

SAN DIEGO WILDFIRES, FALL 2007

CITY OF SAN DIEGO
DEBRIS REMOVAL AND CLEAN-UP
GUIDELINES

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SUMMARY

This document has been developed for the removal of the structural debris associated with the City of San Diego Fall 2007 Wildfires as a single organized project for residents performing their own debris clean-up or through qualified contractors "Contractor".

This document is part of a joint State/County/cities project to remove structural debris. The findings, information, and professional opinions are presented in accordance with generally accepted professional engineering methods, waste management strategies, and debris removal practices following natural disasters.

Oral communications with the City of San Diego or any other agency participating in this project shall be non-binding and shall in no way exclude the contractor from any standards in this document or any other obligations as set forth in contract documents.

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1.0 Introduction

On October 21, 2007, the Governor of the State of California, Arnold Schwarzenegger, declared a state of emergency in San Diego County as a result of wildfires. On October 26, the Governor issued an Executive Order to guide the state response to the San Diego Wildfires.

This document establishes conditions to follow and a set of specifications to mitigate known hazards and conditions which will limit the impacts to the surrounding public and the environment.

1.1 Site Description

Approximately 348 structures were destroyed within the City of San Diego "City" during the San Diego, Fall 2007 Wildfire event. The City properties impacted by the Wildfires are located in the Rancho Bernardo area. Waste, concrete, metals and ash debris have been identified for removal. The sites vary in size and composition, some contain just foundations, ash and metal debris others are partially burned.

1.2 Site Characterization

We know that ash and debris from residential structures consumed by wildfires can contain concentrated amounts of heavy metals, such as arsenic, barium, beryllium, copper, chromium, cadmium, lead and zinc, and asbestos. The concentration of metals has been demonstrated in the *Assessment of Burned Debris Report for the Cedar and Paradise Fires, San Diego County, California, December 2003*.

The California Regional Water Quality Control Board for the San Diego Region (RWQCB) has issued a general waiver allowing firestorm ash and debris that might otherwise be prohibited from disposal in a Class III landfills, be placed in lined cells at Class III landfills. The City of San Diego Local Enforcement Agency (City LEA) has authority under state general law to waive or modify requirements in the permits they issue to landfills to allow greater quantities and additional types of waste to be accepted at area landfills to cope with this emergency.

In order to protect public health and the environment and to ensure all the waste from the Wildfire-2007 event is properly handled, tracked and recycled, all debris (e.g., ash, metal, concrete, other site wastes) shall be properly contained, transported and, recycled or disposed.

The Contractor must segregate and recycle all metal debris from sites to the maximum extent possible, including but not limited to white goods (e.g., appliances). White goods containing refrigerants and must be processed in accordance with state law. Debris removal contractors must also segregate and

recycle all concrete and other recyclable inert debris (asphalt, bricks, etc) removed from these sites. This material should be delivered to the appropriate facilities such as those listed on Table 1

Table 1 – Recycling Facilities

Company	Phone	Clean Concrete, Concrete w/rebar-flush*	Asphalt*	Mixed Construction & Demolition Loads*	Brick*	Swimming Pool Material*	Waste Disposal**
Escondido Sand and Gravel 500 N. Tulip Street Escondido, CA 92025	760-432-4690	X	X				
Hanson Aggregates 9229 Harris Plant Road San Diego, CA 92163	858-715-5600	X	X				
Hanson Aggregates 12560 Highway 67 Lakeside, CA 92040	858-715-5600	X	X				
Hanson Aggregates 3701 Haymar Drive Carlsbad, CA 92008	858-715-5600	X	X				
Vulcan Materials - Carol Canyon 10051 Black Mountain Road San Diego, CA 92126	858-536-9684	X	X				
SANCO Resource Recovery (EDCO) in Lemon Grove 6750 Federal Blvd. Lemon Grove, CA 91945	619-287-7555	X	X	X	X	X	
Miramar Landfill 5180 Convoy Street San Diego, CA 92111	858-694-7000						X

**Please contact facility for information regarding days and hours of operation, material quality requirements, before delivering loads. Be sure to tell the facility your material is from a fire damaged property within the City of San Diego.*

*** Waste Disposal at Miramar Landfill shall not include hazardous waste or disaster debris with concrete slabs or bricks. Loads containing greater than 5% by weight of concrete slabs and/or brick will not be accepted.*

Burned vehicles at a site cleared by a contractor must be cleaned sufficiently of ash and debris at the site to allow safe transportation, and then must be transported to a designated vehicle recycler.

1.3 Permits

To provide an understanding of the permits and requirements necessary for owner/CONTRACTOR to obtain approval for the project, Table 2 is presented

Table 2 - Permit Matrix

Permit and Agency	Responsibility	Contact/Comments
Demolition Permit	CONTRACTOR	The Contractor will obtain a demolition permit from City of San Diego, Development Services Dept. (DSD) for demolition of any structure or foundation. Additional information is available on DSD Informational Bulletin (710A)
Grading Permit	CONTRACTOR (Not applicable if under 200 cyds)	Soil import over 200 cyds per home will require a grading permit.
Road Encroachment	CONTRACTOR	City of San Diego, Development Services Department
Traffic Control	CONTRACTOR	A minimum of two orange construction warning signs "Construction Ahead" and cones. Additional control devices may be necessary based on location
Water Meter	CONTRACTOR	City of San Diego, Water Dept (619) 515-3500
Asbestos Notification	CONTRACTOR	City of San Diego, Environmental Services Dept. (858) 694-7000
Asbestos Notification for 4 units or greater	CONTRACTOR	County of San Diego, Air Pollution Control District at (858) 650-4700 and City of San Diego, Environmental Services Dept. (858) 694-7000

1.4 Known Hazards

Depending on how much of the structure is present, the hazards will vary. If just ash, the removal site can contain elevated level of heavy metals and asbestos. At some home sites, burned trees that remain standing will pose a fall hazard. Those trees must be removed by the Contractor. Unstable chimneys will also be an extreme fall hazard. There is also a physical hazard (i.e., slips, trips, and falls)

from exposed glass and metals and unstable chimneys. Additionally the weather will also pose hazards, including the possibility of heavy rains, excessive erosion debris flows, stormwater pollution, airborne transport of ash and other contaminants, toppling caused by high winds, and damage or fire from lightning strikes. Other hazardous materials or medical wastes may be discovered during the removal. Utilities, such as electrical, gas, cable, telephone, and sewer, are present and need to be accounted for while removing the debris.

2.0 REMOVAL TASKS AND SPECIFICATIONS

To understand what tasks are required to remove the fire related debris the following tasks for a CONTRACTOR are presented.

- The CONTRACTOR will first inspect and photo document each site and evaluate the hazards. The CONTRACTOR will develop a work plan, a health and safety plan, and obtain the necessary permits (See Table 2.)
- The CONTRACTOR will document the site hazards in written form and communicate these hazards to their work crews and arrange for required training where appropriate.
- The CONTRACTOR will install the necessary emergency erosion control and stormwater protection measures to mitigate possible movement of sediment and pollutants into the storm drain system.
- The CONTRACTOR will begin work on the destroyed home site(s). The CONTRACTOR will first determine if the chimney poses a fall hazard. If a risk is determined, the chimney will be taken down with proper dust control. The CONTRACTOR will next remove all recyclable metal debris and ash debris with appropriate dust control measures. If necessary, once the metal, debris and ash are removed, the concrete foundation or slab will be removed and recycled. Prior to removal, the concrete and demolition materials including the slab or foundation may have to be decontaminated or pressure washed to ensure the concrete is not contaminated. The runoff from the decontamination will be collected and properly disposed. If present, suspect asbestos-containing flooring or mastic needs to be removed by wet, manual methods prior to recycling. Note: unburned suspect asbestos containing material (e.g., drywall, flooring, etc.) may not be recycled and must be disposed of in the landfill.
- After all debris is removed from the site, the CONTRACTOR will obtain confirmation soil samples to ensure residual contamination is removed. If clean-up goals are not met, additional excavation may be necessary.

- After all debris is removed the CONTRACTOR will complete erosion control measures and storm water best management practices. The erosion control devices shall be installed using the specifications identified in this document.
- Insurance companies may need to sign off on removal prior to the start of work to avoid problems with claims at a later date.

Note: Other Best Management Practices (BMP's) may be used on a case by case basis, as long as they are approved in writing prior to implementation.

The CONTRACTOR will also:

- Submit a site specific health and safety plan and a community health and safety plan (prepared by a third party certified industrial hygienist [CIH]) to the City of San Diego, Environmental Services Department, 9601 Ridgehaven Court Suite #310, San Diego, CA 92123;
- Perform air monitoring for dust emissions, heavy metal, and asbestos (Overseen by a CIH);
- Perform clean site confirmation sampling through an independent third party company (Completed by a California Professional Geologist or Registered Civil Engineer); and
- The CONTRACTOR will prepare a final report for each home site summarizing the results from the project. Including pre and post removal photos and all sampling data. The reports from the CIH and the independent third party confirmation testing company must be included in the final report.

2.1 Work Plan

The CONTRACTOR will develop a work plan for the project. The plan should include; a project schedule, a cost estimate, a site specific health and safety plan, a community health and safety plan, and any other required documents.

Work Plan will include, but is not limited to, the following elements:

1. Introduction: Identify reference documents used to prepare the Work Plan, summarize the site visit and contacts made, and discuss problems encountered. Identify the disposal companies, material sources, haul routes and other relevant information;
2. Project Supervision: Identify the Contractor's key personnel, include certificate of training, and phone contact numbers;

3. **Project Work Elements:** Briefly describe the site specific removal methods for the project and other items as identified by these specifications to complete the remediation, including mobilization/demobilization, site utilities and facilities, permits, and temporary environmental controls, erosion control, etc. Include work hours and days for these elements of the project.
4. **Daily Reports:** Contractor shall maintain a daily log detailing how debris was handled using the sample form presented in Appendix F.
5. **General Conditions and Special Provisions;** including statements from owner.
6. **Project Schedule:** Prepare a time schedule beginning with start of mobilization through completion of demobilization. Provide a timeline for all major items of work.
7. **Site Specific Health and Safety Plan and a Community Health and Safety Plan.**

All debris will be taken to an Authorized Receiving Facility. Table 3 supplies general recycling and disposal information to assist the Contractor in the disposal of the debris from the fire impacted properties. An authorized receiving facility is any facility/site approved by the City that will stage, store, transfer, process, recycle, or dispose of disaster debris. Requirements for authorization will be based on the type of debris that is accepted and the processing requirements.

Table 3 – Recycling and Disposal Matrix

Material	Disposal Contact or Facility
Ash and Non Recyclable Debris	City of San Diego, Miramar Landfill
Mixed Demolition Debris	Recycle at an authorized receiving facility. Refer to Table 1
Inerts, including dirt, asphalt, porcelain, ceramics, etc.	Recycle at an authorized receiving facility. Refer to Table 1
Vegetation	Recycle at an authorized receiving facility including the Miramar Landfill.
Metal Debris	Recycle at an authorized receiving facility.
Metal Discards, Appliances	Recycle at an authorized receiving facility.

	Freon Extraction is REQUIRED for refrigerators not damaged by the fire. Check with above metal recyclers to determine if they are in compliance with all laws and regulations pertaining to metal and appliance recycling. Note: Furnaces shall be checked for asbestos before disposal.
Vehicles and Trailers	Recycle at an authorized receiving facility.
Burned Vehicles and Trailers	If a vehicle or trailer has been burned, the vehicle or trailer will be transported to an authorized vehicle recycler.
Asbestos Containing Materials	Asbestos was used in many building materials because of its fire resistant properties. Building products containing asbestos and impacted by fire can be segregated from the rest of the debris (i.e., transite pipe and flue ducts, transite siding, etc). In many cases the asbestos containing materials will have been damaged creating a greater potential for fiber release. When identifiable, these materials shall be segregated from the rest of the debris and disposed of at proper waste disposal facilities. Contact: Non-friable asbestos waste: City of San Diego, West Miramar Landfill (858) 573-1415 Friable asbestos waste: Azusa Land Reclamation, California (818) 334-0719 La Paz County Landfill, Arizona (928) 916-1253
Hazardous Waste	CONTRACTOR will be responsible for identifying the appropriate facility.
Household Hazardous Waste (HHW) (including household chemicals, propane tanks, electronics and Universal Wastes)	The CONTRACTOR will perform a sweep of the impacted area. If HHW is discovered, it will be segregated by the CONTRACTOR for removal and management as hazardous waste. Contractor should contact the City of San Diego Environmental Services Department, Household Hazard Waste Program at (858) 694-7000.
Dead Animals	If dead animals are discovered, they will be disposed with the ash and debris.
UXO (Unexploded Ordinance)	With the high temperatures from a forested wildland fire the likelihood of discovering any UXO is remote. If UXO or small arms ammo is discovered the CONTRACTOR shall notify San Diego Fire Department for proper disposal.
Trees	Trees should be chipped and spread on site to the extent possible or taken to an appropriate organic recycler.
Medical Waste	If medical wastes are discovered, they will be properly bagged and transported to the appropriate facility by a properly licensed company.

2.1.1 Schedule

Prior to beginning work, CONTRACTOR will submit a proposed schedule of operations to City of San Diego, Environmental Services Department. This schedule should outline the estimated timeframe for various elements of site cleanup.

- Initiation of site cleanup
- Material collected and segregated
- Materials removed from site.
- Confirmation sampling
- Site work completion
- Final report of site cleanup

2.1.2 Sequence of Operation

Scheduling and coordination of construction activity shall be the sole responsibility of CONTRACTOR within the following limitations:

- All work shall be performed between the hours of 7:00 A.M. to 5:00 P.M., Monday through Saturday.
- All construction equipment working within the residential zones shall maintain a speed of **15 mph or less**.

2.2 General Contractor Conditions

The CONTRACTOR for the structural debris removal will hold at a minimum a Class A, General Engineering Contractor's license with a Hazardous Substance Removal Certification (HAZ) issued within the State of California. Other specialty certifications / registrations / licenses may be necessary to complete the project.

The Contractor shall also have a current company Injury Illness Prevention Program (IIPP) that meets the requirements of Title 8 California Code of Regulations Section 1509. The IIPP shall apply to all employees involved in the Agreement. Each subcontractor involved in the Agreement shall also have a current company IIPP.

The Contractor shall at all times be responsible for the protection of its employees and the public. Review of the Contractor's site specific health and safety plan by San Diego County staff shall in no way relieve the Contractor of responsibility for any aspect of its work, or for compliance with all Federal, State, and local laws pertaining to health and safety.

2.2.1 Notices

1. CONTRACTOR shall notify Underground Services Alert (USA) at least 48 hours prior to any excavation.
2. CONTRACTOR shall notify the local power provider prior to removal of any damaged structure to verify the electrical power has been shut off.

2.2.2 Dust Controls

CONTRACTOR will provide water to prevent dust nuisance at each site. All debris (e.g., ash, metal, concrete, asbestos-containing waste, other site waste) shall be thoroughly wetted, but avoiding runoff from the site, 48 to 72 hours before debris removal begins. Waste will be maintained adequately wetted at all times during removal and loading to prevent visible dust from crossing property lines. PM10 levels shall not exceed 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) anywhere on the site for one continuous minute in any hour. If that standard is exceeded, additional wetting shall immediately be initiated to restore compliance with that standard. Dust control shall not create a runoff problem.

2.2.3 Waste/Debris Load Controls

CONTRACTOR shall prepare a schedule for the completion of debris removal from each site. Bins containing debris / refuse shall be kept covered and emptied and properly disposed of on a frequent basis, not to exceed 14 days

Contractor to ensure ash and dust are contained to the greatest extent possible during hauling of debris.

2.2.4 Swimming Pools

Contractor shall first remove all large debris from the pool area. Contractor shall then follow the County of San Diego, Dept of Environmental Health Guidelines for *Swimming Pools impacted by Smoke and Ash* which can be located at http://www.co.san-diego.ca.us/deh/fhd/pdf/pool_disaster.pdf

2.2.5 Traffic Control

All removal equipment supplied by the CONTRACTOR should be of legal weight according to California Vehicle Code (CVC) Chapter 5. Vehicles exceeding said weight must be reviewed for permitting as an oversized load. This may require additional bonding and designation of specific haul routes.

2.2.6 Equipment Controls

All removal equipment supplied by the CONTRACTOR should have glass enclosures and weigh less than 65,000 lb. The goal is to use equipment that minimizes the impact to the local roadway while completing the removal

2.2.7 Pavement and Drainage Projections

The CONTRACTOR at all times will protect the edge of pavement and all drainage features

2.2.8 Water Quality – Best Management Practices (BMPs)

The CONTRACTOR shall use BMPs to prevent tracking ash and debris into the roadway. A PM10-efficient street sweeper may be necessary if track out becomes an issue.

2.3 Safety

The CONTRACTOR shall, at all times, operate equipment and perform labor in a safe manner to ensure the safety of its employees and the public.

The CONTRACTOR shall retain or employ a third party CIH to review or develop a project specific worker health and safety plan (this could be part of the CONTRACTOR'S Injury Illness Prevention Plan). In addition, the CIH must review or develop a community health and safety plan. Both of these plans must contain the minimum elements specified by the City. Details regarding the required plan elements can be provided upon request.

The CIH will be responsible for field oversight to ensure compliance with the health and safety plan, prepare an air monitoring plan, and prepare the final report summarizing the air data.

2.3.1 Worker Safety

Given that ash can contain elevated levels of heavy metals and asbestos, an exclusion zone will be set up around the contaminated area during removal. Sufficient wetting of the materials is required to prevent visible airborne emissions at the property line. All personnel entering this area may be initially required to wear level "C" protective equipment, with the possibility of airborne asbestos fibers proper respiratory protection using HEPA filters. This level may be downgraded based on industrial hygiene monitoring and the project CIH approval.

2.3.2 Air Monitoring

The CONTRACTOR shall use a CIH to supervise or perform air monitoring for the duration of the project or until the CIH determines the site air monitoring may cease. The methods for air monitoring are as follows:

- PM10 monitoring – Direct reading instrument for PM10 measurement, such as the Dustscan Scout (by Rupprecht and Patashnick), or equivalent. PM10 levels shall not exceed 150 µg/m³ anywhere on the site for any one continuous minute in an hour.
- Heavy Metals – National Institute for Occupational Safety and Health (NIOSH) Method 7300, metal scan, and
- Asbestos – NIOSH Method 7402, High Volume (or alternatively NIOSH Method 7400 and a follow-up with NIOSH Method 7402 analysis if necessary)

Upon completion of the site cleanup the CIH hygienist shall provide a report summarizing the results of their air monitoring activities and any health and safety issues that occurred during the project.

2.4 Special Provisions

2.4.1 Foundation Verification

CONTRACTOR shall be responsible for confirming the foundation square footage prior to removal of the foundation.

2.4.2 Appliance and Vehicle Recycling

CONTRACTOR shall provide for handling, removal and disposal of material, which may require special handling such as various automobile or appliance components.

Materials that must be removed from appliance and vehicles prior to crushing, bailing or shredding for recycling include:

- Chlorofluorocarbons (CFCs) and hydrofluorocarbons (HCFCs) used as refrigerants.
- Polychlorinated biphenyls (PCBs) known to be contained within motor capacitors and fluorescent light ballasts.
- Used oils as defined in Article 13 of Chapter 6.5 of the Health and Safety Code (includes lubricating fluids, compressor oils, and transmission oils).

- Sodium azide canisters in unspent automobile air bags.
- Antifreeze in coolant systems.
- Mercury that may be found in thermometers, thermostats, barometers, electrical switches, and batteries.

The CONTRACTOR shall maintain accurate records detailing the removal and disposal operations involving all such materials, and shall provide the Environmental Services Department with all manifests and/or documentation pertaining to the work. Vehicles and appliances that were completely consumed by the fire that do not contain any of the above items, may be treated as metal debris and removed accordingly. All appliances and vehicles shall be securely covered (i.e. trapped or plastic wrapped) prior to and during transport.

2.4.3 Potential Earthwork

No more than 200 cubic yards of clean soil will be placed on any one site without obtaining a grading permit from the appropriate Building Department. If fill material is necessary, the soil shall be placed in thin lifts and compacted per County/city requirements.

2.4.4 Clean Site Confirmation Sampling

The Contractor shall use an independent third party company to collect confirmation samples and a California State Certified Laboratory to conduct confirmation testing. The confirmation samples will be collected from the impacted structure area in native soil, at random locations.

The selection of the random samples shall be based on a 10 by 10 foot grid overlay over the impacted area with the number of samples being collected based on the square footage of the area impacted as listed below:

Table 4 - Verification Samples

Area (sq-feet)	# Samples
<2000	2
2001 to 3000	3
3001 to 4000	4
4001 to 5000	5
>5000	1 per 1000 sq-ft

The soil samples need to be analyzed for heavy metals (California Assessment Manual (CAM) 17 metals TTLIC procedures, EPA Method 6010B).

The consultant's clean site confirmation data should then be compared with the background levels identified in Table 5. These mean values under Tier 1 Soil Screening Levels are presented in the San Diego Regional Water Quality Control Boards Resolution No. R9-2007-0104.

http://www.waterboards.ca.gov/sandiego/orders/order_files/2007%20order%20files/R9-2007-0104.pdf

This information is presented in the Resolution as Attachment A on page D-43 and is summarized below.

Table 5 - Mean Background Levels

Compound	Mean Background (mg/kg)
Antimony	0.60
Arsenic	3.5
Barium	509
Beryllium	1.28
Cadmium	0.36
Chromium, Total	122
Cobalt	14.9
Copper	28.7
Lead	23.9
Mercury	0.26
Molybdenum	1.3
Nickel	57
Selenium	0.058
Silver	0.80
Thallium	0.56
Vanadium	112
Zinc	149

The mean background levels presented above (Table 5) are to be used to identify if further site mitigation is required. A cleanup goal of 2 times background for this debris removal and clean-up program has been established by San Diego County, Department of Environmental Health

2.5 Erosion Control

Prior to the removal of the structure, some erosion control will be necessary to prevent the migration of contaminants off site. Work may consist of installing silt fences, fiber rolls, erosion control blankets and other erosion control Best Management Practices (BMPs) necessary for improving site stability. Examples of this practice are presented in Figures 2 and 3.

2.5.1 Materials

Fiber Roll Barriers – Fiber roll barriers (also called sediment logs or straw wattles) are commercially manufactured and usually consist of milled wood or other natural fibers sewn into a circular weave fabric. Fiber rolls are good perimeter protection, designed to slow storm water runoff and trap small amounts of sediment. Fiber rolls shall be a minimum 8” diameter.

Erosion Control Blanket – An erosion control blanket is a manufactured blanket or mat that is designed to hold soil and seed in place on slopes. It consists of organic, biodegradable materials such as wood fiber, coconut fiber, or a combination of these materials. It is commercially manufactured and delivered to the site in rolls. Erosion control blankets shall be 100% organic biodegradable (including parent material, stitching, and netting). The minimum thickness shall be 3/8” (9mm). The netting shall be stitched to prevent separation of the net from the parent material. The netting shall be capable of withstanding moderate foot traffic without tearing or puncturing. Neither the netting, nor the installation, shall pose a safety risk to people walking on/crossing over it. Neither shall the blanket or netting pose a hazard to wildlife such as birds, reptiles and amphibians.

Erosion control blanket shall be secured in place with wire staples. Staples for temporary erosion control blankets shall be made of 11 gage (3.05 mm) minimum steel wire and shall be U shaped with 6” (150-mm) legs and 1” (25-mm) crown, or 8” (200-mm) legs and a 2” (50-mm) crown.

Appropriate products include, but may not be limited to:

- Curlex I Fibernet (American Excelsior)
- Curlex II Fibernet (American Excelsior)
- AEC Premier Straw Fibernet (American Excelsior)
- S 75 BD (North American Green)
- S 150 BN (North American Green)
- SC 150 BN (North American Green)
- C125 BN (North American Green)
- Excel S-2 All Natural (Western Excelsior)
- Excel SS-2 All Natural (Western Excelsior)
- Excel CS-3 All Natural (Western Excelsior)
- Excel CC-4 All Natural (Western Excelsior)

Silt Fence – Silt fence consists of a permeable filter fabric that is keyed into the ground and staked beyond the toe of a slope. The fabric pools runoff, causing entrained sediment to settle out behind the fence while water slowly filters through the fabric.

Anchors – Anchors are devices that secure erosion control materials such as fiber roll barriers, erosion control blankets, and silt fence in place.

For erosion control blankets, anchors shall be completely biodegradable, environmentally safe, and shall have no potential for soil and/or water contamination. Steel wire pins or staples are not approved. Petroleum based plastics or composites containing petroleum based plastics will not be approved. Materials deemed to present a hazard from splintering or spearing are not approved. Wood stakes or stakes manufactured from wood byproducts may be approved.

Appropriate products include, but may not be limited to:

- E-Staple (American Excelsior)
- CF Bio Staple (CFM Corp)
- Green Stake (Green Stake)
- Bio-Stake (North American Green)
- Enviro-Stake (ODC Inc)

For silt fence, anchor posts shall be at least 36" long. Steel posts should weigh no less than one pound per linear foot. For fiber roll barriers, stakes shall be wooden and at least 12" long.

Netting is a manufactured product intended to secure wood chips or pine needle mulch to the soil surface.

Netting shall be 100% organic biodegradable and may consist of paper, jute, or cotton netting.

Gravel Bags – Gravel bags are intended to slow storm water flows and trap sediment on paved surfaces. Gravel bags shall be filled with $\frac{3}{4}$ " to $1\frac{1}{2}$ " *washed* rock. Bags filled with sand will not be approved.

2.5.2 Installation Standards

Erosion control BMP installation as defined by accepted industry standards shall consist of furnishing and applying erosion control materials. The work includes proper material handling, area preparation, proper application of the erosion control materials and structures, and maintenance for the areas shown on the Plans.

At the end of every day, driveways and roadways shall be swept clean of debris. Debris shall not be swept into drop inlets or other storm water conveyance structures.

If an entrance/exit to a designated construction/demolition area is unpaved, it shall be stabilized with a 6" layer of crushed gravel rock to prevent sediment tracking onto paved roadways by vehicles.

At the end of the work day or before an during a rain event, all spoil piles shall be covered with a plastic sheet and held in place by weighted fiber rolls, gravel bags or other anchors.

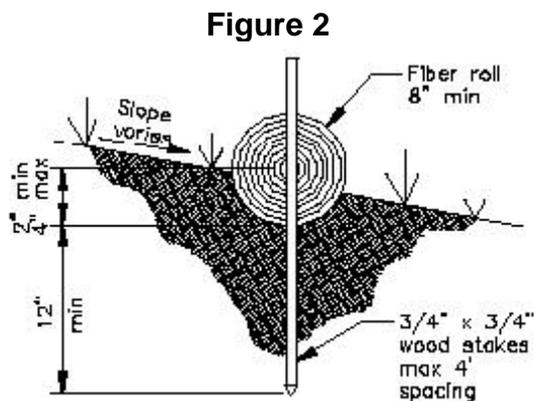
Soil Preparation – Soil preparation shall include all work necessary to prepare designated areas to receive the erosion control materials. Soil preparation work shall not be performed during periods of precipitation or saturated soil conditions and shall not result in excessive soil compaction.

Seeding – Seed shall be applied either mechanically or with hydraulic seeding equipment, at the option of the Contractor. The seed shall be distributed uniformly throughout the seeded area by hand. The basic seed mix will be Upland seed mix or equivalent.

Silt Fence – Install silt fences as directed by County/city. Six inches of the fence shall be buried in a trench along the base of the fence. The posts shall be spaced a maximum of 10 feet apart and driven 18” into the soil or to refusal. Sediment shall be removed from the up-slope side of the fence when it reaches 1/3 the height of the fence

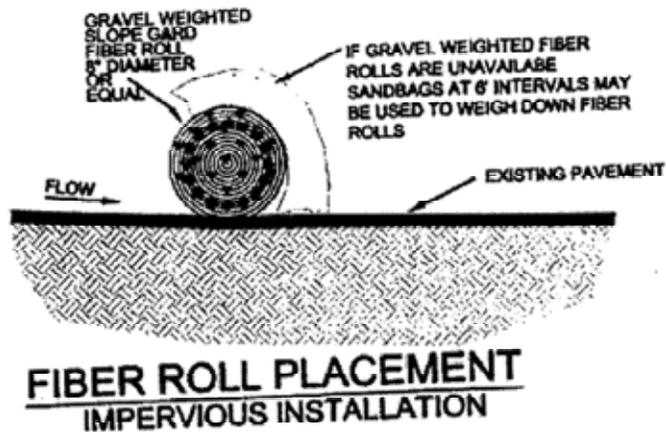
Erosion Control Blanket – Install erosion control blankets as directed by the engineer. Starting at the top of the slope, anchor the blanket in a 6-inch trench, backfill, and securely tamp the backfilled soil. Unroll blanket down slope overlapping parallel and subsequent blankets a minimum of 4 inches. Secure blankets with anchors along the overlaps and place a minimum of 3 anchors per square yard. The Contractor shall determine if more anchors are required and shall be responsible for installing the erosion control blanket so that it will stay in place.

Fiber Roll Barriers – Install fiber roll barriers as directed by the Count/city. Place the fiber roll barrier in a 4-inch trench perpendicular to the flow path of storm water. Drive stakes on either side of the roll and bind together with bailing wire. Refer to standard detail “Fiber Roll” below.



Gravel Bags – Gravel bags or weighted fiber rolls shall be placed on the down slope edge of impervious surfaces, such as driveways. Place gravel bags in double row in a “U” shape.

Figure 3



3.0 Project Completion

To ensure the project was successful in meeting the required waste removal and site mitigation objective, the CONTRACTOR will submit a final report with the foundation footprint, waste tonnages, air monitoring data, and confirmation sampling data to City of San Diego, Environmental Services Department. The confirmation data will be compared to a background soil analysis report. Once it has been demonstrated that the metal results fall below the values presented in Table 5 or 2 times the site specific background the site will be approved for rebuilding.

3.1 Documentation

The CONTRACTOR is required to submit a final report summarizing project data to: City of San Diego, Environmental Services Department, 9601 Ridgehaven Ct Suite #310, San Diego CA 92123.

