b.

COMBINATION AIR VALVE

APCO, Combination Air Valve, 150 psi, C.I., Model 143C, single- body, double orifice, cast iron.

STEEL PIPE ENCASEMENT

ASTM A53, schedule 40 black steel pipe.

TRACER WIRE AND BOX

- A. Wire: Provide #10 AWG jacketed solid copper wire, type THHN/THWN.
- B. Box: Provide 4 inch Schedule 40 PVC pipe and a 4-inch PVC threaded watertight plug as a box for terminations or junctions of tracer wire.
- C. Splice Kit: Use underground waterproof splice materials.

ACCESSORIES

- A. Thrust Blocks: Refer to Section 03300 (Cast-In-Place Concrete).
- B. Marker Post
- C. Manufacturers: Carsonite, Greenline
- D. Flexible fiberglass, dual-sided.
- E. Protection Post
- F. Black iron, 3 inch diameter, 6 feet long, buried 3 feet.
- G. Cover each post at the top with 2 coats of yellow reflectorized paint or tape for a band 3 inches wide.
- H. Metallic Tracer Tape, magnetic detectable conductor, copper tracer wire, plastic covering, imprinted with "Water Line" in large letters.

PART 3 – EXECUTION

EXAMINATION

Verify existing water main size and location.

DELIVERY, STORAGE AND HANDLING

- A. Ensure that pipe is free from defects and damage at time of delivery and prior to installation in the trench.
- B. Remove all defective pipes from the site within 24-hours of discovery.
- C. Handle pipe with padding between metal machinery and pipe.
- D. Keep dirt and foreign matter away from the pipe interiors and sealing surfaces.
- E. Lower pipe carefully into the trench without dropping, rolling or dumping.

PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

BEDDING

- A. Excavate pipe trench in accordance with Section 02315 (Excavating, Trenching and Backfilling). Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Backfill around sides and to top of pipe with bedding material and tamp in place.
- C. Maintain optimum moisture content of bedding material to attain required compaction density.

INSTALLATION - WATER MAIN

- A. Maintain separation distances of water main from sewer pipe as per American Samoa Environmental Protection Agency specifications.
- B. Route pipe in straight line.
- C. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- D. Install water mains and appurtenances in the locations and of the sizes and materials shown on the drawings and bid schedule.
- E. Ensure that ends of pipe in the trench are plugged during all work interruptions and all other times necessary to prevent soil, rodents and trench water from entering the pipeline or contaminating the joints.
- F. Promptly remove all debris that enters the pipeline and swab the area with a 1% hypochlorite solution.
- G. Install pipe with a minimum cover depth of 36-inches measured from finished grade to top of pipe.
- H. Install thrust restraint on all fittings and appurtenances. Contractor's option of the following unless specifically noted on the plans:

1. Concrete Thrust Blocks:
 - i. Pour thrust blocks against the fitting and undisturbed earth.
 - ii. Place concrete thrust blocks so that the pipe and joints will be accessible for repair.
 - iii. Install rebar around the fitting and embed rebar in concrete thrust block as shown on detail drawings.
 - iv. Use full 20-foot sections of pipe out of fittings or valves, otherwise use restrained joints within 20-feet of fitting or valve.
2. Special Anchoring Retainer Glands:
 - i. Install in accordance with manufacturer's recommendations.
 - ii. Project Engineer may specify that an additional; restraint be used for pipe sections near critical fittings.
 - iii. Joint Restraint Rodding ("shackle rods")
 - iv. Rod from hydrant tees to ears on the hydrant base elbow.
 - v. Rod from fitting to fitting.
 - vi. Install tie bolts to connect tie rods, if required.
 - vii. Install duc lugs where required to increase the width of the rodding.
 - viii. Paint rods and hardware with two coats of bituminous coating.
 - ix. Install fully restrained push-on joints where specifically noted on the plans or if the mains are explicitly called out as "fully restrained" in the bid schedule.

I. Horizontal Pipe Deflection:

1. PVC:
 - i. AWWA C900 Water Main may be deflected in accordance with AWWA C605, for sizes 4-inch through 10-inch.

Normal Size	Minimum Bending Radius	Offset per 20' Length
4 in.	100 ft.	23 in.
6 in.	144 ft.	16 in.
8 in.	189 ft.	12 in.
10 in.	231 ft.	10 in.

- xv. Deflection will not be permitted at the joint and must be via a continuous arc of constant radius.
- 2. Ductile Iron
 - i. Ductile iron push-on joints mains may be deflected in accordance with the manufacturer's recommendations and AWWA C600.
 - xvi. Deflection will occur at the push-on joint.

Normal Size	Max Deflection	Offset per 20' Length
3 in. through 12 in.	5°	21 in.
14 in. and larger	3°	12 in.

- J. Install access fittings per Section Disinfection of Water Main System.
- K. Form and place concrete for thrust restraints at each elbow or direction change of pipe main.
- L. Install Metallic Tracer Tape buried continuously at 12 inches below finish grade.
- M. Backfill per Section Excavating, Trenching and Backfilling.
- N. Install marker post at all bends, gate valves...etc as shown on details.
- O. Provide accurate As-built Drawings and Reference Points to accurate locations with a minimum of 2 points for minor and 3 points for major appurtenances.

VALVE, VALVE BOX AND MARKER INSTALLATION

- A. Install valves at location indicated on the plans.
- B. Support gate valves on a pre-cast block during assembly, and thrust block and rebar or fully restrain the valve.
- C. Set valves on solid bearing.
- D. Install thrust blocking and rebar as shown in the drawings.
- E. Center and plumb valve box over valve. Set box cover as specified in drawings.
- F. Set valve Marker Post Installation:
 - 1. Flush with finish grade elevation.
 - 2. Flush with the surfaced street.
 - 3. 2-inches below the level of an unimproved street.
- G. Valve Marker Post Installation:
 - 1. Set post with 18-inches of post above grade with "V" pointing toward gate valve.

2. Paint the marker post “safety blue”.
3. Stencil the size of the valve and the distance to the valve on the post with 2-inch tall black lettering.
4. Install every 300 feet or as directed by the Engineer.
5. Install concrete collar around gate valve lid.

FIRE HYDRANT INSTALLATION

- A. Set hydrants plumb. Locate pumper nozzle perpendicular to and facing roadway.
- B. Set hydrants to grade with nozzles at least 20 inches above ground.
- C. Connect auxiliary gate valve to tee and hydrant to gate valve using a 3-foot section of 6-inch water main pipe on each unless otherwise indicated on the plans.
- D. Fully restrain joints between tee and auxiliary gate valve, and between auxiliary gate valve and hydrant.
- E. Set hydrant on precast concrete block.
- F. Set hydrant with the traffic flange at an elevation of 1 to 3 inches above finished grade.
- G. Place gravel, a minimum of 18 cubic feet per hydrant, from 18 inches below to 6 inches above the weep hole opening.
- H. Paint hydrants in accordance with local code, or as specified in paragraph 2.06

FLUSH HYDRANT INSTALLATION

- A. Set hydrants on solid bearing.
- B. Install hydrants plumb with the pumper nozzle as indicated in the plans. Where grade is established, set the hydrant to an elevation with the nozzles approximately 3 feet above the ground or sidewalk level. Where grades are not established, set the hydrant to the elevation established by the Project Engineer.
- C. Provide each hydrant with protection posts as specified in drawings.

WARNING TAPE INSTALATION

Install warning tape in water main trench 1-foot below finish grade, centered over the pipeline.

PIPELINE MARKER POST INSTALLATION

- A. If the pipeline is not in a roadway or sidewalk and is in an unimproved area, install Carsonite marker posts at 500-foot intervals along the pipeline, centered over the pipe.
- B. If the pipeline is under a traveled roadway, install the marker posts offset from the pipe at a consistent distance.
- C. Allow 36-inches of the post to be exposed above grade.
- D. Stencil the water main information, including offset distance, diameter of pipe, and pipe material neatly on the post.

PRESSURE AND LEAKAGE TESTING

- A. Whenever practical, before backfill is placed or joint covered, test pipe for leaks.

- B. Furnish necessary material, equipment, labor for testing including, but not limited to: water, pump, water storage vessel, piping, two water pressure gauges, valve hydrant, graduated container and corporation stops.
- C. Water pressure gauges shall be liquid filled with 5 psi or less increments.
- D. Pump shall be of a design that limits introduction of air. Defective equipment shall be replaced.
- E. Test mains and have equipment fully prepared prior to calling the Project Engineer or his representative on site to witness the passing of a test. Notify Project Engineer 48 hours prior to pressure testing of any section.
- F. Test Duration: 2 hours minimum
- G. Maximum length of test section: 1,000-feet. Longer length may be tested, but the allowable leakage shall be limited to the 1,000-foot length.
- H. Maximum allowable pressure differential: A pressure differential no greater than 25 psi above the test pressure will be allowed due to elevation changes unless approved by the Engineer.
- I. Testing Procedure:
 1. Fill test section with potable water at a velocity below 1ft/s.
 2. Expel all air from the test section.
 3. Install corporation stops at high points if necessary to facilitate removal, and cap off after successful completion of the test
 4. Verify that all fire hydrant lead valves and main valves within the test section are open.
 5. Pressurized the main to 150 psi or to the pressure class or rating of the pipe as measured at the lowest elevation along the test section, whichever is less.
 6. If pressure drops more than 5 psi during the test, immediately re-pressurize the line to the original test pressure and continue test, and record amount of water required to re-pressurize the line. Two water pressure gauges are required to verify pressurization.
 7. At the end of the test, re-pressurize the line to the original test pressure, and record amount of water required to re-pressurize the line.
 8. Method of Water Measurement: Supply a means of accurate water measurement that is compatible with the pressurizing equipment (e.g. pump and hoses), such as a water meter or a water container with graduations.
 9. Add total amount of water required to re-pressurize the line during and at the end of the test and compare with the allowable leakage as calculated below.
 10. Allowable Leakage Determination

$$L = (N * D * P^{1/2}) / 7400$$
 Allowable Leakage (gph)

N = Total Length Tested Divided by the Standard Pipe Length

D = Nominal Diameter of Pipe (inches)

P = Test Pressure (psi)

Example Allowable Leakage Chart Using Formula Above

PVC and DI Pipe with 20-foot sections

Allowable Leakage/ 1000 feet (gph)				
Pipe Diameter, D	P = 100 psi	P = 150 psi	P = 200 psi	P = 250 psi
4 inch	0.27	0.33	0.38	0.43
6 inch	0.41	0.50	0.57	0.64
8 inch	0.54	0.66	0.76	0.85
10 inch	0.68	0.83	0.96	1.07
12 inch	0.81	0.99	1.15	1.28

11. Repair, at no cost to owner, any section of the line that fails this test.
12. Repair any visible leakage, regardless of the result of the leakage test.
13. Retest all repaired sections of line, at no cost to the owner, until pressure test is successfully completed.
14. Complete pressure test certification forms and submit to Project Engineer within five (5) days of pressure test.

FLUSHING WATER MAINS

- A. Flush with potable water to provide 3 volumetric exchanges in the pipeline at a minimum velocity of 3 feet per second.
- B. "Pig" line after flushing if sediment or debris is still visible in the discharge.

DISINFECTION OF WATER MAINS

- A. Disinfect in accordance with one of the methods outlined in Section 5 of AWWA C651
 1. Continuous Feed Method:
 - i. Feed a chlorine solution into water entering the main such that the water will have a 25-mg/L free chlorine concentration.
 - ii. Continue feeding until the entire pipeline to be disinfected is filled with the chlorinated water.

- iii. At the end of 24-hours, there must be at least 10-mg/L free chlorine residual as evidenced by residual tests taken at approximately 1200 feet intervals along the main.
- 2. Slug Method:
 - i. Feed a chlorine solution into water entering the main such that the water will have a 100-mg/L free chlorine concentration.
 - ii. Apply the solution continuously and sufficiently to ensure that a column of water with 100mg/L free chlorine residual is formed in the pipe.
 - iii. Ensure that all parts of the main and its appurtenances are exposed to the column for at least 3-hours.
 - iv. Check the residual of the column at 1200 feet intervals along the main. If it drops below 50mg/L, inject additional chlorine solution into the entire column such that its residual is raised to 100 mg/L.
- 3. For test methods 2 and 3 in Article 3.12 Paragraph A, ensure that the chlorine solution is introduced within 10-feet of the end of the section being disinfected and for all cases is being withdrawn or wasted from the most extreme point relative to the point of water introduction. If branches exist, ensure that the chlorinated solution reaches all portions of the branches.
- 4. After disinfection, flush chlorinated water from the pipe in an environmentally safe manner. In no case shall direct disposal to a surface water be permitted.
- 5. Check the chlorine residual at time of disposal.
- 6. If disposal is to the ground surface or ditch, neutralize the chlorine residual if the free residual is above 1 mg/L.
- 7. Use the following neutralization chemical schedule:
 - i. Sulfur dioxide at 0.8 lb/100,000 gals/mg/L of free chlorine
 - ii. Sodium Bisulfite at 1.2 lb/100,000 gals/mg/L of free chlorine
 - iii. Sodium Sulfite at 1.4 lb/100,000 gals/mg/L of free chlorine
 - iv. Sodium Thiosulfate at 1.2 lb/100,000 gals/mg/L of free chlorine
 - v. Continue flushing until the residual reaches distribution system levels.
- B. After disinfecting and flushing but before the water main is placed in service, collect and test water samples for bacteriological quality.
- C. Sample in accordance with the Standard Methods for Examination of Water and Wastewater.
- D. Take two consecutive batches of tests, 24 hours apart.
- E. Collect samples from each pipe end and at approximately 1200 feet intervals along each main.
- F. Deliver samples to a state certified testing lab and provide Project Engineer with results within 24 hours of laboratory results.

- G. Regardless of the chosen testing method, if initial disinfection fails to produce satisfactory bacteriological results, re-chlorinate the mains and branch lines, flush and take new samples until satisfactory results are obtained.
- H. Do not place main in service until the Project Engineer has received safe bacteriological results.

TRACING WIRE INSTALLATION

- A. Install with all PVC, Ductile Iron, and HDPE Pipe.
- B. Provide a minimum of three attachments to the pipe per pipe length with duct tape or install in the initial backfill layer 6-inches above and along the pipe centerline.
- C. Avoid underground splices, but where necessary, make splices with an underground, waterproof splice kit.
- D. Provide riser boxes at maximum intervals of 1000 feet or at fire hydrant locations.
- E. Install an independent tracing wire line between each tracing wire box in each direction of pipe.
- F. Bring tracing wire a minimum of 18 inches above ground surface directly behind each hydrant using box construction specified.
- G. Install box to elevation that will not interfere with operation and maintenance of the hydrant.

CONNECTION TO EXISTING WATER MAINS

- A. Make the necessary arrangements with ASPA a minimum of three (3) working days prior to any connections to any water mains.
- B. Do not start work until all the materials, equipment, and labor have been assembled on the site. When work is started on a connection, proceed continuously without interruption, and as rapidly as possible until completed.
- C. If the connection to the existing system involves turning off the water, notify affected customers 24 hours in advance. No shutoff of mains will be permitted overnight, over weekends, or on Federal and holidays. Water shut-off is limited to 4 hours maximum.
- D. Make connections to existing water mains in a neat, workmanlike manner to suit actual conditions encountered at the existing main. Adhere to manufacturer's recommendation to avoid damage to pipe coating when wet or dry tapping. Leave a smooth end at right angles to the axis of the pipe.
- E. Prevent the existing main from being contaminated when making the connection. Take all action necessary to prevent trench water, mud or other contaminants from entering the connection line or main at any time.
- F. Spray or swab all connection components with a 1% hypochlorite solution prior to installation.
- G. Visually inspect any joint not pressure tested for leakage.
- H. Test under system pressure prior to backfilling.

- I. Test in the presence of the ASPA representative.
- J. Repair and retest any joint with leakage until no leakage is visible at no cost to the owner.

VALVES, FITTINGS AND APPURTENANCES

PART 1 GENERAL

SCOPE OF WORK

Work required under this section consists of furnishing and installing valves, gates and appurtenances of the following types:

- A. Gate valves
- B. Check valves
- C. Air release and vacuum valves
- D. Service saddles
- E. Corporation stops
- F. Curb stops
- G. Valve boxes
- H. Water meters
- I. Fire hydrants

SUBMITTAL REQUIREMENTS

The Contractor shall submit shop drawings, manufacturer's literature, samples, certificates and guarantees.

OPERATING AND MAINTENANCE INSTRUCTIONS

The Contractor shall furnish operating and maintenance instructions and parts lists.

PART 2 MATERIALS

GENERAL

- A. All valves 2-1/2" and smaller in diameter shall be provided with screwed ends. All valves larger than 2-1/2" in diameter shall have flanged or bell ends unless otherwise indicated on the Drawings or in these Specifications. Flanges shall be dimensioned, faced and drilled in accordance with ANSI B16.1 for class 125 unless stated otherwise on the Drawings or the Specifications. All necessary caulking materials, gaskets, bolts, and nuts shall be provided.
- B. Valves shall be carefully installed in their respective positions, accessible for operation and repair, and free from all distortion and strain, with joints made as specified, and shall be left in satisfactory operating condition. The valves or gates shall be connected to floor stands where required. All stem guides shall be accurately aligned.
- C. All valves, fittings, hydraulic and electric operators, and all other materials shall be protected from damage and corrosion before installation and until completion of work. After installation, all valves except bronze valves and those underground shall be painted in accordance with the painting requirements and color code for the pipelines of which

they are a part. Bright or rubbing surfaces shall not, however, be painted, but shall be protected with an approved lubricant.

- D. Valves and gates shall be supplied with suitable operating keys, levers, extension rods, floor boxes, hand wheels or chain operators as indicated on the Drawings or in these Specifications.

GATE VALVES

- E. All double disc gate valves shall have their stems in a vertical position or be designed for proper operation in the positions shown on the Drawings and shall have the same clear internal diameter as the pipe on which they are placed.
- F. All gate valves 2-1/2 inches in diameter and smaller shall be all brass or bronze, except the hand-wheel, which shall be of die cast aluminum. Valves shall be of the double disc type with rising stems and shall be rated for 200 psi non-shock cold water. Valves shall be Kennedy 251, Stockham Figure B106, or approved equal. Gate valves 3 inches in diameter or larger shall be iron-body, resilient seated, non-rising stem type and shall conform to AWWA C509. Valves shall have mechanical joint ends and gaskets conforming to AWWA C111 or flanged joint ends. Buried valves shall have a 2-inch operating unit and OPEN LEFT. An operating hand-wheel shall be provided with each flanged gate valve installed above ground. A permanently attached extension rod with operating nut shall be installed on all valves deeper than 4 feet below finished grade to ring the nut to within 1 foot of the surface. Valves shall be Dresser, Mueller, Clow or equivalent. All cast iron body gate valves shall be asphalt coated to prevent corrosion. All ductile iron body gate valves shall be fully epoxy coated both on the interior as well as the exterior for maximum corrosion protection.

CHECK VALVES

Check valves shall be wafer style, spring loaded, and center stem guided type for bolting between adjacent flat face flanges. Bodies shall be semi-steel, plugs and seats shall be bronze, and springs shall be stainless steel. Flow area through the body shall be equal or more than the cross-section of the equivalent pipe size. Check valves shall be APCO Series 3000 or equal.

AIR RELIEF VALVES

- A. Air relief valves for water distribution service shall be ball-and-cup type and shall be of the size and pressure rating indicated on the Drawings. Air relief valves shall be capable of positive action in releasing air entrained in water under pressure. The valve body and cover shall be cast iron, trim shall be bronze and float shall be stainless steel. Cast iron parts shall be coated to retard corrosion.
- B. Air relief valves for water service shall be APCO as manufactured by the Valve and Primer Corporation, Crispin by Multiplex Mfg. Co. or equivalent. Air valves for vertical turbine pumps shall include a double-acting throttling device to restrict the rate of outflow and to allow full capacity inflow on pump stoppage. The rate of outflow shall be field adjustable. Air valves for vertical turbine pumps shall be APCO Series 13740 DAT or equal.

SERVICE SADDLES

- A. On pipe with nominal pipe size 6-inches and smaller, service saddles shall be ductile iron, double strap construction. Saddles shall be Rockwell Type 311, Mueller or other equivalent for Mueller thread.
- B. On pipe with nominal pipe size 8-inches and larger, service saddles shall be ductile iron, double strap construction. Saddles shall be Rockwell Type 313, Mueller, Dresser or other equivalent.

CORPORATION STOPS

Corporation stops shall be compatible with the type and class of service piping and service saddle used for the connection. For plastic service piping, a stainless steel insert shall be provided with each corporation stop. Corporation stops shall be Mueller, Hayes, Crane or equivalent product with "Mueller Threads".

VALVE BOXES

Valve boxes shall be furnished and installed on all buried valves in the locations shown on the Drawings.

Valve boxes shall be concrete traffic-type boxes with cast iron lid on ring seat. The cover shall be marked "WATER". Concrete extension pieces shall be provided with each box as required. Cast iron or PVC pipe extensions may be used for deep bury conditions for valve boxes. Gate Valve boxes shall be 12 inches long. Diameter shall be 10-3/8" minimum with 9" throat diameter. Valve boxes shall be Christ, Model GS, Brook Model 3RT, or equivalent.

WATER METERS

Water meters for measuring pump flow shall be of the size shown on the Drawings. They shall be bronze bodied with thermoplastic straightening vanes, flow tube, and rotor, with graphite radial bearing, stainless steel trim, sealed register, tungsten carbide thrust bearings, and have a ceramic magnet drive. Registration shall be in 1,000s gallons. Sweep hand shall revolve once per 1,000 gallons. Meters shall be Rockwell Series "W" Turbo-Meter or approved equal and conform to AWWA C701.

FIRE HYDRANTS

- A. Wet Barrel Hydrants: Hydrants shall be wet barrel, Clow "Ranger" Model 960 or equal and comply with AWWA C503. Hydrants shall have two 2-1/2 inch hose connections and one 4-1/2 inch pumper connection. The end of the 6-inch bury elbow either mechanical joint or flanged as shown on the Drawings. Bury section lengths shall be as shown on the Drawings.
- B. Exterior parts of the hydrant shall be covered with two coats of red paint matching existing hydrants. All hydrant parts shall be distinctly marked with its name, part number, length, size, and marker's name. The markings shall be on cloth tags securely fastened to the parts with wire or shall be painted on the parts by such other means as will ensure positive identification of the parts on delivery.
- C. Hydrant Guard Post: Four-inch diameter steel pipe shall be used to fabricate hydrant guards. Refer to Standard Drawings for construction details. Hydrant guards shall painted with one coat of suitable primer and two (2) coats of optic yellow enamel paint. Place the hydrant guard posts so the hydrant is located in the center of the guard.

- D. Remove Existing Hydrants: Hydrants that are to be taken out of service as a result of new construction shall be pressure washed inside and out and delivered to the ASPA storage yard.

METER BOXES

- A. Meter boxes shall be constructed of HDPE. Boxes shall be as manufactured by Carson Industries, La Verne, California, or approved equal. Box shall be Part Number 1419B-1. Cover shall be non-hinged type capable of locking, Part Number 1419-3B.
- B. All fittings for installation of the meter shall be provided and installed at the box. Meters shall be provided and installed by the owner. Specific meters to be provided shall be selected following start of construction, but before meter boxes are to be installed.

BACTERIOLOGICAL SAMPLING STATION

- A. The safety guard bacteriological sampling station shall be constructed of high impact thermoplastic material; factory equipped with heavy gauged steel support structure coated with thermoplastic laminated coating (TLC) custom fitted 360° accesses to internal component and bracketry system for precision assembly, high flow blow off. Sampling enclosure shall be of SG-57, model SG-BSS-01 or ASPA approved equal.

PART 3 PERFORMANCE

INSTALLATION OF VALVES, GATES, AND METERS

Valves, gates, and meters shall be carefully installed in their respective positions, free from all distortion and strain, with joints made as specified, and shall be left in satisfactory operating condition. Valves and gates shall be connected to floor stands where required. All stem guides shall be accurately aligned. Before installation, all valves and appurtenances shall be thoroughly cleaned of all foreign material, and shall be inspected for proper operation, both opening and closing and to verify that the valves seat properly. Valves shall be installed so that the stems are vertical, unless otherwise approved by the Engineer. All valves shall be tested in place so far as practicable under the conditions specified and any defects revealed in valves or connections tested shall be corrected. Valves, gates, and meters shall be protected both before and after erection, from rust or other damage. After installation, all items except bronze valves and those underground shall be painted in accordance with the painting requirements and color code of the pipe lines of which they are a part. Bright or rubbing surfaces shall not be painted, but shall be protected with a suitable lubricant.

INSTALLATION OF VALVE BOXES

Valve boxes shall be centered and set plumb over the wrench nuts of the valves and shall not transmit shock or stress to the valves. Valve box covers shall be set flush with the surface of the finished pavement or such other level as may be approved by the Engineer. For valves not located in pavement, a steel marker post 3'-0" above grade and painted yellow shall be furnished and installed at the property line opposite the valve. Backfill shall be placed around the valve boxes and thoroughly compacted to a density equal to that of the undisturbed ground and in such a manner that will not damage or displace the valve box from proper alignment or grade. Misaligned valve boxes shall be excavated, plumbed, and backfilled at the Contractor's expense.

INSTALLATION OF TAPPING SLEEVES AND SERVICE SADDLES

Service saddles shall be installed in accordance with the manufacturer's recommendations and shall be of the proper type for the pipe material.

INSTALLATION OF FIRE HYDRANTS

- A. Hydrants and Appurtenances: Hydrants shall be installed at the locations shown on drawings and in accordance with the drawing details. Hydrants shall be installed with the barrel vertical. After the hydrant has been checked for alignment and grade, the barrel shall be wedged tightly against the side of the trench to prevent any lateral movement. The wedges may be removed after the concrete anchor block, poured at the bottom elbow, has set. The concrete anchor block shall be poured to at least 12 inches above the invert of the bottom elbow and shall not be disturbed for a minimum of three days or as directed by the Engineer.
- B. Prior to final inspection, fire hydrants and parts above the finish ground surface shall be cleaned of all oil, grease, dirt, or other foreign material and given one coat of red lead and two coats of finish paint as specified in Section 10. Only standard tools shall be used in operating fire hydrants.
- C. Hydrant Guard Posts: Hydrants guard posts shall be fabricated in from steel pipe and the assembly shall be welded in a neat and workmanlike manner and shall be cleaned, primed and painted. Drawings of the hydrant guard posts are provided in the drawings.

GALVANIZED GABION (TERRA AQUA “OR APPROVED EQUAL)

SCOPE:

This specification data sheet covers the use of galvanized steel double twisted woven wire mesh gabion baskets filled with stone and used for various applications including but not limited to retaining walls, mechanically stabilized soil retaining structures, stream bank protection, slope paving, outfall structures, weirs, drop structures, etc...

DEFINITION:

- a) Gabions are defined as double twisted woven wire mesh box shaped baskets, of various sizes and dimensions.
- b) The selvages of the gabion baskets are the thicker perimeter and edge wires to which the wire mesh is secured as to withstand sudden or gradual stress from any direction.
- c) Reinforcing wires are the thicker wires incorporated into the netting during fabrication.
- d) The internal diaphragms are the internal wire mesh partitions which divide the gabions into cells.
- e) Lacing or tie wire is used to assemble and join the gabion units.
- f) Connecting wires are the internal wire used to prevent the gabions from bulging.
- g) Alternative wire fasteners are ASTM approved wire fasteners used in lieu of lacing wire.

FABRICATION:

Double Twisted Hexagonal steel wire mesh Galvanized Gabions. Gabions shall be fabricated in such a manner that the sides, ends, lid and diaphragms can be assembled at the construction site into rectangular baskets of the sizes specified and shown in the drawings. Gabions shall be of single unit construction: the base, lid, ends, and sides shall be either woven into a single unit or edge of these members connected to the base section of the gabion in such a manner that strength and flexibility at the connecting point does not compromise the engineered structural design of the gabion. Where the length of the gabion exceeds on an one half its horizontal width, the gabion shall be divided by diaphragms of the same mesh and gauge as the body of the gabion, into cells whose length does not exceed the horizontal width. The gabion shall be furnished with the necessary diaphragms secured in proper position on the base in such a manner that no additional tying is required at this juncture.

MESH FORMATION:

The double twisted hexagonal wire mesh shall have deformability sufficient to permit minimum of mesh elongation equivalent to 10% of the unstretched length of the mesh test section without reducing the gauge or the tensile strength of the individual wire strands to values less than those for similar wire, one gauge smaller in diameter.

NON-RAVELING:

The double twisted hexagonal wire mesh is to be fabricated in such a manner as to be non raveling. This is defined as the ability to resist pulling apart at any of the twists or connections forming the mesh when a single wire strand in a section of mesh is cut or broken.

GABION FILL:

The stone fill material used for filling the gabion units shall be clean, hard stone with pieces ranging from 4 – 8 inches on the greatest dimensions. Stone filling shall not exceed 24 inch vertical drop above the gabion basket. All effort shall be made to ensure that the stone fill material utilized in the design of the structure match the stone fill used in constructing the gabion structure.

ASSEMBLING AND PLACING:

a) Each gabion unit shall be assembled by tying or fastening all connecting seams. The binding wire shall be tightly looped around every other mesh opening along the seams in such a manner that single and double loops are alternated. An alternative wire fasteners may be used in lieu of lacing wire. The alternative wire fasteners shall be applied at approximately 4” – 6” intervals on all vertical and horizontal seams. No less than 3 fasteners per one foot on any given seam.

b) A line of empty gabions, shall be placed into position according to the contract drawings. Binding wire or alternative wire fasteners shall be used to secure each unit to the adjoining one along the vertical reinforced edges and the top selvedges. An approved corner closure tool shall be used to adjoin adjacent gabions to insure a tight, neat seam and minimize gabion wired or fastened to the latter at front and back. The lid shall be secured with an approved closure tool to insure proper closure without excessive mesh deformation.

c) To achieve optimum alignment and finish for retaining walls, a minimum amount of stretching may be required.

d) Connecting wire shall be inserted during the filling operation as follows: The connecting wires shall be installed according to manufacturers instructions every 1’ vertical lift of the gabion unit.

TOLERANCES:

All gabion dimensions shall be within a tolerance limit of plus or minus 5% of the manufacturers stated dimensions.

MINIMUM STRENGTH REQUIREMENTS OF TERRA AQUA DOUBLE TWISTED MESH GABIONS

Test Description	Galvanized
Tensile strength of wire mesh parallel to twist	3500 lbs/ft
Tensile strength of wire mesh perpendicular to twist	1800 lbs/ft
Connection to selvedges	1400 lbs/ft
Panel to Panel	1400 lbs/ft
Punch strength of mesh	6000 lbs/ft

MATERIAL DATA:

- Diameter of mesh wire: 0.120 inches
- Diameter of selvedge wire: 0.153 inches
- Diameter of lacing wire: 0.091 inches
- Coating of wire: finish 5 class 3 zinc coating- ASTM A-641 tested in accordance with ASTM A370-92.
- Tensile of wire: soft temper in accordance with ASTM A641-92
- Weight of zinc coating of wire: shall be determined by ASTM A-90 -wire diameter of 0.120 inches shall have a weight of zinc coating of: 0.85 oz/sf
- Wire diameter of 0.153 inches shall have a weight of zinc coating of: 0.90 oz/sf
- Wire diameter of 0.091 inches shall have a weight of zinc coating of: 0.80 oz/sf
- Grade of zinc coating of wire: high grade or special high grade in accordance with ASTM B-6, Table 1
- Uniformity of coating: shall be determined by ASTM A-239
- Elongation: not less than 12% in accordance with ASTM A370-92.

All of the above wire diameters are subject to a tolerance limit of 0.004 in accordance with ASTM A-641.

All Terra Aqua Gabion “or approved equal” material shall be manufactured according to ASTM A975-97 guidelines for Double Twisted Hexagonal Mesh Gabions.

ROCK FOR GABION WALL

Rock for filling gabions, which are greater than or equal to 18 inches in height, shall vary in size and shall conform to the following:

Screen Size (inches)	Percentage Passing
12	100
4	0-5

Rock for filling gabions, which are equal to 12 inches in height, shall vary in size and shall conform to the following:

Screen Size (inches)	Percentage Passing
8	100
4	0-5

The minimum unit weight of a rock-filled gabion shall be 110 pounds per cubic foot. Verification of the 110 pounds per cubic foot shall be performed when ordered by the Engineer. Verification shall be performed on the smallest standard gabion size to be used on the project. The rock supplied for the project shall be used for verification. Filling shall be done using the same method intended for actual construction. The weight of a rock-filled gabion shall be determined using available certified scales. The volume for calculating the unit weight shall be determined on the theoretical volume of the standard gabion which is rock-filled and weighed