US Department Of Agriculture (USDA)

GAOA Housing Oak Grove Facility Upgrades – Hotshot Barracks

Statement of Work and Specifications Notice

The following document incorporates the Statement of Work and Specifications for the GAOA Housing – Oak Grove Facility Upgrades – Hotshot Barracks. These sections outline the project requirements, performance expectations, and technical standards.

- The Statement of Work begins on Page 2.
- The Specifications begin on Page 8.

STATEMENT OF WORK

1.1 SCOPE OF WORK

Project Location: Oak Grove Fire Station, San Diego County, Palomar Ranger District

Oak Grove Fire Station, 37560 Highway 79 South, Warner Springs, CA 92086, San Diego County. From San Diego, California, travel north on Interstate 15 for ~ 50 miles to Temecula and take the Temecula Parkway/Highway 79 South exit. Turn right and travel east for ~ 20 miles to the Oak Grove Fire Station on the right (south) side of the highway.

All work and products shall meet applicable California Building Standards Code (CBSC), California Plumbing Code (CPC), California Electrical Code (CEC), California Mechanical Code (CMC), California Health and Safety Codes (HSC), California Department of Housing and Community Development (HCD), US Department Housing & Urban Development (HUD), Code of Federal Regulations (29 CFR), and State (Title 8) OSHA, Title 24 California Code of Regulations (CCR), and Title 25 California Code of Regulations (CCR), Americans With Disabilities Act/Architectural Barriers Act (ADAABA) Guidelines, latest edition, in addition to other required regulations as stated in the Specifications and Contract Documents. Where there is a conflict between applicable regulations, the most stringent shall apply.

The work shall be waterproof, rodent proof, and weathertight. All products used shall be nonrusting type.

The project consists of work included here, but not limited to:

Base Bid: Oak Grove Fire Station Hot Shot Barracks

1. Work shall include the following:

- Building Demolition of one Hotshot Barracks Building (Infra #5305), approximately 1312 square feet, three bedrooms, two bath, modular building with asphalt shingle roof, built 2002. Removal and disposal of entire building, foundation and footings, all interior and exterior utilities, appliances, furnishings and fixtures, deck, ramp and stairs. Photos provided are representative of style/type of furnishings, appliances and fixtures but are not all inclusive.

- Exterior utilities (water, septic, leach) shall be cut and capped at both ends a minimum eighteen inches below grade and abandon existing lines in place. Backfill and compact slab, footing and utility areas with imported material to restore the site to its natural conditions.

- Remove and dispose of existing concrete propane tank pad, regulator, fittings, posts, and lines.

- Furnish and install a new 20’x4’x4” minimum propane tank pad for a 1000 gallon propane tank, bollards, regulator, fittings, and lines and connect underground to new building. Removal of existing propane tank and delivery of new propane tank shall be coordinated with the Forest Service

- Existing septic tank shall be pumped and completely removed, void shall be backfilled with imported material and compacted.

- Furnish and install septic system with 4000 gallon septic tank and infiltrator chamber leach field and connect to new building.

- Existing water shall be disconnected from building temporarily. New waterline shall be furnished, installed and connected to new building and tied into existing waterline in a new valve box with a new shut off valve.

- Contractor shall coordinate with San Diego Gas & Electric for electric meter, panel, subpanel, boxes, lines and associated work. Disconnect existing electrical meter, panel, lines, boxes and subpanels, panel board and dispose. Install and connect new electrical meter, panel, subpanel, panel board, pole, lines, boxes, service and incidentals for new building requirements of 200 Amp service. Install and connect new service from location as required by SDGE to new building in accordance with San Diego Gas & Electric requirements. Remaining electrical boxes, posts, panels, subpanels, lines and appurtenances shall be removed and disposed.

- All existing phone lines shall be temporarily disconnected and reconnected to new building.

- All ground disturbance shall be minimized. The contract work area is twenty feet beyond building footprint in all directions, with the exception of utility locations and leach field. No other ground disturbance shall take place.

- Hazardous material sampling and testing shall be completed, and abatement if hazardous materials are found. See the Specifications for the guidelines for sampling and testing, removal and disposal of hazardous materials.

2. Furnish and install one new fully finished, move in ready, manufactured home including delivery and set up, utility installation, utility connections/reconnections and all site work. Site work shall include walkways, ramp, stairs, and all utilities (water, electrical, phone, septic, leach, and propane) including incidentals.

   Building shall be AAAmerican Pacific Manufactured Home, 619-449-3800, Skyline Model 67 CUSTOM HUD, ~1760 square feet, 27 feet x 66 feet, five bedrooms, and three baths with details and layout as shown in Specification 13 34 19, Manufactured Building, or approved equal. The location of the new building shall be in the same location as the existing Barracks Building (Infra #5305) being demolished.

Additive Item #1: Hazardous Material Abatement, Removal and Disposal

1. Abatement, removal and disposal of all hazardous materials.

The Oak Grove Fire Station is located on approximately eleven acres, and there are barracks, an engine garage, offices, warehouse, and training buildings near the proposed work. These areas are not to be disturbed. In addition, there will be areas in the building vicinity that will be flagged as areas not to be disturbed.

1.2 FOREST CONTACT

For information regarding site conditions, contact Tammie Mather at (858) 674-2972 between the hours of 8:00 am and 4:00 pm, Monday through Friday, except legal holidays.

1.3 SPECIFICATIONS

The Construction Specification Institute (CSI) specifications are included by reference. The requirements contained in these specifications are hereby made a part of this solicitation and any resultant contract. CSI specifications applicable to this contract are listed below and are contained in this contract.

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1.4 TIME OF PERFORMANCE

Contract time is limited to 112 calendar days from the issuance of the Notice To Proceed, and includes time for base bid and all additive items, fire days, weather days, holidays, and weekend days. Work for each site shall not overlap with any work at any other site.

1.5 CONTRACT ADMINISTRATION

Before beginning work, the Contracting Officer (CO) or the Contracting Officers Representative (COR) will meet with the Contractor. The meeting will be held at a time and place mutually agreeable to the Contractor and the Forest Service. The contract documents, the scope of the contract and the proposed work schedule will be thoroughly discussed to promote a better understanding between the Contractor and the Forest Service. The Contractor shall name and assign a responsible person as Project Manager and Site Superintendent. He/She shall maintain a project file to contain all correspondence and criteria pertinent to this project. During the process of the work, the Contractor shall confer with the COR, as required, to assure acceptance of the work completed.

1.6 FEES

The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, paying for, and for complying with any applicable all Federal, State, County, Municipal and utility company fees, applicable to the execution of the work.

1.7 APPLICABLE CODES AND REGULATIONS

The contractor shall comply with all applicable Federal, State, Interstate, County, local laws, and environmental regulations and requirements. This includes, but is not limited to, compliance with the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Restoration Compensation and Liability Act (CERCLA), 40 CFR Chapter 1, the California Health and Safety Code; California Code of Regulations (CCR) Title 22, Division 4.5; California Code of Regulations Title 24, Part 2; the San Diego and Orange County Air Pollution Control District, the Regional Water Quality Control Board, and the County Department of Public Health. The responsibility of the Contractor to comply with all current applicable laws, regulations and requirements takes precedence over any other duty or task described herein. Therefore, in the event that subsequent legislation or regulations conflict with prescribed procedures contained in this contract, said changes shall take precedence.

All work submitted and performed by the Contractor may be subject to the review and approval of Environmental Protection Agency (EPA) and/or the appropriate State and local regulatory agency. Therefore, it is the responsibility of the Contractor to contact the appropriate regulatory agency(s) to determine their requirements for each individual project. The Contractor will be responsible for submitting reports to regulatory agencies unless other arrangements are approved by the Contracting Officer's Representative (COR). It is the Contractor's responsibility to find out from the regulatory agency(s) which guidance materials are current and applicable.

The Contractor shall, without additional expense to the Forest Service, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State and local laws, codes, and regulations in connection with the execution of the work. This includes ensuring project related hazardous or toxic wastes are sent to licensed, permitted, and approved disposal sites. The Forest Service will obtain, as necessary, the required temporary EPA Identification Number for site cleanup activities. Contractor shall request EPA# and allow a minimum of one month for processing and issuance of EPA#.

All work shall comply with the applicable requirements of the Code of Federal Regulations (29 CFR) and State (Title 8 CCR) OSHA. All work shall comply with applicable State and municipal safety and health requirements. Where there is a conflict between applicable regulations, the most stringent shall apply.

1.8 CONTRACTOR QUALIFICATIONS AND LICENSES

Contractor must possess all applicable licenses issued by the state, in addition to the certifications listed below. All required certifications must be current at time of contract award. This is not all inclusive and is subject to change as new Federal, State, Interstate, County and local laws and regulations are implemented and existing Federal, State, Interstate, County and local laws and regulations are revised.

Professional Engineer. All building related work performed under this contract shall be performed by a California State licensed Professional Engineer. Prior to commencing work, the contractor shall present a copy of his/her current license to the Contracting Officer.

Electrical. All electrical work performed under this contract shall be performed by a California State licensed electrical contractor. Prior to commencing work, the contractor shall present a copy of his/her current license to the Contracting Officer.

Plumbing. All plumbing work performed under this contract shall be performed by a California State licensed plumbing contractor. Prior to commencing work, the contractor shall present a copy of his/her current license to the Contracting Officer.

Mechanical. All mechanical work performed under this contract shall be performed by a California State licensed mechanical contractor. Prior to commencing work, the contractor shall present a copy of his/her current license to the Contracting Officer.

Lead Based Paint. Contractor must be California trained and certified to perform work involving lead based paint outlined in this contract.

Hazardous Waste Transportation. Contractors transporting hazardous waste must be registered with the State. Statutory requirements governing hazardous waste transportation in California require any person who transports hazardous waste in a vehicle to have a valid registration issued by the Department of Toxic Substances Control (DTSC) in his or her possession while transporting the hazardous waste.

Hazardous Waste Operations (HAZWOPER). Contractor shall maintain current 40 hour HAZWOPER certification.

1.9 PERMITS

The contractor shall obtain all special permits and licenses and give all notices required for the performance and completion of the demolition and removal work, hauling, and disposal of debris. Demolition of structures covered under this Statement of Work may also require a permit from Cal/OSHA if the structure to be demolished is higher than three stories of 36 feet, or the demolition work would require a 5 foot or deeper excavation into which a person needs to descend. To prevent delays in accomplishing the work identified in this Statement of Work, the Contractor shall review the list of structures to be demolished and identify structures requiring a permit. The Contractor is responsible for obtaining all permits and requesting permit extensions.

1.10 WORK PLAN

The Contractor(s) shall provide the Government with the Work Plan for the project. This Work Plan shall include, but is not limited to, the following:

- A listing of personnel and contact information, including subcontractor(s), working on the project. Training, certification and licensing requirements for personnel performing demolition. Qualifications and experience of personnel and subcontractors including the registered civil engineer that will be overseeing the work to be performed. Documentation of Hazardous Waste Operations Training, Lead-Based Paint Certification for on-site personnel as well as license and registration for personnel involved in transporting hazardous waste generated by activities covered under this contract.
- Detailed description of how the work activities will be performed.
- Quality Assurance and Quality Control Plan.
- Site Specific Safety & Health Plan.
- Site Specific Emergency Response Plan.
- Site Specific Stormwater Pollution Prevention Plan describing procedures for protecting soils, vegetation and watersheds during demolition and excavation.
- List of equipment to be used on the project.
- List of supplies to be provided.
- Permit and notification requirements.
- Utility abandonment requirements.
- Construction Management Plan describing proposal to store, collect, segregate, and dispose of all construction wastes and debris produced by the work of this contract.
- A Hazardous Material/Waste Management Plan, which includes waste identification protocol, sampling, testing, and abatement, an explanation for reuse/disposal chosen, identification of the selected recycling facility or TSD facility. Documentation and certification of the facility's ability to accept hazardous materials/wastes shall be provided as an attachment to the work plan.
- Backfill and compaction of depressions caused by excavation, demolition or removal.
- Project Work Schedule.
- Detailed cost estimate/cost breakdown per Specification Section of work to be performed and shall include breakdown for each utility type (water, electrical, septic/leach, propane) that can be used for partial payments as work is completed and accepted.

During field work, if substantial or unexpected latent materials or improvements are encountered on the site, Contractor shall immediately notify the Forest Contracting Officer for direction. Proceeding with cleanup or removal work without Forest Contracting Officer approval will be at the Contractors expense.

All work plans must be approved in writing by the Government prior to the commencement of that phase of work.

1.11 CONTRACTOR DESIGNATION

The Contractor shall appoint a Project Manager to coordinate all Contractors activities during construction and to liase with the Contracting Officers Representative (COR), Contracting Officer (CO), and Project Engineer for the USDA Forest Service. Contractor shall designate in writing an-site superintendent to be on site at all times any construction activity takes place and to coordinate all site work and activities.

1.12ARCHAEOLOGICAL

Should any previously unrecorded cultural resources be encountered during implementation of this project, all work should immediately cease in that area and the Contracting Officer's Representative shall be notified immediately. The Contracting Officer's Representative shall immediately notify the Forest Archaeologist. Work may resume after approval by the Forest Archaeologist; provided any recommended Standard Protection Measures are implemented. Should any cultural resources become damaged in unanticipated ways by Contractor's activities, the steps for inadvertent effects will be followed, as advised by the Forest Archaeologist.

END OF STATEMENT OF WORK

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SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

Project Location: Oak Grove Fire Station, San Diego County, Palomar Ranger District

Oak Grove Fire Station, 37560 Highway 79 South, Warner Springs, CA 92086, San Diego County. From San Diego, California, travel north on Interstate 15 for ~ 55 miles to Temecula Parkway exit and take the Temecula Parkway/Highway 79 South exit. Turn right and travel east for ~20 miles to the Oak Grove Fire Station on the right (south) side of the highway.

Owner: Cleveland National Forest, 10845 Rancho Bernardo Road, Ste 200, San Diego, CA 92127.

All work and products shall meet applicable California Building Standards Code (CBSC), California Plumbing Code (CPC), California Electrical Code (CEC), California Mechanical Code (CMC), California Health and Safety Codes (HSC), California Department of Housing and Community Development (HCD), US Department Housing & Urban Development (HUD), Code of Federal Regulations (29 CFR), and State (Title 8) OSHA, Title 24 California Code of Regulations (CCR), and Title 25 California Code of Regulations (CCR), Americans With Disabilities Act/Architectural Barriers Act (ADAABA) Guidelines, latest edition, in addition to other required regulations as stated in the Specifications and Contract Documents. Where there is a conflict between applicable regulations, the most stringent shall apply.

The work shall be waterproof, rodent proof, and weathertight. All products used shall be nonrusting type.

This project will include, but is not limited to the following:

Base Bid: Oak Grove Fire Station Hotshot Barracks Building

1. Work shall include the following:

- Demolition of one Barracks Building (Infra #5305), approximately 1320 square feet, three bedrooms, two bath, modular building with asphalt shingle roof, built 2002. Removal and disposal of entire building, foundation and footings, all interior and exterior utilities, appliances, furnishings and fixtures, deck, ramp and stairs. Photos provided are representative of style/type of furnishings, appliances and fixtures but are not all inclusive.

- Exterior utilities (water, septic, leach) shall be cut and capped at both ends a minimum eighteen inches below grade and abandon existing lines in place. Backfill and compact slab, footing and utility areas with imported material to restore the site to its natural conditions.

- Remove and dispose of existing concrete propane tank pad, regulator, posts, and lines.

- Furnish and install a new 20’x4’x4” propane tank pad, bollards, regulator, fittings, posts, and lines for a new 1000 gallon propane tank, and connect underground to new building. Removal of existing propane tank and delivery of new propane tank shall be coordinated with the Forest Service.

- Existing septic tank shall be pumped and completely removed, void shall be backfilled with imported material and compacted.

- Furnish and install septic system with 4000 gallon septic tank and infiltrator chamber leach field and connect to new building.

- Existing water shall be disconnected from building temporarily. New waterline shall be furnished, installed and connected to new building and tied into existing waterline in a new valve box with a new shut off valve.

- Contractor shall coordinate with San Diego Gas & Electric for electric meter, panel, subpanel, boxes, lines and associated work. Disconnect existing electrical meter, panel, lines, boxes and subpanels. Install and connect new electrical meter, panel, subpanel, panel board, lines, boxes, service and incidentals for new building requirements of 200 Amp service. Install and connect new underground or overhead service from location as required by SDGE to new building in accordance with San Diego Gas & Electric requirements. Remaining electrical boxes, posts, panels, subpanels, and lines shall be removed and disposed.

- All existing phone lines shall be temporarily disconnected and reconnected to new building.

- All ground disturbance shall be minimized. The contract work area is twenty feet beyond building footprint in all directions, with the exception of utility locations and leach field. No other ground disturbance shall take place.

- Hazardous material sampling and testing shall be completed, and abatement if hazardous materials are found. See the Specifications for the guidelines for sampling and testing, removal and disposal of hazardous materials.

2. Furnish and install one new fully finished, move in ready, manufactured home including delivery and set up, utility installation, utility connections/reconnections and all site work. Site work includes walkways, ramp, stairs, and all utilities (water, electrical, phone, septic, leach, and propane) including incidentals.

   Building shall be AAAmerican Pacific Manufactured Homes Skyline, 619-449-3800, Model 67 CUSTOM HUD, ~1760 square feet, 27 feet x 66 feet, five bedrooms, and three baths with details and layout as shown in Specification 13 34 19 Manufactured Building, or approved equal. The location of the new building shall be in the same location as the existing Barracks Building (Infra #1011) being demolished. Site work shall include walkways, ramps, stairs, and all utilities.

   <u>Additive Item #1: Hazardous Material Abatement, Removal and Disposal</u>

   1. Abatement, removal and disposal of all hazardous materials.

   The Oak Grove Fire Station is located on eleven acres, and there are barracks, engine garages, offices, warehouse, and training buildings near the proposed work. These areas are not to be disturbed. In addition, there will be areas in the building vicinity that will be flagged as areas not to be disturbed.

1.2 WORK SEQUENCE

A. The work shall be conducted in one phase.

B. All work shall be substantially complete and ready for occupancy within 112 calendar days of the Notice to Proceed. Contract time includes all base bid and additive work items, weekends, holidays, fire, and weather days. Work for each site shall not overlap with any work at any other site.

1.3 FEES

The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, paying for, and for complying with any applicable all Federal, State, County, Municipal and utility company fees, applicable to the execution of the work.

1.4 APPLICABLE CODES AND REGULATIONS

The contractor shall comply with all applicable Federal, State, Interstate, County, local laws, and environmental regulations and requirements. This includes, but is not limited to, compliance with the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Restoration Compensation and Liability Act (CERCLA), 40 CFR Chapter 1, the California Health and Safety Code; California Code of Regulations (CCR) Title 22, Division 4.5; California Code of Regulations Title 24, Part 2; the San Diego and Orange County Air Pollution Control District, the Regional Water Quality Control Board, and the County Department of Public Health. The responsibility of the Contractor to comply with all current applicable laws, regulations and requirements takes precedence over any other duty or task described herein. Therefore, in the event that subsequent legislation or regulations conflict with prescribed procedures contained in this contract, said changes shall take precedence.

All work submitted and performed by the Contractor may be subject to the review and approval of Environmental Protection Agency (EPA) and/or the appropriate State and local regulatory agency. Therefore, it is the responsibility of the Contractor to contact the appropriate regulatory agency(s) to determine their requirements for each individual project. The Contractor will be responsible for submitting reports to regulatory agencies unless other arrangements are approved by the Contracting Officer's Representative (COR). It is the Contractor's responsibility to find out from the regulatory agency(s) which guidance materials are current and applicable.

The Contractor shall, without additional expense to the Forest Service, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State and local laws, codes, and regulations in connection with the execution of the work. This includes ensuring project related hazardous or toxic wastes are sent to licensed, permitted, and approved disposal sites. The Forest Service will obtain, as necessary, the required temporary EPA Identification Number for site cleanup activities. Contractor shall request EPA# and allow a minimum of one month for processing and issuance of EPA#.

All work shall comply with the applicable requirements of the Code of Federal Regulations (29 CFR) and State (Title 8 CCR) OSHA. All work shall comply with applicable State and municipal safety and health requirements. Where there is a conflict between applicable regulations, the most stringent shall apply.

1.5 CONTRACTOR QUALIFICATIONS AND LICENSES

Contractor must possess all applicable licenses issued by the state, in addition to the certifications listed below. All required certifications must be current at time of contract award. This is not all inclusive and is subject to change as new Federal, State, Interstate, County and local laws and regulations are implemented and existing Federal, State, Interstate, County and local laws and regulations are revised.

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Plumbing. All plumbing work performed under this contract shall be performed by a California State licensed plumbing contractor. Prior to commencing work, the contractor shall present a copy of his/her current license to the Contracting Officer.

Mechanical. All mechanical work performed under this contract shall be performed by a California State licensed mechanical contractor. Prior to commencing work, the contractor shall present a copy of his/her current license to the Contracting Officer.

Lead Based Paint. Contractor must be California trained and certified to perform work involving lead based paint outlined in this contract.

Hazardous Waste Transportation. Contractors transporting hazardous waste must be registered with the State. Statutory requirements governing hazardous waste transportation in California require any person who transports hazardous waste in a vehicle to have a valid registration issued by the Department of Toxic Substances Control (DTSC) in his or her possession while transporting the hazardous waste.

Hazardous Waste Operations (HAZWOPER). Contractor shall maintain current 40 hour HAZWOPER certification.

1.6 PERMITS

The contractor shall obtain all special permits and licenses and give all notices required for the performance and completion of the demolition and removal work, hauling, and disposal of debris. Demolition of structures covered under this Statement of Work may also require a permit from Cal/OSHA if the structure to be demolished is higher than three stories of 36 feet, or the demolition work would require a 5 foot or deeper excavation into which a person needs to descend. To prevent delays in accomplishing the work identified in this Statement of Work, the Contractor shall review the list of structures to be demolished and identify structures requiring a permit. The Contractor is responsible for obtaining all permits and requesting permit extensions.

1.7 NOTIFICATIONS AND INSPECTIONS

The Contractor shall be responsible for completing all notifications required to perform the activities covered in this Statement of Work.

The Contractor shall be responsible for scheduling all required inspections within the time frame specified to prevent delays in accomplishing the activities covered in this Statement of Work.

1.8 HEALTH AND SAFETY PLAN

The Contractor shall perform all operations in a prudent, conscientious, safe and professional manner. At a minimum, the Contractor's personnel and equipment shall comply with applicable Federal, State, County and local laws, safety and health regulations and procedures, as well as Forest Service regulations, rules and procedures. The Contractor shall ensure that its agents, employees and subcontractors perform in a safe manner. The Contractor shall ensure that all personnel involved in handling hazardous materials/waste and conducting emergency response and site cleanup activities are trained in the level of expertise required for the proper performance of the work activities.

The Contractor shall erect and maintain temporary bracing, shoring, fences, warning lights, barricades, signs, and other measures as necessary to protect the public, workers, and adjoining property from damage from demolition work, all in accordance with applicable codes and regulations.

Open depressions and excavations occurring as part of this work shall be barricaded and posted with warning lights.

A Master Health and Safety Plan is required prior to initiation of work under this contract. The Health and Safety Plan, and amendments thereto, submitted under requirements of this contract shall be prepared by the Contractor's health and safety manger. Plan shall include procedures for accident and follow up.

1.9 MATERIAL WASTE/SEGREGATION

The Contractor is responsible for ensuring that all hazardous and non-hazardous materials and wastes generated during activities undertaken pursuant to this contract are segregated so as to minimize the volume of hazardous wastes. Ninety (90) percent (determined by weight) of the inert material and seventy (70) percent (determined by weight) of the remaining material generated must be recycled, salvaged or reused. The Contractor is responsible for preparing the Debris Management Plan that may be required by San Diego and Orange County. Containers must be marked so that they are readily identified. In addition, the Contractor must ensure that there is a clear audit trail for all items until the final recycling or treatment/disposal is accomplished.

The Contractor is responsible for maintaining a daily log of all construction and demolition debris that leaves the site. The log and receipts must contain the weight of the debris the facility accepted and whether the material was disposed in a landfill or recycled. The log must be available onsite during demolition activities.

1.10 PACKAGING AND CONTAINER MARKING

The contractor shall package, mark, label and load all items in such a manner that all applicable Federal, state and local EPA and DOT regulations are met. Packaging, shipping names, marking, labeling, placarding, etc., under the terms of this contract will be in accordance with 49 CFR and 40 CFR. All hazardous waste containers shall be labeled in accordance with the requirements of 40 CFR Part 262, Subpart C, Part 264, Subpart I and Part 265, Subpart I and California CCR, Title 22, Division 4.5. If items must be repackaged for proper shipment the contractor shall perform such repackaging and furnish all required materials. When repackaging is necessary, the contractor shall be responsible for disposal of the original container and placarding in a manner that complies with all applicable federal, state, and local EPA and DOT regulations. The Contractor shall also provide and affix the appropriate placards to each vehicle prior to leaving specific project sites.

The Contractor shall ensure that all containers used for the packaging and repackaging of hazardous wastes are compatible with the materials they will hold. The Contractor is also responsible for ensuring that the containers they provide for the management of wastes comply with the requirements of 40 and 49 CFR and applicable state and local regulations.

If the Contractor elects to package compatible items in the same container, then the contractor must provide an all-inclusive packing list showing each item and its respective quantity. This list shall be placed outside the outermost container. A copy of the packing list must be attached to the manifest.

The Contractor is responsible for ensuring that all contaminated media (soil, water, etc.) are placed into the appropriate containers in compliance with applicable Federal and State environmental laws and regulations.

1.11 MANIFESTING

A uniform hazardous waste manifest is required for the removal of regulated hazardous wastes from National Forest Lands under this contract. Manifests and land disposal restriction notifications will be prepared by the Contractor in accordance with 40 CFR Part 262 Subpart B, Part 263 Subpart B, Part 264 Subpart E, Part 265 Subpart E and Part 268 as well as California CCR, Title 22, Division 4.5. A Forest Service representative shall sign the manifests as the generator. The Contractor shall review all manifests for completeness and accuracy prior to presenting them to the Forest Service for signature.

Completed copies of all manifests shall be furnished to the Forest Service office whose address appears on the manifests, as well as submitted as attachments to all invoices. Manifests shall be submitted in such a manner as to comply with the timeliness prescribed by the state and EPA regulations. Each manifest, as well as all other documentation required herein shall be clearly and distinctly marked with the contract number and delivery order number as applicable. If blocks are not provided, the contract and delivery order information shall be placed in the upper right hand corner of each document.

1.12 MATERIAL/WASTE MANAGEMENT ON NATIONAL FOREST LANDS

The Contractor(s) is responsible for ensuring that all materials and wastes generated during the activities of this contract are managed in compliance with Federal, state and local environmental laws and regulations. This includes ensuring that all excavated contaminated soils are immediately placed into appropriate containers upon excavation and not stored directly on the ground. In those instances where contaminated soil stockpiling is necessary, soils shall be placed on a liner for containment purposes.

The Contractor(s) is responsible for ensuring that all containers of hazardous waste generated under the activities of this contract are removed from National Forest lands within 60 days of generation.

The Contractor shall dispose of removed materials, waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Burying of trash and debris on the site will not be permitted. Burning of trash and debris at the site will not be permitted.

The Contractor shall remove trash and debris from the site at frequent intervals so that their presence will not delay the progress of the work or cause hazardous conditions for workers or the environment.

Removed materials, trash, and debris shall become the property of the Contractor and shall be removed from the Forests' property and disposed of in a legal manner. Location of disposal site and length of haul shall be the Contractor's responsibility.

1.13 TRANSPORTERS

For all hazardous wastes transported under this contract, the Contractor shall present at time of offer, all applicable state waste hauler licenses and hauler numbers. Only experienced, licensed, transporters shall be used to haul hazardous wastes under this contract. The Contractor shall also provide and affix appropriate placards to each vehicle prior to leaving Forest Service premises and ensure that all EPA, DOT and State transporter requirements are met.

The contractor will comply with, and ensure that all applicable subcontractors comply with, all requirements of 49 CFR 100-199, regarding waste transportation under this contract. Complete compliance with these regulations shall include, but not be limited to, ensuring that emergency response information is carried on transport vehicles and maintained at facilities where hazardous materials are received, stored, or handled during transportation. Shipping papers will contain an emergency response telephone number supplied by the disposal contractor which is monitored 24 hours a day in order to provide immediate, detailed emergency information to personnel reacting to emergencies. Technical names will be included in the descriptions of materials reflected on shipping papers by "not otherwise specified" (n.o.s.) descriptions.

1.14 OFF-SITE RECYCLING AND TREATMENT/STORAGE/DISPOSAL FACILITIES

The Contractor shall identify each recycling and/or Transfer, Storage and Disposal (TSD) facility, which may receive hazardous wastes under this contract. Each TSD facility must have, as a minimum; EPA RCRA permitted or state approval as a treatment or disposal facility and is in good standing with the regulatory community. The Contractor agrees that no facility other than those initially accepted by the Government in the award process will be used. The Forest Service on a case-by-case basis may accept additional TSD facilities.

In an effort to reduce the Region's future liability for the wastes it generates, ALL wastes and contaminated media managed under this contract shall be sent to only those treatment/ storage/disposal facilities that are in compliance with EPA's "Off-Site Rule" (40 CFR 300.400 on the U.S. Environmental Protection Agency's "Off-Site Rule" list). The Contractor shall provide confirmation that the proposed off-site facility is Off-Site Rule compliant prior to the initiation of any shipment.

1.15 WORK PLAN

The Contractor(s) shall provide the Government with a Work Plan for the project. This Work Plan shall include, but is not limited to, the following:

- A listing of personnel and contact information, including subcontractor(s), working on the project. Training, certification and licensing requirements for personnel performing demolition. Qualifications and experience of personnel and subcontractors including the Registered Professional Engineer that will be overseeing the work to be performed. Documentation of Hazardous Waste Operations Training, Lead-Based Paint Certification for on-site personnel as well as license and registration for personnel involved in transporting hazardous waste generated by activities covered under this contract.
- Detailed description of how the work activities will be performed.
- Quality Assurance and Quality Control Plan.
- Site Specific Safety & Health Plan.
- Site Specific Emergency Response Plan.
- Site Specific Stormwater Pollution Prevention Plan describing procedures for protecting soils, vegetation and watersheds during demolition and excavation.
- List of equipment to be used on the project.
- List of supplies to be provided.
- Permit and notification requirements.
- Utility abandonment requirements.

- Construction Management Plan describing proposal to store, collect, segregate, and dispose of all construction wastes and debris produced by the work of this contract.
- A Hazardous Material/Waste Management Plan, which includes waste identification protocol, sampling, testing, and abatement, an explanation for reuse/disposal chosen, identification of the selected recycling facility or TSD facility. Documentation and certification of the facility's ability to accept hazardous materials/wastes shall be provided as an attachment to the work plan.
- Backfill and compaction of depressions caused by excavation, demolition or removal.
- Project Work Schedule.
- Detailed cost estimate/cost breakdown per Specification Section of work to be performed and shall include breakdown for each utility type (water, electrical, septic/leach, propane) that can be used for partial payments as work is completed and accepted.

During field work, if substantial or unexpected latent materials or improvements are encountered on the site, Contractor shall immediately notify the Forest Contracting Officer for direction. Proceeding with cleanup or removal work without Forest Contracting Officer approval will be at the Contractors expense.

All work plans must be approved in writing by the Government prior to the commencement of that phase of work.

1.16 CONTRACTOR DESIGNATION

The Contractor shall appoint a Project Manager to coordinate all Contractors activities during construction and to liase with the Contracting Officers Representative (COR), Contracting Officer (CO), and Project Engineer for the USDA Forest Service. Contractor shall designate in writing an-site superintendent to be on site at all times any construction activity takes place and to coordinate all site work and activities.

1.17 ARCHAEOLOGICAL

Should any previously unrecorded cultural resources be encountered during implementation of this project, all work should immediately cease in that area and the Contracting Officer's Representative shall be notified immediately. The Contracting Officer's Representative shall immediately notify the Forest Archaeologist. Work may resume after approval by the Forest Archaeologist; provided any recommended Standard Protection Measures are implemented. Should any cultural resources become damaged in unanticipated ways by Contractor's activities, the steps for inadvertent effects will be followed, as advised by the Forest Archaeologist.

1.18 STORMWATER POLLUTION PREVENTION PLAN

The Contractor shall prepare an Erosion Control/Stormwater Pollution Prevention Plan in accordance with Specification Section 01 57 24, Stormwater Pollution Control, prior to commencing work. Contractor shall identify and address all types and specific locations of erosion control measures. The plan shall be submitted to the Contracting Officer for review and approval prior to submitting it for regulatory review.

1.19 CONTRACTOR CAUSED SPILL AND RELEASES

The Contractor is solely responsible for any and all spills or leaks and subsequent clean up that may be required during the performance of this contract which occur as a result of or are contributed to by the actions of its agents, employees, or subcontractors. The Contractor agrees to clean up such spills or leaks to the satisfaction of the Forest Service and in a manner that complies with applicable Federal, state, and local laws and regulations. The clean up shall be at no cost to the Forest Service. The contractor shall provide spill response materials including, but not limited to, containers, shovels and personal protective equipment. Spill response materials shall be available at all times in which hazardous materials and hazardous wastes are being handled or transported. Spill response materials shall be compatible with the type of material being handled or transported.

The contractor shall report all such spills or leaks, regardless of their quantity, to the Forest Service immediately upon discovery. A written follow-up report shall be submitted to the Forest Service no later than 24 hours after the initial telephonic report. The written report shall be in narrative form and, as a minimum, include the following:

- Description of the item spilled (including identity, quantity, manifest no., etc).
- Whether amount spilled is EPA/state reportable, and if so whether it was reported, and to whom.
- Exact time and location of spill including a description of the area involved.
- Containment procedures initiated.
- Summary of any communications contractor has with press, Federal, state and local regulatory agencies and officials, or Forest Service officials.

Upon completion of the clean-up activities for contractor caused spills and releases, the contractor shall submit a final clean-up certification report to the Forest Service. The report shall include a description of clean-up procedures employed at the site, the final disposition and disposal location of spill residue. Include also copies of all spill related cleanup and closure documentation and correspondence from the regulatory agencies.

1.20 FIRE PLAN

Contractor is responsible to complete and abide by the enclosed Forest Fire Plan. All welding and cutting (spark producing) activities will require a permit from the Descanso Ranger Station. All equipment must have approved spark arrestors and be inspected by a Forest Service Fire Prevention Officer.

1.21 USE OF PREMISES

A. See Section 01 14 00, Work Restrictions.

B. The Contractor shall coordinate parking of their vehicles and temporary storage of equipment and materials with the Contracting Officers Representative. Contractor shall have all heavy equipment washed prior to entering the project area to remove soil, seeds and plant material from noxious weeds to prevent the introduction and spread of weeds not already present on Descanso Ranger District or the Cleveland National Forest. Inspections shall be coordinated and scheduled with the Contracting Officers Representative at least 3 business days prior to equipment arriving on site.

1.22 CONTRACTOR'S SCHEDULE

A. The contractor shall provide the Government with a complete work schedule at the project prework conference describing the different work activities and when they will be initiated and completed. The Contractor will be expected to follow this schedule during the course of the contract or shall submit a revised schedule within 48 hours of any unforeseen delays or changes. Such schedule shall be in the form of a Critical Path Schedule and shall include the timing for each major phase of the work. The schedule shall include the sequencing of the various phases of the work and work specialties and shall constitute a basis for the evaluation of time extensions in the negotiations for changes.

1.23 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Division and Sections using the 48-division format and Construction Specification Institute (CSI) "Master Format" numbering system.

B. Specifications Content: The Specifications use certain convention for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. The conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the same required. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

   a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where used within a sentence or phrase.

1.24 DAYS/HOURS OF OPERATION

A. The Contractor's hours of operation shall be restricted to 8:00 am to 4:30 pm, Monday through Friday, unless otherwise specified. In addition, the work shall be shut down during the following periods.

1. Work shall be shut down on Saturdays, Sundays, and all federally listed Holidays.
2.One week shutdown for the week of Thanksgiving, and two week shutdown for weeks of Christmas and New Years.
3. Contract time has been adjusted to reflect these periods of shutdown.

1.25 MEASUREMENT AND PAYMENT

A. Cost Breakdown: The Contractor shall provide to the Government at the prework conference a breakdown of each Lump Sum Unit Price for the project for the purpose of computing progress payments and for use in determining costs for proposed changes to the Contract. Such breakdown shall include each separate phase of the work by Construction Specification Institute CSI) Specifications and shall include breakdown for each utility type (water, electrical, septic/leach, propane) but need not separate labor from material costs. The approved cost breakdown will constitute the basis under which monthly progress payments will be made. Design and mobilization cost shall be included with each applicable line item in the Schedule of Items.

B. The work shall be measured for each item as listed below and as shown on the Schedule of Items.

1. Lump Sum Quantity (LSQ) shall be measured as one job and shall include all mobilization, preparation work, site work, cleanup and the like.

2. Actual Quantity (AQ) shall be measured as the actual work completed as described in Contract Specifications herein.

3. Design Quantity (DQ) shall be based upon the original design data available prior to advertising the project. Original design data include the preliminary survey information, design assumptions, calculations, drawings and the presentation in the contract.

C. Payment: Payment for the quantity or unit, as measured above, will be at the contract unit price as shown on the Schedule of Items. Payment will constitute full compensation for all labor, equipment, materials, testing and incidentals necessary to complete the work described herein.

D. No separate measurement or payment will be made for work specified in this section.

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.1 REQUIREMENTS OF REGULATORY AGENCIES

A. All work performed shall comply with Health, Safety and Fire Codes, OSHA regulations and/or applicable regulations established by Federal, Local, County and State codes and ordinances.

END OF SECTION 01 11 00

SECTION 01 14 00 - WORK RESTRICTIONS

PART 1 – GENERAL

1.1 DESCRIPTION

A. This work consists of the use by the Contractor of areas and facilities owned by the Government during the construction of this project.

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1.2 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 All work shall be performed in a manner to minimize ground disturbance at the site.

3.2 The Contractor will have limited use of the site only within the project area as determined by the Contracting Officer's Representative for construction operations. The Contractor may store equipment and materials in this area. The Contractor shall be responsible for providing for the security of the equipment and materials delivered and stored at the jobsite. Contractor's use of the delineated portion of the premises is limited by the Government's right to perform work or to retain other Contractors on portions of the project.

3.3 No water will be available for the Contractors use. Contractor's imported water source shall be free of all deleterious materials. All water is considered incidental to individual work items. No telephone, electrical, or sanitary facilities will be available for the Contractor's use.

3.4 The Contractor shall take all reasonable precautions to ensure a safe construction area.

3.5 The Contractor's operations shall at no time interfere with emergency vehicle traffic. Existing road and parking areas shall be kept open to all traffic at all times.

3.6 The Contractor shall return the area designated for equipment and materials storage to the original state at the completion of the project.

3.7 Contractor shall cleanup work areas on a daily basis in accordance with Section 01 74 00, Construction Waste Management and Disposal.

END OF SECTION 01 14 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section specifies administrative and supervisory requirements necessary for project coordination including, but not necessarily limited to:

1. General Project Coordination Procedures.

2. Contractor's personnel.

3. General installation provisions.

4. Cleaning and protection.

1.2 COORDINATION

A. Coordination: Coordinate construction activities included under various Sections of these specifications in order to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.

2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Conservation: Coordinate construction activities in order to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.3 SUBMITTALS

A. Coordination Drawings: Prepare and submit coordination Drawings where close coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Indicate required installation sequences.

2. Indicate relationship of components shown on separate shop drawings.

3. Comply with requirements contained in Section 01 33 23, Shop Drawings, Product Data and Samples.

1.4 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 GENERAL INSTALLATION PROVISION

A. Inspection of Conditions: Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Contracting Officer for final decision.

F. Recheck measurements and dimensions before starting each installation.

G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Contracting Officer for final decision.

J. Any damage to or interruption of utilities caused by Contractor or Contractor’s personnel shall be repaired by Contractor and utility restored to full use immediately. The Contractor shall replace all damaged work, materials and equipment with new of like kind or equal, as approved by the Contracting Officer. All repairs shall be in accordance with all local, State, County, Federal building codes and standards.

3.2 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

END OF SECTION 01 31 00

SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing technical information, and for the approval of material, and product substitutions. Work includes:

1. Catalog Data

2. Samples

B. Related Work:

1. Certificates and Warranties
2. Testing Information and Criteria for verification of Title 24 regulations.

1.2 COMPLETENESS OF SUBMITTALS

A. Submittals shall include all pertinent data required to understand the quality of components, dimensional relationships, integration with other materials, assembly techniques, structural aspects, color, finish, texture, and other such characteristics as may be necessary to fully describe the item and its intended use.

B. Incomplete submittals will be cause for rejection. Additional contract time will not be allowed to compensate for incomplete submittal packages.

1.3 SUBSTITUTIONS

A. The Contractor shall submit all required information and submittals or any submittals to be considered as an "or equal" substitution at the Prework Meeting or within 15 days of Notice to Proceed. The Government shall have 21 days to review and approve all information. No work shall be initiated until all submittals related to those work items have been reviewed and approved in writing by the Contracting Officer. After this period, no substitution in products shall be considered and the Contractor shall secure and install products specified or approved. All resubmittals will incur an additional 21 days for review and approval.

1.4 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 CATALOG DATA

A. Original Submittals: Copies of original catalog data are required for the submittal (printed or Xerox copies are not acceptable).

1. Data: Each submittal shall have all pertinent data contained therein that is applicable to the item submitted for acceptance.

B. Resubmittal: Copies of original catalog data are required for each re-submittal.

2. Data: Each submittal shall have all pertinent data contained therein that is applicable to the item submitted for acceptance.

C. Acceptance: Upon acceptance, one copy so noted will be returned and the remainder will be retained by the Contracting Officer.

3.2 SAMPLES

A. Original Submittal: Actual samples of each item for which samples are required (materials and products requiring selection of design, color, texture and finish), unless otherwise specified, shall be furnished for acceptance. Acceptance shall be obtained prior to delivery of the material to the project site. These samples shall be representative of the actual material proposed for use in the project and of sufficient size to demonstrate design, color, texture and finish as they will appear in the completed installation.

B. Resubmittals: All rejected samples will be returned upon request and any or all resubmittals required shall consist of new samples.

C. Approval: Upon acceptance, one sample so noted will be returned and the remainder will be retained by the Contracting Officer.

3.3 IDENTIFICATION

A. Each catalog brochure or page submitted shall clearly identify the specific item being submitted for acceptance. A cover sheet shall be provided with each submittal identifying project name, general contractor information, subcontractor information if applicable, and submittal number.

3.4 CONTRACTOR'S RESPONSIBILITY

A. Representation: By the submittal of any catalog data, the contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and other essential data and has coordinated same with the contract documents and other accepted submittals.

B. Acceptance of catalog data shall not relieve the contractor from responsibility for errors or omissions therein.

C. Prohibitions: No portion of the work requiring catalog data shall commence prior to approval of such items.

D. Coordination: Contractor shall be responsible for coordination between trades to ensure total compatibility with or between substituted items and those existing, specified, or otherwise provided. Alterations required to achieve compatibility with or between substituted items, shall be accomplished without sacrifice of performance and at no additional cost to the Government.

E. Verification: Any change from elements as originally designed shall be substantiated by calculations and/or data certified by a registered engineer or architect licensed in California.

END OF SECTION 01 33 23

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control. Work shall include providing quality control in conformance with the inspection of construction provision of this Contract to ensure compliance with the specifications and provisions of the contract. The contractor shall provide all personnel, equipment, tests and reports necessary to meet the requirement of this specification.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.

2. Requirements for Contractor to provide quality-control services required by Contracting Officer, Government, or authorities having jurisdiction are not limited by provisions of this Section.

C. See Divisions 01 00 00 through 32 00 00 for specific test and inspection requirements, and as listed herein.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that the completed construction complies with requirements. Services do not include contract enforcement activities performed by Contracting Officer.

C. Testing Agency: An independent state certified entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.3 REPORTS: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.

9. Test and inspection results and an interpretation of test results.
10. Ambient conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract.
12. Document requirements.
13. Name and signature of laboratory inspector.
14. Recommendations on retesting and reinspecting.

A. Permits, Licenses, and Certificates: For Government's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

B. Contractor shall be responsible for all fees associated with the project required by utility companies, and Federal, State, County, or Local governmental regulatory agencies.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

F. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

G. Inspection of Construction: The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that all services, supplies and the work performed under this contract conforms to contract requirements. All work shall be conducted under the general direction of the Contracting Officer and is subject to Government inspection and testing at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.

Government inspections and tests are for the sole benefit of the Government and do not:

1. Relieve the Contractor of responsibility for providing adequate quality control measures.

2. Relieve the Contractor of responsibility for damage to or loss of the material before acceptance.

3. Constitute or imply acceptance.

The presence or absence of a Government inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specification without the Contracting Officer's written authorization.

1.5 QUALITY CONTROL

A. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Contractor's responsibility is to engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ the same entity engaged by Government, unless agreed to in writing by Government.

2. Notify testing agencies at least 24 hours in advance of time when work that requires testing or inspecting will be performed.

3. Where specifications require the Contracting Officer to be present during the sampling or testing procedures to obtain approval, the Contractor shall coordinate the Government inspections with the work progress and provide 72 business hours prior notice for an inspection requiring government observation for approval. The Contractor shall provide 24 hours notice for cancellation.

4. Quality-control services are indicated as Contractor's responsibility; submit a certified written report, in duplicate, of each quality-control service within two days of test being performed. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents shall be the responsibility of the Contractor.

5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Special Test and Inspections: Contractor will engage a testing agency to conduct special tests and inspections required by the specifications and drawings.

1. Testing agency will notify Contracting Officer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Contracting Officer with copy to Contractor and to authorities having jurisdiction within 2 days of test being performed.

3. Testing agency will submit a certified written final report at Substantial Completion of project of all special tests and inspections performed throughout the contract, which includes a list of unresolved deficiencies. Two copies of final report shall be submitted.

4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

5. Testing agency will retest and re-inspect corrected work.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

D. Retesting/Re-Inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Contracting Officer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Contracting Officer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.

5. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting.
4. Facilities for storage and field-curing of test samples.
5. Preliminary design mix proposed to use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.6 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

   1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

   2. Retain subparagraph above. Above is for simple projects that do not include a "Cutting and Patching" Section and relies on patching and repair materials being the same as for new construction.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality control services.

END OF SECTION 01 40 00

SECTION 01 41 00 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes the codes and standards which apply to the work in this contract. Additional codes and standard may be cited in sections to which they apply.

1.2 CODES AND STANDARDS

All work and products shall meet the following codes and standards in addition to other required regulations as stated in the Specifications and Contract Documents. Where there is a conflict between applicable regulations, the most stringent shall apply:

- International Building Code (IBC), latest edition or California Building Code (CBC), latest edition
- International Plumbing Code (IPC), latest edition or California Plumbing Code (CPC), latest edition
- International Mechanical Code (IMC), latest edition or California Mechanical Code (CMC), latest edition
- National Electric Code (NEC), latest edition
- Title 24 California Building Energy Efficiency Standards, latest edition
- California Fire Code (CFC), latest edition
- California Building Standards Code (CBSC), latest edition
- California Health and Safety Codes (HSC)
- California Department of Housing and Community Development (HCD)
- US Department Housing & Urban Development (HUD)
- Code of Federal Regulations (29 CFR), and State (Title 8) OSHA, Title 24 California Code of Regulations (CCR), and Title 25 California Code of Regulations (CCR)
- Americans With Disabilities Act/Architectural Barriers Act (ADAABA) Guidelines, latest edition
- CalTrans Construction Site Best Management Practices (BMP's) Reference Manual, latest edition
- American Society for Testing and Materials (ASTM), latest edition
- Occupational Safety and Health Administration (OSHA)
- Underwriters Laboratory (UL)

The work shall be waterproof, rodent proof, and weathertight. All products used shall be nonrusting type.

Contractor shall follow all Federal, State, County, Local, and Municipal regulations and guidelines.

1.3 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 41 00

SECTION 01 57 24 – STORMWATER POLLUTION CONTROL

PART 1 – GENERAL

1.1 WORK OF THIS SECTION

A. Water pollution control work shall conform to the provisions in the CalTrans Stormwater Quality Handbook and these special provisions.

This project shall conform to the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit for General Construction Activities by the State Water Resources Control Board (SWRCB). This General Permit, hereafter referred to as the "Permit," regulates storm water discharges associated with construction activities.

Water pollution control work shall conform to the requirements in the CalTrans "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual" and the CalTrans "Construction Site Best Management Practices (BMPs) Reference Manual," and addenda thereto issued up to, and including, the date of advertisement of the project, hereafter referred to respectively as the "Preparation Manual" and the "Construction Site BMP Manual" and collectively as the "Manuals." Copies of the Manuals and the Permits may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520. Copies of the Manuals may also be obtained from the Department of Transportation's Internet Web Site at: http://www.dot.ca.gov/hq/construc/stormwater.html.

B. The Contractor shall know and fully comply with the applicable provisions of the Manuals, Permit, and Federal, State, and local regulations that govern the Contractor's operations and storm water discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall maintain a copy of the Permit at the project site and shall make the Permit available during construction.

The Contractor shall implement, inspect and maintain all necessary water pollution control practices to satisfy all applicable Federal, State, and Local laws and regulations that govern water quality for areas used outside of the Project limits or areas arranged for the specific use of the Contractor for this project. Installing, inspecting, and maintaining water pollution control practices on areas outside the Project limits not specifically arranged for and provided for by the Owner for execution of this contract will not be paid for by the Government.

C. The Contractor shall be responsible for all fees associated with the project required by Federal, State, County or local governmental agencies.

D. The Contractor shall be responsible for the costs and for liabilities imposed by law as a result of the Contractor's failure to comply with the provisions set forth in this section "Water Pollution Control", including but not limited to, compliance with the applicable provisions of the Manuals, Permit, and Federal, State and local regulations. Costs and liabilities include, but are not limited to, fines, penalties, and damages whether assessed against the Owner of the Contractor, including those levied under the Federal Clean Water Act and the State Porter Cologne Water Quality Act.

E. Conformance with the provisions of this section "Water Pollution Control" shall not relieve the Contractor from the Contractor's responsibilities.

F. The Contractor shall notify the Forest Service immediately upon request from the regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records pertaining to water pollution control work.

G. Contractor shall have all heavy equipment to be used on site washed prior to entering the project area to remove soil, seeds, and plant material from noxious weeds to prevent the introduction and spread of weeds not already present on Cleveland National Forest. The Forest Service shall inspect equipment prior to moving on site. Inspections shall be coordinated and scheduled with the Contracting Officer's Representative.

1.2 REFERENCES

As a minimum, the Contractor shall follow the USDA Forest Service National Best Management Practices for Water Quality Management on National Forest System Lands, FS-990a, latest edition.

Except as otherwise indicated in this Section, the Contractor shall comply with the most recent version of the following documents:

A. CalTrans Standard Specifications, Section 7-1.01G "Water Pollution", latest edition.

B. CalTrans "Storm Water Pollution Prevention Plan Preparation Manual", latest edition.

C. CalTrans "Water Pollution Control Program Preparation Manual", latest edition.

D. CalTrans "Construction Site Best Management Practices (BMPs) Reference Manual", latest edition.

E. General Permit – Regional Water Quality Control Board.

1.3 SUBMITTALS

Submittals shall include all pertinent data required to understand the quality of components, dimensional relationships, integration with other materials, assembly techniques, structural aspects, color, finish, texture, and other such characteristics as may be necessary to fully describe the item and its intended use.

Submittals for the following items shall be in accordance with Section 01 33 23, Shop Drawings, Product Data, and Submittals.

A. Submit Design Data, Product Data, Material Certificates, and Warranties signed by the manufacturer certifying that products meet or exceed requirements for review and approval by the Forest Service.

B. Storm Water Pollution Prevention Plan (SWPPP) and Permit.

1.4 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work specified in this section. All work specified in this Section is considered incidental to other Sections.

PART 2 – PRODUCTS

2.1 PRODUCTS, GENERAL

A. General: Materials shall conform to these specifications and to details in the "Manuals." As a minimum, all products that will be needed in the event of inclement weather and as required shall be included in the SWPPP.

PART 3 – EXECUTION

3.1 SWPPP PREPARATION, APPROVAL AND UPDATES

A. As part of the water pollution control work, a Storm Water Pollution Prevention Plan, hereafter referred to as the "SWPPP," is required for this contract. The SWPPP shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the CalTrans Standard Specifications, the requirements in the Manuals, the requirements of the Permit, and these special provisions. If required, the SWPPP shall be submitted to the RWQCB with a Notice of Intent. Upon the RWQCB approval and the Forest Service approval of the SWPPP, the SWPPP shall be considered to fulfill the provisions in Section 7-1.01G, "Water Pollution," of the CalTrans Standard Specifications for development and submittal of a Water Pollution Control Program.

B. No work having potential to cause water pollution, as determined by the Forest Service or RWQCB, shall be performed until the Forest Service and RWQCB has approved the SWPPP.

C. The Contractor shall designate a Water Pollution Control Manager. The Water Pollution Control Manager shall be responsible for the preparation of the SWPPP and any required modifications or amendments and shall be responsible for the implementation and adequate functioning of the various water pollution control practices employed. The Water Pollution Control Manager shall serve as the primary contact for all issues related to the SWPPP or its implementation, monitoring and maintenance. The Contractor shall submit to the Forest Service a statement of qualifications, describing the training, previous work history and expertise of the individual selected by the Contractor to serve as Water Pollution Control Manager. The Forest Service will reject the Contractor's submission of a Water Pollution Control Manager if the submitted qualifications are deemed to be inadequate.

D. Within 10 days after the issuance of the Notice to Proceed on the contract, the Contractor shall submit a copy of the RWQCB approved SWPPP to the Forest Service. The Forest Service will have 21 days to review the SWPPP. If revisions are required, as determined by the Forest Service, the Contractor shall revise and resubmit the SWPPP within 15 days of receipt of the Forest's comments. The Forest Service will have 21 days to review the revisions. Upon the Forest Service's approval of the SWPPP, a copy incorporating the required changes, shall be submitted to the Forest Service. In order to allow construction activities to proceed, the Forest Service may conditionally approve the SWPPP while minor revisions are being completed.

E. The objectives of the SWPPP shall be to:

Identify all pollutant sources including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site, and

Identify non-storm water discharges, and

Identify, construct and implement in accordance with a time schedule, and maintain BMPs to reduce or eliminate pollutants in storm water discharges from the site during the duration of the work.

Develop a maintenance schedule for BMPs installed before and during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs).

The SWPPP shall apply to all areas that are directly related to construction activities and other site work including, but not limited to, staging areas, storage yards, and access roads within or outside of the Project limits.

F. As a minimum, the SWPPP shall incorporate pollution control practices in the following categories:

1. Soil Stabilization;
2. Sediment control;
3. Tracking control;
4. Wind erosion control;
5. Non-storm water control;
6. Waste management and material pollution control;

7. Sampling and analysis;

And, will include those items listed in the specifications and as required.

H. The Contractor shall develop a Water Pollution Control Schedule that shall describe the timing of grading or other work activities that could affect water pollution. The Water Pollution Control Schedule shall be updated by the Contractor to reflect any changes in the Contractor's operations that would affect the necessary implementation of water pollution control practices.

I. The Contractor shall incorporate the "Minimum Requirements" presented in the Preparation Manual into the SWPPP. In addition to the "Minimum Requirements" presented in the Preparation Manual, the Contractor shall complete the BMP Consideration Checklist presented in the Preparation Manual. The Contractor shall identify and incorporate into the SWPPP the water pollution control practices selected by the Contractor or as recommended by the Forest Service.

J. One hundred percent (100%) of exposed disturbed areas including all flat areas and slopes must have erosion protection BMPs properly installed and maintained during the rainy season (October 1 through April 30). Unpaved roadways and traveled ways within contractor's onsite yards are exempt from 100% erosion control protection requirement but shall have, where appropriate, BMPs installed such as gravel bag chevrons as conditions warrant.

K. In addition to the Minimum Requirements presented in the Preparation Manual, special requirements shall be incorporated into the SWPPP and the Water Pollution Control Cost Break-Down as follows:

Special Requirement(s)

Category	BMP/Location/Quantity
Soil Stabilization Practices	
Sediment Control Practices	
Wind Erosion Control	
Tracking Control Practices	
Non Storm Water Control	
Waste Management & Materials Pollution Control	

L. The following contract items of work shall be incorporated as a minimum, into the SWPPP as "Temporary Water Pollution Control Practices": Fiber Rolls.

M. The Contractor shall prepare an amendment to the SWPPP when there is a change in construction activities or operations which may affect the discharge of pollutants to surface waters, ground waters, municipal storm drain systems, or when recommended by the Forest Service. Amendments shall show additional water pollution control practices or revised operations, including those areas or operations not shown in the initially approved SWPPP. Amendments to the SWPPP shall be prepared and submitted for review and approval in the same manner as specified for the SWPPP approval. Subsequent amendments shall be submitted within a time approved by the Forest Service, but in no case longer than the time specified for the initial submittal and review of the SWPPP. At a minimum, the SWPPP shall be amended annually and submitted to the Forest Service 25 days prior to the defined rainy season.

N. The Contractor shall keep one copy of the approved SWPPP and approved amendments at the project site. The SWPPP shall be made available upon request of a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency or the local storm water management agency. Requests by the public shall be directed to the Forest Service.

3.2 SWPPP IMPLEMENTATION

A. Upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the project for sampling and analysis (if required), installing, constructing, inspecting, maintaining, removing and disposing of the water pollution control practices included in the SWPPP and any amendments. Implementation of the SWPPP begins when construction begins, and before initial clearing, grubbing, and grading operations. Unless otherwise directed by the Forest Service, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered.

B. If the Contractor or the Forest Service identifies a deficiency in any aspect of the implementation of the approved SWPPP or amendments, the deficiency shall be corrected immediately. The deficiency may be corrected at a later date and time, if requested by the Contractor, and approved by the Forest Service in writing, but not later than the onset of the precipitation. If the Contractor fails to correct the identified deficiency by the date agreed or prior to the onset of precipitation the project shall be in noncompliance.

C. If the Contractor fails to conform to the provisions of "Water Pollution Control," the Contracting Officer may order the suspension of construction operations, which create water pollution.

D. Implementation of water pollution control practices may vary by season. The Construction Site BMP Reference Manual and these special provisions shall be followed for control practice selection of year round, rainy season and non-rainy season water pollution control practices.

E. YEAR- ROUND IMPLEMENTATION REQUIREMENTS

1. The Contractor shall conduct sampling and analysis (if required), and have a year-round program for implementing, inspecting and maintaining water pollution control practices for soil stabilization, wind erosion control, tracking control, sediment control, non-storm water control, waste management and materials pollution control.

2. As part of the SWPPP, the Contractor's shall have a "weather triggered" action plan and have the ability to deploy standby BMPs as needed to completely protect the exposed portion of the project site within 48 hours of a predicted storm event.

3. The National Weather Service weather forecast shall be monitored and used by the Contractor on a daily basis. An alternative weather forecast proposed by the Contractor may be used if approved by the Forest Service. If precipitation is predicted, the necessary water pollution control practices shall be developed prior to the onset of the precipitation.

4. A minimum of 100% of the material needed to install weather triggered BMPs necessary to completely protect the exposed portions of the site from erosion, and to prevent sediment discharges, must be stored on site. Areas that have already been protected from erosion using physical stabilization or established vegetation stabilization BMPs as determined by the Contracting Officer, are not considered to be "exposed" for purposes of this requirement.

5. Disturbed soil areas shall be considered active whenever the soil disturbing activities have occurred, continues to occur or will occur during the ensuing 21 days. Non-active areas shall be protected as prescribed in the Construction Site BMP Manual within 14 days of cessation of soil disturbing activities or prior to the onset of precipitation, whichever occurs first.

6. In order to provide effective erosion control the Contractor may be requested to apply permanent erosion control in small or multiple units as disturbed soil areas are deemed substantially complete by the Forest Service.

7. The Contractor shall implement, maintain, and inspect the following temporary sediment control practices on a year-round basis, as conditions warrant. The listed practices shall remain in place until their use is no longer needed, as determined by the Forest Service.

8. The active disturbed soil area of the project site shall be not more than 1 acre. The Contracting Officer may approve, on a case-by-case basis, expansions of the active disturbed soil area limit. Soil stabilization and sediment control materials shall be maintained on site sufficient to protect the unprotected disturbed soil area. A detailed plan for the mobilization of sufficient labor and equipment shall be maintained to deploy the water pollution control practices required to protect the project site prior to the onset of precipitation events.

3.3 MAINTENANCE

A. To ensure the proper implementation and functioning of water pollution control practices, the Contractor shall regularly inspect and maintain the construction site for the water pollution control practices identified in the SWPPP. The Contractor shall inspect the construction site as follows:

1. Prior to a forecast storm;
2. At 24-hour intervals during extended precipitation events;
3. After a precipitation event, which causes site runoff;
4. Routinely, a minimum of once every week during the rainy season (October 1st – April 30th) and once every month during non-rainy season (May 1st – September 30th).

B. The Contractor shall use the Storm Water Quality Construction Site Inspection Checklist provided in the Preparation Manual or an alternative inspection checklist provided by the Forest Service. One copy of each site inspection record shall be submitted to the Forest Service within 24 hours of completing the inspection.

3.4 REPORT REQUIREMENTS

A. Report of Discharges, Notices or Orders:

If the Contractor identifies any discharge into receiving waters in a manner causing, or potentially causing, a condition of pollution, or if the project receives a written notice or order from any regulatory agency, the Contractor shall immediately inform the Forest Service within 2 days of the discharge event, notice, or order. The report shall include the following information:

1. The date, time, location, nature of the operation, and type of discharge, including the cause or nature of the notice or order.
2. The water pollution control practices deployed before the discharge event, or prior to receiving the notice or order.
3. The date of deployment and type of water pollution control practices deployed after the discharge event, or after receiving the notice, or order, including additional measures installed or planned to reduce or prevent reoccurrence.
4. An implementation and maintenance schedule for any affected water pollution control practices.

B. Report of First-Time Non-Storm Water Discharge:
The Contractor shall notify the Forest Service at least 3 days in advance of each first-time non-storm water discharge event, excluding exempted discharges. The Contractor shall notify the Forest Service of each different operation causing a non-storm water discharge. Non-storm water discharges shall be monitored at each first-time occurrence and routinely thereafter.

C. Annual Certifications:

By June 15 of each year, the Contractor shall complete and submit an Annual Construction Activity Certification as contained in the Preparation Manual to the Forest Service. If the contract is for less than one year, the Contractor shall complete and submit an Annual Construction Activity Certification at the end of the project.

3.5 WPCP COMPLIANCE

A. The County of San Diego Department of General Services inspection department will conduct regular inspections of the site at the prescribed intervals coinciding with paragraph 3.3.A of this section, to ensure compliance with the Storm Water BMP'S. During the inspection any items of non-compliance will be noted on a "CORRECTION NOTICE" by the county inspector and given to the contractor and the Forest Service.

B. Upon receiving a "correction notice" the contractor has 10-days to make the noted corrections. At the end of the 5-day period a follow-up inspection will be conducted by the County Inspector to verify corrections and if all of the corrections have not been made, a "NOTICE OF VIOLATION" will be issued to the contractor, upon reception of notice of violation the Contractor has 24-hours to bring the project in to full compliance.

C. After the 24-hour period a Contractor Inspector will conduct a follow-up inspection (at the cost of the Contractor) to verify compliance, if the site is still found to be non-compliant the following actions can and will be taken:

1. The Forest Service will have all of the violation items corrected at the Contractor's expense, as indicated in the General Conditions Article 12 "Uncovering and Correction of work"
2. The Forest Service will levy liquidated damages in the amount of $500.00 per day against the contractor.
3. The Forest Service will have all of the violations corrected at the Contractor's expense and the County of San Diego will levy liquidated damages in the amount of $500.00 per day against the contractor.

D. Liquidated damages levied by the Forest Service will accrue daily until all of the items identified by the "NOTICE OF VIOLATION" have been deemed Compliant by a Forest Service Contracting Officer.

END OF SECTION 01 57 24

SECTION 01 71 13 - MOBILIZATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This work consists of preparatory work and operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site, and for all other work and operations that must be performed or that cause costs to be incurred prior to beginning work on the various items on the project site.

1.2 MEASUREMENT AND PAYMENT

A. The accepted quantities will be paid for at the contract unit price for item 01 71 13, Mobilization.

B. Progress payments will be made as follows:

1. The Government will pay to the Contractor in the first progress payment the total premium paid by the Contractor to obtain bonds. This payment shall not be in addition to the contract price and will be included in Item 01 71 13, Mobilization.

2. When 5 percent or more of the original contract amount is earned from other pay items, 50 percent of the amount for mobilization, or 5 percent of the original contract amount, whichever is less, will be paid.

3. When 10 percent or more of the original contract amount is earned from other pay items, 100 percent of the amount for mobilization, or 10 percent of the original contract amount, whichever is less, will be paid.

4. Upon completion of all work on the project, any unpaid amount for item 01 71 13, Mobilization, will be paid.

C. The total of all payments will not exceed the original contract amount for item 01 71 13, Mobilization.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 71 13

SECTION 01 74 00 - CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work in this section consists of the cleanup required in areas affected by the construction and the disposal of refuse and excess material resulting from construction operations. Such work includes but is not limited to the following items:

1. Disposal of the excess or unsuitable materials.
2. Disposal of other rubbish generated due to construction.
3. Cleaning or any other operation in which waste is generated.

1.2 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 Excess materials and refuse materials, including recyclables, generated by the Contractor's demolition and construction operations including wood, shingles, fiberglass, masonry, rebar, concrete, asphalt, all construction debris, unsuitable excavation, and the like shall be removed from the project site as it accumulates and disposed of off National Forest Lands to an appropriate recycle facility or landfill. The Contractor shall keep all areas adjacent to, and leading to the site, clean and free of debris at all times. Site shall be restored to as near its natural condition as possible.

3.2 Salvageable items not intended for use in this contract and not specifically designated to remain the property of the Government shall become the property of the Contractor. Items not salvageable shall be disposed of according to article 3.1 above.

3.3 Concrete trucks shall be washed out in the project area in conformance with Caltrans Best Management Practices (BMP) requirements.

3.4 Burning is not permitted on Government Property. No welding operations shall proceed until an approved welding permit has been issued by qualified Forest Service fire personnel.

3.5 Contractor shall use large commercial magnet daily to collect all nails left on site after work is completed and before moving off site, including all access, driveway, storage and parking areas.

END OF SECTION 01 74 00

SECTION 01 74 19 – CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section includes required salvage and recycling of the following waste materials and applies to all such listed waste materials produced during the course of this contract.
   1. Metals: Metal scrap including iron, steel, copper, brass, and aluminum.
   2. Untreated Wood: Unpainted, untreated dimensional lumber, plywood, oriented strand board, Masonite, particleboard, and wood shipping pallets.
   3. Salvaged Materials: Reusable lumber, fixtures, and building supplies.
   4. Cardboard: Clean, corrugated cardboard such as used for packaging, etc.
   5. Paper: Discarded office refuse such as unwanted files, correspondence, etc.
   6. Plastic Buckets: Containers for various liquid and semi-solid or viscous construction materials and compounds.
   7. Beverage Containers: Aluminum, glass, and plastic containers.
   8. Other Mixed Construction and Demolition Waste: Solid waste resulting solely from construction, remodeling, repair, or demolition operations on pavement, buildings, or other structures exclusive of waste materials listed herewith.

B. Non-Recyclable Waste: Collect and segregate non-recyclable waste for delivery to a permitted landfill site.
   1. Mixed Solid Waste: Solid waste usually collected as a municipal service, exclusive of waste materials listed above.

C. Hazardous Waste: Control and disposal of hazardous waste is specified in Section 02 41 00, Demolition.

1.2 DEFINITION

A. Waste Materials are defined as large and small pieces of the materials indicated which are excess to the contract requirements and generally include materials which are to be salvaged from existing construction and items of trimmings, cuttings and damaged goods resulting from new installations, which cannot be effectively used in the work.

1.3 SUBMITTALS

A. Construction Waste Management Plan:
   1. Before start of construction, submit a construction waste management plan indicating proposal on how to collect, segregate, and dispose of all construction wastes and debris produced by the work of this contract. Include description of on-site reprocessing and re-use opportunities.
   2. Include estimated costs associated with recycling, salvaging, and reusing materials and address source reduction of material use.
   3. Identify areas specifically for construction and demolition waste recycling.
   4. Show compliance with regulations specified under “Quality Assurance” article below. Include a list of recycling facilities to which indicated recyclable materials will be distributed for disposal.
   5. Identify materials that are not recyclable or otherwise conservable that must be disposed of in a landfill or other means acceptable under governing State and local regulations.

6. List permitted landfills and/or other disposal means to be employed.
7. Indicate any instances where compliance with requirements of this specification does not appear.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the requirements of the State of California's "Integrated Solid Waste Management Regulations" and applicable local ordinances and regulations. Contact Information: California Integrated Waste Management Board, 8800 Cal Center Drive, Sacramento, CA 95826, phone: (916) 255-2296.

B. Disposal Sites, Recyclers, and Waste Materials Processors: Use only facilities properly permitted by the State of California and by local authorities where applicable.

B. California Recycling Information: http://www.ciwmb.ca.gov/Recycle/#WhereRecycle

C. Pre-Construction Waste Management Conference: Prior to beginning work at the site, schedule a conduct a conference to review the Construction Waste Management Plan and discuss procedures, schedules and specific requirements for waste materials recycling and disposal. Discuss coordination and interface between the Contractor and other construction activities. Identify and resolve problems with compliance with requirements. Record minutes of the meeting, identifying all conclusions reached and matters requiring further resolution.

1. Attendees: The Contractor and related Contractor personnel associated with the work of this section, including personnel to be in charge of the waste management program defined here as the Construction Quality Manager; the Contracting Officer, and such additional Government personnel as the Contracting Officer deems appropriate.
2. Plan Revision: Make any revisions the Construction Waste Management Plan agreed upon during the meeting and incorporate resolutions agreed to be made subsequent to the meeting. Submit the revised plan to the Contracting Officer for approval.

D. Implementation:

1. Designate an on-site party responsible for instructing workers and implementing the Construction Waste Management Plan.
2. Distribute copies of the Construction Waste Management Plan to the job site superintendent and each subcontractor.
3. Include waste management and recycling in worker orientation. Provide on-site instruction on appropriate separation, handling, recycling, and salvaging methods to be used by all parties at the appropriate stages of the work at the site. Include waste management and recycling discussion in pre-fabrication meetings with subcontractors and fabricators. Also include discussion of waste management and recycling in regular job meetings and job safety meetings conducted during the course of work at the site.
4. Institute monthly reporting and feedback on waste management to access progress and address problems. Post this information for all construction personnel to read.

1.5 STORAGE AND HANDLING

A. Site Storage: Remove all indicated recyclable materials from the work location to approved containers daily.

B. Position covered containers for recyclable waste materials at a designated location on the Project Site. Select a location for the recyclable materials containers separated from that of general waste and rubbish containers. Provide separate collection containers for a minimum of the following materials:

1. Untreated lumber.
2. Gypsum wallboard.
3. Paper, paper products, and cardboard.
4. Plastics.
5. Metals.
6. Glass.
7. Other salvageable materials.

C. Change out loaded containers for empty ones as demand required, but not less than monthly.

D. Handling: Deposit all indicated recyclable materials in the containers in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.

E. If the contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the recycling containers. In such case, request resolution by the Construction Quality Manager as to disposal of the contaminated material. Directions from the Construction Quality Manager do not relieve the Contractor from compliance with all legal and regulatory requirements for disposal, nor shall such directions cause a request for modification of the Contract.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Environmental Requirements: Transport recyclable waste materials from the work area to the recycle containers and carefully deposit in the containers without excess noise and interference with other activities, in a manner to minimize noise and dust. Reclose container covers immediately after materials are deposited.

B. Do not place recyclable waste materials on the ground adjacent to a container.

1.7 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WASTE MANAGEMENT

A. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Execution Requirements listed above for progress cleaning requirements.

B. Implement waste management procedures in accordance with approved construction waste management plan. Maintain procedure throughout the life of this contract.

C. Source Separation: Separate, store, protect, and handle at the project site all identified recyclable and salvageable waste products to prevent contamination of materials and maximize recyclability and salvage ability of materials.

D. Arrange for the regular collection, transport from the site, and delivery to respective approved recycling centers of indicated recyclable waste materials. Maintain records accessible to the Contracting Officer for verification of construction waste materials recycling.

E. Delivery Receipts: Arrange for timely pickups from the site or deliveries to approved recycling facilities of designated waste materials to keep construction site clear and prevent contamination of recyclable materials. Keep and maintain records of all deliveries to recycling facilities and all pickups of waste materials at the site by others as specified above.

F. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the work. Relocate and modify facilities as required.

3.2 RECYCLABLE WASTE MATERIALS HANDLING

A. General: The following paragraphs supplement handling requirements for various materials identified for classification and recycling listed in Part 1 "Summary" article above.

1. Paper: Classify and handle waste paper goods as follows:

    a. Bond Paper: As generally found in the construction offices and used for specifications, correspondence, copiers, PC laser printers and facsimile machines. Collect in a separate container at each work station and deposit loose in the appropriate recycle container daily.
    b. Newsprint: Newspapers and tabloid style advertising (slick finish magazines and advertising materials are not typically recyclable). Collect in a single location and deposit daily in the appropriate recycle container.
    c. Diazo Prints (drawings): Set up a single location for collection. Roll together to minimize space. Deposit daily in the appropriate recycle container.

2. Packaging materials:

    a. Cardboard and paperboard cartons and boxes: Knock-down, fold flat and deposit in the appropriate recycle container.
    b. Paper packing materials (separators, stiffeners, etc.) shall be placed in the same container.
    d. Newsprint, used as packing (shredded or whole), shall be deposited in the recyclable container for newsprint.
    e. Plastic (polystyrene peanuts and other shapes) shall be deposited in the recyclable container for plastics.
    f. Metal and plastic banding materials shall be deposited in the appropriate container.
    g. Metals: Cut all items to lengths and sizes to fit within the container provided, when necessary. Where there is sufficient quantity of a specific recyclable waste item (for example, salvaged metal roofing or duct work), make special arrangements for items to be bundled, banded or tied, and stack in a designated location for a special pick-up. Coordinate all special arrangements with the Construction Quality Manager.

3. Plastics: Collect recyclable plastics (polystyrene and others specifically marked for recycling) daily from work areas and deposit in designated containers.

4. Glass: Remove waste glass products (sheet, bottles, etc.) daily from the work area and deposit in designated containers. Where glass containers are marked for separation by color or type, segregate glass accordingly. Glass containing imbedded wire (typically in some fire rated doors having glazed lights) is usually not reprocessed; verify with the Construction Quality Manager that wire glass is not recyclable.

5. Asphalt: Provide asphalt to area asphalt supplier, or recycling facility, for use as stabilization material.

6. Concrete: Provide concrete to area concrete supplier, or recycling facility, for use as stabilization material.

7. Fencing: Provide fencing to a recycling facility.

8. Wood or Metal Bollards: Provide wood or metal to a recycling facility.

9. Trees, Limbs, Slash, and Roots: Provide to a recycling facility.

10. Other items: Where recycling classification of any given waste material is unclear, verify proper disposal with the Construction Quality Manager.

END OF SECTION 01 74 19

SECTION 01 78 36 – WARRANTIES

PART 1 – GENERAL

1.1 DESCRIPTION

A. The work of this Section consists of the assignment of manufacturer's warranties for products incorporated into the work.

1.2 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for the work specified in this section.

B. No final payment on this Contract will be made until the Contractor provides the Contracting Officer with A complete set of the manufacturer's warranties.

PART 2 – PRODUCTS

1.1 QUALITY ASSURANCES

A. Warranties for the following shall be provided if applicable:

1. Manufactured Building.

2. All other products not specified herein but for which the manufacturer provides a warranty.

PART 3 – EXECUTION

3.1 All warranties shall be executed in the name of the current Forest Supervisor, Cleveland National Forest, 10845 Rancho Bernardo Road, Suite 200, San Diego, CA 92127.

END OF SECTION 01 78 36

SECTION 02 41 00 - DEMOLITION

PART 1 - GENERAL

1.01 DESCIPTION

A. The work within this section includes but is not limited to the following items: demolition, removal and disposal of buildings, foundations, footings, appliances, furnishings, fixtures and materials, wood, shingles, metal, utilities, concrete, and miscellaneous site features and debris.

B. Hazardous Materials: It is the responsibility of the contractor to sample & test, identify, and remove any hazardous materials present in the building materials prior to any demolition work, if any hazardous materials are found. All hazardous materials abatement work shall be done by a California certified Asbestos abatement contractor. Hazardous materials shall be classified, handled, and disposed of off National Forest Lands at a suitable disposal site in accordance with State and Federal laws described herein. All work shall be in accordance with Local, State, County and Federal regulations and laws. Disposal tickets shall be furnished to the Contracting Officer for each load of debris which identify the specific address of the origin of the debris associated with each ticket. Contractor shall be responsible for payment of all fees for waste disposal.

C. Contractor shall furnish a work plan and an abatement work plan to the Forest Service for review and acceptance before starting any work.

1.02 MEASUREMENT AND PAYMENT

A. Measurement for work performed under this section will be made under those pay items as listed in the Schedule of Items.

1. The removed and disposed building materials, as accepted by the Contracting Officer's Representative, will be measured as shown in the Schedule of Items and includes all equipment, labor, and hauling of debris.

2. No separate measurement and payment will be made for appurtenance demolition. This work will be considered incidental to this work.

B. Payment will be made at the contract unit price designated in the Schedule of Items, and will constitute full compensation for all materials, labor, equipment, testing, and incidentals necessary to complete the work.

1.03 QUALITY ASSURANCE

A. Regulatory Assurance: Comply with governing Environmental Protection Agency notification regulations before beginning demolition. Comply with hauling, abatement, and disposal regulations of authorities having jurisdiction.

B. Disposal Records: Provide routine review of all receipts and documentation for all disposal, recycling and landfill disposal. Upon project completion, provide all manifests and tickets documenting final disposal of recycled and disposed wastes in accordance with Section 01 33 23 Shop Drawings, Product Data and Submittals.

1.04 PROJECT CONDITIONS

A. Contractor shall perform their own independent site inspection of the site conditions.

1.05 DEFINITIONS

A. Demolish: Completely remove and legally dispose of off-site.

B. Salvage: Carefully detach from existing construction, in a manner to prevent damage, reduce size or configuration as necessary and deliver to the designated location.

C. Inert Material: A material passively resistant to change. For this project, these include block, masonry, pavement and concrete.

1.06 MATERIAL OWNERSHIP

A. Unless otherwise indicated, demolition debris becomes the property of the Contractor.

1.07 SUBMITTALS

A. Provide a schedule of demolition activities and work plan in accordance with Specification Section 01 11 00, Summary of Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 Prior to starting demolition work, the Contractor shall make an inspection with the Contracting Officer's Representative to determine the physical condition of adjacent improvements scheduled to remain. The Contractor shall exercise caution to minimize disturbance to existing improvements and to avoid all waterlines in the vicinity of the work area.

3.02 All work shall be performed in a manner to minimize ground disturbance at the site.

3.03 The Contractor shall be responsible for thorough site investigation and for generating a complete building material inventory of each building, furnishings, fixtures and materials, utilities, and other site improvements, features and debris within the limits of the contract work area.

3.04 Any welding or torch cutting work cannot proceed until a welding permit is obtained from the proper Forest Service employee. Do not use cutting torches until work is cleared of flammable materials. Maintain portable fire-suppression devices during flame cutting operations. Maintain fire watch during and for at least 2 hours after flame cutting operations. Maintain adequate ventilation when using cutting torches.

3.05 All concrete, curbs, footings, slabs, foundations and asphalt pavement designated for demolition shall be removed to their entire depth or a maximum of eighteen inches below natural grade.

3.06 Recycleable material shall be removed and disposed of to an approved recycling facility. Contractor shall eliminate at least 90 percent by weight of the inert material from going into a landfill. Materials to be recycled include, but are not limited to:

a. Asphalt
b. Concrete
c. Metal
d. Wood

Contractor shall furnish a signed copy of the disposal agreement within two (2) days of receipt.

3.07 All regulatory permitting and disposal notifications shall be made in a timely manner by Contractor prior to beginning work.

3.08 Prior to demolition, the Contractor shall have the water pumped from the existing septic tank and disposed by a licensed septic pumping company. Demolish existing abandoned septic tank to the bottom of the tank. Tank materials, including the tank floor shall be completed removed from the site. Demolition shall include removal of the structure in its entirety. All areas shall receive imported clean washed sand material. The top six inches shall be clean material meeting the requirements for "General Backfill" as described in Section 31 20 00 Earth Moving for compaction for structures. Site shall be left in a natural state.

3.09 Prior to commencing work, erosion control measures shall be established in accordance with Section 01 57 24, Storm Water Pollution Control, and implemented as needed.

3.10 Demolition work shall be performed in such a manner as to ensure the safety of persons working or visiting the area. The use of explosives is prohibited on this project. Do not burn demolished materials under any circumstance. Remove and transport debris in a manner that will prevent spreading or spillage into adjacent areas. All loads of debris (dump trucks or bins) are to be covered when in motion to prevent airborne dust.

3.11 Fill material shall be placed in depressions resulting from the removal of foundations, walkways, concrete, and the like. Backfill shall be compacted in accordance with Section 31 20 00, Earth Moving. Sites shall be graded smooth to blend in with existing contours and shall be free draining.

3.12 UTILITY DEMOLITION

A. All utility improvements designated to be demolished or abandoned AS SHOWN ON THE DRAWINGS and that interfere with the installation of new utilities shall be removed.

B. Locate, identify, disconnect, and seal or cap off existing utilities within structures to be demolished.

C. Locate, identify, and disconnect existing above ground water, electrical, sewer and gas lines and appurtenances which are to be removed shall be removed to a point that is a minimum of eighteen inches below ground and capped at both ends.

D. Locate, identify, and disconnect existing underground water, electrical, phone, sewer and gas lines which are to be abandoned shall provide a radial clearance of three feet from the point where the new utility connects to existing system.

E. Upon encountering any utility NOT SHOWN ON THE DRAWINGS, the Contractor shall immediately notify the Contracting Officer.

3.13 All designated salvageable material shall be removed without unnecessary damage and shall be stored in locations as designated by the Contracting Officer's Representative.

3.14 Debris resulting from the demolition portion of this project shall be removed from the work site as it accumulates in accordance with Section 01 74 00, Cleaning and Waste Management, and 01 74 19 Construction and Waste Management. Keep all pavement areas adjacent to and leading from the site, clean and free of debris at all times.

3.15 PROTECTION OF SENSITIVE RESOURCE AREAS AND ADJACENT TREES

A. Existing trees and vegetation adjacent to the demolition areas shall be protected against any Damage. Only remove trees and stumps designated in writing to be removed.

3.16 Contractor shall use a large commercial magnet daily to collect all nails left on site after work is completed and before moving off site, including all access, driveway, storage and parking areas.

END OF SECTION 02 41 00

SECTION 03 11 00 - CONCRETE FORMING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form stripping.

1.2 RELATED SECTIONS

A. Section 03 20 00 - Concrete Reinforcing.

B. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 318 - Building Code Requirements for Reinforced Concrete.

C. ACI 347 - Recommended Practice For Concrete Formwork.

D. PS 1 - Construction and Industrial Plywood.

1.4 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing to conform to code requirements. Resultant concrete to conform to required shape, line and dimension.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with ACI 347 and 301 standards.

1.6 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section. All work specified in This Section shall be considered incidental to specification Section 13 34 19, Manufactured Building.

PART 2 - PRODUCTS

2.1 WOOD FORM MATERIALS

A. Forms shall be smooth, clean, mortar tight and have sufficient strength to resist deflection under the loads imposed by the concrete Plywood shall be provided in the largest practical sizes to minimize joints. Plywood: U.S. Product Standard PS 1 (for Softwood Plywood, Construction and Industrial), grade-stamped, "B-B Ply form" Class II Ext. DFPA for concealed surfaces, "HDO-Ext" for exposed-to-view faces or faces to be painted, 3/4-inch thick. Furnish in largest practicable sizes to minimize number of joints. Douglas Fir species; medium density overlaid one side; sound undamaged sheets with clean, true edges or any lumbers of sufficient strength to hold the concrete in place.

A. Lumber: Douglas Fir species; Number 2 grade; with grade stamp clearly visible.

2.2 FORMWORK ACCESSORIES

A. Form Ties: Snap-off type, galvanized metal, fixed length, cone type, 1 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.

B. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture.

C. Corners: Chamfered, wood strip type; 3/4 x 3/4 inch size; maximum possible lengths.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 EARTH FORMS

A. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.3 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

E. Obtain approval before framing openings in structural members which are not indicated on Drawings.

F. Provide chamfer strips on external corners of walls.

G. Coordinate this section with other sections of work which require attachment of components to formwork.

H. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Contracting Officer.

3.4 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Provide temporary ports or openings in formwork where required to facilitate cleaning and Inspection. Locate openings at bottom of forms to allow flushing water to drain.

E. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.6 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

D. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

E. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.7 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.

3.8 FIELD QUALITY CONTROL

A. Section 01 40 00, Quality Requirements: Field inspection.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

C. Do not reuse wood formwork more than 2 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.9 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION 03 11 00

SECTION 03 20 00 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

1.2 RELATED SECTIONS

A. Section 03 11 00 - Concrete Forming.

B. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 318 - Building Code Requirements For Reinforced Concrete.

C. ACI SP-66 - American Concrete Institute – Detailing Manual.

D. ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.

E. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

F. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

G. AWS D 1.4 - Structural Welding Code for Reinforcing Steel.

H. CRSI - Concrete Reinforcing Steel Institute – Manual of Practice.

I. CRSI 63 – Recommended Practice For Placing Reinforcing Bars.

J. CRSI 65 – Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

1.4 SUBMITTALS FOR REVIEW

A. Section 01 33 23, Shop Drawings, Product Data and Samples: Procedures for submittals.

B. Shop Drawings: Indicate bar sizes, spacing, locations, and quantities of reinforcing steel, and bending and cutting schedules.

1.5 SUBMITTALS FOR INFORMATION

A. Section 01 33 23, Shop Drawings, Product Data and Samples: Procedures for submittals.

B. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.

C. Submit certified copies of mill report or reinforcement materials analysis.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301 and ACI SP-66.

1.7 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section. All work specified In this section shall be considered incidental to specification section 13 34 19, Manufactured Building.

PART 2 - PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars.

2.2 ACCESSORIES

A. Tie Wire Minimum 16 gauge.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.

C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Stainless steel type; size and shape as required.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI SP-66.

B. Locate reinforcing splices not indicated on drawings, at point of minimum stress. Review location of splices with Contracting Officer.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Accommodate placement of formed openings.

D. Maintain concrete cover around reinforcing as follows:

Item:	Coverage:
Footings and Concrete Formed Against Earth	3 inch
Slabs on Grade	3 inch

E. No welding of reinforcing steel bar will be allowed.

3.2 FIELD QUALITY CONTROL

A. Section 01 40 00, Quality Requirements: Field inspection.

B. Inspect for acceptability.

3.3 DELIVERY, STORAGE AND HANDLING

A. Deliver material to site at such intervals to ensure uninterrupted progress of work.

B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete in ample time to not delay work.

C. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. If bolts and nuts become dry or rusty, clean and re-lubricate before use.

1. Do not store materials on structures in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials and identification.

END OF SECTION 03 20 00

SECTION 03 30 00 – CAST–IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This section includes reinforced concrete and placement of reinforced concrete. The work includes preparation of surfaces, mixing, placement, and finishing of concrete.

1.2 RELATED SECTIONS

A. Section 31 20 00 – Earth Moving.

B. Section 03 11 00 - Concrete Forming.

C. Section 03 20 00 – Concrete Reinforcing.

1.3 REFERENCES

A. ACI 211.1 - Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

B. ACI 301 - Structural Concrete for Buildings.

C. ACI 302 - Guide for Concrete Floor and Slab Construction.

D. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

E. ACI 305R - Hot Weather Concreting.

F. ACI 306R - Cold Weather Concreting.

G. ACI 308 - Standard Practice for Curing Concrete.

H. ACI 318 - Building Code Requirements for Reinforced Concrete.

I. ASTM C33 - Concrete Aggregates.

J. ASTM C94 - Ready-Mixed Concrete.

K. ASTM C150 - Portland Cement.

L. ASTM C260 - Air Entraining Admixtures for Concrete.

M. ASTM C494 - Chemical Admixtures for Concrete.

N. ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous Type).

O. ASTM D1190 - Concrete Joint Sealer, Hot-Poured Elastic Type.

P. ASTM C231 – Air Content of Freshly Mixed Concrete by the Pressure Method.

Q. ASTM C1116 – Standard Specification for Fiber Reinforced Concrete and Shotcrete.

1.4 SUBMITTALS

A. Section 01 33 00 – Shop Drawings, Product Data and Samples: Procedures for submittals.

B. Product Data: Provide data on joint devices, admixtures, fiber, sealants, curing compounds, color and joint material.

C. Material Certificates: Provide material certificates signed by manufacturer certifying that each material item complies with, or exceeds, specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

D. Mix Design: Provide concrete mix design from manufacturer for review and approval as specified in paragraph 2.1 herein.

E. Batch Tickets: Upon delivery to the site, provide job tickets for each load delivered. Tickets shall show the date and time of batching, and type and quantity of each cement type and content, water content, aggregate weight, all additives and the moisture in the aggregates. Tickets shall be verified before any material is placed.

1.5 QUALITY ASSURANCE

A. See Section 01 40 00, Quality Requirements, as shown herein.

B. Concrete Testing Service: Engage an independent testing laboratory acceptable to Contracting Officer to perform material evaluation tests including preparing and testing concrete cylinders and beams, conducting slump tests, temperature tests, and conducting air entrainment tests.

C. Materials and installed work shall require testing at any time during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

D. Acquire cement and aggregate from same source for all work.

1.6 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section. All work specified under this section shall be considered incidental to Section 13 34 19, Manufactured Building.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Prepare design mixes for each type and strength of concrete in accordance with IBC, Chapter 19.

1. All design mixes shall be certified by a registered Civil Engineer licensed to practice in the State of California.

2. Mix designs shall be accompanied by slump test, as well as compression test reports (buildings) or flexural strength test reports (helipads, taxiways, fuel truck travel ways and parking areas, Note: Modulus of Rupture may be converted to Compressive Strength for Field Quality Control, See Item 8 of Section 3.12 A below). Ensure that mix design and aggregate quality tests have been run within 12 months of the date of submittal and that the aggregate source is the same.

3. Proposed mixes shall produce concrete to strengths specified with adequate workability and proper consistency to permit concrete to be worked into forms and around reinforcement without excessive segregation or bleeding.

4. Mixes for concrete to be placed by pumping shall assure adequate workability to permit placement at the specified slump.

5. Mix design shall be subject to review by the Contracting Officer and the Testing Laboratory. Mixes shall be submitted in accordance with Section 01 33 23 Shop Drawings and Submittals. Do not begin concrete production until proposed mix design(s) have been approved by Contracting Officer. Do not mix chemical admixtures from different manufacturer's.

B. Portland Cement shall conform to ASTM C 150, Type IIA cement. The Contractor shall obtain from his supplier of cement or concrete a certificate stating that the cement complies with this specification.

C. Aggregates shall conform to ASTM C 33. Maximum size of aggregate shall be either one (1) inch or not larger than three-quarters (3/4) of the minimum clear spacing between reinforcing bars or between reinforcing concrete surface with the smaller size governing. Combined grading requirement of fine and course aggregate is as shown below:

Combined Aggregate Grading		Percent Passing
Sieve Size	1" Max.	¾" Max.
1"	95-100	--
¾"	75-87	90-100
3/8"	45-65	60-80
No. 4	35-52	40-60
No. 8	37-39	30-45
No. 16	22-31	20-35
No. 30	12-21	13-23
No. 50	05-13	05-15
No. 100	0-4	0-5
No. 200	0-2	0-2

D. Water (Used in Mix) shall be clean and free from injurious amounts of acids, alkalis, salts, organic matter or other deleterious substances.

E. The water/cement ratio of the design mix shall be maintained at all times regardless of making field adjustment due to weather or placement conditions. Maximum allowable mixing water shall not exceed seven (7) gallons per sack. Mixing water shall be reduced by the amount of moisture in the aggregate above saturated surface dry conditions.

F. The slump of the concrete as designed and placed on the job shall be four inches maximum when tested in accordance with ASTM C143.

G. Concrete shall be air-entrained, and shall contain 5 percent plus or minus 1 percent entrained air as determined by test procedure ASTM C138. Only air-entrained agents meeting the requirements of ASTM C260 will be permitted and shall be added at the mixer.

H. Provide concrete for new walkways, propane tank pad, bollards, and valve boxes with the following minimum criteria: (This data and all admixtures used shall be shown on all tickets for all material delivered to the job site.)

Unit	Measurement
Compressive Strength (28 day)	3000 psi
Water/Cement Ratio (maximum)	0.45
Aggregate Size (maximum)	1 inch
Air Entrained (plus or minus 1%)	5 percent
Slump (maximum)	4 inches
Fiber	1.5 pounds per cy

I. Admixture: A type that increases the workability and reduces the water demand of the concrete, the brand and amount used subject to the approval of the Contracting Officer and shown in respective mix designs. No admixture containing calcium chloride or salt shall be used.

1. Air Entrainment: ASTM C260, 5% plus or minus 1%

2. Chemical: ASTM C494

J. Limits: The allowable mix design tolerances shall not exceed one percent for cement and water, two percent for each aggregate, or one percent for aggregates weighed cumulatively.

K. Fiber: Concrete requiring fiber shall contain 1.5 pounds Fiber mix, or approved equal, per cubic yard.

L. Use accelerating admixtures in cold weather only when approved by Contracting Officer. Use of admixtures will not relax cold weather placement requirements.

M. Use set retarding admixtures during hot weather only when approved by Contracting Officer.

2.2 JOINT DEVICES AND FILLER MATERIALS

A. Joint Materials: Provide joint sealants, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

1. Expansion Joint Fillers: Asphalt impregnated fiberboard or felt, 1/2 inch thick conforming to ASTM D1751.

2. Isolation Joint Fillers: Bituminous preformed filler conforming to ASTM D994.

3. PVC Waterstop: PVC molded strips conforming to ASTM D638 and Army Corps of Engineers CRD-C 572-74 .

2.3 CONCRETE CURING MATERIALS

A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per square yard, complying with AASHTO M182, Class 2.

B. Moisture-Retaining Cover: One of the following, complying with ASTM C171:

a. Waterproof paper.
b. Polyethylene film.
c. Polyethylene-coated burlap.

C. Liquid Membrane-Forming Curing Compound: ASTM C309. Use type 1 or 1-D clear cure compound.

2.6 CONCRETE MIXING

A. Depending on local conditions, or with approval of the Contracting Officer, the methods of mixing may be limited to one of the following:

1. Batching at a Central Plant or "Ready Mixed Concrete" shall comply with requirements of ASTM C94, and as specified herein.

2. Job Site Mixing: Mix materials for concrete in appropriate drum type batch mechanical machine mixer. For mixers of one cubic yard or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.

PART 3 - EXECUTION

3.1 EXAMINATION

A. All concrete work shall be as shown herein.

B. Verify requirements for concrete cover over reinforcement.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

C. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcement.

3.2 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

C. For walkways cross slope shall be less than 2% and running slope shall be less than 5%. The subgrade shall be prepared in accordance with Section 31 20 00, Earth Moving. Place expansion joint material as described herein before placing new concrete.

D. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

3.3 MIXING AND HAULING

A. Batching and Mixing at a Central Plant Conforming to ASTM C94: The method herein contemplated is ordinarily referred to as "Ready-Mixed Concrete", and may only be employed if the time interval between mixing at the plant and discharge into the forms does not exceed 90 minutes. This time limitation may be still further reduced when high ambient air temperature or the high temperature of the batch ingredients indicate a shorter time period is required. The mixture shall be agitated continuously from the time the truck is loaded until time of discharge.

B. Batching and Mixing at Site of Work: Concrete shall be mixed thoroughly in a batch mixer of approved type and capacity for a period of not less than 1-1/2 minutes after all component materials, including water, are in a drum, or as specified by the manufacturer of the mixer.

3.3 FORMS

A. See Section 03 11 00, Concrete Forming.

3.4 REMOVAL OF FORMS

A. Formwork not supporting weight of concrete, such as sides of walls, and similar parts of the work, may be removed anytime after 24 hours after placement of the concrete.

3.5 INSTALLATION OF EMBEDDED ITEMS

A. General: Allow other trades or work to secure or insert sleeves, boxes, bolts, anchors, inserts, or other rough hardware, with every facility for setting same accuracy in forms, and be responsible for any and all changes in the position of such items after they have been set in forms.

3.6 CONCRETE PLACEMENT

A. Environmental Conditions:

1. Cold Weather Placing: When air temperature has fallen to or is expected to fall below 40 deg F, protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306. Do not place concrete on frozen sub grade or sub grade containing frozen materials.

2. Hot Weather Placing: When air temperature is above or expected to be above 85 deg for weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305.

B. Preplacement Inspection: Before placing concrete, the Contracting Officer shall inspect and approve the complete installation for formwork, reinforcement, and items to be embedded or cast-in. Moisten wood forms immediately before placing concrete where form coatings are not used.

C. Placing Concrete:

1. All concrete shall be placed within 90 minutes of charging the mixer but, in no case shall concrete be placed after it has started to take its initial set.

2. Concrete shall be placed in such a manner as to avoid segregation but, in no case shall the concrete be dropped freely more than five feet. Deposit concrete as nearly as practicable to its final location to avoid segregation.

3. Concrete shall be placed continuously and spread in horizontal layers when practicable but no deeper than 24 inches. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete in a manner to avoid inclined construction joints or the formation of seams or planes of weakness. When placement consists of several layers, place each layer while preceding layer is plastic to avoid cold joints.

4. Concrete for slabs shall be deposited and consolidated in a continuous operation within limits of construction joints, until the placing of a panel or section is completed.

5. Protect adjacent finish materials against spatter during concrete placement.

6. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping to provide a smooth void free surface against formwork.

7. Do not use vibrators to transport concrete inside forms or cause segregation of mix.

8. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or derbies to smooth surface, free of humps or hollows. Slope surfaces uniformly to drain as shown on the drawings. Do not disturb slab surfaces prior to beginning finishing operations.

9. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.

10. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

D. Concrete Placement for Bollards: All pipe shall be set vertically and embedded in the concrete in accordance with specifications. After pipe footings have set and cured, pipe shall be filled with concrete and rounded at the top.

3.7 JOINTS

A. Contraction (Control) Joints in Slabs-On-Ground: Construction contraction joints in slabs-on-ground to form panels of patterns AS SHOWN ON DRAWINGS. For swale, curb, gutter, and walkways control joints (troweled ¾" max depth and 1/8" – ¼" grooves with ¼" radius edges) shall be located at approximately every 5 feet and/or at the end of each radius, and shall be perpendicular to the longitudinal direction.

B. Expansion Joints: Expansion joints shall be installed where concrete walkway abuts buildings, curbs and any existing concrete. Extend joint material from bottom of slab to within 1/8 inch of finished slab surface.

3.8 CONCRETE FINISHING

A. Finish all concrete with a heavy broomed finish.

3.9 CONCRETE CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Concrete shall be cured for a minimum of 7 days by one of the following methods:

1. Provide moisture curing by keeping surface continuously wet by covering with water or water-fog spray, or absorptive cover.

2. Moisture-Retaining Cover: Place cover in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Provide curing and sealing compound in accordance with manufacturer's recommendations. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.10 SEQUENCE OF PLACEMENT

A. Do not place loads on concrete until concrete strength cylinders from the same concrete cured under the same conditions indicate that all concrete has obtained at least 80 percent of its required 28 day compressive strength.

3.11 CONCRETE REPAIRS

A. Surface repairs shall be made with cement mortar immediately after removal of forms, acceptable to the Contracting Officer. Repairs include filling in holes or openings left for other trades, after work of other trades is in place. Repairs include honeycombs, rock pockets, and void over ¼ inch in any dimension, holes left by ties, rods, and bolts, cracks in excess of 0.01 inch in concrete surfaces.

B. Remove defective areas to sound concrete with clean square cuts. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried. Compact mortar and keep continuously moist for not less than 72 hours. Alternate repair methods are subject to approval by the Contracting Officer. If defects cannot be repaired to satisfaction of Contracting Officer, concrete shall be removed and replaced.

C. Correct high areas in slabs after cure period by grinding.

3.12 FIELD QUALITY CONTROL

A. Sampling and testing for quality control during placement of concrete include the following, as directed by the Contracting Officer.

1. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.

2. Slump: ASTM C143 - One test at point of discharge for each truck load, before placement; additional tests when concrete consistency seems to have changed, or whenever water is added.

3. Air Entrainment: ASTM C138 - One test for each truck load, before placement.

4. Compression Test Specimen: ASTM C31 - One set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens, except when field-cure test specimens are required.

5. Compressive Strength Tests: ASTM C39 - One set of 4 standard cylinders for each day's pour exceeding 5 cubic yards plus additional sets for each 50 cubic yards over and above the first 25 cubic yards of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

6. Flexural Test Specimen: ASTM C 31 / ASTM C 192 – One set of 4 - 6"x6"x21" molded beams for each flexural strength test. Mold and store cylinders for laboratory cured test specimens, except when field-cure test specimens are required.

7. Flexural Strength Test: ASTM C 78 (or conversion to Compressive Strength for Field Quality Control, see item 8.) – One set of 4 - 6"x6"x21" molded beams for each day's pour exceeding 5 cubic yards plus additional sets for each 50 cubic yards over and above the first 25 cubic yards of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

8. Compressive Strength of Concrete Using Portions of Beams Broken in Flexure: ASTM C116 – Test desired mix design using at least 3 specimen prepared from ASTM C 78 at 28 days. Establish a correlation between flexural strength and compressive strength at 28 days. If mix design meets or exceeds required Modulus of Rupture, ASTM C31 and ASTM C39 may be used for field quality control of concrete designed for flexure at the schedule in item 5 above.

B. Strength level of concrete will be considered satisfactory if averages of sets of two consecutive strength test results equal or exceed specified compressive or flexural strength, and no individual strength test results falls below specified compressive strength by more than 500 psi or flexural strength by more than 80 psi.

C. Test results will be reported in writing to the Contracting Officer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in site, design compressive or flexural strength at 28 days, concrete mix proportions and materials, compressive or flexural breaking strength and type of break for both 7-day and 28-day tests.

END OF SECTION 03 30 00

SECTION 13 34 19 – MANUFACTURED BUILDING

PART 1 – GENERAL

1.1 SCOPE

A. Furnish and install one new fully finished, move in ready, manufactured home including delivery and set up, utility installation, utility connections/reconnections, and all site work. Site work includes concrete walkways, aluminum ramp, stairs, and all utilities (water, electrical, phone, septic, leach, and propane) including incidentals.

1.2 BUILDING REQUIREMENTS

A. Building shall be AAAmerican Pacific Manufactured Homes, 619-449-3800, Skyline Model 67 CUSTOM HUD, ~1760 square feet, five bedrooms, and three baths, with details and layout as listed herein, or approved equal. New building location shall be in the same footprint as the existing Barracks Building footprint being demolished AS SHOWN ON THE DRAWINGS.

1.3 PROPANE TANK PAD AND BOLLARDS

A. Furnish and install new concrete propane tank pad, bollards, fittings, regulator, and lines, and connect new propane tank underground to new building. New 1000 gallon propane tank delivery shall be coordinated by the Forest Service.

B. Contractor shall furnish and install a minimum of six metal bollards in accordance with industry standards and as shown herein.

1.4 ELECTRICAL SERVICE

A. Contractor shall coordinate with San Diego Gas & Electric for electric meter, panel, subpanel, boxes, lines, and associated work. Disconnect existing meter, panel, subpanel, boxes, lines, service, pumphouse, and incidentals. Contractor shall furnish and install new electrical meter, meter board, panel, subpanel, boxes, lines, service, and incidentals for new building requirements of 200 Amp service. Install and connect new service from location as required by SDGE to new building in accordance with San Diego Gas & Electric requirements. Remaining electrical, boxes, panel, subpanel, posts, lines and incidentals shall be removed and disposed in accordance with specifications.

1.5 SEPTIC SYSTEM

Contractor shall furnish and install a septic system with a 4000 gallon precast concrete septic tank and infiltrator chamber leach field, and connect to new building in accordance with specifications and AS SHOWN ON THE DRAWINGS. Existing septic tank shall be pumped and completely removed, void shall be backfilled with imported material and compacted in accordance with specifications. Existing septic and leach lines shall be cut and capped at both ends, and abandoned in place in accordance with specifications.

1.6 WATER

Contractor shall furnish, install, and connect new waterline to new building, and tie into existing waterline in a new valve box with a new shut off valve. Existing water shall be disconnected from building temporarily, cut and capped at both ends, and abandoned in place in accordance with specifications. New building shall have two new hose bibbs on exterior – one on front of building and one on rear of building.

1.7 PHONE

Contractor shall temporarily disconnect existing phone lines from existing building, and connect to new building.

1.8 SUBMITTAL REQUIREMENTS

A. Submittals shall include all pertinent data required to understand the quality of components, dimensional relationships, integration with other materials, assembly techniques, structural aspects, color, finish, texture, and other such characteristics as may be necessary to fully describe the item and its intended use.

B. Contractor shall furnish proposed floor plan and detailed list of items included with building, including setup and installation procedures.

C. Contractor shall furnish proposed materials to be used for Electrical, Propane, Septic and Leach System, and Water.

1.9 MEASUREMENT AND PAYMENT

A. Measurement will be Lump Sum Quantity for the delivered, set up, installed, completed, and accepted building. Measurement will be Lump Sum Quantity for utility installation and all site work (electrical, water, phone, sewer, leach, and propane) including incidentals.

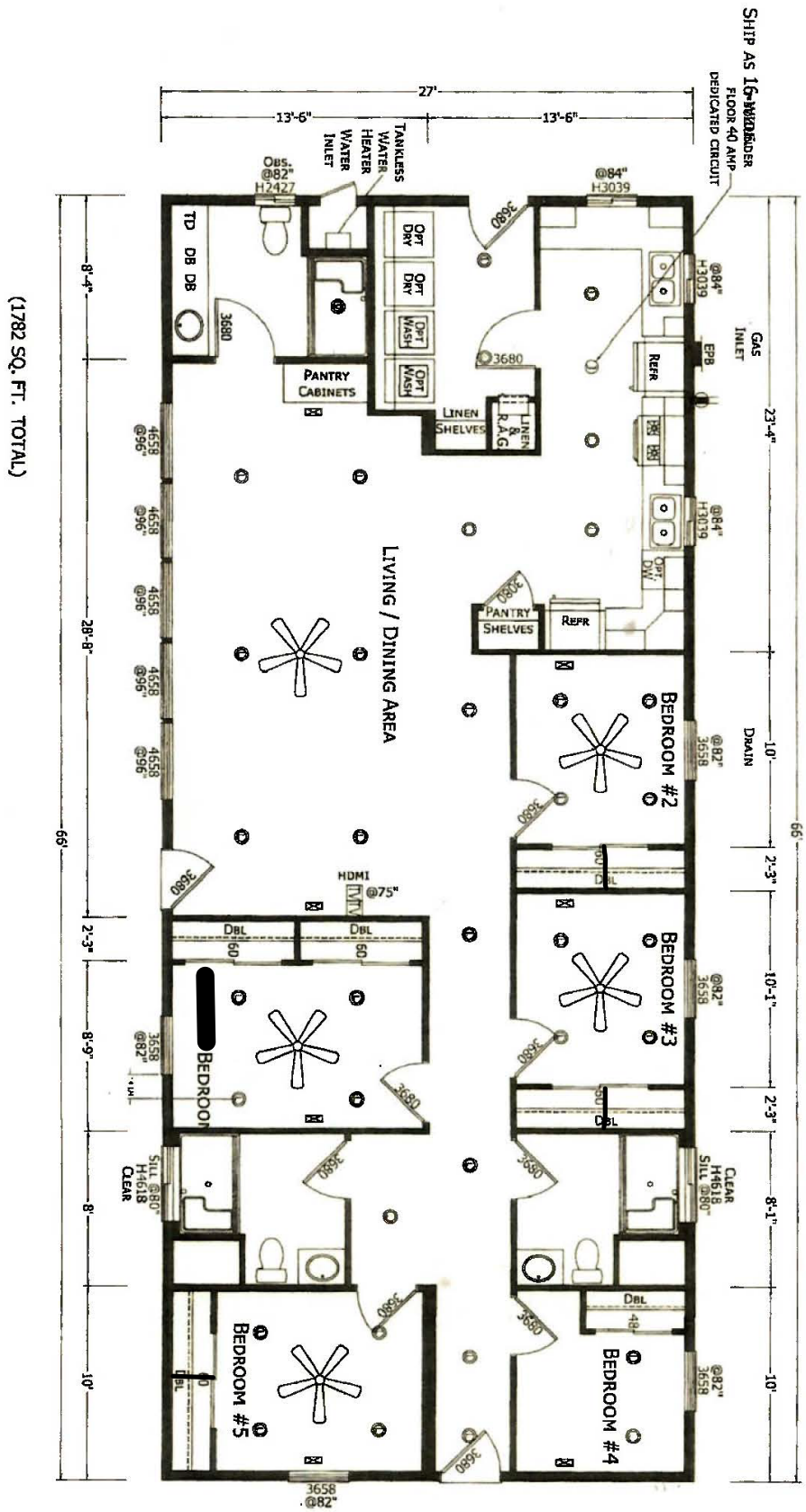
B. Payments will constitute full compensation for all products, labor, materials, equipment, testing, and incidentals necessary to provide completed building, utilities, and site work in conformance with these specifications, drawings, and Statement of Work.

PART 2 – PRODUCTS

2.1 MANUFACTURED BUILDING

A. Building shall be as listed herein, or approved equal.

B. Floor plan layout provided as an example.


SHIP AS 16-WINDOW
FLOOR 40 AMP
DEDICATED CIRCUIT
27'
13'-6"
13'-6"
TANKLESS
WATER
HEATER
WATER
INLET
OBS.
@82"
H2427
@84"
H3039
3680
TD DB DB
OPT DRY
OPT DRY
OPT WASH
OPT WASH
PANTRY CABINETS
LINEN SHELVES
LINEN R.A.G.
GAS INLET
EPB
REFR
DRAIN
PANTRY SHELVES
LIVING / DINING AREA
BEDROOM #2
BEDROOM #3
BEDROOM #4
BEDROOM #5
HDMI
@75"
DBL
60
48
4658
@96"
3658
@82"
SILL @80"
H4618
CLEAR
8'-4"
28'-8"
66'
23'-4"
10'
2'-3"
10'-1"
8'-1"
8'-9"
8'
(1782 SQ. FT. TOTAL)

C. Building shall include the following items, as a minimum:

a. Building shall meet all Building Code requirements, energy star label, WUI compliant, ADAABA compliant, minimum 1750 square feet, foundation ready with skirting, concrete skirting curb, fire vents, gutters and downspouts, three awnings for exterior doors, and crawl space door. Building to include all engineering, plans, seven year warranty, delivery, set up, interior close up – drywall, marriage, crack repair, touch up paint, and all install and finish work. Contractor shall be responsible for all permits, plans and fees associated with the building. Colors, finishes, style, fixtures, products, details not provided here shall be proposed by the Contractor and accepted by the Contracting Officers Representative. Style and colors shall be selected by Contracting Officer from manufacturer's choices.

b. Energy star features shall include insulated duct, R8 flex duct at cross over duct connection sealed with mastic, extra strap at metallic tape, ceiling board penetrations sealed with foam sealant, caulk roof to wall, sidewall to end wall and marriage line gasket.

c. Building shall include the following items: Exterior walls shall be 9 foot high, 2x6 with house wrap and R19 insulation; 9 foot high interior walls shall be 2x4 with R11 insulation; roof shall be a truss system for 40 lb roof load over OSB and shall have R38 insulation; 12 inch eave overhang shall be hardi board fiber cement fascia, exterior siding shall be hardi board fiber cement vertical wood look with 1x4 hardi board fiber cement trim with 2x6 header; all required venting, including dryer vents; high quality architectural dimensional asphalt shingles with 30 year warranty; T&G OSB floor decking; Shaw luxury vinyl pro series Pantheon HD waterproof 7 inch plank flooring, or approved equal, throughout; R22 floor insulation; interior gypsum drywall ceiling and walls, square corner bead walls, 3 ¼ inch casing, 3 ¼ inch base board; painting of exterior and interior walls, trim, fascia, doors, ceiling, baseboards; three 36x80 fiberglass, six panel exterior doors with heavy duty commercial grade keyed entry lever satin nickel locksets with changeable cylinder to yale compatible; one fiberglass, smooth panel exterior door for water heater closet with exterior grade satin nickel knob; interior doors shall be hollow core two panel with satin nickel lever lockset; interior utility room door shall be hollow core louvered with satin nickel lever lockset; bath doors shall be two panel hollow core with satin nickel privacy lever with push button lockset; bedroom doors shall be two panel hollow core with keyed entry lever satin nickel lockset; vinyl double hung cased white windows with screens throughout, except bathrooms and kitchen; bathrooms shall have white vinyl obscure glass horizontal slider stack windows with screens; kitchen shall have white vinyl horizontal slider stack windows with screens; all window shall be dual pane, low E, tempered glass; 2 inch faux wood blinds throughout.

d. 200 Amp panel for electrical service with three inch conduit and weatherhead for overhead connection; Noritz Model NR98 OD Series residential propane tankless water heater, or approved equal, in exterior closet; AC Pro, X-Series Heat Pump, 5 ton, SEER2 Efficiency Rating of 19, Split, Central Ducted, Outdoor Unit, model number SPHP-X-1060B, condenser and air handler, condenser pad, whip, disconnect, and all wiring, or approved equal; floor heat registers, toe kick registers in wet areas; heat pump ready; thirty eight white can lights including four per bedroom; white rocker switches in all rooms, kitchen, living/dining room, utility room, bedrooms, bathrooms, and for each exterior light; 3-way white switch for hall and utilities; standard interior white receptacles throughout with two per bedroom room, four in living room/dining room area, one per bathroom, nine in kitchen area; one white double usb receptacle in kitchen; one white double usb receptacle in living area; white smoke and carbon monoxide detectors throughout; two exterior GFI receptacles with cover; one white wall mounted programmable smart thermostat; three black exterior lights at exterior doors.

e. Five bedrooms shall have two separate closets with hollow core sliding bypass wardrobe doors per room; wood shelves and rods in each closet; two white standard receptacles per room; one white ceiling fan with light per room.

f. Three baths each with 60 inch white aquatic roll in shower including shower dam, chrome grab bars, fold down seat, chrome handheld faucet with chrome trim, white shower curtain; comfort height white toilet; white porcelain undermount sink with single lever chrome faucet; medicine cabinet, chrome towel/bars and tissue holder; two hall baths shall have a 2.25 linear foot hardwood shaker style vanity with doors and nickel cabinet knobs, and 8 square feet solid surface countertop with bullnose and 4 inch matching backsplash; 24 inch mirror and 18 inch light strip; one white bath with exhaust fan/light combo and one with white exhaust fan only; third bath shall have an 8 linear foot hardwood shaker style vanity with drawer bank and doors with single lever chrome faucet and nickel cabinet knobs, 22 square feet solid surface countertop with bullnose and 4 inch matching backsplash; 36 inch mirror; 18 inch light strip and exhaust fan only.

g. Kitchen shall be two hundred square feet minimum full kitchen to include a 38 inch wide designated location for two each 25 cubic feet side by side refrigerators with ice maker, plumbed for ice maker with recessed box; a 32 inch wide designated location for one electric stainless steel range and electric stainless steel 30 inch stainless steel range hood; prepped for electric range and range hood; a 25 inch designated location for a four cycle dishwasher, plumbed for dishwasher. Kitchen shall have two double stainless steel undermount sinks with two industrial pull down spray head chrome faucets; hardwood shaker cabinets with matching crown molding throughout, brushed nickel cabinet knobs, white lined adjustable shelves throughout, 26 linear feet lower cabinets; 72 linear feet upper cabinets with 24 inch deep cabinet over each refrigerator area; two drawer banks and one trash drawer, all with full extension drawer glides; drawer over door for lower cabinets in kitchen, doors for upper cabinets kitchen; overhead cabinets with adjustable center shelf; two pantry's with 5 adjustable -18 inch deep white lined shelves - 36 inch wide pantry closet in kitchen area and 48 inch wide pantry cabinet in dining area with drawers in bottom cell; full height 4 inch subway tile backsplash including behind range, 56 square feet solid surface countertops with bullnose.

h. Utility/laundry room shall be plumbed for two washers and two propane gas dryers plumbed with recessed boxes; linen closet with white lined adjustable shelving, linen shelving, 60 inch wide x 42 inch tall with white lined adjustable shelving, and a 60 inch wide full utility overhead cabinet.

i. Living/dining area shall be one hundred square feet and shall include tv prep recessed standard box, tv prep recessed with hdmi located 75 inches above finished floor; white ceiling fan with light in living room; one LED flush mount ceiling light in dining area; white standard receptacles.

D. Set up shall include the following items:
a. Site preparation and grading.
b. Foundation installation, skirting, fire vents, crawl space door, concrete skirting curb.
c. Door awnings, standard aluminum three foot x four foot.
d. Gutters and downspouts.

Utility installation shall include the following items:
a. Utility connections/reconnections.
b. Utility installation and site work.
c. ADAABA compliant ramp with handrails and landing to main entrance, aluminum steps with handrail for two other exterior doors.
d. Five foot concrete walkways on all sides of new building. Walkways shall meet ADAABA guidelines and all building code requirements.

2.2 PROPANE TANK PAD AND BOLLARDS

A. Furnish and install new concrete propane tank pad, bollards, regulator, fittings, and lines, and connect new propane tank underground to new building. Contractor shall construct a concrete propane tank pad in accordance with required industry standards sized for a 1000 gallon propane tank. The tank pad shall be a minimum of 20 feet by 4 feet by 4 inch thick. Removal of existing propane tank and delivery of the new 1000 gallon propane tank delivery shall be coordinated with the Forest Service.

B. Contractor shall furnish and install a minimum of six metal bollards in accordance with industry standards and as shown herein. Contractor shall furnish and install six inch (Inside Diameter) Schedule 40 steel pipe, 0.280 inch wall thickness, filled with concrete, and rounded at the top. Concrete shall be a minimum 3000 psi. All pipe shall be set vertically and embedded in concrete. The pipe shall be installed three feet above the top of concrete pad and shall extend three feet below concrete pad. All metal is to receive two coats of safety yellow, gloss finish, Rustoleum Industrial Choice 5200 System DTM Acrylic, or approved equal, over two coats Rustoleum Industrial Choice 5200 System DTM primer, over a properly prepared surface.

C. Propane tank pad, bollards, concrete, paint, appurtenances and related work shall be considered incidental to building.

2.3 ELECTRICAL

A. Electrical components shall be as required by building manufacturer and SDGE requirements for a complete and operational building, and shall be in accordance with specifications, and drawings.

B. All electrical components and related work shall be considered incidental to building.

2.4 SEPTIC SYSTEM

A. Septic tank shall be 4000 gallon precast concrete tank, Jensen Precast Underground Tank, Model JZ-4000-EBE-ST septic tank, or approved equal, and shall be and in accordance with specifications, and drawings. Leach field shall be Infiltrator Systems, Inc. Quick 4 High Capacity Chambers, or approved equal and shall be in accordance with specifications, and drawings.

B. All septic and leach system components and related work shall be considered incidental to building.

2.5 WATER

A. Water lines shall be as required by building manufacturer, and shall match the type and size lines on site. Valve box, shut off valves, and hose bibbs shall be in accordance with specifications, and drawings.

B. All water components and related work shall be considered incidental to building.

2.6 CONCRETE WALKWAYS

A. Furnish and install walkways in accordance with specifications and drawings.

B. All walkway components and related work shall be considered incidental to building.

2.7 PHONE

A. Disconnect and reconnect phone lines in accordance with specifications and drawings.

B. All phone components and related work shall be considered incidental to building.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install building and accessories in accordance with manufacturer's recommended installation instructions, building codes, industry standards, and as shown herein. Whichever is more stringent shall govern.

END OF SECTION 13 34 19

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section includes the following:
1. Protecting existing trees and vegetation to remain.
2. Clearing and grubbing.
3. Trees located within the new leach field area shall be removed and disposed. Removing trees, stumps, roots, logs and other vegetation, after receiving written notice from Contracting Officer. Remove minimum required obstructions, trees, shrubs, stumps, roots, grass, brush chips and other vegetation is required to permit installation of new construction. Removal includes digging out stumps and obstructions, grubbing roots, and backfill and compaction, in accordance with Section 31 20 00, Earth Moving. Trees may only be removed following the Contracting Officer's written notice. Removal of existing trees shall include removing their stumps and roots within the drip line and work area.

1.2 MATERIALS OWNERSHIP

A. Except for materials indicated to be stockpiled or to remain Government property, cleared materials shall become Contractor's property and shall be removed from the site and disposed of off National Forest Lands to an accepted disposal site in accordance with local regulations.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations. Do not close or obstruct roads, walks, or other occupied or used facilities without permission from Contracting Officer.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and stockpiled on Government premises to location approved by Contracting Officer.

C. Notify utility locator service for area where project is located before site clearing.

1.4 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section. All work specified in this Section is considered incidental to other Sections.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Satisfactory Soil Materials: As specified in Section 31 20 00, Earth Moving.

1. Obtain acceptable imported soil materials off-site when satisfactory soil materials are not available on site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, walkways, and site areas in accordance with Specification Section 01 57 24, Storm Water Pollution Control, and Specification Section 31 20 00, Earth Moving.

B. Locate and clearly flag trees and vegetation to be removed or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their natural condition, as acceptable to Owner.

3.2 TREE PROTECTION

A. Do not excavate within drip line of trees, unless otherwise indicated. Where excavation within drip line of trees is required, excavation is not permitted within 6 feet of the trunk of the tree.

B. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner acceptable by Contracting Officer.

D. Provide protection for roots over 1-1/2 inch diameter cut during construction operations. Coat cut faces, with approval of the Contracting Officer, an acceptable coating formulated for use on damaged plant tissues for all cut roots to be exposed for more than 24 hours. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.

3.3 UTILITIES

A. Locate, identify, disconnect, relocate, and seal or cap off utilities indicated to be removed.

B. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted. Arrange to provide temporary utility services.

C. Excavate for and remove underground utilities indicated to be removed. Relocate utilities AS SHOWN ON THE DRAWINGS and in accordance with Section 02 41 00, Demolition, 31 20 00, Earth Moving, 33 11 00 Water Utility Distribution Piping, 33 12 00 Water Utility Distribution Equipment, and 33 13 00 Disinfection of Water Utility Distribution.

3.4 CLEARING AND GRUBBING

A. Remove minimum required obstructions, trees, shrubs, stumps, roots, grass, brush chips and other vegetation as required to permit installation of new construction. Removal includes digging out stumps and obstructions, grubbing roots, and backfill and compaction, in accordance with Section 31 20 00, Earth Moving. Trees may only be removed following the Contracting Officer written notice. Removal of existing trees shall include removing their stumps and roots within the drip line and work area.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Conform to the requirements of Section 31 20 00, Earth Moving.

C. Burning of slash shall not be permitted at any time.

D. Remove existing above and below grade improvements as indicated and as necessary to facilitate new construction. Relocate those to remain as designated by the Contracting Officer.

3.5 TREE AND STUMP REMOVAL

A. Tree removal and disposal shall include removal and disposal of tree stump associated with tree, unless otherwise specified.

B. Depression created by tree, stump and root removal shall be backfilled and compacted in accordance with Section 31 20 00, Earth Moving.

3.6 DISPOSAL

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash, debris, trees, stumps, logs, roots, and other vegetation and legally dispose of them off Government property in accordance with Section 02 41 00, Demolition.

END OF SECTION 31 10 00

SECTION 31 20 00 – EARTH MOVING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This work consists of providing equipment and labor necessary to complete site excavation; excavating and backfilling for the installation of all structures; utility systems; placement of fill and backfill materials; trenching and backfill; excavation; drainage features; compaction and finish grading.

B. Earthwork shall include but is not limited to the following:

1. Fill and backfill, including the importing of approved off-site material.
2. Excavate to levels and lines required for foundations or other subgrade work.
3. Compact subgrade, backfill material, and granular rock where required.
4. Rough and finish grade to levels and lines indicated.
5. Finish grading.
6. Provide erosion, sedimentation, and dust control in accordance with local ordinance and State of California requirements, and in accordance with Section 01 57 24, Stormwater Pollution Control.

1.2 PROTECTION

A. Furnish, install and maintain all supports and shoring required to support the sides of excavation and to protect adjacent work or existing improvements.

1.3 VERIFICATION OF CONDITIONS

A. The Contractor shall begin work by careful examination of existing conditions and information and shall become knowledgeable as to the nature and location of the work, the conformation of the ground, the nature of subsoil conditions, groundwater conditions, nature and extent of materials or existing improvements to be encountered and any and all determinable matters that can affect the work.

B. Existing Utilities: Contractor shall locate existing underground utilities in areas of excavation work. For utilities that are to remain in place, Contractor shall provide adequate means of support and protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Government and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner. Do not interrupt existing utilities serving facilities occupied by Government or others, during occupied hours, except when permitted in writing by Contracting Officer and then only after acceptable temporary utility services have been provided. Provide minimum of 72-hour notice to Contracting Officer, and receive written notice to proceed before interrupting any utility. The Contractor shall be responsible for the repairs of existing utilities that are disrupted by construction operations and scheduled to remain. Repair shall be made within 8 hours of interruption.

1.4 SUBMITTALS

Submittals shall include all pertinent data required to understand the quality of components, dimensional relationships, integration with other materials, assembly techniques, structural aspects, color, finish, texture, and other such characteristics as may be necessary to fully describe the item and its intended use.

Submittals for the following shall be in accordance with Section 01 33 23, Shop Drawings, Product Data, and Submittals.

A. Submit Design Data, Product Data, Material Certificates, and Warranties signed by the manufacturer certifying that products meet or exceed requirements for review and approval by the Forest Service.

B. Test Reports: Submit the following reports directly to Contracting Officer from the testing services, with copy to Contractor in accordance with Section 01 33 23, Shop Drawings, Product Data, and Submittals.

1. Test reports on imported materials for compliance with specification.

2. Verification of suitability of each material, in accordance with specified requirements.

3. Field reports.

4. Other test reports.

1.5 QUALITY ASSURANCE

A. Testing and Inspection Service: Contractor shall contract with and pay for a state certified independent geotechnical testing laboratory to perform soil testing and inspection service prior to and during earthwork operations.

B. Perform work as shown herein.

1.6 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section. Work covered under this section shall be considered incidental to Section 02 41 00, Demolition and Section 13 34 19, Manufactured Building.

PART 2 - PRODUCTS

2.1 BACKFILL MATERIALS

A. GENERAL

1. The Contracting Officer shall approve all backfill material. Materials used for backfill shall be free from frozen or organic matter and contain no deleterious substances. Backfill materials shall be obtained from on site excavation, designated borrow sources and commercial sources.

B. GENERAL BACKFILL

1. Imported fill shall be non expansive and predominantly granular soil or soil-rock mixture, which is free from organic matter, and deleterious substances including but not limited to organic matter, drain tile, abandoned conduit, broken concrete and rebar. Imported fill material may be used if approved by the Contracting Officer.

2. The following criteria shall be met:

   a. Maximum Particle Size: 2 ” greatest dimension, ASTM C136

   b. Maximum Particle Size: Within upper 6” of Fill: 1-1/2” greatest dimension, ASTM C136

C. DRAIN ROCK/VALVE BOX GRAVEL

1. Material for use below valve boxes without concrete bottoms as drain course shall consist of approved washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.

D. DRAIN ROCK/CRUSHED ROCK: Material for use below valve boxes with concrete bottoms as drain course shall consist of approved sound, hard durable, well-graded sands and gravels meeting the following gradation requirements, or approved equal:

U.S. Standard Sieve Size	Percent Passing
1-1/2 inch	90-100%
¾ inch	85-100%
3/8 inch	75-100%
No. 4	60-100%
No. 8	45-95%
No. 16	20-85%
No. 30	5-60%
No. 50	0-40%
No. 100	0-20%
No. 200	0-10%

E. FOUNDATION FILL

Unless otherwise stated,

1. Furnish granular material free of excess moisture, frozen lumps, roots,, sod and other deleterious material and conform to the following:

   a. Material passing 2” sieve 100%.

   b. Soil Classification, AASHTO M145, A-1-a.

   2” sieve – 100% passing
   #10 sieve – 50% max passing
   #40 sieve – 30% max passing
   #200 sieve – 6% passing
   AASHTO T 27 and T 11

F. CONCRETE ENCLOSURE BEDDING

1. Bedding material for concrete enclosures, utility boxes, manholes, or the like shall be fine sand or soil, 100% passing the No. 8 Sieve, without sharp chips or points.

2. ¾" gradation of aggregate materials for concrete utility boxes shall be as follows:

U.S. STANDARD SIEVE SIZE	PERCENT PASSING
3/4 inch	100%
No. 4	0-10%
No. 100	0-3%

G. PLASTIC ENCLOSURE BACKFILL

1. Backfill materials around plastic/polyethylene utility boxes and manholes shall be sand or per Manufacturer's installation requirements.

H. BACKFILL FOR NON STRUCTURAL CONCRETE

1. Materials for backfill of nonstructural slabs, walkways, drainage swales, catch basins, generator and LPG tank pads, and the like shall meet the quality requirements of screened "Foundation Fill" above.

2.2 EROSION, SEDIMENTATION AND DUST CONTROL

A. FIBER ROLL

Soil erosion and storm water pollution control measures shall be in accordance with Caltrans Best Management Practices (BMP's) Reference Manual, latest edition, for minimum use and installation of construction site BMP's and as a minimum, shall be placed at locations per the approved SWPP Plan. Installation shall be in accordance with manufacturer's recommended installation procedures if not shown in the Caltrans BMP manual.

Fiber roll materials shall comply with Caltrans Construction Site Best Management Practices (BMP), latest edition. Fiber roll material shall be certified in writing by manufacturer to be seed free and weed free. Posts shall be 1" x 2" x 12" wood stakes.

2.3 MARKING TAPE AND TRACER WIRE (UTILITY LINES)

A. Warning tape shall be minimum 6-inch wide "Idento Tape" as manufactured by Allen Systems, Inc., or approved equal. Tape shall be non-detectable and color coded to correspond with the utility below. When more than one utility is located in a common trench marking tape shall be 6 inches wide with imprint "Caution - Buried Utility Lines Below"; color shall be red.

B. Tracer wire shall be 14 AWG insulated copper.

2.4 COMPACTION EQUIPMENT

A. Compaction equipment shall be capable of obtaining compaction requirements without detrimentally affecting the compacted material. The compacting units may be of any type, provided they are capable of compacting each lift of material as specified and meet the minimum requirements contained herein.

B. Minimum requirements for rollers are as follows:

1. Tamping or sheep foot rollers shall meet the following minimum requirements:

   a. Diameter - 40"
   b. Completely filled with liquid.

2. Grid rollers shall be capable of exerting a force of 250 pounds per inch of width of roller drum.

3. Steel-wheel rollers, other than vibratory, shall be capable of exerting a force of not less than 250 pounds per inch of width of the compression roll or rolls.

4. Vibratory steel-wheel rollers shall have a minimum weight of 6 tons. The compactor shall be equipped with amplitude and frequency controls and specifically designed to compact the material on which it is used.

5. Pneumatic backfill tamper shall be used to compact soil around foundations and other structures and for compacting backfill in utility trenches.

6. Pneumatic-tire rollers shall have smooth tread tires of equal size that provide a uniform compacting pressure for the full width of the roller and shall meet the following minimum requirements:

   a. Towed rollers:
      1) Ballast density shall exceed 100 pounds per cubic foot
      2) Volume of ballast shall exceed 7 cubic feet per tire
      3) Tire pressure shall exceed 45 pounds per square inch

   b. Self propelled rollers:

      1) Shall exert a force that exceeds 200 pounds per linear inch of rolling width.

2.5 WATER

A. Water for compaction shall be clean, and free of all organic, deleterious substances and contaminants.

PART 3 - EXECUTION

3.1 GENERAL EXCAVATION AND DISPOSAL

A. Contractor shall verify all actual site conditions, levels, and grades prior to beginning work and inform the Contracting Officer of any discrepancies that exist.

B. Excavated areas shall be replaced with compacted backfill material or concrete to the required levels when necessary to complete the work.

C. Clearing and grubbing shall be accomplished before excavation or backfill placement begins. Slash and grubbed stumps shall be removed from Government land in accordance with Section 01 74 00, Construction Waste Management and Disposal, or AS SHOWN ON DRAWINGS. Slash disposal and grubbing of stumps, when approved by the Contracting Officer, may proceed concurrently with excavation. Excavation and placement operations shall be conducted so slash material will not be incorporated in the embankment.

D. All unsuitable material excavated shall be unclassified and shall include earth fills, gravels, boulders, debris, asphalt, concrete, brick, and any other materials encountered in excavation and grading operations.

E. All suitable, excavated material shall be used in the construction of embankments, subgrades, shoulders, slopes, bedding, and backfill for structures and for other purposes AS SHOWN ON THE DRAWINGS, and as specified herein, or as designated by the Contracting Officer's Representative. Excess suitable material shall be used throughout the project AS SHOWN ON THE DRAWINGS and as designated by the Contracting Officer.

F. All excavations of every description and of whatever substances encountered shall be performed to the depth AS SHOWN ON THE DRAWINGS, staked on the ground, and as specified herein. All materials shall be piled in an orderly manner a sufficient distance from the banks of an excavation to avoid overloading and to prevent slides or cave-ins.

G. Undercutting will not be permitted.

H. Material encountered in the excavation, suitable for topsoil, cushion, road finishing, or other purposes, may be conserved and utilized as such when approved by the Contracting Officer.

I. Unsuitable material found at the maximum depth of excavation that does not have the required bearing capacity, including but not limited to organic materials, broken concrete and rebar, abandoned water and sewer lines, or that has been disturbed or weakened by construction activity shall be excavated. Disposal of unsuitable material will be as otherwise designated by the Contracting Officer. Excavated areas shall be replaced with compacted backfill material and base material or surfacing materials approved by the Contracting Officer to the required levels when necessary to complete the work.

J. The Government will not make payment on excavations beyond indicated limits unless the Contracting Officer in advance of doing the work authorizes such excavations. Over excavation shall be restored to specified elevations with compacted backfill or concrete materials approved by the Contracting Officer.

K. Rocks too large to be incorporated into the embankment shall be broken for incorporation into the embankment, maneuvered to the face of the embankment and embedded so that they will not roll or obstruct the use and maintenance of the area, or moved to locations approved by the Contracting Officer.

L. Water encountered during excavation operations shall be handled to prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area. Separate payment will not be made for pumping of water from trenches or for excavation of material rendered unsuitable as a result of water encountered. Do not allow water to accumulate in excavations. Remove water and/or snow to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.

M. Excavated areas shall be replaced with compacted backfill material or concrete to the required levels when necessary to complete the work.

N. Sheeting and shoring should be used as is necessary for the protection of the work and for the safety of personnel. Excavations shall be by open cut. Whenever depth of excavation exceeds 5 feet the excavation shall be shored.

O. When abandoned waterlines, septic lines, leach lines or any other abandoned utility is encountered during excavation work, the necessary portion of that utility shall be removed and disposed of in accordance with Section 02 41 00, Demolition, and Section 01 74 00, Cleaning and Waste Management.

3.2 EXISTING IMPROVEMENTS

A. Maintain and protect utility service lines passing through the work area.

B. The Contractor's attention is directed to the existence of pipe and other underground improvements, which may or may not be shown on the drawings. All reasonable precautions shall be taken to preserve and protect any such improvements. The contractor shall be responsible for contacting Underground Service Alert (U.S.A.) at 1-800-642-2444 a minimum of 48 hours prior to locating utilities before excavating.

C. The Contractor shall be aware of the possible existence of underground utilities and improvements which may be in place but not shown on the drawings. If such are encountered the contractor shall notify the Contracting Officer immediately and take precautions to preserve and protect any such improvements until further instructions can be issued by the Contracting Officer.

D. Where existing utilities or improvements interfere with the work, they shall not be removed, relocated, or otherwise disturbed unless authorized in writing and in advance by the Contracting Officer.

3.3 EXCAVATION FOR UTILITY TRENCHES

A. Conform to the requirements for general excavation and the following:

1. Trenches shall be of the necessary width for properly laying utility lines. Water line trenches shall be uniformly graded to avoid high points that would necessitate the placing of air valves in the water lines. The trench shall be prepared and backfilled with specified materials to the depths AS SHOWN ON THE DRAWINGS, as specified herein, or as required by the utility provider, and shall be compacted as specified. In cases of discrepancies between the specifications, the drawings, the utility provider requirements, the utility provider requirements shall govern at all times.

2. Trenches shall be sloped or shored as required by the California State Division of Safety and Health, or the utility provider.

3. All roots shall be cut and removed from trenches. Bottoms of trenches shall be accurately graded to an elevation below the grade line of the proposed utility line.

3.4 EXCAVATION FOR STRUCTURES, WALKWAYS, ROADWAYS, AND OTHER FILL AREAS

A. Conform to the requirements for general excavation and the following:

1. Over excavation beyond footing dimensions AS SHOWN ON THE DRAWINGS shall be filled with concrete poured integrally with the footing.

2. Depth of excavation for slabs on grade shall be sufficient to allow for aggregate base, vapor barrier, sand, and slab thickness AS SHOWN ON THE DRAWINGS or per approved design.

3. Depth of excavation for roadway and walkways shall be sufficient to allow for aggregate base, drainage layers and surface course thickness AS SHOWN ON THE DRAWINGS or per approved design.

4. Extend excavation beyond exterior finished structure dimensions to allow for placing and removal of forms and other appurtenances.

3.5 BACKFILL PLACEMENT

A. GENERAL BACKFILL PLACEMENT

1. Fill material shall be placed and compacted at moisture content suitable for compaction.
2. Layer place fill, except over rock surfaces. Over rock surfaces, material may be placed by end dumping to the minimum depth needed for operation of spreading equipment. Level and smooth each fill layer before placement of subsequent layers. Operate hauling and spreading equipment uniformly over the full width of each layer. Place suitable material in layers no more than 12 inches thick.
3. No fill material shall be placed when free water is standing on the surface of the area where the fill is to be placed and no compaction of fill will be permitted with free water on any point of the surface of the fill to be compacted. Do not place backfill material on surfaces that are muddy, frozen, or contain frost or ice.
4. Excessively wet material that is otherwise suitable for embankment shall be field drained and dried to the moisture content suitable for compaction.
5. Any fill containing organic materials or other unacceptable material previously described shall be removed and replaced with approved fill material prior to compaction.
6. The Contractor must obtain approval from the Contracting Officer prior to backfilling.
7. Unless otherwise specified, all backfill not accessible to roller compaction shall be compacted by power tampers, vibratory compactors or other approved means to the degree of compaction specified.
8. Pneumatic backfill tamper shall be used to compact soil around foundations and other structures and for compacting backfill in all utility trenches.

B. BACKFILL PLACEMENT FOR UTILITY TRENCHES

1. GENERAL

a. Backfilling will not be authorized until the trenching, pipe, and pipe joints are inspected, pressure tested, and conform in every way to related sections.

b. Care shall be exercised in placing backfill to avoid damage to conduit and piping systems.

c. The trench shall be prepared and backfilled with specified materials to the depths AS SHOWN ON THE DRAWINGS, as specified herein, or as required by utility provider, and shall be compacted as specified.

In cases of discrepancies between the specifications, the drawings, the utility provider requirements, the utility provider requirements shall govern at all times.

d. If the trench is improperly backfilled, it shall be reopened to the depth required for proper compaction, then refilled and compacted as specified herein, at no additional cost to the Government.

e. No self-propelled compaction equipment shall be used over utility trenches without prior approval from the Contracting Officer.

2. PIPE ZONE OF UTILITY TRENCHES

a. Caltrans Class 2 Aggregate Base Backfill shall be used to provide a cushion below, adjacent to, and above the utility line.

b. Backfill material shall be deposited in six inch maximum thickness layers (loose measure).

c. Tracer wire shall be installed with each utility. The tracer wire shall be electrically continuous between points of connection of each utility. Connectors for buried use shall be used.

3. TRENCH ZONE OF UTILITY TRENCHES

a. Caltrans Class 2 Aggregate Base or Foundation Fill Backfill placed on top of the utility shall be used to provide conduit protection.
b. Backfill material shall be deposited in layers not to exceed twelve inches (loose measure).
c. Backfill material in the upper portion of trenches passing under areas of proposed buildings, roadways, walkways, parking areas and all other trenches shall be comprised of materials placed and compacted until the uniform density is at least 90 percent of the maximum dry density as determined by ASTM D1557. Material shall be as specified herein, AS SHOWN ON THE DRAWINGS, or as required by the utility provider and shall be compacted as specified. The contractor shall perform compaction tests in accordance with Section 31 20 00, Earth Moving and Section 01 40 00, Quality Requirements. A minimum of one in place density test shall be performed for every 250 linear feet of trench each day per layer, but in any case no fewer than three tests per day per layer per type of material.

d. Warning Tape shall be installed in each utility trench.

C. BACKFILL PLACEMENT AROUND/INSIDE VALVE BOX ENCLOSURES/WELL HEAD

1. Valve boxes shall be surrounded by a minimum of 6 inches on all sides with general backfill, sand, or crushed rock material unless otherwise SHOWN ON THE DRAWINGS, or as stated elsewhere herein. Backfill material within 6 inches of the surface shall be free of rock greater than 3 inches.

2. The backfill material shall be placed in layers not more than 12 inches maximum thick (loose material) and compacted by mechanical tampers, and not more than 4 inches (loose depth) for material compacted by hand-operated tampers.

3. The backfill material shall be compacted uniformly through its entire depth to a density equal to that of the adjacent undisturbed native soil.

D. BACKFILL PLACEMENT FOR STRUCTURES, WALKWAYS, ROADWAYS, AND OTHER FILL AREAS

1. GENERAL

   a. Embankments shall be constructed of suitable material and compacted uniformly throughout the depths specified herein. The contractor shall perform compaction tests in accordance with Section 31 20 00, Earth Moving and Section 01 40 00, Quality Requirements. A minimum of one in place density test shall be performed for every 250 square feet each day per layer, but in any case no fewer than three tests per day per layer per type of material.

   b. Compaction of not less than 95 percent of ASTM D1557, shall be obtained for the top 12 inches of subgrade for the width AS SHOWN ON THE DRAWINGS in both excavation and embankment sections. The contractor shall perform compaction tests in accordance with Section 31 20 00, Earth Moving and Section 01 40 00, Quality Requirements. A minimum of one in place density test shall be performed for every 250 square feet each day per layer, but in any case no fewer than three tests per day per layer per type of material.

2. LAYER PLACEMENT

   a. Embankment shall be placed in horizontal layers not exceeding 12 inches (loose measure) and compacted. Each embankment layer shall be leveled and smoothed before placement of subsequent layers. Hauling and spreading equipment shall be operated uniformly over the full width of each layer.

   b. Where material containing large amounts of rock is used to construct embankments, a solid embankment with adequate compaction shall be constructed by working smaller rock and fines in with the larger rocks to fill the voids and by operating hauling and spreading equipment uniformly over the full width of each layer as the embankment is constructed.

   c. Placing individual rocks greater than 8 inches in diameter will not be permitted.

   d. Material shall be at moisture content suitable for attaining the required density.

   e. Cohesive soils that have become hard or lumpy, or that have been piled and have become dry, shall be broken up and properly conditioned for moisture content immediately before placement.

   f. Surfaces on which compacted fill will be placed shall be wetted or dried as may be required to obtain the compaction specified.

3. FINISHING SUBGRADE

   a. For areas receiving aggregate base or surface course, only rocks that do not protrude above the subgrade more than one-third of the depth of the base or surface course, or 3 inches, whichever is less, may remain in place.
   b. Finished grade surface shall be reasonably smooth, compacted, and free from irregular surface changes within the tolerances specified herein.

   c. During grading operations and before stopping work for the day, blade unfinished areas being graded to provide a well-drained surface so water cannot collect in pools and puddles.

   d. The subgrade shall be shaped to produce a surface which is uniform, consistent to grade and crowned or cross sloped as SHOWN ON THE DRAWINGS or specified herein.

e. Protect newly graded areas from traffic and erosion.

f. The subgrade shall be visibly moist during shaping and dressing. The Contractor shall apply water if insufficient moisture is not present to prevent segregation. Application of water shall be incidental to the work. Low sections, holes, cracks or depressions shall be brought to grade with suitable material. Final compaction of subgrade shall meet 95 percent relative to the maximum dry density of ASTM D1557 for a minimum depth of 1 foot below the grading plane. The contractor shall perform compaction tests in accordance with Section 31 20 00, Earth Moving and Section 01 40 00, Quality Requirements. On subgrade, a minimum of one in-place density test shall be performed for every 250 square feet each day per layer, but in any case no fewer than three tests per day per layer per type of material.

4. AGGREGATE BASE

a. Aggregate base course material shall be placed to the depth and width as SHOWN ON THE DRAWINGS and thoroughly compacted. Final compaction of subgrade shall meet 95 percent relative to the maximum dry density of ASTM D1557. Compacted base shall provide a minimum of 4 inch thick course and shall not vary more than 0.05 foot above or below established finished grade. Total compacted thickness shall not vary more then ½ inch and shall not be consistently above or below the specified thickness. The contractor shall perform compaction tests in accordance with Section 31 20 00, Earth Moving and Section 01 40 00, Quality Requirements. One in-place density test shall be performed for every 250 square feet each day per layer, but in any case no fewer than three tests per day per layer per type of material.

5. FINISHING SLOPES AND SITE GRADING

a. Finished slopes shall conform reasonably to the lines AS SHOWN ON THE DRAWINGS and the approved final locations staked on the ground. The finished slope shall be reasonably smooth, compacted and free from surface irregularities that would affect drainage. Loose rock, loose debris, and other loose material, each of which is larger than 3 inches in diameter, shall be removed from the slope unless otherwise SHOWN ON THE DRAWINGS, or as designated by the Contracting Officers Representative.

b. All areas covered by the project, including excavated and filled areas and adjacent transition areas, shall be uniformly graded so that finished surfaces are at the elevations AS SHOWN ON THE DRAWINGS, or shall match the adjacent surrounding area elevations as approved by the Contracting Officer.

E. BACKFILL PLACEMENT ADJACENT TO CONCRETE STRUCTURES

1. GENERAL

a. Prior to placement of backfill, all forms shall be removed and the excavation shall be cleaned of all trash, debris and unsuitable material.

b. Where self-propelled or power mechanical compaction is used, the uncompacted thickness of each lift of backfill shall be not more than 12 inches.

c. Where hand-operated mechanical compaction is used, the backfill shall be placed in loose layers of not more than six inches.

2. BACKFILL ADJACENT TO FOUNDATION WALLS/FOOTINGS

a. General

1) Backfilling against foundation walls and/or footings shall not be started until conditions have been inspected and approved by the Contracting Officer.

2) Rollers shall not be operated within two feet of structural walls unless otherwise approved by the Contracting Officer.

3) No backfill shall be placed until the foundation walls and/or footings have cured sufficiently to develop the strength necessary to withstand, undamaged, the pressure that will result from backfilling and compaction operations. Minimum 7 days unless otherwise approved in writing by the Contracting Officer.

b. Exterior side of foundation walls/footing

1) Backfilling behind exterior foundation walls and/or footings shall consist of General Backfill, Imported Backfill Material and/or Aggregate Base or per approved design as approved by the Contracting Officer and shall be compacted to a dry density of not less than 95 percent of the maximum dry density determined by ASTM D1557. The contractor shall perform compaction tests in accordance with Section 31 20 00, Earth Moving and Section 01 40 00, Quality Requirements. A minimum of one in place density test shall be performed for every 250 square feet each day per layer, but in any case no fewer than three tests per day per layer per type of material.

c. Interior side of foundation walls/footings

1) Backfill behind interior walls, below slabs-on-grade, footings and foundation mats shall consist of General Backfill, Imported Backfill Material and/or Aggregate Base or per approved design as approved by the Contracting Officer and shall be compacted to a dry density of not less than 95 percent of the maximum dry density determined by ASTM D1557. The contractor shall perform compaction tests in accordance with Section 31 20 00, Earth Moving and Section 01 40 00, Quality Requirements. A minimum of one in place density test shall be performed for every 250 square feet each day per layer, but in any case no fewer than three tests per day per layer per type of material.

2) Vapor barriers are required under all interior slabs-on-grade unless otherwise AS SHOWN ON THE DRAWINGS or per approved design. Install with complete coverage over gravel base. Lap all joints six inches minimum. Seal all tears and breaks and all pipe and conduit penetrations with waterproof tape recommended by the manufacturer for that purpose. Cover all vapor barriers with two inches of clean sand, minimum.

3.6 FINISH SLOPES AND SITE GRADING

1. Finished slopes shall conform reasonably to the lines AS SHOWN ON THE DRAWINGS and the approved final locations staked on the ground. The finished slope shall be reasonably smooth, compacted and free from surface irregularities that would affect drainage. Loose rock, loose debris, and other loose material, each of which is larger than 3 inches in diameter, shall be removed from the slope unless otherwise SHOWN ON THE DRAWINGS, or as designated by the Contracting Officers Representative.

2. All areas covered by the project, including excavated and filled areas and adjacent transition areas, shall be uniformly graded so that finished surfaces are at the elevations AS SHOWN ON THE DRAWINGS, or shall match the adjacent surrounding area elevations as approved by the Contracting Officer.

3.7 STORAGE OF MATERIALS

A. Stockpile materials acceptable for backfill and fill in location where designated in writing by the Contracting Officer. Place, grade, and shape stockpiles for proper drainage.

1.Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

2. Dispose of excess soil material and material not acceptable for use as backfill or fill.

B. No stockpiled material shall be deposited at any time so as to endanger the partly finished structure either by direct pressure, indirectly overloading bank contiguous to the operation, or by any other manner.

3.8 COLD WEATER PROTECTION

A. Protect the bottom of excavation from freezing when atmospheric temperature is less than 35 degrees F.

3.9 DEWATERING

A. The Contractor shall maintain all excavated and general site area free of water at all times. Grading, drainage, ditches, dikes and any other necessary work shall be undertaken to divert rainfall or other surface water from the excavation. The Contractor shall prevent, and remove, if necessary all subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

B. Concrete curing water or water from other construction operations shall not be allowed to accumulate in the excavation during foundation construction.

3.10 TESTING

A. All sampling and testing shall be performed by a Government-approved independent commercial testing laboratory at the Contractor's expense and such work shall be considered incidental to individual work items. Such work shall be certified, in writing, to the Contracting Officer. A complete record of all laboratory work shall be attached.

B. Where fill, backfill, or in-place materials are required to be compacted to a specified density, the maximum density for control shall be determined by using the ASTM D1557 method. The results of these tests shall be the basis upon which satisfactory completion of work will be judged.

C. In areas where field density test results indicate less than the required degree of compaction, or in areas where previously accepted compaction has been disturbed, the backfill shall be replaced, reworked and/or compacted to obtain the required results at no additional cost to the Government.

D. All materials to be delivered to jobsite which require testing shall be sampled at the plant and tested prior to being incorporated at job site. All tests shall be performed and written test data shall be available for use as target values. All materials on site and used on the work shall be sampled and tested prior to being incorporated at job site. Written test data shall be available for use as target values.

E. Quality Control Testing during Construction: Allow testing service to inspect and approve each subgrade and fill layer before further backfill or construction work is performed.

1. Perform field density tests in accordance with ASTM D1556 (sand cone method), ASTM D2167 (rubber balloon method), or ASTM D2922 (Nuclear Method), as applicable.

   a. Field density tests may be performed by the nuclear method in accordance with ASTM D2922, providing that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D1556. In conjunction with each density calibration check, check the calibration curves furnished with the moisture gages in accordance with ASTM D3017.

   b. If field tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Contracting Officer.

2. Footing Subgrade: For each strata of soil on which footings will be placed, perform at least two tests to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata when acceptable to Contracting Officer.

3. Building Slab Subgrade: Perform at least one field density test of subgrade for every 250 square feet of building slab per layer per day, but in any case no fewer than three tests per layer per day per type of material. In each compacted fill layer, perform one field density test for every 250 square feet of overlaying building slab area, but in any case no fewer than three tests per day per layer per type of material.

4. Foundation and Retaining Wall Backfill: Perform at least two field density tests at locations and elevations as listed herein per type of material per day.

5. Embankment: For in-place density perform a minimum of one test per two foot lift and not to exceed 500 feet horizontal spacing between tests but in any case no fewer than three tests per day per layer per type of material.

6. Roadway, Parking, Walkway and Other Fill Areas Subgrade: For in-place density perform a minimum of one test per 250 square feet, but in any case no fewer than three tests per day per layer per type of material.

7. Aggregate Base: For in-place density perform a minimum of one test per 250 square feet, but in any case no fewer than three tests per day per layer per type of material.

8. Utility Trenches: For in-place density perform a minimum of one test per 250 square feet, but in any case no fewer than three tests per day per layer per type of material.

9. If in the opinion of the Contracting Officer, based on testing service reports and inspection, subgrade or fills that have been placed are below specified density, perform additional compaction and testing until specified density is obtained.

3.11 TOLERANCES

Maximum allowable deviations from construction stakes and drawings and from staked slope measured from slope stakes or hinge points shall be:

A. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes and as follows:

1. Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10 foot above or below required subgrade elevations.

2. Walks and Paved Areas: Shape surface of areas under walks or pavement to line, grade and cross-section, with finish surface not more than 0.01 foot above or below required subgrade elevation.

B. Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2 inch when tested with a 10-foot straightedge.

END OF SECTION 31 20 00

SECTION 33 11 00 - WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SCOPE:

A. This work consists of furnishing and installing new potable water lines AS SHOWN ON THE DRAWINGS and specified in this contract. Work includes the installation of thrust blocks, mechanical unions, freeze protection, and other provisions necessary to protect the waterline.

1.2 CODES AND STANDARDS:

B. Work performed under this Section shall meet the requirements of the most current edition of the following unless otherwise noted:

1. California Plumbing Code, latest edition
2. National Sanitation Foundation (NSF)
3. American Society for Testing and Materials (ASTM), latest edition
4. International Association of Plumbing and Mechanical Officials (IAPMO)
5. American Water Works Association (AWWA)
6. San Diego Water Agency Standards (SDWAS), latest edition
7. California Code of Regulations Title 22, Div 4.5
8. Underwriters Laboratory (UL)

1.3 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work specified in this Section. All work covered under this Section shall be considered incidental to Section 13 34 19, Manufactured Building. Work performed under this section includes all excavation, waterlines, bedding, backfill, compaction and testing, connections, fittings, appurtenances, and disinfection of the complete potable water distribution system as specified herein and AS SHOWN ON THE DRAWINGS.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS:

A. All materials shall be new, of size, material, and type called for in these specifications and AS SHOWN ON THE DRAWINGS.

1. Galvanized Steel Pipe: (GSP) Galvanized steel pipe and fittings shall be standard weight Schedule 40, with 150 pound class fittings, approved for use with potable water.

2. Ductile iron pipe and fittings (DI, CMLCDI, CMLDI) shall meet the representative AWWA standards for the products used. All ductile iron pipe and fittings shall be concrete mortar lined. Where specified on the plans these components must also be concrete coated. DI pipe and fittings shall be installed per SDWAS.

3. Polyvinyl Chloride (PVC) Solvent weld Pressure Pipe: PVC industrial pipe with a nominal pipe size of 3 inches and smaller shall be solvent weld, bell and spigot, pressure pipe, Schedule 80. Pipe shall be NSF approved for use with potable water and meet the requirements of ASTM D-1784 and D-1785.

4. Polyvinyl Chloride (PVC) Pressure Pipe: PVC pipe with a nominal pipe size of 4 inches and larger shall meet the requirements of AWWA C900-07. All pipe shall meet the requirements of DR 18, pressure class 235. Pipe shall be bell end containing a lock-in ring and spigot joint, meeting ASTM F477 and ASTM D3139. Pipe and fittings shall be installed per SDWAS.

5. Pipe Fittings: All change-in-direction fittings for PVC pipe 3 inches and smaller shall be of the same size and material as the pipe it serves. All PVC or DI pipe 4 inches and larger shall make changes in direction with ductile iron fittings of the same size and class as to the pipe it serves. All ductile iron fittings shall be joined together using a mechanical joint (MJ), Push on (PO), or flanged (FLG) connections. Designed restrained joint connections shall be allowed to reduce the need for thrust or reaction blocks in certain locations.

6. PVC Solvent Cements and Primer: Solvent cements and primer for use with PVC pipe shall comply with the California Plumbing Code, meet ASTM D1784 and be as recommended by the pipe manufacturer.

B. Pipe Thread Sealing Paste: Pipe sealant compound shall be a non-hardening, non-seizing, and non-toxic sealing paste containing TFE-Fluorocarbon approved for use with potable water.

2.2 ACCESSIBLE HYDRANTS shall meet Section 33 12 00, Water Utility Distribution Equipment.

2.3 MARKING TAPE

A. Marking tape shall have a metallic core, 2 inches wide with imprint "Caution - Buried Waterline Below"; color shall be blue. Tape shall be as manufactured by "Detectatape" by Allen Systems, Inc., Wheaton, IL, or "Terra Tape D" by Griffolyn Co., Inc., Houston, TX.

B. Where more than one utility is located in a common trench marking tape shall be 6 inches wide with imprint "Caution - Buried Utility Lines Below"; color shall be red.

2.4 VALVES AND VALVE BOXES

A. Valves, valve boxes, and hose bibbs shall meet the requirements of Section 33 12 00, Water Utility Distribution Equipment or SDWAS.

2.5 BEDDING AND BACKFILL MATERIALS

A. Bedding and backfill shall be in accordance with Section 31 20 00, Earth Moving.

2.6 SLEEVES

A. All locations where waterline crosses a road, spur or walkway insert a sleeve of next larger size ABS (rounded to next whole inch) which extends a minimum of 18 inches past edge of road, spur or walkway in each direction. In addition, insert sleeves for future use where SHOWN ON THE DRAWINGS. Where waterline crosses a sewer line keep one foot vertical separation above sewer lines minimum.

PART 3 - EXECUTION

3.1 LAYING PIPELINE

A. Protection of pipe: All pipe and fittings shall be protected during storage and installation to prevent contamination. Care shall be taken during laying and joining to prevent dirt and other objectionable material from entering pipe. Cap or plug lines with a glued cap sized for that size waterline when work is not in progress.

B. No pipe shall be placed in the trench until the trench sub grade and bedding have been inspected and approved by the Contracting Officer's Representative.

C. Pipe installation shall conform with the manufacturer's installation requirements, and the more stringent of the following standards: the California Plumbing Code, AWWA and SDWAS where applicable.

1. All pipe shall be laid in a manner that the Contracting Officer can validate that the materials meet the required specification when installed in the trench.

2. PVC pipe shall be cut square to insure proper assembly. PVC gasketed pipe shall be beveled with a plastic pipe pilot-beveling tool, hand beveling will not be allowed. Pipe shall be assembled within the trench. Dropping pipe into trench after assembly will not be allowed. PVC spigot end pipe shall be assembled with its spigot ends pointing in the direction of flow. Pipe shall be installed in accordance with the more stringent appropriate standard UPC, SDWAS, AWWA M24.

3. Galvanized steel pipe and low alloy steel pipe, two inches and larger in diameter, shall be aligned in the trench prior to making joints. No pipe shall be bent to make deflections in the line. Only standard elbows, fittings, swing joints, or other suitable means of pipe deflection approved by the Contracting Officer will be allowed. When pipes are installed in a structure, they shall be adequately supported.

4. Ductile Iron pipe shall be installed in accordance with SDWAS and AWWA.

5. All PVC water pipe shall be installed with a minimum #14 AWG continuous tracer copper wire attached to pipe as approved by the Contracting Officer. Wire shall be looped in each valve box and extend above grade at each above grade plumbing device or terminate in a "gate cap marked "tracer".

6. No PVC pipe shall be encased in concrete.

7. Imported granular fill meeting the specifications in Section 31 20 00, Earth Moving shall be placed in the pipe zone. Care shall be taken in placing the backfill material simultaneously around the main pipeline and appurtenance pipes so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe or on the sides of the pipe. Care shall be taken to place material simultaneously on both sides of the pipe to prevent lateral movement. This area shall be mechanically compacted to attain 90% relative density. Care shall be taken when compacting appurtenance laterals 50mm (2") and smaller to prevent the crushing or denting of the copper lateral.

8. Native materials free of deleterious materials and rocks larger than 2" shall be allowed within the trench zone above the pipe zone. Materials shall meet the specifications in Section 31 20 00, Earth Moving and be compacted to a minimum of 90% relative density.

D. Valves and other control devices shall be installed in the line where called for AS SHOWN ON THE DRAWINGS and in accordance with Section 33 12 00, Water Utility Distribution Equipment.

E. Changes in grade and alignment shall be made with appropriate fittings. PVC SCH 80 pipe may be deflected along the length of pipe to the minimum curve radii recommended by the manufacturer. No deflection may occur in glued fittings. PVC C-900 pipe must be laid without deflection in the pipe length. Any deflection in PVC C-900 pipe shall be completed using high deflection PVC couplings or other DI fittings. Mechanically joined or PO pipe and fittings shall not exceed the manufacturer's deflection standards. Changes in alignment, which cannot be made with standard fittings, may be accomplished with swing joints installed so the lines drain. All pipe shall be laid with no sags or crests in gradient except where shown on the plans.

F. Where required, thrust blocks shall be cast in place concrete sized and placed in accordance with details AS SHOWN ON THE DRAWINGS. Thrust blocks shall be installed at all changes in direction, at stops or dead ends, at tees and bends, changes in size, and at valves where thrust may be expected. Concrete shall be a dry mixture so the concrete may be shaped by hand into the desired shape. Concrete shall not interfere with the pipe and fitting connection. Thrust Blocks shall be placed against undisturbed earth. Designed restrained joints shall be allowed where shown on plans or approved by Contracting Officer.

G. Polyethylene encasement shall be used for all ferrous metal materials not otherwise protectively coated.

H. Non-oxide grease shall be used on buried metallic pipe and fittings where soils conditions exhibit elevated corrosion potential. The geotechnical report or COR shall delineate any locations where corrosion potential is elevated.

I. Record drawings shall detail the manufacturer make/model, and manufacturing date of all valves buried in the ground. The number of turns required to open/close gate valves will also be recorded.

J. Marking tape shall be placed above all buried water lines between 12- 15 inches above the top of pipe.

3.2 TESTING

A. General: All water lines, their fittings, valves and connections, and all appurtenances and devices constructed and installed under this contract shall be tested before connection to existing system. Testing against a closed valve connected to the existing system is not allowed. In long lines (>2500-feet) appropriate valves and test fittings shall be incorporated in the pipeline design so that segments can be isolated for testing. Blow off valves, air relief valves, sample taps, etc. may be considered acceptable connections for pressure testing. Additionally in long pipelines, water quality sample taps shall be designed into the system at no further than 3500' increments. Operating and recurring and occasional surge pressures shall be considered for all testing design recommendations. After connection to existing systems, sufficient system testing shall be performed to assure the interconnection is acceptable. All tests shall be made in the presence of the Contracting Officer's Representative.

B. Preparation for Testing: Before the start of testing, the Contractor shall clean, inspect and remove all dirt or other foreign materials from all piping, valves, fittings and other appurtenances. Center of pipe sections may be weighted with select backfill material to prevent pipe displacement during testing. All equipment shall be set up and approved by the Contracting Officer's Representative before testing begins.

C. If it is believed that foreign material may be in the line, all valves on the line shall be thoroughly flushed, and carefully inspected after flushing, to see that the entire operating mechanism of each valve is in good condition.

D. Preliminary tests: Preliminary testing of parts of piping and appurtenance shall be done as soon as possible after construction or installation.

E. Testing: All threaded, glued, or flanged water pipelines, valves, appurtenances, tanks and the like shall be tested for water tightness, to no discernable leakage for three (3) hours. Failures shall be repaired or replaced, and testing done until acceptance is reached.

F. Final and System Test:

1. After piping completion and concealment, and after connection to existing piping systems, all systems shall be tested to the first shut-off location past the connection points. The tests shall be the same as above, and all shall pass before acceptance.

2. Pipelines shall be drained and vented after testing.

3. Potable water lines shall be filled from the system source and left in an operable condition upon completion of all testing and disinfection.

3.3 DISINFECTION METHOD

A. Before disinfection, the waterlines, with outlets open, shall be flushed thoroughly with water. Flushing shall be done after the testing has been completed. Disinfection shall be completed in accordance with Section 33 13 00, Disinfecting of Water Utility Distribution.

B. Following disinfection, all chlorine treated water shall be thoroughly drained from the system in accordance with Section 33 13 00, Disinfection of Water Utility Distribution.

END OF SECTION 33 11 00

SECTION 33 12 00 – WATER UTILITY DISTRIBUTION EQUIPMENT

PART 1 - GENERAL

1.1 SCOPE

A. This work consists of furnishing and installing water valves and valve boxes and all appurtenances AS SHOWN ON THE DRAWINGS and specified herein.

1.2 CODES AND STANDARDS

A. Work performed under this Section shall meet the requirements of the following unless otherwise noted:

1. California Plumbing Code, latest edition
2. American Society for Testing and Materials (ASTM), latest edition
3. American Water Works Association (AWWA).
4. Underwriters Laboratory (UL)
5. National Sanitation Foundation (NSF)
6. International Association of Plumbing and Mechanical Officials (IAPMO)
7. San Diego Water Agency Standards (SDWAS), latest edition
8. California Code of Regulations, Title 22, Division 4.5

1.3 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section. All work in this section will be considered incidental to section 13 34 19, Manuractured Building.

PART 2 - PRODUCTS

2.1 Pipe and Fittings - Unless otherwise shown on the drawings, all pipe and fittings within 3 feet of a valve, meter, or center of a valve box shall be AS SHOWN ON THE DRAWINGS.

2.2 VALVES

A. Valves and valve boxes shall be new, of size, material and type shown on the drawings or specified herein. All valves shall be equipped with curb box key, 2” operating nut, or other operating devices. Extensions per SDWAS WV-05 shall be supplied for 2” and under valves whose standard operator would exceed 24 inches below the top of valve enclosure or gate well. Extensions per SDWAS WV-04 shall be supplied for valves with 2” operating nuts whose standard operator would exceed 60 inches below the top of the gate well.

B. Buried Valves ¾- Inch through 2 Inches – Ball type Valves ¾- inch through 2 inches shall meet AWWA C-800. They may have threaded, compression, SuperGrip, or any other type ends of the correct type to install in the pipeline where required. Valves shall be installed per USFS WV-07 and located AS SHOWN ON DRAWINGS.

C. Valves Larger than 2 Inches - Valves 2 inches and up, shall be AWWA approved gate valves with epoxy coated iron body, resilient wedge, "O" ring stem seals, non-rising stem, with 2-inch square operating nut, Mueller A-2360 series, or an approved equal. They may have: screwed ends, flanged ends, Push on ends, spigot ends, mechanical joint ends, or other ends of the correct type to install in the pipeline where required. They shall meet the requirements of California EPA standards.

D. Water pressure reducing valve shall be construction with thermal expansion bypass, stainless steel strainer. When buried the regulator must be equipped with a sealed cage and stainless trim. They shall meet the requirements of California EPA standards. Initial pressure up to 250 pounds and reduced pressure range of 25-75 pounds. All pressure reducing valves shall be set at 50 psi unless otherwise noted on drawings. In areas of high differential pressure between the water main and intended use, multiple regulators in series may be required as per the manufacturers' requirements to prevent "wire drawing" of the valve seats.

E. Backflow prevention devices shall be installed AS SHOWN ON THE DRAWNGS

   a. Double Check (DC) valve type. They shall be of the same size as the pipe they are connected to. Backflow device shall be as manufactured by Zurn Industries, LLC. They shall meet the requirements of California EPA standards and be approved by USCFCCCHR.
   b. Reduced pressure (RP) valve type. They shall be of the same size as the pipe they are connected to. Backflow device shall be as manufactured by Zurn Industries, LLC. They shall meet the requirements of California EPA standards and be approved by USCFCCCHR.

F. Combination Air/Vacuum release valves shall have a cast iron body and cover, stainless steel float and brass seat. When installed on pipelines 4"-6" They shall be installed per SDWAS WA-02. For pipelines 3" and under, a modification of SDWAS WA-02 under this section will reduce equipment to 1". CARV shall be installed AS SHOWN ON DRAWINGS.

G. Manual air release valves shall conform to SDWAS WA-01 when installed on pipelines 4"-6". For pipelines 3" and under, a modification of WA-01 under this section will reduce equipment to 1". Manual air relief valves shall be installed AS SHOWN ON DRAWINGS.

H. Blow off valves on 3"-6" pipelines shall consist of a lateral waterline from the main with an isolation valve at the main as shown in SDWAS WB-01. For pipelines less than 3" a modification of WB-01 under this section will reduce the blow off equipment to 1". Blow off valves shall be installed AS SHOWN ON DRAWINGS.

2.3 VALVE BOXES

A. GATE WELL in roadways shall be traffic rated with H20 cast iron frame and cover as depicted in SDWAS WV-02. Gate wells in non-traffic areas at a minimum must conform to SDWAS WV-01. Covers shall be marked "water". When gate wells are located in unpaved areas, 6" thick concrete pad shall extend 12" radially from the edge of the gate well. Gate wells shall be located AS SHOWN ON DRAWINGS.

B. VALVE BOXES when required shall conform to the specific equipment drawing for SDWAS. Extensions when required shall be of the same material and manufacturer as the box unless otherwise specified herein. Size of box shall allow for a minimum of 6 inches clearance on all sides of valve and pipes. When valve boxes are located in unpaved areas, 6" thick concrete pad shall extend 12" radially from the edge of the gate well. Valve boxes shall be located AS SHOWN ON DRAWINGS.

2.4 FIRE HYDRANT shall be a dry-barrel Mueller 2-1/8" Post Type, Model 9.25, manufactured by Mueller Company, or approved equal.

2.5 DRAIN ROCK used in SDWAS WB-01, WA-01, WS-01, is modified by this section. Drain rock shall be washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.

2.6 FILTER FABRIC shall be placed around all valves that use a gate well, and under any drain rock. Fabric shall be 8.0 oz/square yard woven monofilament filtration geotextile made of 100% polypropylene yarns.

2.7 HOSE BIBB shall be brass with brass tee. Contractor shall install two hose bibbs on exterior of new building.

PART 3 - EXECUTION

3.1 VALVES

A. Valves shall be installed AS SHOWN ON THE DRAWINGS and staked on the ground. Valves shall be installed in such positions that they are readily accessible and can be easily and fully opened and closed without binding. All valves shall be installed with stems pointing up. Where possible all valves shall be installed in the center of the valve box or gate well.

3.2 VALVE ENCLOSURES

A. All valves shall be installed in boxes or enclosures AS SHOWN ON THE DRAWINGS and specified herein. The box shall be set over the pipes and centered on the valve and related assemblies.

B. Sectional or stacked units shall be permanently assembled. The enclosures shall be compacted in place and installed in such a manner to prevent settlement or other movement after installation. The area on which the box sets shall be compacted as sub-base for structures. All valves shall be placed upon a bed of drain rock material, 6 inch thickness.

3.3 Valve Boxes and gate wells - Each valve shall be housed in a valve box or gate well unless specified otherwise. Each valve box shall have a drain rock bed under it a minimum depth of 4-6 inches with a 3 inch concrete base AS SHOWN ON DRAWINGS. The box, when in final position, shall be 1/2 inch minimum above surrounding finish grade and there shall be a minimum of 1/2 inch clearance between the box and the pipeline at any point. After the box is in final position, the area around the box shall be backfilled and compacted the same as for structures. When a valve box is equipped with a concrete bottom, each box shall have a drain through the concrete with ¼" x ¼" hardware cloth over the opening.

3.4 Setting Boxes and Components - Following assembly of the valves and various components, the box shall be set down over the pipes and centered to conform with the details AS SHOWN ON THE DRAWINGS. Before setting the box or assembling the components, the area under the box shall be compacted using mechanical tamping equipment. Compaction shall be accomplished by making three passes over the entire area under the box with the tamping unit. The drain rock under each valve box shall be placed in 6 inch maximum thickness layers with each layer receiving three passes with the mechanical compactor.

3.5 FIRE HYDRANT

Fire Hydrant shall be installed in an area AS SHOWN ON THE DRAWINGS and approved by the Contracting Officers Representative. Lateral water line will be from the new 3 inch line.

3.6 DRAIN VALVES

All low points within the water distribution line shall have a blow off AS SHOWN ON DRAWINGS. All necessary air bleeding valves shall be installed to allow water to drain freely from the water distribution system.

3.7 AIR RELEASE COMBINATION/VACUUM BREAKER VALVE

All high points within the water distribution line shall have a manual or automatic air release/vacuum relief combination valve installed. Type and location shall be AS SHOWN ON DRAWINGS.

3.8 ISOLATION VALVES

Isolation Valves shall be installed within the transmission and distribution mains at roughly 1,000 foot intervals, and at all branch lines, AS SHOWN ON THE DRAWINGS to allow for maintenance and repair of the water system. An air relief valve shall be installed on the downhill gradient side of the line valve, and a blow off shall be installed on the uphill gradient side of a line valve. The gradient is not necessarily in the direction of flow, but the physical gradient of the pipeline.

3.9 SAMPLE TAPS shall be installed in locations AS SHOWN ON THE DRAWINGS. Depending on the freeze potential at the site, different types of sample taps may be employed.

A. Sample taps at the well head, storage tank, or other points where there is a low potential for freezing next to a building. These taps shall be chrome plated, no lead, “plain end sampling valve”, as manufactured by Legend Valve or approved equal.

B. Sample taps located along water transmission or distribution mains in areas where the likely hood of freezing is low shall be of a design as shown in SDWAS WM-01. The enclosure shall be WTS-858E as manufactured by Pipeline Products, or approved equal, and finished in a forest green color.

C. Sample taps located along water transmission or distribution mains in areas where the likely hood of freezing is high shall be of a design as shown in USFS drawing WM-01F. The valve and enclosure shall be Eclipse #88 SS as manufactured by Kupferle Foundry, or approved equal.

3.10 TESTING

A. The final assembly, including pipe and fittings, shall be tested and disinfected in accordance with Section 33 11 00 and 33 13 00, Water Utility Distribution Piping and Disinfecting of Water Utility Distribution, respectively.

3.11 GRADING AND CLEANUP

A. Upon completion of backfill, the area around the boxes shall be finish graded to the contour of the original ground or to the lines AS SHOWN ON THE DRAWINGS. The general area disturbed by the installation operation, shall be cleaned up by removing all debris and material not utilized.

END OF SECTION 33 12 00

SECTION 33 13 00 – DISINFECTING OF WATER UTILITY DISTRIBUTION

PART 1 - GENERAL

1.1 SCOPE

A. This work consists of the cleaning, flushing and disinfecting water system in compliance with American Water Works Association (AWWA) Standard C-651-654 and as specified herein. Work also includes water sampling and testing of well water before and after disinfection.

1.2 CODES AND STANDARDS: The latest edition shall apply.

A. AWWA Manual M20, "Water Chlorination, Principles and Practices."

B. AWWA Standard C-651 and C-654.

1.3 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work specified in this section. All work specified in this section shall be considered incidental to Section 13 34 19, Manufactured Building.

PART 2 - PRODUCTS

2.1 Disinfecting agent shall be a National Sanitation Foundation (NSF) approved calcium hypochlorite, sodium hypochlorite or elemental gaseous chlorine to produce a stock solution of known strength.

2.2 Prior to any discharge to the ground, chlorinated water must be de-chlorinated. Sodium thiosulfate or other approved chemical may be used for this process. It is the contractors responsibility to test the chlorine residual and pH to determine if it is safe for release to the environment. No discharge water should be allowed to enter any meadows or riparian areas.

PART 3 - EXECUTION

3.1 PRELIMINARY FLUSHING

A. Before disinfection, the new piping shall be flushed thoroughly with water. Flushing shall be done in the Contracting Officer's Representative's presence, after the pressure test has been made.

B. Pipe shall be flushed toward an open standpipe, drain line or disconnected waterline. Debris shall be diverted away from building connections and waterlines with reduced capacities via isolation valves.

C. If it is believed that foreign material may be in the water system, all valves on the line shall be thoroughly flushed, and carefully inspected after flushing, to see that the entire operating mechanism of each valve is in good condition.

3.2 DISINFECTION OF WATER WELL

A. All equipment installed in the well that will come in contact with the water shall be disinfected just prior to, and while being installed in the well. All pumping equipment shall be placed on clean tarps or elevated in such a manner that the components do not come in contact with the soil after they have been disinfected. A 50 mg/L, pH balanced chlorine solution shall be sprayed on all components before being placed in well. Additional amounts of this solution shall be placed in the well as the pump equipment is being installed. Recommended disinfection chemical "Sterilene" by Jet Lube, or equal.

B. Water well casing and standing water within the well shall then be disinfected to a concentration of 50 mg/L in accordance with AWWA C654-13.

C. 24 hours following the disinfection step in 3.2B, the well shall be purged of any remaining chlorine. The water shall be contained and dechlorinated per Paragraph 2.2. The well shall then sit static (un-pumped) for 12-24 hours before proceeding to the next step.

D. Following the steps in 3.2C, the well water shall be sampled for Total coliform bacteria to determine presence or absence. If analysis reveals the presence of Total Coliform bacteria, repeat disinfection procedure until an absence of Total Coliform bacteria is achieved.

3.3 DISINFECTING PORTIONS OF A WATER SYSTEM (EXISTING, NEW, OR BROKEN WATERLINES): After isolating the sections of new waterlines or determining location and exposure of the break, the area shall be carefully inspected to locate and isolate sewers and other contaminant sources. Following this, the Contractor shall flush the main while standing water in the trench is being pumped away. The affected section shall be isolated, service connections shall be shut off, and the section shall be subjected to disinfection procedures described for new lines. The slug may be increased to 500 mg/l.

3.4 DISINFECTING A NEW RESERVOIR: Spray wash a 50 PPM chlorine solution on to all interior surfaces, measure pH of the source water and correct to a pH of 5.5- 7.0 if necessary with an NSF approved chemical, fill tank with water while injecting a NSF approved chlorine solution and maintaining a 1-2 mg/L chlorine residual in the tank, allow tank to sit 24 hours, draw bacterial and VOC samples, wait for results and information from the Health Department that the results are OK, verify that the chlorine residual is below 2 mg/L and place the tank into service. If the chlorine residual is still above 2 mg/L partially drain tank while de-chlorinating discharge, and refill with source water until chlorine residual is below 2 mg/L.

3.5 FINAL FLUSHING: Following chlorination, all treated water shall be thoroughly flushed from the newly laid waterline. Flushing shall continue until the free available chlorine level is one milligram per liter or less. Under no circumstances shall chlorinated wastewater be allowed to flow into drainages, roadways or streams. Contractor shall construct an earthen sump to receive the chlorinated water in order to reduce the chlorine concentration prior to ground release. Chlorine concentration shall not be above 0.2 mg/L when released.

3.6 WATER SAMPLING: Water samples shall be taken from the following system locations into a California State certified laboratory issued container for analysis as described herein.

A. WATER DISTRIBUTION SYSTEM: Prior to connection to the existing water system, a water sample shall be taken at the lowest downstream point of the new distribution system for bacteriological/Total Coliform analysis following disinfection to test the effectiveness of the process. Samples shall be processed by a State Certified Lab and lab results presented to the Contracting Officer's Representative prior to acceptance of work. Chlorination shall continue until proper disinfection is achieved. When the results show an absence of Total Coliform and Fecal Coliform bacteria, the water system will be considered properly disinfected and may be connected to the existing system. If the sample result shows a presence of Total Coliform bacteria, disinfection of the distribution system shall be repeated until a negative result is achieved.

END OF SECTION 33 13 00

SECTION 33 36 00 – SEPTIC SYSTEM

PART 1 - GENERAL

1.1 SCOPE

A. Contractor shall furnish and install septic tanks, tank manhole risers, septic lines, distribution boxes, infiltrator chambers, clean outs, drop manways and infiltrator chamber leach lines as described herein.

B. Septic system work shall conform to the requirements of County of San Diego, Department of Environmental Health (DEH), Land and Water Quality Division, and all Federal, State, County, or local governmental regulatory agencies.

C. Contractor shall be responsible for obtaining a permit and all fees associated with the project required by the County of San Diego, DEH, Federal, State, County, or local governmental regulatory agencies.

D. The Contractor shall notify the Forest Service immediately upon request from the regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractors records pertaining to wastewater system work on this project.

1.2 SUBMITTALS

A. Submittals shall be provided in accordance with Section 01 33 23, Shop Drawings, Product Data and Samples. The Contractor shall submit product data for all components of a complete septic system, installation instructions, and warranty documents for all new septic system, tank, leach field and appurtenance installations.

B. When substitution for any item, fixture or equipment is made, manufacturer's shop drawings/cut sheets shall be provided. Submittals shall include but is not limited to tanks, covers, risers, valve boxes, distribution boxes, pipe, tape, sealant, infiltrators, and manways.

1.3 CODES AND STANDARDS

A. Work performed under this section shall meet the requirements of the latest edition of the following unless otherwise noted:

1. California Plumbing Code (CPC), latest Edition
2. International Association of Plumbing and Mechanical Officials (IAPMO)
3. Installation Standards (CPC-IS)
4. National Sanitation Foundation (NSF)

1.4 MEASUREMENT AND PAYMENT

A. Measurement for work performed under this section will be made as follows:

1. The furnished, accepted, and installed septic tanks as measured on a lump sum basis, including manhole risers, support frames and covers for complete installation to grade, sewer lines, and all tank accessories; and the furnished, installed and accepted leach fields, including all trenching, pipe, infiltrator chambers, distribution boxes, septic lines, inspection ports, and appurtenances necessary for complete installation as recommended by manufacturer's installation instructions.

2. No separate payment will be made for work specified in this Section. All work covered under this Section shall be considered incidental to Section 13 34 19, Manufactured Building.

PART 2 - PRODUCTS

2.1 SEPTIC SYSTEM

A. All components for septic systems shall be per proposed and approved products. All lines, fittings and accessories shall be as manufactured and furnished by the pipe supplier and compatible with that of the pipe and other components. Manways and extensions shall be provided for tank openings and shall extend to finish grade. Covers shall be steel or cast iron.

2.2 SEPTIC TANK

A. Septic tank shall be 4000 gallon precast concrete tank by Jensen Precast underground Model JZ-4000-EBE-ST, or approved equal. All pipe, fittings and accessories shall be as manufactured and furnished by the pipe supplier and compatible with that of the pipe and the tank.

2.3 LEACH FIELD SYSTEM

A. Leach field system shall be Infiltrator Systems, Inc. Quick 4 High Capacity Chambers, or approved equal. All lines, fittings, components, and appurtenances shall be as manufactured and furnished by the infiltrator supplier and compatible with that of the infiltrators.

2.4 CLEAN OUTS

A. Clean outs shall be of the same size and material as the sewer line and shall be installed per industry standard.

2.5 VALVE BOXES

A. BOXES LOCATED IN NON-TRAFFIC VEHICULAR WAYS: Boxes for cleanouts and inspection ports shall have cast iron lid marked "Sewer" or "CO."

A. BOXES LOCATED IN VEHICULAR TRAVELED WAYS shall be precast concrete and shall be traffic rated with H20 cast iron frame and cover. Covers shall be marked "Sewer" for clean outs. Extensions shall be of the same material and manufacturer as the box unless otherwise specified herein. Size of box shall allow for a minimum of 6 inches clearance on all sides of clean out.

2.6 DISTRIBUTION BOXES

A. Boxes for lateral distribution of septic lines shall be watertight, concrete, equipped to feed all of the lateral leach lines simultaneously.

2.7 MARKING TAPE

A. Marking tape to be placed over new sewer lines shall have a metallic core and shall be 2 inches wide, with imprint "Caution – Buried Sewer Line Below"; color shall be yellow. TX.

2.8 JOINT SEALANT

A. Joint sealer shall be applied to concrete surfaces to be sealed.

2.9 DROP MANWAY

A. Drop inlet manway boxes for septic line intermediate collection point shall be watertight concrete, traffic rated and shall be designed to accommodate all septic/sewer lines.

PART 3 - EXECUTION

3.1 Excavation, backfill and compaction of the septic system shall be in strict accordance with the manufacturer's recommended installation instructions and per accepted design.

3.2 No pipe shall be laid until the trench subgrade and bedding have been inspected and approved in writing.

3.3 Laying of lines shall begin at the lowest point in the direction of flow. All piping, fittings, and accessories shall be assembled per manufacturer's recommendations and in accordance with CPC. Pipe deflections shall be kept to a minimum, any deflection of piping shall be per manufacturer's requirements.

3.4 Before lowering pipe into the trench, the pipe shall be inspected. Cracked, chipped, broken, or otherwise defective pipe will be rejected and removed from the job site. The ends and interior of the pipe shall be clean.

3.5 Cleanouts shall be installed in accordance with the CPC.

3.6 Where waterline is being crossed, pipelines of twenty foot lengths shall be used with the length centered to provide ten foot of distance from the waterline to the nearest sewer or drain line joint. Where water and sewer lines share a common trench, the waterlines shall be installed a minimum of 12 inches horizontally and vertically above the top of the sewer line, and constructed on a solid shelf on one side of the trench.

3.7 Marking tape, appropriately color coded and marked, shall be placed above the septic lines 6 inches and 6 inches below finish grade.

3.8 Manhole extension risers shall be installed in accordance with manufacturer's written installation instructions. Installation shall provide for a permanent watertight unit that will allow grade level access into each septic tank chamber.

3.9 A 2 inch concrete foundation shall be installed beneath all distribution boxes to provide for a level base for uniform distribution.

3.10 All sections of pipe shall be cleaned with an inflatable rubber ball of a size that will inflate to fit snugly into the pipe. The ball may be used without a tag line. The ball shall be placed in the last cleanout, manhole, or entry on the pipe to be cleaned, and water shall be introduced behind it. The ball shall pass through the pipe with only the force of the water impelling it. All debris flushed out ahead of the ball shall be removed at the first location or manhole where its presence is noted. In the event that wedged debris, or a damaged pipe, Contractor shall stop the ball, remove the obstruction, or make suitable repairs.

3.11 The septic tanks, drop manways and distribution boxes shall be installed level. All connections shall be watertight.

3.12 After installation of the septic tanks, sewer pipe and cleanouts, and prior to completion of tank backfilling, the system shall be filled with water and allowed to stand for 24 hours minimum to check for leaks.

3.13 If the water level in the septic tank falls a distance greater than one eighth (1/8) of an inch in 24 hours, then repairs shall be made to the tank until the leaks are eliminated, at the Contractors expense. If repairs cannot be made to sufficiently eliminate the leaks, then the Contractor shall replace the necessary components to provide a watertight septic system.

3.14 Sewer lines shall be tested for leaks between the point of connection to the building drain and the septic tank connection point. Testing shall be done by plugging the line and introducing air into the system until the pressure reaches 5 psi. The pressure shall be maintained for a minimum of 15 minutes. Other drain lines shall be plugged at both ends and at any cleanouts or manholes and tested in the same manner.

END OF SECTION 33 36 00