

**TECHNICAL SPECIFICATIONS:
SHINOHARA II BURN SITE
FINAL COVER
CHULA VISTA, CALIFORNIA**

Prepared for:

City of Chula Vista
Chula Vista, California

Prepared by:

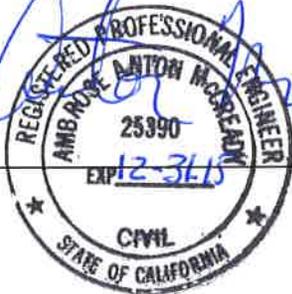
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These Technical Specifications: Final Cover for the Shinohara II Burn Site located in Chula Vista, California, dated September 2013 and revised April 2015, were prepared and reviewed by the following:



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CONTENTS**DIVISION 1 – GENERAL REQUIREMENTS**

01010	Summary of Work.....	01010-1
01025	Measurement and Payment.....	01025-1
01050	Surveying.....	01050-1
01200	Project Meetings.....	01200-1
01300	Contractor Submittals.....	01300-1
01500	Temporary Facilities and Controls.....	01500-1
01700	Contract Closeout.....	01700-1

DIVISION 2 - SITEWORK

02110	Clearing and Stripping.....	02110-1
02221	Excavation and Grading.....	02221-1
02222	Select Fill.....	02222-1
02226	Geotextile Fabric.....	02226-1
02229	Trenching, Backfilling, and Compacting.....	02229-1
02233	Aggregates and Rip Rap.....	02233-1
02250	Erosion Control and Protection.....	02250-1
02720	Drainage Structures, Piping, and Fittings.....	02720-1
02820	Fertilizer and Seed.....	02820-1

DIVISION 3 CONCRETE (Not Used)

DIVISION 4 MASONRY (Not Used)

DIVISION 5 METALS (Not Used)

DIVISION 6	WOOD AND PLASTIC	(Not Used)
DIVISION 7	THERMAL AND MOISTURE PROTECTION	(Not Used)
DIVISION 8	DOORS AND WINDOWS	(Not Used)
DIVISION 9	FINISHES	(Not Used)
DIVISION 10	SPECIALTIES	(Not Used)
DIVISION 11	EQUIPMENT	(Not Used)
DIVISION 12	FURNISHINGS	(Not Used)
DIVISION 13	SPECIAL CONSTRUCTION	(Not Used)
DIVISION 14	CONVEYING SYSTEMS	(Not Used)
DIVISION 15	MECHANICAL	(Not Used)
DIVISION 16	ELECTRICAL	(Not Used)

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings, Special Provisions, and Technical Specification Divisions 1 and 2 apply to this Section.

1.2 DEFINITIONS

- A. Construction Quality Assurance (CQA) Consultant: The monitoring firm responsible for implementation of the CQA plan.
- B. Construction Quality Assurance (CQA) Officer: The professional representative of the CQA Consultant responsible for implementation of the CQA program and assuring that the Construction Report is prepared.
- C. Construction Quality Assurance (CQA) Monitor: Site representative of the CQA Consultant responsible for documenting field observations and tests.
- D. Design Engineer: The individual or firm responsible for the design and preparation of the drawings and technical specifications.
- E. City: City of Chula Vista.
- F. Owner: Shinohara and City of Chula Vista.

1.3 PROJECT DESCRIPTION

- A. The Project: The Project consists of construction of a final cover over Shinohara II Burn Site, Chula Vista, California, as specified and shown in the Contract Documents.
- B. Specification sections have not been divided into groups for work of subcontractors or various trades. Questions concerning the applicability or interpretation of a particular section or part of section or drawing should be directed to the Design Engineer.
- C. The Work: The Work to be performed by the Contractor consists of providing all

labor, services, tools, machinery, equipment, and materials necessary to complete the project. The Work includes but is not limited to the following items:

1. Mobilization and demobilization.
 2. Surveying.
 3. Mow existing vegetation located within the entire project limits.
 4. Grading for surface water drainage control ditches, and other control features as shown on the Drawings.
 5. Rough grade, smooth irregular fill, and prepare the Foundation Layer grades.
 6. Import as needed select soil for 3.5 foot thick slope and 2 foot thick top deck cover.
 7. Place geotextile fabric and drain rock at down chutes on slope as shown on the drawings.
 8. Fertilize and broadcast seed on cover surfaces as described in Section 02820.
 9. Implement SWPPP plan and BMPs throughout the project.
 10. Install fence around Burn Site to restrict access.
 11. Leave site in orderly conditions.
- D. The Contractor shall furnish all labor, materials, equipment, tools, facilities, and services necessary for proper execution, testing, and completion of the Work.
- E. The Contractor shall be responsible for all coordination of this work, including coordination between trades, subcontractors, suppliers, public utilities and the landfill operation.
- F. It is in the interest of the Contractor that the Work proceeds in the most expeditious manner possible to meet the construction schedule.

1.4 CONSTRUCTION WATER

- A. Water for construction, moisture-conditioning and dust control shall be provided to the Contractor by the City. Water availability must be discussed with the City and Contractor's water source determined by the City.
- B. The Contractor shall be responsible for transporting and/or conveying all required construction water from the owner-supplied source to his water truck loading location.

1.5 WORK UNDER OTHER CONTRACTS

- A. Quality Assurance Consultant: A separate contract will be issued between City and the Construction Quality Assurance (CQA) Consultant. That contract includes:
 - 1. Construction quality assurance monitoring
 - 2. Construction quality assurance testing
 - 3. Written certification of construction to the California Regional Water Quality Control Board (RWQCB), San Diego Region and other agencies.
- B. Quality Assurance Monitoring and Testing Procedures: The Quality Assurance Monitoring and Testing Procedures which the CQA Consultant will perform are available from the City or their authorized representative.

1.6 CONTRACTOR USE OF PREMISES

- A. Work Days: The Contractor shall have equipment and material delivery access to and from the site as noted in the Special Provisions.
- B. Access: No later than 10 days after notice to proceed, the Contractor shall arrange with the City a sequence of procedures, means of access, space for storage of materials and equipment, and use of approaches and roadways. Contractor's use of the premises shall be confined to the areas approved by the City.
- C. Smoking: Smoking is prohibited on the work area or within 100 feet of the work area and materials storage area.
- D. Contractor shall not dispose of waste oils, fuels, cleaners or other potentially hazardous substances on-site.

1.7 CONTRACTOR USE OF SITE

- A. The Contractor will conduct its operations to avoid interferences with ongoing facility operations (including the allowance of water supply for dust control and operational measures), and to prevent damage to existing site infrastructure and utilities. Coordination with City will be necessary.
- B. The Contractor shall limit activities to the construction area, stockpiles, staging area and haul roads as identified by the City.

1.8 SITE CONDITIONS

- A. The Contractor shall enforce safety procedures to minimize hazards to workers, the public, and the environment.
- B. Existing Grades: The existing grades may vary from those indicated on the Drawings. The procedure for adjusting the existing grades is specified in Section 01050, Surveying. The Contractor shall perform a pre-construction survey, upon request of the City, of the work areas to establish existing grades, if deemed necessary by the City.
- C. Existing Features: Field verify the elevations and the location of existing features, see Section 01050, Surveying.

1.9 SUBMITTALS

- A. Site Health and Safety Plan: The Contractor is responsible for site health and safety for its employees. Ten days prior to starting work at the site, the Contractor shall prepare a Site Health and Safety Plan, and provide a copy of this Plan to the City for informational purposes only. The Site Health and Safety Plan shall be prepared in accordance with applicable provisions of OSHA regulations 29 CFR 1910.120 and 1926. The Contractor shall also comply with Cal OSHA requirements.
- B. Written plan of Contractor's proposed sequence of construction. Submit within ten (10) days after the Notice to Proceed and receive City approval prior to commencing the Work.
- C. Shop Drawings, Record Drawings, independent quality control laboratory test results, manufacturer's specifications, and literature for various products, and other information as described herein. Submittals requested herein are intended to match elements of the Work to actual conditions found in the field. All submittals are subject to the approval of the Engineer.
- D. Other submittals as specified in these Specifications.

1.10 SUPERINTENDENT

A. Contractor shall provide a single qualified full-time superintendent for the duration of the project. Contractor shall not change superintendent without City's written permission. Contractor's proposal to change personnel must be justifiable to the City, and must demonstrate that the proposed replacement possesses adequate qualifications.

1.11 LIST OF DRAWINGS

A. The following Drawings form part of the Contract Documents (SCS Engineers, September 2013):

<u>Sheet Number</u>	<u>Description</u>
1.	Title Sheet – Location Map
2.	Site Topography and Survey Control
3.	Foundation Layer Grading Plan
4.	Sections
5.	Final Cover Grading Plan
6.	Sections and Details

END OF SECTION

SECTION 01025**MEASUREMENT AND PAYMENT****PART 1 - GENERAL**

1.1 DESCRIPTION

- A. The bid items will be paid by Unit Prices. They constitute all of the labor and costs for the completion of the work.

No direct or separate payment will be made for providing miscellaneous temporary or accessory works and services, including but not limited to Contractor's field offices and sheds, surveys, job signs, sanitary requirements, testing, safety devices, submittals, record drawings, water supplies, dust controls, power, maintaining traffic, removal of Contractor generated waste, watchmen, security, bonds, insurance, cleanup, and all other conditions of the Contract Documents.

- B. Contractor mobilization and demobilization shall be paid for as Lump Sum and shall not exceed 5% of the total bid.
- C. Record drawings, project meetings, and construction quality control shall be included in related bid items.
- D. Siltation and erosion controls including, but not limited to silt fencing, straw bales, erosion control matting, and other measures, and compliance with all stormwater management/sediment control regulations, shall be paid for by Unit Prices listed in the Contractor's Schedule of Values.
- E. All Contractor Health and Safety provisions to perform the work will be included in related bid items.
- F. Contractor Quality Control and associated testing provisions during the progression of the work will be included in the related bid items.
- G. Monthly Payment Applications for Lump Sum and Unit Price Items in progress, if applicable, shall be based on labor and materials expended at the end of each month as documented by the Contractor and approved by the City. During the last week of the month, the Contractor is responsible for providing the City with records of construction that has occurred during that month. The City will consider the information provided by the Contractor and other information as necessary before making a determination on the percent complete on each pay item for the month.

1.2 RELATED DOCUMENTS

- A. Drawings, Special Provisions, and Technical Specification Divisions 1 and 2 apply to this Section.

1.3 SUMMARY

- A. This Section specifies administrative and procedural requirements for Unit Price, and Lump Sum pay items.

1. Bid prices shall be based on labor and material Unit Prices or Lump Sums and include all necessary material, overhead, profit, and applicable taxes and permit fees.
2. Refer to individual Technical Specifications sections for construction activities requiring the establishment of bid prices, as applicable.
3. The City reserves the right to reject the Contractor's work-in-place until the work meets the requirements of the Drawings and Specifications.

- B. The following is the Bid Item measurement and payment descriptions for the work:

1. Mobilization/Demobilization (Bid Item #1)
Measurement by lump sum (LS), based on mobilizing of equipment and labor to perform work and demobilizing from and cleaning the site after all work and testing has been performed and accepted by the City.

Payment as follows: 50 percent of lump sum amount upon completion of 10 percent of the work, and 50 percent for demobilization and site cleanup; Payment includes all costs for mobilizing and demobilizing equipment, living expenses, permits, bonds, insurance, office and field overhead, and any other administrative costs necessary to complete the work. Includes work described in Section 01010, 01025, 01050, 01200, 01300, 01500, and 01700. Payment will be limited to 10 percent of the total contract price.

2. Construction Surveying (Bid Item #2)
Measured by the lump sum (LS).

Payment includes all costs for construction surveying needed to perform the work shown on the Drawings. Payment includes all costs to perform construction surveying as described in Section 01050.

3. Mowing and Clearing (Bid Item #3)
Measured by the Lump sum (LS).

Payment includes all costs to clear areas then load, haul, stockpile, and replace on denuded areas as shown in the Drawings and as described in Section 02110.

4. Foundation Rough Grading (Bid Item #4)

Measurement by the cubic yard (CY) based on a survey of the Existing and final grading before and after placement. No adjustment will be made for uneven contours or waste. The volume survey will be conducted by Contractor's surveyor. The volume will also be verified by the Engineer at the request of the City.

Payment will be by the cubic yard (CY). Includes all costs to excavate the basin, handle material, as shown on the Drawings and described in Sections 02222.

5. Import Soil Cover (Bid Item #5)

Measurement by the cubic yard (CY) based on a survey of the Existing and final grading before and after placement. No adjustment will be made for uneven contours or waste. The volume survey will be conducted by Contractor's surveyor. The volume will also be verified by the Engineer at the request of the City.

Payment will be by the cubic yard (CY). Includes all costs to place onsite source fill for the basin, handle material, and compact material to 95% relative compaction as shown on the Drawings and described in Sections 02222.

6. Place and Compact Soil Fill (Bid Item #6)

Measurement by the cubic yard (CY) based on a survey of the Existing and final grading before and after placement. No adjustment will be made for uneven contours or waste. The volume survey will be conducted by Contractor's surveyor. The volume will also be verified by the Engineer at the request of the City.

Payment will be by the cubic yard (CY). Includes all costs to place onsite source fill for the basin, handle material, and compact material to 95% relative compaction as shown on the Drawings and described in Sections 02222.

7. Place and Compact Soil Fill (Bid Item #7)

Measurement by the cubic yard (CY) based on a survey of the Existing and final grading before and after placement. No adjustment will be made for uneven contours or waste. The volume survey will be conducted by

Contractor's surveyor. The volume will also be verified by the Engineer at the request of the City.

Payment will be by the cubic yard (CY). Includes all costs to place onsite source fill for the basin, handle material, and compact material to 95% relative compaction as shown on the Drawings and described in Sections 02222.

8. Geotextile (Bid Item #8)
Measured by the square foot (SF) based on as-built surveys made along down chutes where installed geotextile laying on the final grades.

Payment will be by the Square Foot (SF) installed. Payment includes all costs to construct the 12 ounce geotextile layer including furnishing and installing materials as shown in the Drawings.

9. Install Aggregate Base (Bid Item #9)
Measurement based by the cubic yard (CY) of Class II aggregate base used for the parking and turn-around area. Measurement made by volume determined by survey.

Payment will be by the cubic yard (CY) installed. Payment includes all costs to furnish and install the aggregate base as shown on the Contract Drawings.

10. Implement SWPPP Plan (Bid Item #10)
Measurement by lump sum (LS), based on implementation of the requirements of the SWPPP Plan that is accepted by the City.

Payment includes all costs for BMPs needed to perform the work shown on the Drawings. Payment includes all costs associated with implementation of the SWPPP.

11. Fertilizer and Seed (Bid Item #11)
Measured by the acre (AC). Measurement will be based on perimeter survey for fertilizing and seeding within the construction limits. Sloped areas will be measured based on actual area, not plan area.

Payment includes all costs to fertilize and seed areas as shown in the Drawings and as described in Section 02820.

12. Install Fence (Bid Item #12)
Measured by linear foot (LF). Measurement will be based on a survey of the length of fence installed.

Payment includes all costs to install fence as shown in the Drawings.

END OF SECTION

SECTION 01050

SURVEYING

PART 1 - GENERAL

1.1 SUMMARY

This section includes the requirements for surveying, field engineering, and record documents.

1.2 CONTRACTOR'S SURVEYOR

A. The Contractor shall separately contract with a surveyor licensed in the State of California to provide field engineering and surveying services as required for layout and construction of the project and to provide as-built Drawings of the completed project. The Surveyor shall:

- locate existing features,
- verify existing grades,
- provide construction stake out,
- create final Record Drawings (as-builts),
- provide survey base maps for Record Drawings.

1.3 CONTRACTOR SUBMITTALS

The Contractor shall submit the following items to the City for review:

A. Existing Topographic Map: Within 10 days of commencing work, the Contractor shall perform a site survey, if required by the City, and prepare an existing topographic map. The map shall be submitted to the City for review and approval before starting site grading.

B. Project Record Documents: Upon substantial completion of the Work, deliver record documents to City. Final payments will not be made until satisfactory record documents are received by City. Accompany record documents with transmittal letter containing:

1. Date.
2. Project title and number.
3. Contractor's name and address.
4. Title and number of each record document.
5. Certification that each document as submitted is complete and accurate.
6. Signature of Contractor, or its authorized representative.

1.4 WEEKLY INSPECTIONS

To verify the Contractor's monthly progress payment requests, the following items shall be made available for monthly inspection by the CQA Officer:

- A. Record Documents.
- B. Updated construction schedules using Microsoft Project on a CD ROM, if required by the City.

1.5 SITE CONDITIONS

- A. Existing Grades: The Contract Drawings depict surface elevations in 2012.
- B. Existing Features: Contractor is required to field-verify the location of existing features, and at points of connection or tie-in to the work. The City's record drawings are available to the Contractor. The existence and location of features are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and existing features. The City and the engineer take no responsibility for the accuracy of these record drawings implied or otherwise.
- C. Field Verification: Prior to construction, coordinate with City or their Engineer to verify the elevations of existing features of the landfill and at points of connection or tie-in to the Work.
- D. Discrepancies: Should the Contractor discover any discrepancy between actual conditions and those indicated which prevent following good practice or the intent of the Drawings and Specifications, he/she shall notify the City or their authorized representative in writing and request clarification and instructions on how to proceed. The Contractor shall not proceed with work without advance approval from City.
- E. No Additional Payment: No claims shall be made for extra payment or extensions of Contract completion time if the Contractor fails to notify the City of any discrepancy before proceeding with that part of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 QUALIFICATIONS OF SURVEYOR

The Contractor shall arrange for the services of a State of California licensed land surveyor.

3.2 FIELD SURVEY WORK

- A. Control Points: The Engineer will provide drawings with control point data for locations shown on the Drawings to the Contractor.
- B. Benchmarks: The Contractor shall establish and maintain a minimum of two permanent benchmarks on the site, referenced to data established by survey control points. Record benchmark locations including horizontal and vertical data on Project Record Documents. Do not change or relocate benchmarks or control points without prior written approval by the City. Promptly report lost or destroyed benchmarks and central points or requirements to relocate benchmarks and central points because of necessary changes in grades or locations, as applicable.
- C. Site Improvements: The Contractor shall work from lines and levels established by benchmarks and control points to set lines and levels as needed to properly locate each element of the Project. Locate and lay out site improvements, including stakes for slopes, grading, fill placement, drainage controls, and pipe invert elevations. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions
- D. Relocation of Existing Utilities: The Contractor shall furnish information necessary to adjust, move, or relocate existing features, structures, utility poles, lines, services or other appurtenances located in, or affected by construction, if they exist. Coordinate with the County, City, and local authorities having jurisdiction.

3.3 TOLERANCES

- A. Inside the Limits of the Landfill: Within the limit of the landfill, elevations and 10-foot contour lines shown on the drawings are approximate. However, minimum and maximum slope requirements shown on the drawings and specified herein must be observed at all times. Slopes and tolerances shall be constructed as indicated.
 - 1. Horizontal and vertical survey tolerances shall be 1.0 feet and 0.1 feet, respectively.
 - 2. Steepest fill slopes are 2:1.

- B. Outside the Limits of the Landfill Closure Area: Outside the limits of the landfill closure area, grades shall be constructed as indicated.
- C. Positive Drainage: Within the limits of the project area, provide positive drainage towards permanent drainage ways. All areas shall be graded to the minimum slopes indicated. No ponding areas are permitted.

3.4 RECORD DOCUMENTS

- A. General: Protect new record documentation from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the City's reference during normal working hours. Electronic documents shall be backed-up at least once per week.
- B. Recording
 1. Label and file record documents and samples in accordance with Specification Section number listings in Table of Contents of this Technical Specification. Label each document "PROJECT RECORD" in neat, large, printed letters.
 2. Preparation of project record documents shall be by personnel skilled as a draftsman competent to prepare the required drawings.
 3. Record and update daily record information from field notes, on set of blue line prints, and this specification.
 4. Record information concurrently (daily) with construction progress. Do not conceal work until required information is recorded.
 5. Record deviations from required lines and levels, and advise the Engineer and CQA Officer when deviations that exceed indicated or recognized tolerances are detected. On Project Record Drawings, record deviations that are accepted and not corrected.
- C. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed or below-grade elements that would be difficult to measure and record at a later date.

Mark record sets with red erasable pencil. Mark new information that is important to the City, but was not shown on Contract Drawings or Shop Drawings. Note related Change Order numbers where applicable. Organize

record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on the cover of each set. Legibly mark each item to record actual construction, including:

1. Measured horizontal and vertical locations of underground utilities, drain pipe and appurtenances, referenced to permanent surface improvements.
2. Measured locations of internal utilities, and appurtenances concealed in construction, referenced to visible and accessible features of construction.
3. Field changes (dimensions and detail).
4. Changes by Modifications made by the CQA Officer or City.
5. Details not on original Contract Drawings.
6. References to related Shop Drawings and Modifications.
7. Depths of various elements of the Work in relation to datum.
8. Record Specifications: Maintain one complete copy of the Specifications, including addenda and one copy of other written construction documents such as Change Orders and Field Order issued in printed form during construction. Mark these documents to show substantial variations in actual work performed in comparison with the text of the Specifications, Change Order, and Field Order. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and product data. Legibly mark up each Section to record:
 - a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - b. Changes made by Change Order or Field Order.
 - c. Other matters not originally specified.

PART 4 - MEASUREMENT AND PAYMENT

Measurement and payment will be made for surveying under Bid Item No. 2 – Construction Surveying.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and Special Provisions of the Contract, including Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

This Section specifies administrative and procedural requirements for project meetings including but not limited to:

- A. Pre-Construction Conference
- B. Progress Meetings

1.3 DESCRIPTION

The CQA Officer will schedule and administer a pre-construction conference, periodic construction progress meetings, and specially called meetings throughout the progress of work. The CQA Officer will be responsible for preparing the agenda, making arrangements, preparing the meeting minutes, and presiding at these meetings.

Representatives of Contractor, Subcontractor(s), and Suppliers attending these meetings shall be qualified and authorized to act on behalf of the entity each represents.

The Contractor shall attend meetings to make sure that work is being performed consistent with Contract Documents and construction schedules.

1.4 PRECONSTRUCTION CONFERENCE

Within fifteen (15) days after the Notice to Proceed and before starting the work, a joint meeting shall be held with representatives of the City, Engineer, CQA Staff, Contractor's Project Manager and his Superintendent and other invited parties or government agencies which may be affected by or have jurisdiction over the project. This meeting is intended to introduce the various key personnel from each organization and to discuss the Contract Documents, the start of construction, order of work schedule, coordinate with the landfilling operations, labor and legal requirements, approved insurance requirements, names of the major subcontractors, progress payments, shop drawing submittal schedule, protection of existing facilities and other pertinent items associated with the Project. The Contractor shall bring four (4) copies of a construction schedule to this meeting.

The suggested agenda for the preconstruction meeting:

- A. Introduction of key personnel and roles
- B. Overview of project
 - 1. Project summary
 - 2. Contract completion time
- C. Project schedule
- D. Critical work sequencing
- E. Labor requirements
- F. Relationship and coordination with:
 - 1. Other contracts
 - 2. On-going landfilling operations
- G. Use of premises (SPECIAL PROVISIONS)
 - 1. Right-of-ways and easements
 - 2. Access and traffic control
 - 3. Office, work, and storage areas
 - 4. Temporary facilities/utilities
 - 5. Safety and first aid procedures
 - 6. Security procedures
 - 7. Posting of signs
 - 8. Clean-up procedures
 - 9. County requirements
 - 10. City requirements
- H. Procedures and processing of:
 - 1. Field decisions
 - 2. Change orders
 - 3. Applications for payment
 - 4. Partial payments
 - 5. Record documents
 - 6. Shop drawings
 - 7. Request for extension of Contract time
- I. Construction facilities, controls, and aids
- J. Staking of work
- K. Equipment to be used
- L. Material/manufacturers/suppliers to be used
- M. Major equipment/material deliveries
- N. Requirements of railways and highway departments
- O. On-site material storage requirements
- P. Laboratory testing of materials
- Q. Project inspections
- R. Permit requirements

1.5 PROGRESS MEETINGS

During the course of the Contract, periodic progress meetings may be requested, organized and conducted by the CQA Officer to discuss the progress of the Contract and for coordination. The Contractor's Project Manager and his construction superintendent shall attend these meetings.

The progress meetings will be held at the Contractor's field office.

The suggested agenda for these meetings:

- A. Review minutes of previous meeting.
- B. Review of work progress since previous meeting.
- C. Field observations, problems, and conflicts.
- D. Problems which impede the construction schedule.
- E. Review of off-site fabrication and delivery schedules.
- F. Corrective measures and procedures to regain projected schedule.
- G. Revisions to construction schedule.
- H. Progress schedule during next work period.
- I. Coordinate with the landfill operations.
- J. Coordination of schedule.
- K. Shop drawing submittals.
- L. Maintenance of quality standards.
- M. Pending changes and substitutions.
- N. Review proposed changes for:
 - 1. Effect on construction schedule and on completion date.
 - 2. Effect on other Contracts of the project.
- O. Other business.
- P. Construction schedule.
- Q. Critical/long-lead items.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement and payment will be made for project meetings. Costs shall be included in various bid items for the work.

END OF SECTION

SECTION 01300
CONTRACTOR SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings, Special Provisions, and Divisions 1 and 2 Specification Sections apply to this Section.

1.2 SUMMARY

This section identifies the required project submittals (Table 01300-1) and the process by which they will be reviewed and approved. Unless otherwise specified, 6 copies of submittal information will be provided by the Contractor to the CQA Officer in accordance with specified time frames.

- A. A Summary of Submittals is provided in Table 01300-1 for quick review by the Contractor. It shall be the Contractor's responsibility to review the Specifications to identify the specific requirements for each submittal.

Table 01300-1.
Summary of Submittals

Submittal	Time Due	Approval Period	Approver
Health and Safety Plan Construction Schedule	10 Days Before Start	Informational	N.A.
Subcontractor List	5 Days After NTP	5 Days	City
Manufacturer's Test Certifications	15 Days Prior to Procurement	5 Days	Engineer
Product Information	Prior to Procurement	10 Days	Engineer
Shop Drawings	10 Days Before Constructing	10 Days	Engineer
Material Samples/ Test Results	30 Days before Constructing	10 Days	Engineer
Compaction Equipment Information	5 Days Prior to Intended Use	5 Days	Engineer
As-Built Plans	30 Days After Close of Construction	Informational	Engineer

NOTE: Contractor will contract with others for surveys.

1.3 SUBMITTAL PROCEDURES

- A. The Engineer reserves the right to modify the procedures and requirements for submittals, as necessary, to accomplish the specific purpose of each submittal. Direct inquiries to Engineer regarding the procedure, purpose, or extent of any submittal.
- B. Review, acceptance, or approval of substitutions, schedules, Shop Drawings, lists of materials, and procedures submitted or requested by Contractor shall not add to the Contract amount, and additional costs, which may result therefrom shall be solely the obligation of Contractor.
- C. The Engineer is not responsible for providing engineering or other services to protect Contractor from additional costs accruing from submittals.
- D. Submittals processed by Engineer do not become Contract Documents and are not Change Orders; the purpose of submittal review is to establish a reporting procedure and is intended for Contractor's convenience in organizing the work and to permit Engineer to monitor Contractor's progress and understanding of the design.
- E. Delays caused by the need for re-submittal shall not constitute basis for claim.

1.4 ADMINISTRATIVE SUBMITTALS

- A. Provide administrative submittals required by the Bidding Requirements, Special Provisions, and as might be specifically required in other parts of the Contract Documents.
- B. Make required submittals promptly to the applicable federal, state, or local agency, as required by law. Failure to comply with this requirement may result in withholding of progress payments and make Contractor liable for other prescribed action and sanctions.
- C. If authorized or required by the Owner, submit to the Engineer a copy of letters relative to the Contract including notifications, reports, certifications, payrolls, and the like, that are submitted directly to a federal, state, or other governing agency.

1.5 SCHEDULES

- A. General:
 - 1. Submit proposed project schedule and preliminary schedule of submittals in duplicate to Owner and their authorized representative.

2. Based on comments received on the original proposed schedule, revise and resubmit as specified.
3. Submit progress schedule weekly showing actual progress in comparison to the original proposed schedule.

B. Schedule of Submittals:

1. Preliminary Schedule of Submittals. Indicate submittals required by Specification section number with brief description, starting and completion dates for respective submittal preparation, and submittal review by Owner and Engineer. Contractor shall submit its Preliminary Schedule of Submittals at least 5 days prior to the Pre-construction Conference.
2. Finalized Schedule of Submittals. Furnish sub-network to the progress schedule indicating respective progress schedule activity, which sequentially follows the submittal activity. Contractor shall submit its Finalized Schedule of Submittals within 5 days after the Pre-construction Conference.

1.6 SHOP DRAWINGS

A. General:

1. Shop Drawings, as defined herein, consist of all drawings, diagrams, illustrations, schedules, and other data which are prepared by or for the Contractor to illustrate some portion of the work; and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other information prepared by a manufacturer and submitted by the Contractor to illustrate material or equipment for distinct portions of the work.
2. Submittal of incomplete or unchecked Shop Drawings will not be acceptable. Shop Drawing submittals, which do not clearly show Contractor's review, stamp or specific written indication of Contractor review will be returned to Contractor for resubmission.
3. Submittal of Shop Drawings not required under these Contract Documents and not shown on the schedule of submittals will be returned to the Contractor un-reviewed and unstamped by the Engineer.

B. Procedures:

1. Submit to Engineer for review and approval, in accordance with the accepted schedule of submittals, six (6) copies of Shop Drawings.

2. Transmit each submittal on Engineer-accepted form.
3. Sequentially number the transmittal forms; re-submittals to have original number with an alphabetic suffix.
4. Identify project, Contractor, Specification section number, pertinent drawing sheet and detail number(s), products, units and assemblies, and the system or equipment identification or tag number as shown.
5. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, are in accordance with the requirements of the Contract Documents.
6. Transmit submittals in accordance with finalized schedule of submittals, and deliver to the Engineer.
7. Provide space for Engineer review stamps, 2-1/2 inches by 3-1/2 inches.
8. Revise and resubmit submittals as required; identify all changes made since previous submittal.
9. Submittals will be acted upon by Engineer and transmitted to Contractor not later than 10 working days after receipt by Engineer.
10. When Engineer has reviewed Shop Drawings, three (3) copies will be returned to Contractor appropriately annotated.
 - a. If major changes or corrections are necessary, Shop Drawing may be rejected and one set will be returned to Contractor with such changes or corrections indicated.
 - b. Correct and resubmit the Shop Drawings in the same manner and quantity as specified for the original submittal.
11. Foreign Manufacturers. Submit names and addresses of companies within the United States that maintain technical service representatives; include complete inventory of spare parts and accessories for each foreign-made item proposed for incorporation into the work. Failure to prove these capabilities shall be just cause for rejection of foreign-manufactured items.
12. Interfacing Work. Where called for in the Specifications and as determined necessary by the Engineer to provide proper correlation with other work, complete inter-face information shall be submitted. This interface information shall be accurate and contain all information necessary to allow for manufacturing and construction of the interfacing or connecting work.

1.7 SAMPLES AND TEST SPECIMENS

- A. Where required in the Specifications, and as determined necessary by the CQA Officer, submit test specimens or samples of material, equipment, and fittings to be used or offered for use in connection with the work. Include information as to their sources, prepay cartage charges, and submit such quantities and sizes for proper examination and tests to establish the quality or equality thereof, as applicable.
- B. Submit samples and tests specimens in ample time to enable CQA Officer to make tests or examinations necessary, without delay to the work.
- C. Submit additional samples as required by CQA Officer to ensure equality with the original approved sample and/or for determination of Specification compliance.
- D. Tests required by the Specifications to be performed by an independent laboratory shall be made by a laboratory licensed or certified in accordance with state statutes.
- E. Submit certified test results of specified tests in duplicate to the CQA Officer.
- F. Samples and laboratory services shall be at the expense of Contractor, unless otherwise specified, and be included in the prices bid for the associated work.
- G. Approved sample items (fixtures, hardware, etc.) may be incorporated into the work upon approval and when no longer needed by CQA Officer for reference.

1.8 QUALITY CONTROL SUBMITTALS

- A. **Manufacturers' Certification of Proper Installation.** Where manufacturer's certification is required in the Specifications, the manufacturer shall provide certification stating the following:
 - 1. The product or system has been installed in accordance with the manufacturer's recommendations.
 - 2. A manufacturer's authorized representative has inspected the product or system.
 - 3. The product or system has been serviced with the proper lubricants.
 - 4. Applicable safety equipment has been properly installed.
 - 5. Proper adjustments have been made, and the product or system is ready for functional testing, and operation.

B. Certification of Compliance:

1. Where specified, furnish certification of compliance for products specified to a recognized standard or code or the Specifications prior to the use of such products in the work.
 - a. CQA Officer may permit use of certain materials or assemblies prior to sampling and testing if accompanied by a certification of compliance.
 - b. The manufacturer of the product shall sign certifications; state that the components involved complies in all respects with the requirements of the Specifications.
 - c. Furnish certification of compliance with each lot delivered to the job-site and clearly identify the lot so certified.
2. Products used on the basis of a certification of compliance may be sampled and tested at any time. The fact that a product is used on the basis of a certification of compliance shall not relieve Contractor of responsibility for incorporating products in the work, which conform to requirements of the Contract Documents. Products not conforming to such requirements will be subject to rejection whether in place or not.
3. Engineer reserves the right to refuse permission for use of products on the basis of a certification of compliance.

1.9 CONTRACT CLOSEOUT SUBMITTALS

- A. Record Drawings. The Contractor shall prepare and submit to the CQA Officer a clean copy of a marked-up (in red) set of Contract Drawings depicting all changes and modifications made during the construction. The Contractor shall utilize the necessary survey data for all the changes and modifications and shall provide as-built, record drawings of the completed landfill closure and landfill gas system (see page 01050-1).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement and payment will be made for Contractor Submittals. Costs shall be included in the respective bid items.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

The requirements of this Section apply to, and are a component of, each section of the Specifications. The Contractor is responsible for furnishing all labor, equipment, materials, and provisions to provide temporary facilities and controls, including but not limited to, the Contractor's field office, Contractor's storage area(s), utility connections/hookups and permits for water service, electrical service, telephone service, maintenance of traffic, barricades, fences, damage to existing property, security, access roads, drainage, erosion and sediment control measures, parking, and emergencies.

1.2 REFERENCES

Drawings, Special Provisions, and Divisions 1 and 2 Specification Sections apply to this Section.

1.3 FIELD OFFICE

- A. The Contractor shall furnish and maintain one temporary field office for its own use, as needed. This office shall be located on-site and so as not to interfere with construction or landfill operations. The Contractor shall provide electrical service to the office. The Contractor shall obtain all permits for the facilities.
- B. A potable water supply is not currently available on-site. The Contractor shall provide potable water supply for its employees and subcontractors.
- C. Sanitary sewers are not available at this location. The Contractor shall provide sanitary facilities for its employees and his subcontractor's employees.
- D. Any communication given to the Contractor's representative or delivered at Contractor's office in his/her absence shall be deemed to have been delivered to Contractor.
- E. Copies of the Drawings and Specifications, and other Contract Documents shall be kept at the site and be available for use by the City, Engineer, CQA Staff, or Contractor at all times.

1.4 CONTRACTOR'S STORAGE AREAS

- A. A storage area will be provided on the project site for use by the Contractor for storage of his materials, tools, equipment, and other items necessary for the project construction. The exact limits of the storage area will be designated at the preconstruction meeting and in the field by the City. The Contractor shall be solely responsible for the security of this area, including fencing, watchmen, and other means of security. Under no circumstances will the City be responsible for the security of any property belonging to the Contractor, its subcontractors, or any of its work forces.

1.5 SANITARY FACILITIES

- A. Contractor shall furnish temporary sanitary facilities at work locations, as provided herein, for the needs of all construction workers and others performing work or furnishing services in connection with the Work.
- B. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. The use of existing toilet facilities at the sanitary landfill by Contractor's personnel is strictly forbidden.

1.6 TRAFFIC PROVISIONS

- A. **Maintenance of Traffic:** The Contractor shall conduct his/her operations in a manner that will not close any thoroughfare or interfere in any way with site traffic except with written permission of the City. Work shall be conducted so as to minimize obstruction of traffic, and traffic shall be maintained on at least half of the roadway width or 12 feet at all times except as approved by City. Approval shall be obtained from the City prior to starting any activity that will obstruct traffic.

1.7 FENCES

- A. All existing fences affected by the work shall be maintained by Contractor until completion of the work.
- B. On completion of the work, Contractor shall restore all fences to their original or to a better condition and to their original location.

1.8 DAMAGE TO EXISTING PROPERTY

- A. Contractor will be held responsible for any damage to existing structures, environmental control and monitoring facilities, materials or equipment because of his/her operations and shall report any damaged items to City upon recognition of such damage. Contractor is responsible for repairs of damaged structures,

work, materials or equipment to the satisfaction of, and at no additional cost to the City. Such repairs or replacements shall be done in a timely manner.

- B. Contractor shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.
- C. Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges or other public or private property, which may be caused by transporting equipment, materials, or workers to or from the work. Contractor shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

1.9 SECURITY

- A. Security measures shall be at least equal to those usually provided by City to protect its facilities during normal operation, and shall also include such additional security fencing, barricades, lighting and other measures as required to protect the site.

1.10 ACCESS ROADS

- A. Contractor shall construct, grade, stabilize and maintain temporary access roads to various parts of the site as required to complete the project.

1.11 DRAINAGE

- A. The Contractor shall keep all natural drainage and water courses unobstructed or provide equal courses effectively placed, and prevent accumulations of surface water.

1.12 EROSION AND SEDIMENT CONTROL MEASURES

- A. Adequate control of erosion and siltation of a temporary nature on areas disturbed by the work specified in this Section shall be provided by the Contractor, subject to the approval of the City. There will be a joint on-site inspection prior to commencing work, with Contractor, County Officials, and the City to agree on sediment control measures and temporary drainage pipes, slope drains, gutters etc.
- B. Erosion control shall comply with all applicable State and County Regulations. Contractor shall prepare all necessary documentation for agency approvals and obtain required construction permits.

1.13 PARKING

- A. Contractor shall provide and maintain suitable parking areas for the use of all construction workers and others performing work in connection with the project. Vehicles shall not be parked where they may interfere with public traffic, facility operations, or construction activities.

1.14 EMERGENCIES

- A. The Contractor shall display and update phone numbers of the local police, fire department, hospital, and emergency squad at its office and at all phones on site during the project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Separate payment will not be made for Temporary Facilities and Controls.

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The work described in this section complies with the requirements stated in General and in Specifications for administrative procedures in closing out the work.

1.2 SUBSTANTIAL COMPLETION

A. When Contractor considers the work as substantially complete, he shall submit to the City and CQA Officer:

1. A written notice that the work, or designated portion thereof, is substantially complete.
2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, City and CQA Officer shall observe the work to determine the status of completion.

C. Should City or CQA Officer determine that the work is not substantially complete:

1. The City or CQA Officer will promptly notify the Contractor in writing, giving the reasons therefore.
2. The Contractor shall remedy the deficiencies in the work and send another written notice of substantial completion to the City or CQA Officer.
3. CQA Officer will review the work.

D. When the CQA Officer or City finds that the work is substantially complete, he/she will:

1. Prepare and deliver to the Contractor a list of items to be completed or corrected before final payment.

2. After consideration of any objections made by the City as provided in General and Supplementary Conditions of the Contract, and when CQA Officer considers work substantially complete, the CQA Officer will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised list of items to be completed or corrected.

1.3 FINAL ACCEPTANCE

- A. When the Contractor considers the work is complete, he/she shall submit written certification that:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents.
 4. Equipment and systems have been tested in the presence of the Engineer and CQA Officer and are operational.
 5. Work is completed and ready for final observation.
- B. Engineer will make an observation of the work to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should CQA Officer consider that the work is incomplete or defective:
 1. CQA Officer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send another written certification to the CQA Officer that the work is complete.
 3. CQA Officer will review the work.
- D. When the CQA Officer finds that the work is acceptable under the Contract Documents, he/she shall request the Contractor to make closeout submittals.

1.4 CLOSEOUT SUBMITTALS

- A. The Contractor shall provide evidence of compliance with the requirements of the governing authority.

- B. The Contractor shall submit of accurate “as-built” Record Drawings of the project.
- C. The Contractor shall submit of all specified warranties, guarantees, and operation and maintenance manuals as applicable.

1.5 FINAL ADJUSTMENT OF ACCOUNTS

- A. The Contractor shall submit a final statement of accounting to the City.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous change orders or written amendment.
 - b. Allowances.
 - c. Unit prices.
 - d. Work not done.
 - e. Failed test costs.
 - f. Penalties.
 - g. Deductions for liquidated damages.
 - h. Other adjustments.
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. The Contractor shall submit satisfactory evidence of release of all liens or claims.
- D. City will prepare a final Change Order, reflecting approved adjustments to the Contract Sum, which were not previously made by Change Orders.

1.6 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement and payment will be made for Contract Closeout.

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02110

CLEARING AND STRIPPING

PART 1. GENERAL

1.1 DESCRIPTION

- A. Scope: The Contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required for site clearing work. The Contractor shall not disturb more than (100) acres of surface area at any one time during the project without prior approval from the City.
- B. General: Site clearing work shall include removal of surface debris and other plant life required and for bringing the site to final grade. Vegetation in areas to be stripped shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing.
- C. Work Specified Elsewhere:
Section 02222 - Excavating and Grading.

1.2 DEFINITIONS

- A. Clearing: Clearing shall consist of removing vegetation, including trees and brush, and debris that exists within the construction limits.
- B. Stripping: Grasses and top soil shall be removed from the work area as shown on the Drawings and as specified herein. This material shall be stockpiled in a designated area and reapplied after completion of the final cover as specified.
- C. Permits: The Contractor shall obtain all permits necessary for removal of vegetative growth within the work area.

1.3 QUALITY ASSURANCE

- A. All materials and labor furnished under this section shall comply with ASTM, AA, NEC, ANSI and all other applicable Federal, State and County codes and regulations including revisions to date of contract.
- B. Coordinate Clearing Work with utility companies.

PART 2. PRODUCTS (Not Applicable)

PART 3. EXECUTION

3.1 PREPARATION

- A. Verify that existing plant life designated to remain is clearly tagged and/or identified.
- B. Identify an appropriate waste/salvage area for placing removed materials. The waste/salvage area shall be approved by the City prior to placement of materials.

3.2 PROTECTION

- A. Locate, identify and protect existing utilities from damage.
- B. Protect trees, plant growth and features designated to remain, as final landscaping by encircling the trees with protective fencing.
- C. Protect bench marks, survey control point, wells, and existing structures from damage or displacement.

3.3 CLEARING

- A. Clear areas required for site access and execution of the Work.
- B. Remove trees and shrubs within marked areas. Remove stumps, main root ball and root system to a depth of 12 inches.
- C. Clear undergrowth and deadwood, without disturbing subsoil.

3.4 TOPSOIL STRIPPING

- A. Strip approximately 3 inches of topsoil from the work areas, without mixing with foreign materials.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on site to depth not exceeding 20 feet and protect from erosion.
- D. Place excess topsoil not intended for reuse on denuded areas at a location on site, as approved by the City.

3.5 DUST CONTROL

The CONTRACTOR shall be responsible for controlling objectionable dust by his/her operation of vehicles and equipment during all land disturbing activities. The Contractor shall use methods, subject to the CQA Office's approval, that keep dust in the air to a

minimum and to the satisfaction of the City. Dust control will be particularly important in controlling the migration of waste particles containing lime, cement, metals, silt, and sand during the re-grading of the landfill slopes and top deck.

END OF SECTION

SECTION 02221

EXCAVATION AND GRADING

PART 1. GENERAL

1.1 SUMMARY

- A. Section includes excavating soil and rock as required.
- B. Related Sections:
 - 1. Section 02110 – Clearing and Stripping
 - 2. Section 02222 – Earthfill

1.2 DEFINITIONS

- A. Construction Quality Assurance (CQA) Consultant: The monitoring firm responsible for implementation of the CQA plan.

PART 2. PRODUCTS

2.1 NO PRODUCTS ARE REQUIRED FOR EXCAVATION.

PART 3. EXECUTION

3.1 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Provide for dust control.
- C. Provide dewatering as necessary.

3.2 EXCAVATION AND GRADING

- A. Excavation and Grading includes cover, roads, and drainage ditches.
- B. Strip surfaces of work area of vegetation or other organic material prior to grading the foundation layer soil. Place stripped vegetation and soil in designated stockpiles on Drawing No. 2.
- C. Excavate to the limits of work lines and grades shown on the Drawings.

- D. Remove lumped subsoil, boulders, and rock over 6 inches in largest dimension from completed area of the cover surface.
- E. Notify City of unexpected subsurface conditions and discontinue work in affected area.
- F. Exercise care to preserve materials below and beyond the lines of grading. Excavation performed for the convenience of the Contractor will be at no additional expense to the City. Place earthfill in over-excavated areas per Section 02222.
- G. Exercise care to preserve existing environmental control systems by hand digging to expose wells, piezometers, risers, etc., so as not to damage said item, especially during grading operations.

3.3 WASTE EXCAVATION AND HANDLING

- A. The Contractor may encounter waste during excavation and uncovering of the edge of existing cover system. In the event that waste is encountered, it shall be excavated and disposed at the active working face of the landfill as directed by the City.
- B. The Contractor shall prepare and utilize a site-specific Health and Safety Plan to prevent associated hazards, as specified in Section 01010.

END OF SECTION

SECTION 02222**EARTHFILL****PART 1. GENERAL**

1.1 SUMMARY

- A. Section includes placement of on-site soils as earthfill.
- B. Related sections:
 - 1. Section 02221 – Excavation and Grading

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D 422-63 (7/84), Standard Test Method for Particle-Size Analysis of Soils.
 - 2. D 1557-91, Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-LB (4.54 KG) Hammer and 18-in (457-mm) drop.
 - 3. D 2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.
 - 4. D 2922-81, Test Method for Density of Soil and Soil Aggregate in Place by Nuclear Methods.
 - 5. D 3017-78, Test Method for Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods.

1.3 DEFINITIONS

- A. Backfill: Material placed in previously excavated trenches.
- B. Cohesionless Materials: Materials classified by the Unified Soil Classification System (USCS) as GW, GP, SW, and SP.
- C. Cohesive Materials: Materials classified by USCS as GC, SC, ML, CL, MH, and CH.
- D. Earthfill: On-site soil, obtained from on-site excavation, that is placed to specified densities and moisture contents.
- E. Lift: One single continuous placement of soils, usually measured in inches of depth.

- F. Percent Relative Compaction: Field dry density expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D 698.

PART 2. PRODUCTS

2.1 EARTHFILL

- A. Sources: On-site stockpiles and on-site borrow areas as shown on the Drawings.
- B. Free of organic or other deleterious material.
- C. Maximum particle size of 4 inches in largest dimension

2.2 SOIL

- A. Source: City-designated onsite stockpiles.
- B. Soil/Compost mixture shall consist of equal parts onsite soil and compost.

PART 3. EXECUTION

3.1 GENERAL

- A. Identify required lines, levels, contours, and datum.
- B. Provide for dust control.
- C. Provide for surface water control.

3.2 SUBGRADE PREPARATION

- A. Strip surfaces in the work area of vegetation or other organic material. Stripped material will be stockpiled in a location identified by the City per Section 02221, 3.2B.
- B. Grade the exposed surface per Section 02221. Place and compact additional soil fill per this Section.
- C. CQA Monitor will observe prepared surfaces before earthfill placement.

3.3 EARTHFILL

- A. Earthfill shall be placed to smooth existing surfaces to achieve the cover system's Foundation Layer. The CQA Monitor shall observe the Contractor verify foundation layer thickness meets the 2 foot minimum thickness.
- B. Place soil to the lines and grades shown on the drawings.
- C. Scarify top of each compacted lift before placing subsequent lift, unless sheepsfoot or padfoot compactor is utilized.
- D. Maintain moisture content within specified range.
- E. Moisture condition, recompact, or remove and replace soil not meeting specified requirements as determined by the City or authorized representative.
- F. Place and compact as specified in Tables 02222-1.
- G. Testing will be performed as specified in Table 02222-2.

**Table 02222-1.
Soil Cover
Placement and Compaction Requirements**

Fill Type	Loose⁽¹⁾ Lift Thickness (inches)	Moisture Content⁽²⁾	Minimum Subgrade and Lift Density	Method of Test	Finished Grade Tolerance⁽³⁾ (feet)
Soil Cover	8-in maximum	5% below optimum to 5% above optimum	95.0% minimum	ASTM D 698	-0.1 to +0.1
⁽¹⁾ Thinner lifts may be required to obtain adequate compaction. ⁽²⁾ Moisture limits may have to be adjusted to obtain required density or to minimize desiccation cracking. ⁽³⁾ Provided adequate drainage is maintained.					

**Table 02222-2.
Soil Cover Testing Frequency**

Test Method ASTM No.	General Fill	Foundation Layer On-Site	Soil Mono-Layer On-Site
Conformance Testing			
D698		500 cy/	5,000 cy/
D422		500 cy/	5,000 cy/
D2487		500 cy/	5,000 cy/
D5084			5,000 cy/
Field Testing			
D2922	1,000 cy	500 cy/	500cy/
D698	10,000 cy	5,000 cy/	5,000 cy/
Frequency/ Number of Tests = 1,000 cy/10			

3.4 FIELD QUALITY ASSURANCE

- A. The City will engage and pay for the services of: (1) CQA Consultant; and (2) CQA Laboratory
- B. Contractor shall render assistance as necessary for CQA Consultant to obtain soil and material samples.
- C. CQA Consultant will determine maximum dry density and optimum moisture content.
- D. CQA Consultant will determine in-place density and moisture content.
- E. Cooperate with City or authorized representative in scheduling and performing field CQA tests.

END OF SECTION

SECTION 02226
GEOTEXTILE FABRIC

PART 1. GENERAL

1.1 DESCRIPTION

- A. This section covers the work necessary to furnish and install woven and non-woven geotextile fabric required by the Drawings and Specifications.
- B. The work includes furnishing all labor, supervision, tools, construction equipment, and materials necessary to install the fabrics described by these Drawings and Specifications.

1.2 GENERAL

- A. Provide all labor, materials, and equipment necessary to accomplish the work specified in this section.

1.3 REFERENCES

- A. Reference Standards: The following standards, including documents references therein, are referenced within this section and form part of this section to the extent designated herein. Unless otherwise specified, the most recent version of the reference standards at the bidding shall apply.
- B. American Society of Testing and Materials (ASTM):
 - 1. ASTM D885, Methods of Testing Industrial Filament Yarns Made from Man-Made Fibers.
 - 2. ASTM D1777, Method for Measuring Thickness of Textile Materials.
 - 3. ASTM D3776, Test Methods for Mass Per Unit Area (Weight) of Woven Fabric.
 - 4. ASTM D3786, Test Method for Hydraulic Bursting Strength of Knitted Goods and Non-woven Fabrics.
 - 5. ASTM D4491, Test Methods for Water Permeability of Geotextiles by Permittivity.
 - 6. ASTM D4533, Test Method for Trapezoid Tearing Strength of Geotextiles.

7. ASTM D4632, Test Method for Breaking Load and Elongation of Geotextiles (Grab Method).

1.4 DEFINITIONS

- A. Satisfactory Materials: Materials which comply with the requirements of this Section are satisfactory.
- B. Unsatisfactory Materials: Materials which do not comply with the requirements of satisfactory materials are unsatisfactory.

1.5 SAFETY

- A. The Contractor shall be solely responsible for installing geotextiles in a safe manner. Provide appropriate measures to ensure that persons working on or near the project area are protected.
- B. Contractor shall familiarize themselves with, and comply with, all applicable codes, ordinances, statutes, and bear sole responsibility for the penalties imposed for noncompliance.

1.6 SUBMITTALS

- A. Prior to delivery, submit certificates of compliance with the requirements and testing methods specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Geotextile shipped during the wet weather period shall be shipped in a closed trailer.
- B. Geotextile shall be protected from precipitation, inundation, ultraviolet exposure, dirt puncture, cutting, and other damaging or deleterious condition.

PART 2. PRODUCTS

2.1 EQUIPMENT

- A. Furnish all necessary equipment required to accomplish the construction of the road base aggregate and erosion protection layers.

2.2 NON-WOVEN GEOTEXTILES

- A. The non-woven geotextile supplied by the Contractor shall be:

1. A non-woven, needle-punched, staple fiber or continuous filament polyester material, or
2. A non-woven, needle-punched, staple fiber or continuous filament polypropylene material.

Geotextile shall be UV-light resistant.

- B. Geotextile shall meet performance criteria and shall be approved by the CQA Officer.

PERFORMANCE CRITERIA

Fabric Property	Unit	Test Method	Woven	Non-Woven
Grab Strength	Lb	ASTM D4632	135	
Trapezoid Tear	Lb	ASTM D4533	45	
Puncture Strength (5/16")	Lb	ASTM D3787	70	
Mullen Burst	Psi	ASTM D3786	265	
Vert. Water Flow 2" head	Gpm/ft ²	ASTM D4491	4	
Coef. Of Perm. K	cm/sec	ASTM D4491	0.06	
AOS (Apparent Opening Size)	Sieve Size	ASTM D4751	40	
UV Resistance (500 hr.)	%	ASTM D4355	90	

- C. The Manufacturer shall mark on each roll the Manufacturer's name, product identification, lot number, roll number, and roll dimensions.
- D. The Manufacturer shall test one sample, consisting of five specimens, per each lot. One random thickness test per roll shall also be performed. The Contractor shall submit all test information and samples prior to the material being received on site.

2.3 WOVEN GEOTEXTILES

- A. The woven geotextile supplied by the Contractor shall be:
1. A woven, continuous filament polyester material, or
 2. A woven, continuous filament polypropylene material.

- B. Geotextile shall meet performance criteria and shall be approved by the CQA Officer.
- C. The Manufacturer shall mark on each roll the Manufacturer's name, product identification, lot number, roll number, and roll dimensions.
- D. The Manufacturer shall test one sample, consisting of five specimens, per each lot. One random thickness test per roll shall also be performed. The Contractor shall submit all test information and samples prior to the material being received on site.

PART 3. EXECUTION

3.1 DEVELOPMENT

- A. Geotextile is to be deployed following the Manufacturer's recommendations, standards, and guidelines.
- B. The geotextile is to be secured against movement caused by wind. Securing mechanism must be left in place on geotextile until replaced with protective soil cover material.
- C. Geotextile laying and subsequent covering with gravel, soil, road base aggregate and erosion layers shall proceed in such a manner as to minimize exposure to light.
- D. The surface to receive the geotextile shall be smooth, free from obstructions, depressions, and sharp objects. Notify the CQA Monitor prior to placing geotextile so that the CQA Monitor may observe the surface to receive the geotextile. Lay geotextile so as to minimize the number of joints and seams.

Lay geotextile loosely, but without creases.

- E. Do not operate machinery directly on the geotextile. When placing material over joints, place in the direction from the overlying geotextile to the underlying geotextile. Prevent puncture, tear, or displacement of geotextile and protect from damage.

3.2 SEAMING

- A. Seams for the geotextile shall be overlapped sewn seams for the geotextile shall be overlapped to provide a "prayer" seam, "J" seam, or "butterfly" seam and shall be a two-thread, double-lock switch, Federal Class No. 1. Heat bonded seams for the non-woven filter geotextile shall be overlapped a minimum of 1 foot. Seams shall be continuous.

- B. Polymeric thread shall be used in sewing with properties equal to or greater than those of the geotextiles.

3.3 REPAIRS

- A. Repair holes or tears in the geotextile by fabric patch placed over the repair area overlapping undamaged geotextile by 1 foot. Patch should have dimensions at least 1 foot greater than the tear or hole.
- B. Replace roll when tear exceeds 10 percent of roll width.
- C. Remove materials which may have penetrated torn fabric.
- D. Log any defects, holes, and tears which are identified and repaired.

3.4 PROTECTION

- A. Geotextile shall be stored in such a manner to protect it from puncture, dirt, grease, water, mud, or excessive heat.

END OF SECTION

SECTION 02229

**TRENCHING, BACKFILLING, AND
COMPACTING**

PART 1. GENERAL

1.1 SUMMARY

- A. Section includes exploratory backhoe trenching, backfilling, and compacting as specified herein.
- B. Related sections:
 - 1. Section 02222 – Earthfill

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D 422, Method for Particle-Size Analysis of Soils.
 - 2. D 1557, Test Methods for Laboratory Compaction Characteristics of Soil.
 - 3. D 2487, Standard Test Method for Classification of Soils for Engineering Purposes.
- B. Occupational Safety and Health Administration (OSHA).

1.3 DEFINITIONS

- A. Backfill: Material placed in previously excavated trenches.
- B. Cohesionless Materials: Materials classified by the Unified Soil Classification System (USCS) as GW, GP, SW, and SP.
- C. Cohesive Materials: Materials classified by USCS as GC, SC, ML, CL, MH, and CH.
- D. Construction Quality Assurance (CQA) Consultant: The monitoring firm responsible for implementation of the CQA plan.
- E. Lift: One single continuous placements of soils.
- F. Soils laboratory: A laboratory capable of conducting the tests required by this specification. Also referred to as the CQA Laboratory.

PART 2. PRODUCTS

2.1 GENERAL (Backfill)

- A. Sources: Obtained from identified on-site stockpiles.
- B. Free of angular, and other deleterious materials.
- C. Greater than 30 percent fine material (#200 sieve).
- D. Maximum particle size of 4 inches.

2.2 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the acceptance of the City.

PART 3. EXECUTION

3.1 PREPARATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely, safe, and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FINISH ELEVATIONS AND LINES

- A. Comply with pertinent provisions of the Specifications and Construction Drawings.

3.3 PROCEDURES

- A. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- B. Maintain access to adjacent areas at all times.

3.4 TRENCHING

- A. Trenching:
 - 1. Excavate trenches.
 - 2. Where it becomes necessary to excavate beyond the limits of normal excavation lines in order to remove boulders or other interfering objects,

backfill the voids remaining after removal of the objects as directed by the CQA Monitor.

3. When the void is below the subgrade for the utility bedding, use suitable earth materials and compact to the relative compaction directed by the CQA Monitor, but in no case to a relative compaction less than 95.0 percent of ASTM D 698.
 4. When the void is in the side of the trench or open cut, use suitable soil or sand compacted or consolidated as approved by the CQA Monitor, but in no case to a relative compaction less than 95.0 percent of ASTM D 698.
 5. Remove boulders and other interfering objects, and backfill voids left by such removals, at no additional cost to the City.
- B. Trench to the minimum width necessary for proper installation of the pipe with sides as nearly vertical as possible. Uniformly grade the bottom to provide uniform bearing for the utility.
- C. Depressions:
1. Except where rock is encountered, do not excavate below the depth indicated or specified.
 2. Where rock is encountered, over excavate rock to a minimum overdepth of 4 inches below the trench depth indicated or specified.

3.5 BACKFILLING

- A. General:
1. Backfill trenches to the ground surface with materials shown on the Construction Drawings.
 2. Reopen trenches which have been improperly backfilled. Refill and compact as specified, or otherwise correct to the approval of the Design Engineer.
 3. Do not allow or cause any of the Work performed or installed to be covered up or enclosed by work of this Section prior to required inspections, tests, and approvals.
 4. Should any of the Work be so enclosed or covered up before it has been approved, uncover all such Work and, after approvals have been made, refill and compact as specified, all at no additional cost to the City.

- B. Lower portion of trench:
 - 1. Trench gravel: Take special care in backfilling and bedding operations to not damage pipe and pipe coatings. Place gravel to completely surround pipe without voids. Lightly tamp bedding to compact.
- C. Remainder of trench:
 - 1. Except for special materials for drainage trenches, backfill the remainder of the trench with trench backfill material.
 - 2. General earthfill: Deposit trench backfill material in layers not exceeding 8 inches in thickness, and compact each layer to 95.0 percent relative compaction based on ASTM D 698.
 - 3. Trench gravel: Place gravel in layers not exceeding 12 inches. Lightly tamp to eliminate voids.

3.6 FIELD QUALITY CONTROL

- A. The CQA Monitor shall inspect open cuts and trenches before installation of pipes, and will make the following tests:
 - 1. Verify that trenches are not backfilled until all tests have been completed.
 - 2. Check backfilling for proper layer thickness and compaction.
 - 3. Verify that test results conform to the specified requirements, and that sufficient tests are performed.
 - 4. Verify that defective work is removed and properly replaced.

END OF SECTION

SECTION 02233**AGGREGATES AND RIP RAP****PART 1. GENERAL****1.1 SUMMARY**

- A. The requirements for drainage layer aggregate, gravel road aggregate, and rip rap are specified herein.

1.2 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced in the text. The publications are referenced to in the text by basic designation only.

- B. American Society for Testing and Materials (ASTM):

1. ASTM C 88, Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
2. ASTM C 131, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
3. ASTM D 75, Sampling Aggregates
4. ASTM D 422, Particle Size Analysis of Soils
5. ASTM D 698, Laboratory Compaction Characteristics Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 Kn-m/m³))
6. ASTM D 1556, Density and Unit Weight of Soil in Place by the Sand-Cone Method
7. ASTM D 2434, Permeability of Granular Soils (Constant Head)
8. ASTM D 2487, Classification of Soils for Engineering Purposes
9. ASTM D 2922, Density of Soil and Soil-Aggregate in Place by Nuclear Method (Shallow Depth)
10. ASTM D 3017, Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

11. ASTM D 4253, Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
12. ASTM D 4254, Minimum Index Density and Unit Weight of Soils Using a Vibratory Table
13. ASTM D 4373, Calcium Carbonate Content of Soils
14. ASTM E 11, Wire-Cloth Sieves for Testing Purposes
15. ASTM E 548, Guide for General Criteria Used for Evaluating Laboratory Competence

1.3 SUBMITTALS

- A. Prequalification: Contractor shall submit the material source and required tests for drainage layer and road aggregate to the CQA Officer for approval.
- B. Test Reports: The specified test reports shall be submitted to the CQA Monitor.
- C. Approval of Material Source: The source of the material to be used for producing aggregates shall be selected not less than thirty (30) days prior to the time the material will be required in the work. Tentative approval of the source will be based on an inspection by the CQA Monitor. Tentative approval of material will be based on tests of samples for the specific job. Final approval of both the source and the material will be based on tests for gradation performed on samples taken from the completed and compacted work.

PART 2. PRODUCTS

2.1 AGGREGATES AND RIP RAP

- A. Aggregates shall consist of clean, sound, durable particles of crushed stone or gravel and screenings. The Contractor shall obtain materials that meet the specifications and can be used to meet the grade and smoothness requirements specified herein, after all compaction and proof-rolling operations have been completed. Slag shall not be used. The aggregate shall be free of silt and clay (as defined by ASTM D 2487), vegetable matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve shall be known as coarse aggregate; that portion passing through the No. 4 sieve shall be known as fine aggregate.

- B. Gradation Requirements: Gradation requirements specified herein shall apply to the completed work. The aggregate shall be graded continuously, well within the limits specified in Table 02233-1, Gradation of Aggregates.

2.2 SOURCE QUALITY CONTROL

- A. Sampling and testing shall be performed by an approved commercial testing laboratory subject to approval by the CQA Monitor. Approval of testing facilities shall be based on compliance with ASTM E 548, and no work requiring testing will be permitted until the facilities have been inspected and approved. The materials shall be tested to establish compliance with the specified requirements. Copies of test results shall be furnished to the Engineer.
- B. Sampling: Samples for material gradation tests shall be taken in conformance with ASTM D 75. When deemed necessary, the sampling will be observed by the CQA Monitor.
- C. Tests: The following tests shall be performed in conformance with the applicable standards listed.
 - 1. Sieve Analyses: Sieve analyses shall be made in conformance with ASTM D 422.
 - 2. Soundness Test: Soundness shall be tested in conformance with ASTM C 88.
 - 3. Wear Test: Wear tests shall be made according to ASTM C 131.

PART 3. EXECUTION

3.1 EQUIPMENT

- A. All equipment and tools used in the performance of the work will be subject to approval before the work is started and shall be maintained in satisfactory working condition at all times. The equipment shall be adequate and shall have the capability of producing the required compaction, as well as meeting the grade controls, thickness control, and smoothness requirements as set forth herein.

3.2 STOCKPILING MATERIAL

- A. Prior to stockpiling of material, storage sites shall be cleared and leveled by the Contractor. All materials, including approved material available from excavation and grading, shall be stockpiled in a manner and at locations approved by the CQA Monitor. Aggregates shall be stockpiled on the cleared and leveled areas

designated by the CQA Monitor so as to prevent segregation. Materials obtained from different sources shall be stockpiled separately.

3.3 PREPARATION OF UNDERLYING COURSE

- A. Prior to constructing the crushed-aggregate course for the road(s), the underlying course shall be cleaned of all foreign substances. At the time of construction of the course, the underlying course shall contain no frozen material. The underlying course shall conform to Section 02222 Earthfill.

3.4 GRADE CONTROL

- A. During construction, the lines and grades shall be maintained by the Contractor.

3.5 PLACING

- A. Road Base: A woven geotextile shall be placed on the prepared surface of the roadway areas to receive aggregate as shown on the Drawings. The aggregate shall be placed so that it cascades down onto the geotextiles rather than being pushed so that it does not slide across the surface causing slack wrinkles in the geotextile or damage to the roadway subgrade.
- B. Rip rap: Rip rap shall be placed in such a manner to provide a uniform layer with larger rock fragments evenly distributed and smaller rock fragments filling the spaces between the larger fragments.

**Table 02233-1.
Gradation/Testing of Aggregates**

Use	Size	Tests
Parking Area	Crushed rock, 3/4 to 1-1/2 inch	C131/D422
Drainage Rock	4" to 8" rock	C131/D422

END OF SECTION

SECTION 02250**EROSION CONTROL AND PROTECTION****PART 1. GENERAL****1.1 DESCRIPTION**

- A. Scope: The Contractor shall provide sediment and erosion control devices to contain surface drainage from within the construction-site, waste, and storage areas. The CQA Officer may require protection in other areas.
- B. General Description: This work shall consist of the application of measures throughout the life of the project to control erosion and to minimize the siltation of rivers, streams and bay. The measures shall include, but not be limited to, the use of berms, dikes, dams, sediment basins, sediment traps, filters, silt fence, fiber mats, netting, gravel or crushed stone, mulch, grasses, slope drains and other methods approved by City or Soil Conservation District. Erosion and siltation control measures as described herein shall be applied to erodible material exposed by any activity on the project.
- C. Related Work Specified Elsewhere:
 - 1. Section 02221 – Excavating and Grading
 - 2. Section 02222 – Earth Fill
 - 3. Section 02233 – Aggregates
 - 4. Section 02820 – Fertilizer and Seed

1.2 QUALITY ASSURANCE

- A. The U.S. Soil Conservation Service handbook of Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas, adopted by the County or Soil Conservation District and the State of California Department of Water Resources is to be used.

1.3 PERMITS

- A. The Sediment Control Permit will be obtained by the Contractor.
- B. The Contractor shall be responsible for obtaining other necessary permits and approvals from the appropriate governmental agencies. Copies of all permits or approvals shall be provided to the CQA Officer prior to starting any work covered by the permits or approvals.

In the event of conflict between these requirements and pollution control laws, rules or regulations of other Federal, State or Local agencies, the more restrictive laws, rules or regulations shall apply.

- C. The CQA Officer shall have the right to inspect erosion control measures in off-site borrow pits and waste areas and to report violations of permit requirements to the Merced County agencies.
- D. Contractor Compliance:
 - 1. In the event that erosion and pollution control measures are required due to the Contractor's negligence, carelessness or failure to install permanent control as part of the scheduled Work, the CQA Officer may order that Work to be performed by the Contractor at his own expense.
 - 2. Where erosion and sediment control work to be performed is not attributed to the Contractor's negligence, carelessness or failure to install permanent controls and falls within the Specifications for a work item that has a Contract price, the units of work shall be paid for at the proper Contract price.
- E. Work Suspension: The Contractor shall comply with the requirements specified herein and as shown on the Drawings. Any violation of these requirements may result in the issuance of a written Notice of Suspension of the Work. The suspension of Work will not be lifted until the Contractor has completely corrected the violation. Time extensions requested as a result of delays occasioned by such suspensions will not be considered.
- F. Revisions: Should conditions arise in the field that render the Erosion Control and Protection Plans inadequate or inappropriate for Work included in the Contract, the Contractor shall immediately notify the CQA Officer and the County. Where necessary, additional plans or modifications will be furnished by City and will become a condition of the Erosion Control Permit and the Contract.

1.4 PREPARATION

- A. Notification by the Contractor: The Contractor shall notify the San Diego County Construction Inspection Division at least 48 hours before commencing work on the project. The site, work materials, plans specifications and permits shall be available on-site at all times during working hours for inspection by the City representatives.

1.5 SUBMITTALS

- A. Pre-qualification: Submit the material source, descriptions, and material

specifications certified by the supplier to the CQA Officer for approval.

- B. Certificate of Compliance: The Contractor shall submit to the CQA Officer for approval at least 14 days before procurement a Certificate of Compliance that the supplied materials meet the specifications herein.

PART 2. PRODUCTS

2.1 MATERIALS

- A. Seed, sod, mulch, fertilizer, topsoil, soil conditioner and other materials for seed shall be in accordance with Caltrans Specifications – Section 20.
- B. Temporary slope drains shall be constructed of material acceptable to the CQA Officer, i.e., pipe, fiber mats, rubble, plastic pipe and plastic sheets.
- C. Polyethylene Erosion Control Matting shall be Enkamat type 7010 or other equivalent product as approved by the CQA Officer.
- D. Filter Stone shall conform to the 1998 Caltrans Specifications.
- E. Other materials as required may be specified by the CQA Officer.

2.2 SILT FENCE

- A. Silt fence shall contain net backing for support. Posts shall be galvanized steel or 1-1/2 inch square hardwood. Silt fence shall have the following properties.

Property	Test Method	Unit	Minimum Average Value
Tensile Strength	ASTM D4632	Lbs	120
Water Flow Rate	ASTM D4491	gal/min/ft ²	3

Silt fence shall be “Mirafi Envirofence” by Mirafi Inc., or equal.

2.3 STRAW BALES

- A. Straw bales shall be bound with wire or nylon.
- B. Steel rebars or 2" x 2" wooden stakes (two per bale) at least 6 feet long (not on the final landfill cover).

PART 3. EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. Implementation:
1. The Contractor shall implement and comply with all applicable regulation pertaining to erosion and sediment control.
 2. No work shall be started until the erosion control schedules and methods of operation have been accepted by the CQA Officer and implemented by the Contractor.
- B. Clearing: Clear only those areas that are so designated on the Drawings. Where possible, maintain a vegetative buffer zone between the disturbed working area and any watercourse.
- C. Stockpiles: Protect excavated material from being eroded into any waters or onto any adjacent lands. Stockpile excavated material on the high side of excavated areas.
- D. Sediment Control: When sediment control devices are designated on the Drawings or by the CQA Officer, install during the initial grading and clearing operations and complete their installation before proceeding with any other site work. Maintain all devices until final restabilization and restoration or otherwise directed by the CQA Officer to remove them.
- E. Erosion Control: Provide erosion control measures such as straw bale, earth berm, dike or other diversion devices that will safely convey runoff through disturbed areas to prevent scour or gully erosion. When possible, runoff shall be diverted in a safe manner around disturbed areas using pipes with headwalls and protected outlets.
- F. Maintenance and Repairs: All erosion and sediment control devices that are disturbed during the construction operations shall be fully repaired by the end of the day on which they are disturbed. All erosion and sediment control devices shall be maintained for the winter season and during other times when the project is closed down.
- G. Critical Areas: Critical areas are disturbed areas with a surface gradient exceeding ten (10) percent and shall be immediately stabilized with vegetation after filling and/or backfilling operations and maintained. Those areas that cannot be planted shall be adequately covered with straw mulch, wood chips, matting or other erosion prevention materials. Those disturbed areas that are less than ten (10) percent in surface gradient shall be considered critical after diverting runoff

from critical areas.

- H. Stone Entrance: Provide a stone entrance device in accordance with San Diego County District Standards and Specifications, at all points of egress onto public thoroughfares.
- I. Drainage:
1. The Contractor shall shape the graded area in a manner as to permit the run-off of precipitation and shall construct earth berms along the top edges of embankments to intercept runoff water. Earth berms shall be compacted to the satisfaction of the CQA Officer.
 2. Temporary slope drains shall be provided to carry runoff from cuts and embankments. The slope drains may be of flexible or rigid construction, but shall be capable of being readily shortened or extended as the cut or fill advances. Pipe end sections shall be provided at the entrance to temporary slope drains. Where necessary, energy dissipaters shall be provided at the outlet. In all cases, temporary slope drains shall be outletted into either a stabilized area or a sediment control measure.
- J. Cut Slopes and Fill Slopes: Cut slopes and fill slopes shall be dressed, prepared and seeded as the Work progresses in accordance with the following sequence:
1. Slopes with a vertical height of 40 feet or greater shall be seeded in three approximately equal increments of height.
 2. Slopes with a vertical height of less than 40 feet, but more than 10 feet, shall be seeded in two approximately equal increments of height.
- Slopes with a vertical height of 10 feet or less may be seeded in one operation.
- K. The dressing, preparing and seeding of slopes shall be performed immediately following the completion of each increment of height stated and immediately following the suspension of grading operations.
- L. Work Site: The CQA Officer will limit the area of excavation and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other pollution control measures current in accordance with the accepted schedule. Should seasonal limitations make coordination unrealistic, erosion control measures shall be taken immediately. All construction shall be confined to the minimum area necessary to accommodate the Contractor, equipment and work force engaged in his work.

- M. Grading Unit: A grading unit is defined as a complete grading spread consisting of earthmovers, hauling units, graders, compactors, etc. Each grading unit will be limited to the amount of surface area of erodible earth material exposed at one time not to exceed 100 acres, unless a larger area is approved by the CQA Officer or specified in this Invitation for Bids/Project Manual. The Contractor shall be prepared to dress and seed behind each grading unit as defined above.

END OF SECTION

SECTION 02720**STORM DRAINAGE STRUCTURES, PIPING, AND FITTINGS****PART 1. GENERAL****1.1 DESCRIPTION**

- A. Scope of Work: The work in this Section includes all the labor, materials, equipment and incidentals required to construct storm drainage down chutes and other drainage structures as shown on the Drawings, specified herein.
- B. Related Work Specified Elsewhere:
 - 1. Section 02110 – Site Clearing, Grubbing, And Stripping
 - 2. Section 02221 – Excavation and Grading
 - 3. Section 02222 – Earthfill
 - 4. Section 02233 – Aggregates
- C. References:
 - 1. Caltrans Standard Specifications for Construction Materials, October, 1998.

1.2 SUBMITTALS

- A. Supplier information and product specifications shall be submitted to the CQA Officer for review and approval at least 30 days before product procurements. The Contractor shall be fully responsible for any construction delays due to failure to obtain submittal approval in a timely manner.

PART 2. PRODUCTS**2.1 MATERIALS**

- A. Rip Rap: Refer to Section 02233 – Aggregates and Rip Rap.
- B. Caltrans Aggregates: Refer to Section 26 - Aggregates.

PART 3. EXECUTION

- A. Down Chutes:

1. Down chutes shall be excavated as specified in Section 02229 – Trenching, Backfilling, and compaction.

END OF SECTION

SECTION 02820

FERTILIZER AND SEED

PART 1. GENERAL

1.1 SUMMARY

- A. Section included
 - 1. Preparing, fertilizing and seeding the soil-cover layer.
- B. Related Sections:
 - 1. Section 02222 – Earthfill

1.2 SUBMITTALS

- A. Product data: within 30 days after Contractor has received the City notice to proceed, submit:
 - 1. Complete materials list of items proposed to be provided under this section
 - 2. Complete data on source, size, and quality
 - 3. Sufficient data to demonstrate compliance with the specified requirements

PART 2. PRODUCTS

2.1 WATER

- A. Shall be clear and suitable for agricultural use.
- B. Reclaimed water may be used; however, it must be tested by a certified laboratory and found suitable for plant growth before it is applied.
- C. If water is obtained at the site, it shall be done so only under permit where facilities are utilized.

2.2 SEED

- A. All seeds shall be in conformance with the California State Seed Law of the Department of Food and Agriculture.
- B. Each bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test.
- C. Seed containers shall be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained.
- D. Prior to seeding at the request of the CQA Officer, the Contractor shall provide a letter of certification, original Association of Official Seed Analysts (AOSA)-certified seed test results, and calculation of PLS content.
- E. All legume seed shall be pellet-inoculated as provided in Bulletin AXT-280 of the University of California Cooperative Extension, "Pellet Inoculation of Legume Seed". Inoculant sources shall be species-specific and shall be applied at a rate of 2 pounds of inoculant per one hundred pounds of seed.
- F. The seed mixture shall meet the requirements of LM Erosion blend as supplied by Lockwood Seed and Grain, Chowchilla, California, telephone 559-665-5702.
- G. Species to be applied at the specified rates as follows:
 - 1. Common Barley 40 pounds/acre
 - 2. Annual Rye 40 pounds/acre
 - 3. Crimson Clover 15 pounds/acre
 - 4. Rose Clover 5 pounds/acre

2.3 FERTILIZER

- A. Shall conform to the requirements of the California Food and Agricultural Code.
- B. Shall be pelleted or granular form.
- C. Shall have a minimum guaranteed analysis of 16-20-0+S (Sulfur).
- D. Shall be applied at the rate of 300 pounds per acre.

PART 3. EXECUTION

3.1 PREPARATION OF SEEDING AREAS

- A. Fertilizer and seed shall be applied to a freshly-graded surface while soil remains friable and weed-free.
- B. If seeding area is compacted, loosen top ½ inch of soil to create favorable conditions for germination. Method to be approved by the CQA Officer.
- C. Remove soil lumps, ridges, and depressions.
- D. Track walk with dozer.

3.2 WEATHER LIMITATIONS

- A. Apply during the following months: October and November, unless otherwise approved by the City.
- B. Do not apply in wind conditions which would not allow uniform application of seed mix.
- C. Apply on soil that is surface moist.

3.3 EQUIPMENT

- A. Use a broadcast distribution system for fertilizer and seed.

3.4 PROTECTION

- A. Protect hydroseeding area from damage.
- B. Repair damaged areas.

END OF SECTION