

# Course Highlights

---

- ◆ Introduction
- ◆ Planning for Erosion and Sediment Control
- ◆ Erosion Control (Soil Stabilization) BMPs
- ◆ ***Sediment Control BMPs***
- ◆ Wind Erosion Control BMPs
- ◆ Tracking Control BMPs
- ◆ Non-Stormwater Management BMPs
- ◆ Waste Management and Materials Pollution Control BMPs
- ◆ Class Exercise
- ◆ Field Demonstration of BMPs



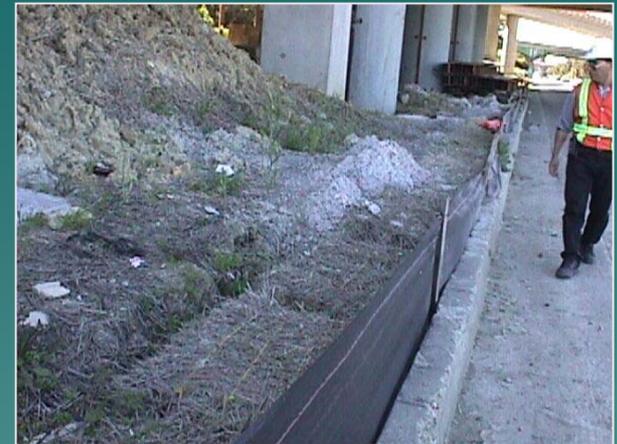
# Sediment Control BMPs

---

- ◆ SC-1 Temporary Silt Fence (SSP 07-430)
- ◆ SC-2 Temporary Sediment Basin
- ◆ SC-3 Temporary Sediment Trap
- ◆ SC-4 Temporary Check Dams (SSP 07-415)
- ◆ SC-5 Temporary Fiber Rolls (SSP 07-420)
- ◆ SC-6 Temporary Gravel Bag Berms (SSP 07-470)
- ◆ SC-7 Street Sweeping (SSP 07-360)
- ◆ SC-8 Temporary Sandbag Barrier
- ◆ SC-9 Temporary Straw Bale Barrier (SSP 07-460)
- ◆ SC-10 Temporary Drain Inlet Protection (SSP 07-490)
- ◆ Chemical Treatment

# Temporary Sediment Controls

- ◆ These practices can consist of
  - temporary linear sediment barriers (silt fences etc.),
  - fiber rolls, gravel bag berms, or
  - check dams to break up slope length or flow;
  - or temporary sediment/desilting basin or sediment trap.
  
- ◆ Sediment control generally involves: intercepting sediment laden runoff, slow the flow, and **allow the suspended sediment particles to drop out of suspension.**



# SC-1 Temporary Silt Fence (SSP 07-430)

---

- ◆ Silt fences allow sediment to settle from runoff.



# SC-1 Temporary Silt Fence (SSP 07-430)

Permeable fabric designed to intercept and slow flow of sediment-laden sheet flow runoff

- ◆ Material Requirements
  - Silt fence shall be woven polypropylene or polymer fabric
  - Minimum width of 36 inches
  - The fabric shall conform to the requirements in ASTM (American Society for Testing and Materials) designation D4632 and have an integral reinforcement layer
  - The permittivity of the fabric shall be 0.05 l/sec minimum in conformance with ASTM designation D4491
  -



# SC-1 Temporary Silt Fence (SSP 07-430)

- ◆ Silt fence loses it's permeability when it comes in contact with sediment-laden runoff
- ◆ Runoff is ponded



The geotextile is no longer passing 20 gal/min. The forces exerted are great - proper staking and keying-in of silt fence is **critical**

# SC-1 Temporary Silt Fence (SSP 07-430)

## ◆ Stakes Requirements

- Wood stakes shall be commercial quality lumber
- Stake dimensions:  
2 x 2 inches by 48 inches in length
- Stakes shall be free from decay, splits or cracks longer than the thickness of the stakes
- 5 ft min to 6 ft maximum stake spacing (unreinforced)
- 10 ft maximum stake spacing with reinforcement

- ◆ “U,” “T,” “L” steel may be used, 48 inches in length



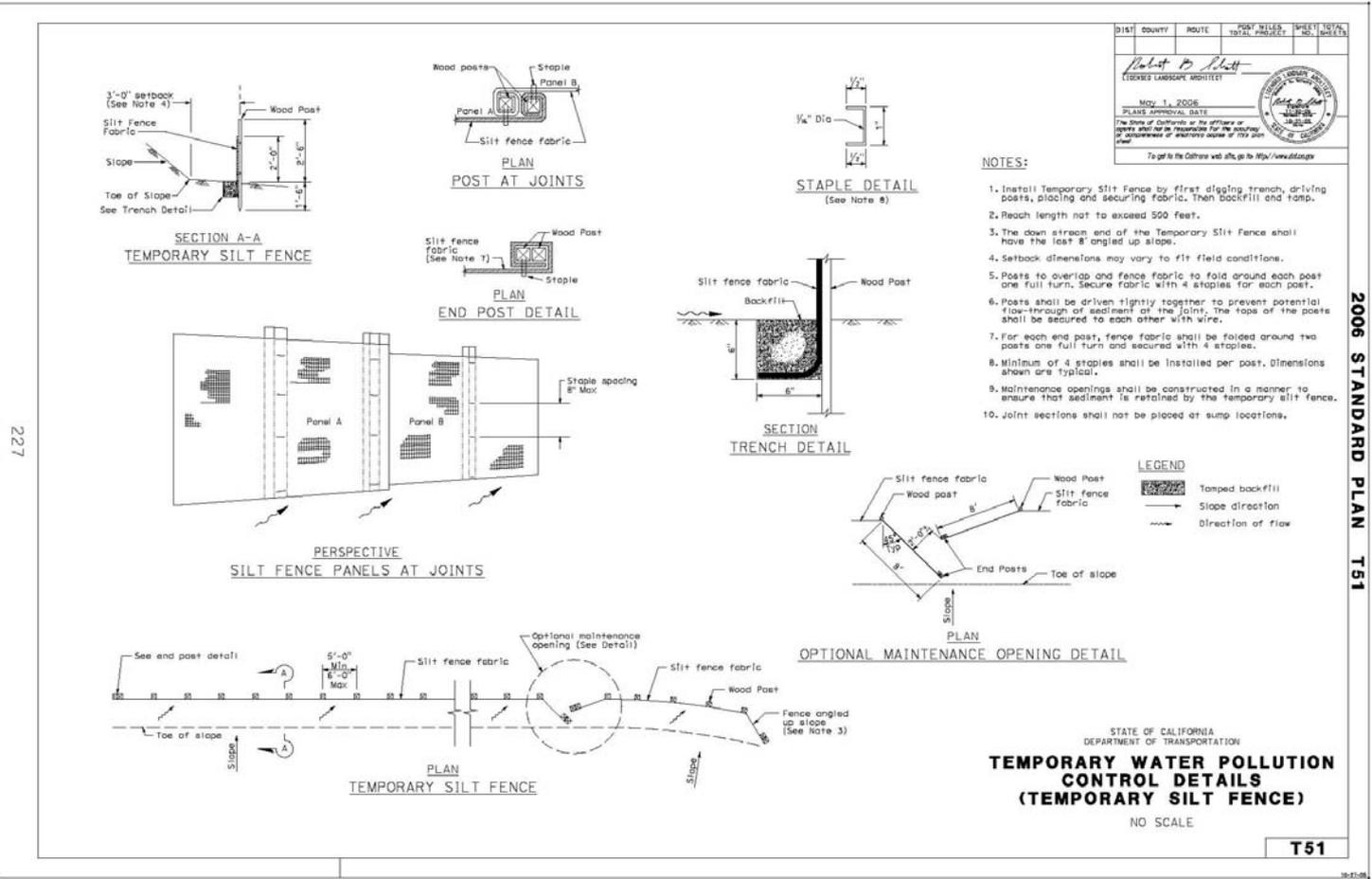
# SC-1 Temporary Silt Fence (SSP 07-430)

## ◆ Design and layout

- Maximum length of slope draining to any point should be 200 ft
- Slope of area draining to the silt fence should be less than 1:1 VH
- For slopes steeper than 1:2 that contain large numbers of rocks or dirt clods that tend to dislodge additional protection may be necessary



# SC-1 Temporary Silt Fence (SSP 07-430)

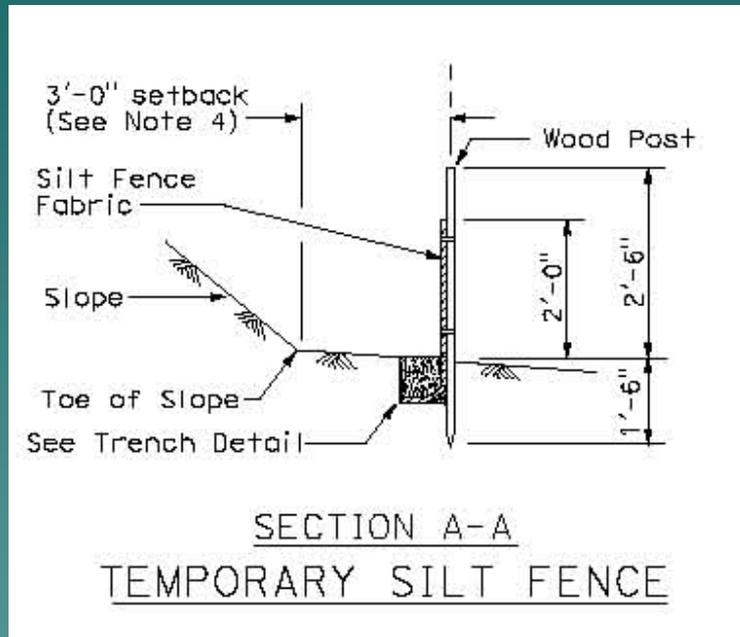


2006 STANDARD PLAN T51

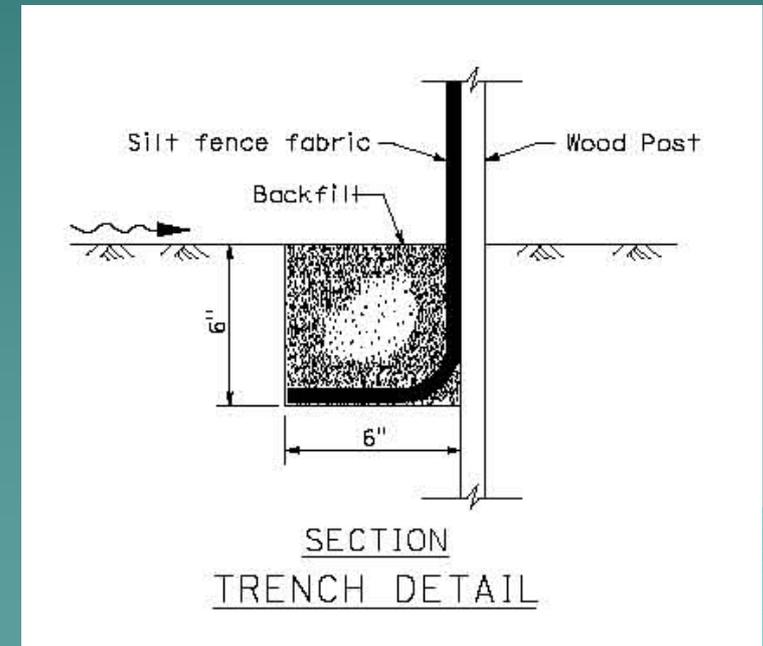
227

T51

# SC-1 Temporary Silt Fence (SSP 07-430)



- ◆ "Key-in" bottom of silt fence a minimum of 12 inches



- ◆ Construct silt fence with a set-back of at least 3 ft from the toe of the slope

# SC-1 Temporary Silt Fence (SSP 07-430)

## ◆ Installation Requirements

- Reach of silt fence shall not be longer than 500 ft
- Construct each reach so that the **base elevation** does not exceed  $1/3$  the height of the barrier  
example: ( $1/3$  of 24" = 8")



# SC-1 Temporary Silt Fence (SSP 07-430)

Improper silt fence **application** can cause erosion



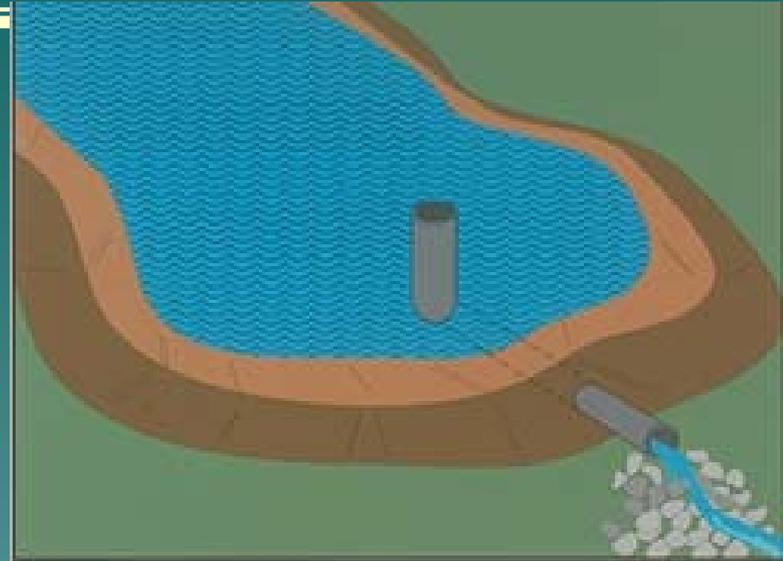
Incorrect - up and down slopes

Incorrect application – across concentrated flow



# SC-2 Temporary Sediment Basins

- ◆ DSAs between 5 to 10 acres
- ◆ 3,600 ft<sup>3</sup>/acre storage
- ◆ Length  $\geq$  2x Width
- ◆ Depth 3 to 5 ft
- ◆ Impounding levees with adequate structural integrity
- ◆ Features to accommodate bypass or overflows
- ◆ Drain within 72 hours



# SC-2 Temporary Sediment Basins

- ◆ A major obstacle to desilting basin effectiveness is the outlet design



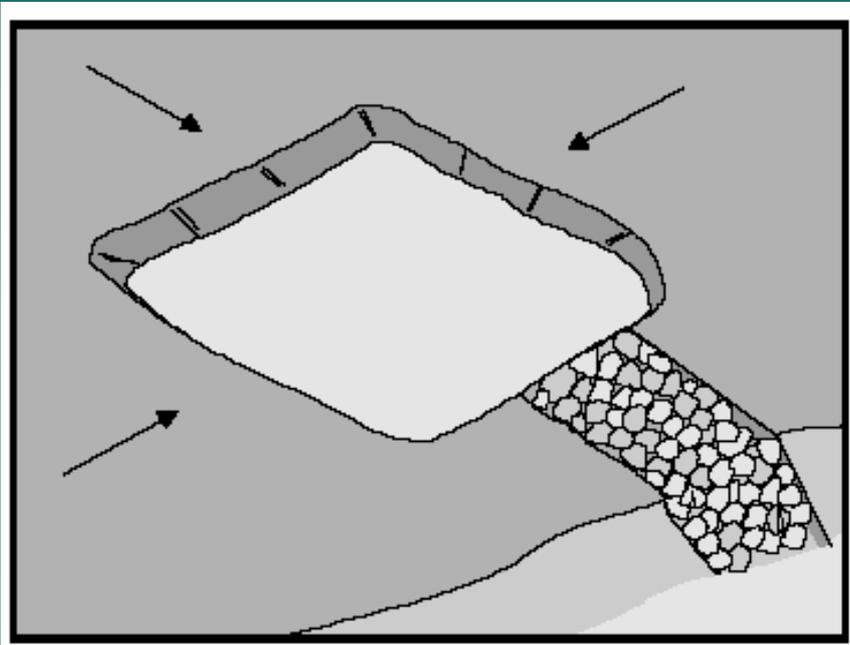
# SC-2 Temporary Sediment Basins

---

- ◆ A desilting basin must have an emergency spillway for overflow



# SC-3 Temporary Sediment Trap



- ◆ Size limited by availability of right-of-way
- ◆ Not appropriate for drainage areas greater than 5 acres
- ◆ Sediment storage = 929 ft<sup>3</sup>/acre
- ◆ Length  $\geq$  3x Width
- ◆ Depth 3 to 5 ft
- ◆ If captured runoff has not completely infiltrated within 72 hours dewater trap
- ◆ Safety fencing may be required

# SC-4 Temporary Check Dams

## (SSP 07-415)

---

- ◆ Are small devices constructed of rock, gravel bags, fiber roll, or other proprietary devices placed across natural or man-made channels or ditches



# SC-4 Temporary Check Dams (SSP 07-415)

---

- ◆ Fiber rolls:
  - 8 to 10 inches in diameter
  - Rice or wheat straw, wood excelsior, or coconut fibers
  - 1 inch x 2 inch x 24 inch wood stakes
- ◆ Bag size Requirements :
  - Each gravel-filled bag shall have a length of 24-32 inches, width of 16-20 inches, and mass of approximately 30-50 lbs
  - Non-woven polypropylene
- ◆ Fill material:
  - Fill material shall be between **3/8" and 3/4" inch** in diameter
  - Be free from clay balls, organic matter and other deleterious material

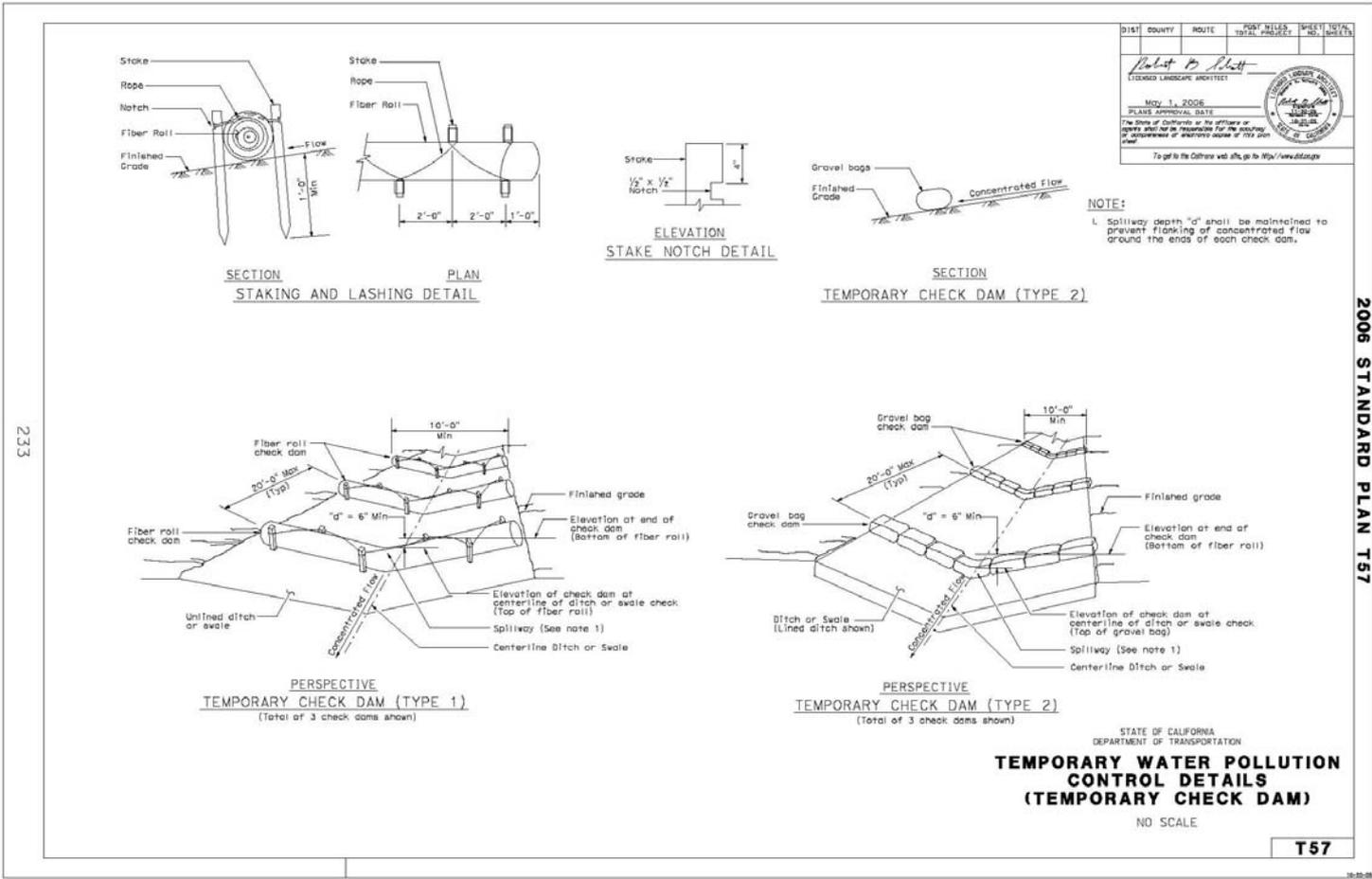
# SC-4 Temporary Check Dams (SSP 07-415)

---

## Installation Requirements

- ◆ Type I
  - Restrain using rope and notched stakes
  - Furrows not required
- ◆ Type II
  - Single layer
  - Tightly abut bags; do not overlap
  - Clear bedding area
  - Place at a distance and height to allow small pools to form behind them
  - Space bags based on slope gradient
  - Provide sufficient spillway depth to prevent flanking around ends

# SC-4 Temporary Check Dams (SSP 07-415)



# SC-5 Temporary Fiber Rolls (SSP 07-420)

---

- ◆ Consist of wood excelsior, rice or wheat straw, or coconut fibers that are rolled and bound into a tight tubular roll and placed on slopes to intercept runoff



# SC-5 Temporary Fiber Rolls (SSP 07-420)

---

## ◆ Material Requirements:

- Fiber roll shall be either (1) prefabricated rolls or (2) rolled tubes of erosion control blankets
- For field rolled fiber rolls; roll into a minimum of 8 in diameter, and bond every 6 ft along the length of the roll

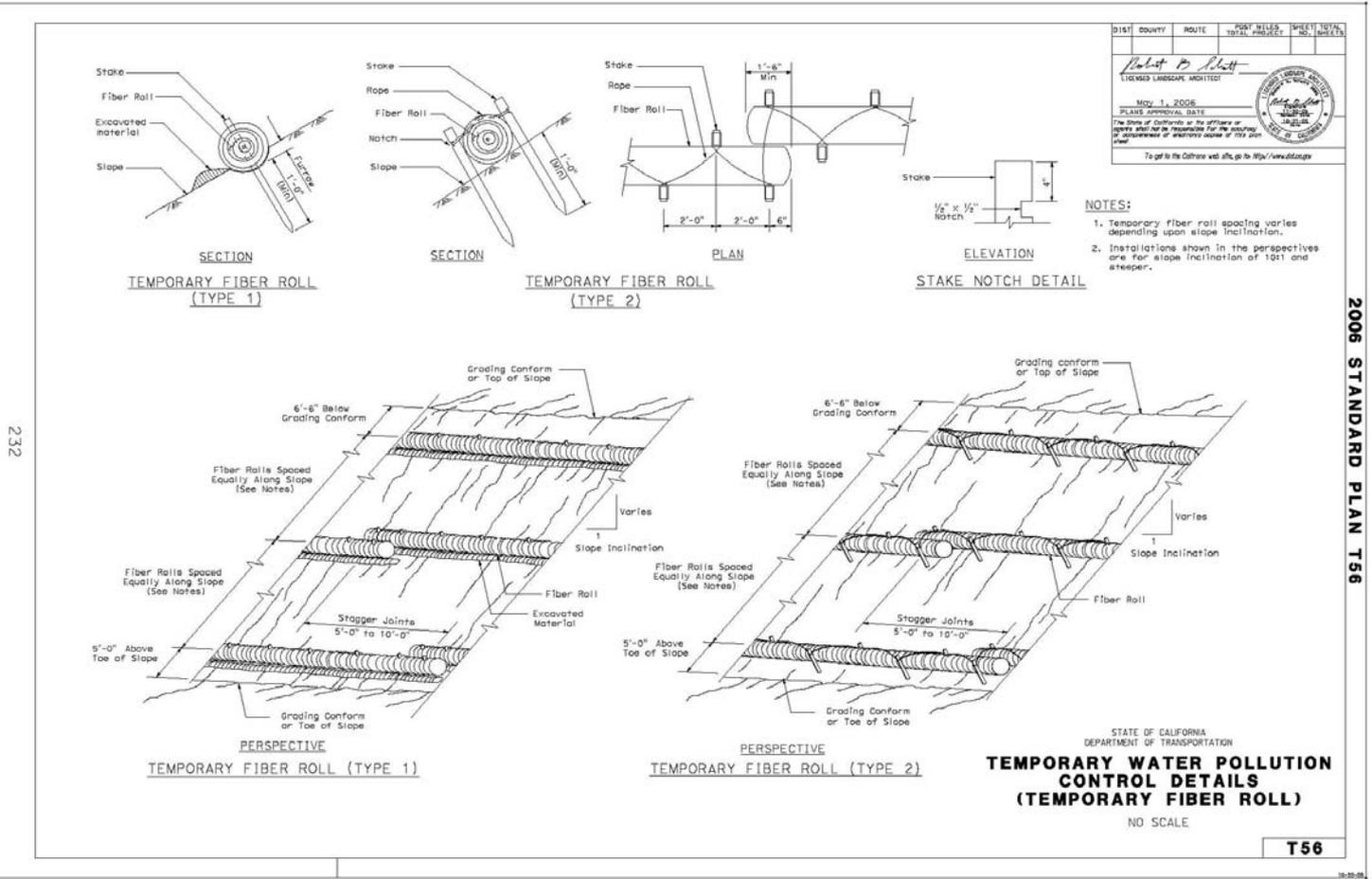


# SC-5 Temporary Fiber Rolls (SSP 07-420)

- ◆ Installation Requirements:
  - For breaking-up slope length fiber roll spacing is based on slope inclination
    - ◆ 1:4 or flatter – spacing shall be placed 20 ft apart
    - ◆ 1:4 to 1:2 – spacing shall be 15 ft apart
    - ◆ 1:2 or greater – spacing shall be 10 ft apart
  - Place fiber rolls into a 2 to 4 inches trench
  - Stake or tie fiber rolls into place
    - ◆ Tied fiber rolls staking is spaced at 2 ft apart
    - ◆ Stake spacing at 2 ft apart



# SC-5 Temporary Fiber Rolls (SSP 07-420)



DIST.	COUNTY	ROUTE	POST MILES	SHEET NO.	TOTAL SHEETS

*Robert B. Elliott*  
LICENSED LANDSCAPE ARCHITECT

May 1, 2008  
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness or reliability of the information.

To get to the Caltrans web site, go to <http://www.dot.ca.gov>

- NOTES:**
1. Temporary fiber roll spacing varies depending upon slope inclination.
  2. Installations shown in the perspectives are for slope inclination of 1:1 and steeper.

# SC-6 Temporary Gravel Bag Berms (SSP 07-470)

---

- ◆ Are nonwoven polypropylene geotextile type of bags placed across slopes to intercept runoff, reduce its flow velocity, and release it as sheet flow



# SC-6 Temporary Gravel Bag Berms (SSP 07-470)

---

- ◆ Material (bags) Requirements
  - Bags shall be either polypropylene, polyethylene, or polyamide woven fabric
  - Minimum unit weight of 8 ounces per square yard)
  - Burst strength exceeding 200 lbs in conformance with ASTM designation D4632
  - Ultraviolet stability exceeding 70% in conformance with ASTM designation D4355

# SC-6 Temporary Gravel Bag Berms (SSP 07-470)

---

- ◆ Bag size Requirements :
  - Each gravel-filled bag shall have a length of 24-32 inches, width of 16-20 inches, and mass of approximately 30-50 lbs
  
- ◆ Fill material:
  - Fill material shall be between 3/8 and 3/4 inch in diameter
  - Be free from clay balls, organic matter and other deleterious material

# SC-6 Temporary Gravel Bag Berms (SSP 07-470)

---

- ◆ Installation requirements:
  - Install along a level contour
  - Clear bedding area of obstructions one inch or larger in diameter
  - Place in single layer with ends abutted tightly and not overlapped
  - Turn ends of bags (last 6 feet) up slope to prevent flow around ends
  - Use in conjunction with temporary soil stabilization
  - Construct barriers with a set-back of a least 3 ft from toe of slope

# SC-7 Street Sweeping

## (SSP 07-360)



- ◆ Visible sediment tracking shall be swept and vacuumed daily
- ◆ Do not use kick brooms or sweeper attachments
- ◆ Dispose of sweeper waste at an approved dumpsite

# SC-7 Street Sweeping (SSP 07-360)

---



Street sweeping is an important tracking control.

# SC-7 Street Sweeping (SSP 07-360)



**Regular  
sweeping can  
reduce off site  
sediment.**

# SC-8 Temporary Sandbag Barrier

---

- ◆ Are a woven fabric type of bag designed to intercept and slow flow of sediment-laden sheet flow runoff

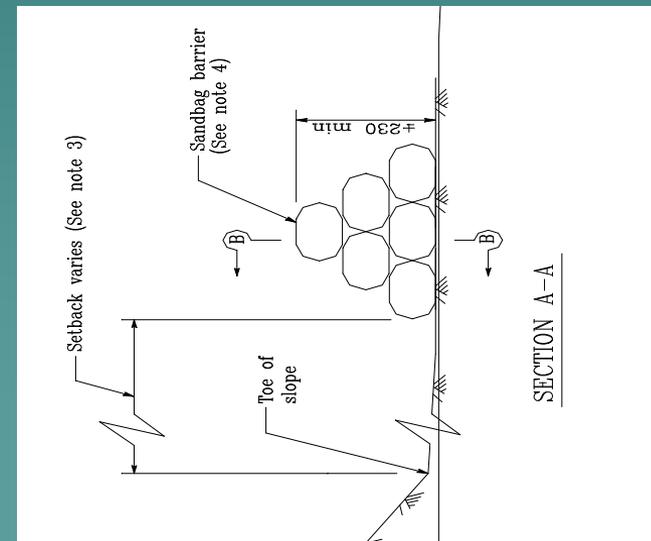
# SC-8 Temporary Sandbag Barrier

---

- ◆ Bag size Requirements :
  - Each sand-filled bag shall have a length of 18 inches, width of 12 inches, thickness of 3 inches, and mass of approximately 33 lbs
  - Alternate bags sizes need approval by the Resident Engineer
- ◆ Fill material:
  - All sandbag fill material shall be non-cohesive, Class 1 or Class2 permeable material free from clay and deleterious material
  - Conform to section [68-1.025](#) of the Standard Specifications
  - Fill Material is subject to approval of the RE

# SC-8 Temporary Sandbag Barrier

- ◆ Installation requirements:
  - Install along a level contour
  - Turn ends of bags up slope to prevent flow around ends
  - Use in conjunction with temporary soil stabilization
  - Construct barriers with a set-back of a least 3 ft from toe of slope



# SC-9 Temporary Straw Bale Barrier (SSP 07-460)

---

- Not used in District 7
  - ◆ Not environmentally friendly
  - ◆ Cost prohibitive
  - ◆ Often installed incorrectly / i.e., a check dam on a paved surface



# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

---

- ◆ Device used at storm drain inlets to settle or filter sediment-laden runoff

# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

---

- ◆ DI Protection Types
  - Type 1 – Temporary Silt Fence
  - Type 2 – Excavated Sediment Trap
  - Type 3A – Gravel Bag Barrier
  - Type 3B – Gravel Bag Barrier
  - Type 4A – Fiber Rolls
  - Type 4B – Foam Barrier
  - Type 5 – Sediment Filter Bag

# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

---

- ◆ General requirements:
  - Requires adequate area for ponding without encroaching upon the traveled way
  - Frequent maintenance is required
  - Draining areas greater than 1 acre shall be routed to a sediment trapping device
  - May require other methods of temporary protection to prevent sediment-laden storm water and non-storm water flow from entering inlets
  - If high flows are expected use other sediment trapping devices in conjunction with inlet protection



# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

---

- ◆ Type 1 - Temporary Silt Fence
  - Appropriate in open areas subject to sheet flows
  - Flows should not exceed 0.5 cfs
  - Do not place fabric underneath grate inlet



# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

---

- ◆ Type 2 Excavated Sediment Trap
- ◆ Appropriate where relatively high heavy flows are expected and over flow capacity is needed





# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

- ◆ Type 3A Gravel Bag Barrier
  - Appropriate where flows exceed 0.5 cfs and it is necessary to allow overtopping to **prevent flooding**
  - Flows shall not overtop curb
  - Ponded water shall not encroach on the traveled way
  - In areas with high silts and clayey soils use additional media for protection



# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

- ◆ Type 3B Gravel Bag Barrier
  - Appropriate where flows exceed 0.5 cfs and it is necessary to allow overtopping to **prevent flooding**
  - Ponded water shall not encroach on the traveled way
  - In areas with high silts and clayey soils use additional media for protection





# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

- ◆ Type 4A - Fiber Rolls and Type 4B – Foam Barriers
  - Not appropriate for locations where they can not be properly anchored
  - Foam barriers – use on pavement and secure using anchoring nails, spikes, or adhesive
  - Fiber Rolls - use in unpaved areas around inlets and anchor using stakes





# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

---

- ◆ Type 5 – Sediment Filter Bag
  - Woven polypropylene or polymer material
  - Sized to fit catch basin or drainage inlet
  - Loops and dump straps incorporated into design
  - Include a restraint chord
  - Must be secured on all sides of catch basin or inlet





# SC-10 Temporary Drain Inlet Protection (SSP 07-490)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**

PROJECT ENGINEER

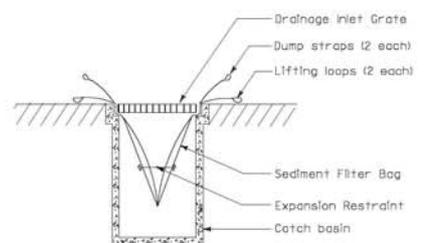
CHECKED BY

DESIGNED BY

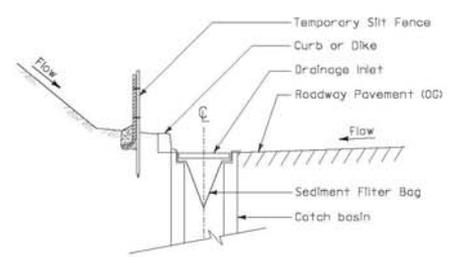
DATE

REVISOR

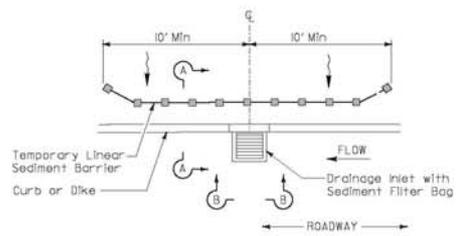
DATE



SECTION B-B  
**SEDIMENT FILTER BAG DETAIL**



SECTION A-A

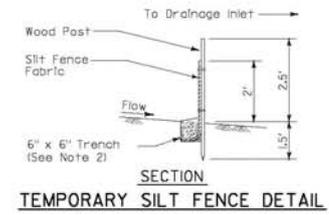


PLAN  
**TEMPORARY DRAINAGE  
 INLET PROTECTION (TYPE 5)  
 (SEDIMENT FILTER BAG)**



REF SSP 07-ABC			
DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT
REGISTERED CIVIL ENGINEER		SHEET NO.	TOTAL SHEETS
PLANS APPROVAL DATE			
<small>The State of California or its officers or agents shall not be responsible for the accuracy or appropriateness of electronic copies of this plan sheet.</small> <small>Caltrans now has a web site! To get to the web site, go to <a href="http://www.dot.ca.gov">http://www.dot.ca.gov</a></small>			

- NOTES**
1. Temporary Linear Sediment Barrier shall be silt fence, fiber roll, gravel bag barrier, or other.
  2. Install Temporary Silt Fence by first digging trench, driving posts, placing and securing fabric. Then backfill and tamp.
  3. Dimensions may vary to fit field conditions.



**TEMPORARY WATER POLLUTION  
 CONTROL DETAILS  
 (TEMPORARY DRAINAGE  
 INLET PROTECTION)**

NO SCALE  
 ALL DIMENSIONS ARE IN  
 INCHES UNLESS OTHERWISE SHOWN

**WPC-**

# Sediment Control BMPs

## Chemical Treatment

---

- ◆ Chemical treatment of stormwater is a relatively new and unproven technology in California.
- ◆ Chemical treatment includes the application of chemicals to stormwater to aid in the reduction of turbidity caused by fine suspended sediment.
- ◆ Chemical treatment can reliably provide exceptional reduction of turbidity and associated pollutants where turbid discharges to sensitive waters cannot be avoided using other BMPs.
- ◆ Typically, chemical use is limited to waters with numeric turbidity standards.

# Sediment Control BMPs

## Chemical Treatment

---

### Limitations:

- ◆ The use of chemical treatment must have the advanced approval of the Regional Water Quality Control Board.
- ◆ Chemical treatment of storm water is a new technology and has not been used very often in California.
- ◆ Petroleum based polymers should not be used.
- ◆ Requires sediment basin or trailer mounted unit for chemical application.
- ◆ Batch treatment required. Flow through continuous treatment not allowed.
- ◆ Requires large area.
- ◆ Labor intensive operation and maintenance.

# Course Highlights

---

- ◆ Introduction
- ◆ Planning for Erosion and Sediment Control
- ◆ Erosion Control (Soil Stabilization) BMPs
- ◆ Sediment Control BMPs
- ◆ ***Wind Erosion Control BMPs***
- ◆ Tracking Control BMPs
- ◆ Non-Stormwater Management BMPs
- ◆ Waste Management and Materials Pollution Control BMPs
- ◆ Class Exercise
- ◆ Field Demonstration of BMPs



# WE-1 Wind Erosion Control

---



Lack of wind erosion controls

# WE-1 Wind Erosion Control



Soil binder applied via water truck

- ◆ Effectiveness depends on soil, temperature, humidity and wind velocity
- ◆ All equipment to ensure even distribution and have positive shutoff
- ◆ Temporary soil stabilizers and soil binders will also provide wind erosion control benefits

# WE-1 Wind Erosion Control

**Regular spraying with water or a binder also reduces dust.**



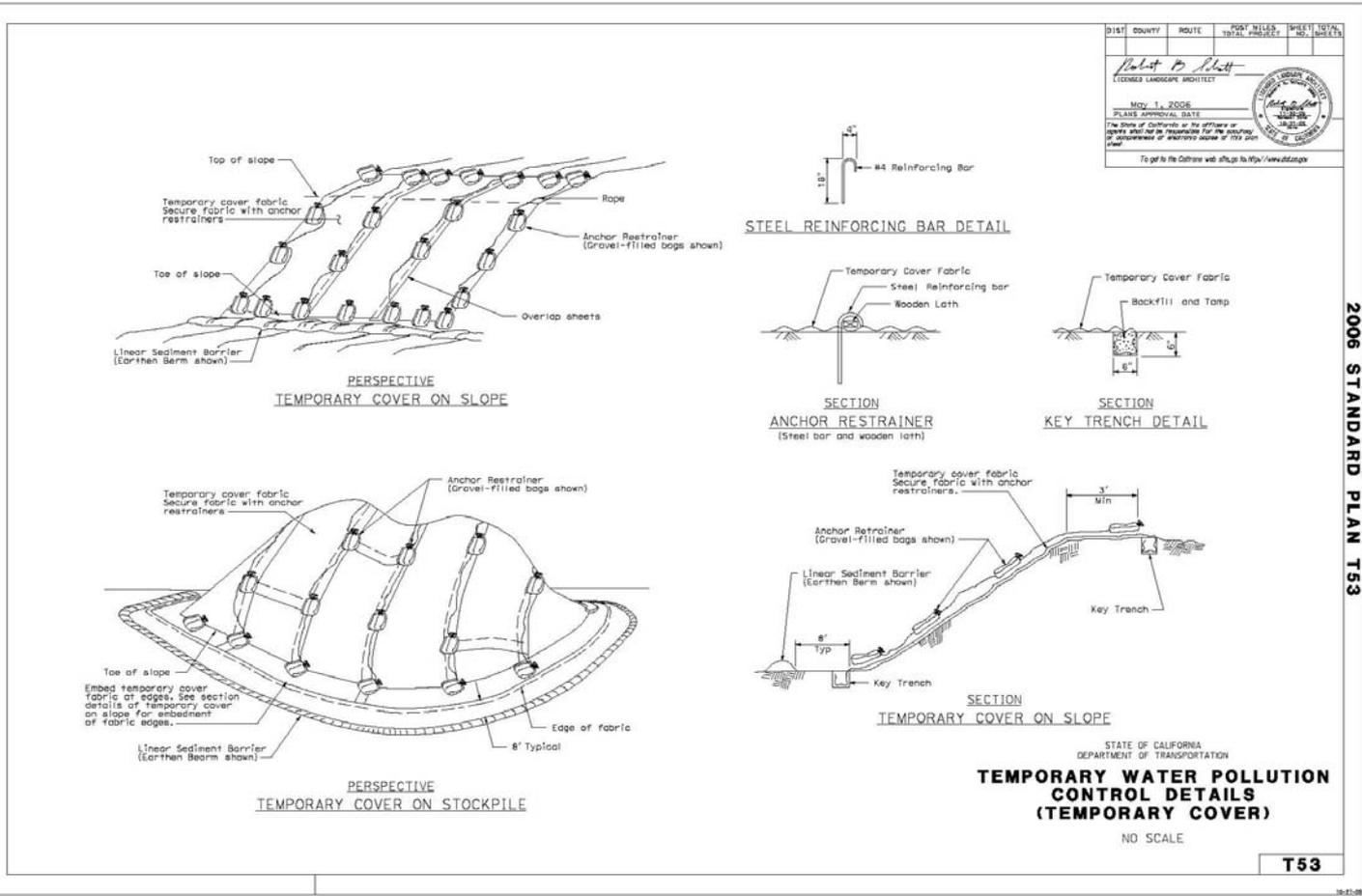
# WE-1 Wind Erosion Control



**Covering stockpiles with plastic is an effective way of reducing wind erosion.**

# WE-1 Wind Erosion Control

229



2006 STANDARD PLAN T53

# WE-1 Wind Erosion Control



# Course Highlights

---

- ◆ Introduction
- ◆ Planning for Erosion and Sediment Control
- ◆ Erosion Control (Soil Stabilization) BMPs
- ◆ Sediment Control BMPs
- ◆ Wind Erosion Control BMPs
- ◆ ***Tracking Control BMPs***
- ◆ Non-Stormwater Management BMPs
- ◆ Waste Management and Materials Pollution Control BMPs
- ◆ Class Exercise
- ◆ Field Demonstration of BMPs



# Tracking Control

---

ID	BMP Name
TC-1	Temporary Construction Entrance (SSP 07-480)
TC-2	Temporary Construction Roadway (SSP 07-481)
TC-3	Entrance/Outlet Tire Wash

# TC-1 Temporary Construction Entrance (SSP 07-480)

---



Lack of stabilized entrance / exit

# TC-1 Temporary Construction Entrance (SSP 07-480)

---



Lack of stabilized entrance / exit

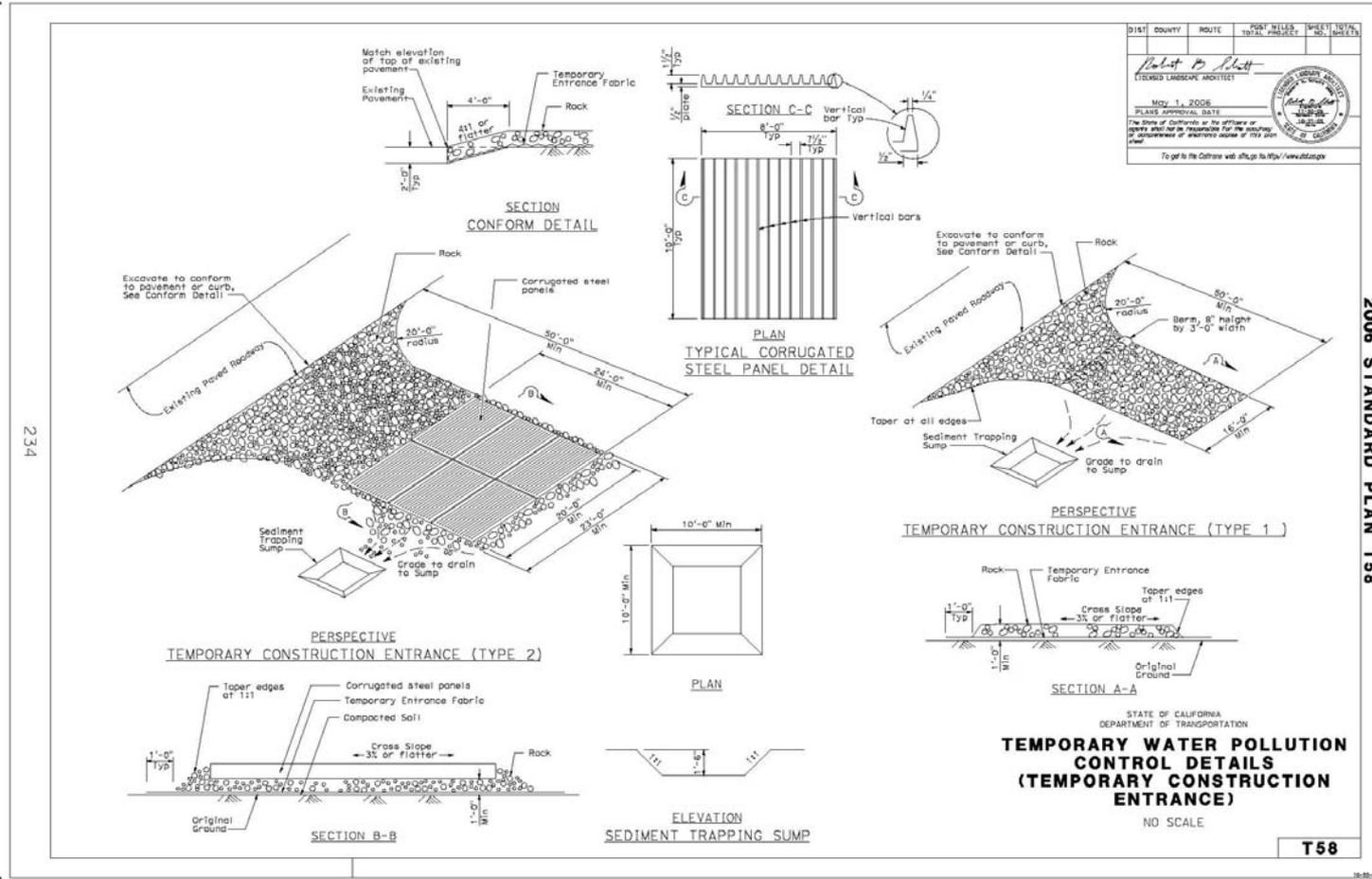
# TC-1 Temporary Construction Entrance (SSP 07-480)



Large diameter rock used as a stabilized  
entrance / exit.

- ◆ Construct sump within 20 feet of temporary construction entrance
- ◆ If aggregate is used place over geotextile fabric 12" deep
- ◆ Use 3" -6" diameter rock
- ◆ Minimum of 50ft in length
- ◆ All exit locations to be used continuously for a period of time shall be stabilized
- ◆ Design for heaviest equipment
- ◆ Limit number of entrances and exits
- ◆ Require their use when installed

# TC-1 Temporary Construction Entrance (SSP 07-480)



234

# TC-2 Temporary Construction Roadway

**This temporary access road is stabilized with gravel.**



# TC-2 Temporary Construction Roadway



# TC-3 Entrance/Outlet Tire Wash

**Sites with clayey soils may require a wheel wash...**

**...such as this drive-through type**



# TC-3 Entrance/Outlet Tire Wash

---



**...which  
splashes the  
wheels and  
undercarriage  
of the vehicle**

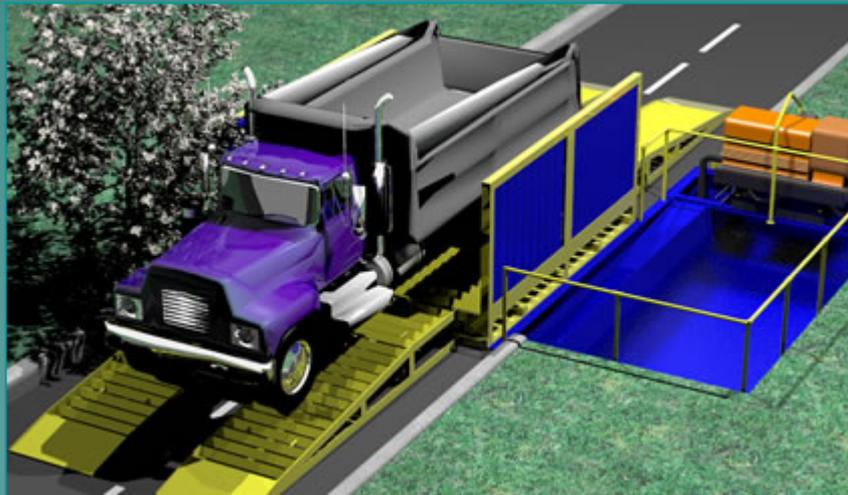
# TC-3 Entrance/Outlet Tire Wash

---

**...and  
keeps the  
entrance  
clean  
without  
sweeping**



# TC-3 Entrance/Outlet Tire Wash



# Course Highlights

---

- ◆ Introduction
- ◆ Planning for Erosion and Sediment Control
- ◆ Erosion Control (Soil Stabilization) BMPs
- ◆ Sediment Control BMPs
- ◆ Wind Erosion Control BMPs
- ◆ Tracking Control BMPs
- ◆ ***Non-Stormwater Management BMPs***
- ◆ Waste Management and Materials Pollution Control BMPs
- ◆ Class Exercise
- ◆ Field Demonstration of BMPs





# Non-Storm Water Management BMPs (Construction Site Management SSP 07-346)

---

<b>ID</b>	<b>BMP Name</b>
NS-1	Water Conservation Practices
NS-2	Dewatering Operations
NS-3	Paving and Grinding Operations
NS-4	Temporary Stream Crossing*
NS-5	Clear Water Diversion*
NS-6	Illicit Connection / Illegal Discharge Detection and Reporting
NS-7	Potable Water / Irrigation
NS-8	Vehicle and Equipment Cleaning
NS-9	Vehicle and Equipment Fueling
NS-10	Vehicle and Equipment Maintenance
NS-11	Pile Driving Operations
NS-12	Concrete Curing
NS-13	Material and Equipment Use over Water
NS-14	Concrete Finishing
NS-15	Structure Demolition/Removal Over or Adjacent to Water

\* Not included in SSP 07-346

# New Standard Special Provision

---

## Construction Site Housekeeping BMPs

- ◆ 07-346 Construction Site Management



# 07-346 Construction Site Management

---



- ◆ Spill prevention and control
- ◆ Material management
- ◆ Material storage
- ◆ Stockpile management
- ◆ Solid waste management

# 07-346 Construction Site Management

---



Provides for management of

- ◆ Hazardous waste
- ◆ Contaminated soil
- ◆ Concrete waste
- ◆ Sanitary/septic waste
- ◆ Liquid waste

# 07-346 Construction Site Management

---

- ◆ Water control and conservation
- ◆ Illegal connection and discharge detection and reporting
- ◆ Vehicle and equipment cleaning
- ◆ Vehicle and equipment fueling and maintenance
- ◆ Material and equipment over water



# 07-346 Construction Site Management

---



- ◆ Structural removal over or adjacent to water
- ◆ Paving, sealing, sawcutting, and grinding operations
- ◆ Thermoplastic striping and pavement striping
- ◆ Pile driving
- ◆ Concrete curing
- ◆ Concrete finishing

# 07-346 Construction Site Management



- ◆ Dewatering \*

- ◆ \*07-346 used when water from dewatering can be discharged within project limits. A separate SSP is needed when estimated quantities of water are greater or the dewatering operation are complex
- ◆ Pending - SSP 07-341 - Dewatering (Water Pollution Control).

# NS-1 Water Conservation Practices (SSP 07-346)

- ◆ RE must approve washing activities if potential to discharge to storm drain or watercourse
- ◆ Inspect irrigation system and adjust watering schedules
- ◆ Shut off water source to broken lines, sprinklers, or valves
- ◆ Reuse water line flushing for landscape irrigation
- ◆ Do not wash paved areas
- ◆ Route water from water line repair to areas that infiltrate
- ◆ Prevent water truck filling areas from discharging



**Instead of  
using a hose,  
this sediment  
should have  
been swept up**

# NS-2 Dewatering Operations (SSP 07-346)



- ◆ Notify District Construction Storm Water Coordinator
- ◆ Use Caltrans Field Guide to Construction Site Dewatering
- ◆ Contractor to submit a Dewatering and Discharge Plan
- ◆ Use where groundwater or accumulated precipitation will be discharged from site
- ◆ Addresses sediment only
- ◆ Notify RE if pollutant other than sediment is present
- ◆ Must comply with applicable permits

# NS-3 Paving and Grinding Operations (SSP 07-346)

---



- ◆ Cover drainage inlets and use linear sediment barriers to protect downhill watercourses
- ◆ Limit paving, sawcutting, and grinding during the rainy season to locations where runoff can be captured
- ◆ Vacuum slurry from saw cutting operations immediately
- ◆ Collect grinding residue with vacuum
- ◆ Substances used to coat asphalt equipment shall not contain soap, will be non-foaming and non-toxic

# NS-4 Temporary Stream Crossing

- ◆ Use where construction equipment must frequently cross a waterway
- ◆ If improperly designed they may increase pollution load through washouts and scouring
- ◆ Stabilize construction roadways and use sediment control BMPs
- ◆ May require RWQCB, USACE, DFG permits / approval



# NS-4 Temporary Stream Crossing

---



# NS-5 Clear Water Diversion



- ◆ May require RWQCB, USACE, DFG permits / approval
- ◆ If improperly designed they may increase pollution load through washouts and scouring
- ◆ Follow Caltrans Field Guide to Construction Site Dewatering
- ◆ Construct diversions with material free of potential pollutants
- ◆ Do not completely dam stream flow

# NS-6 Illicit Connection / Illegal Discharge (SSP 07-346)

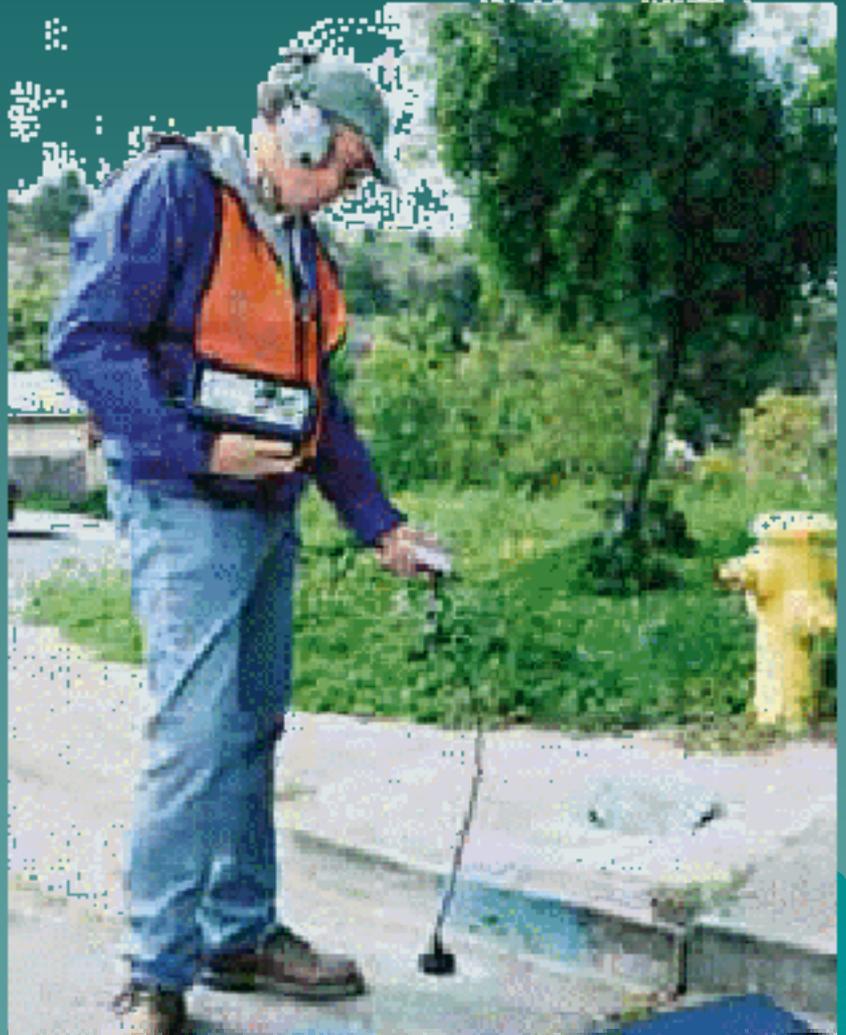
- ◆ Can be in liquid or solid form
- ◆ Refers to discharges and dumping caused by parties other than contractor
- ◆ Inspect site before beginning of job
- ◆ Inspect site on frequent and predetermined schedule
- ◆ Proceed with caution - notify RE at time of discovery



# NS-7 Potable Water / Irrigation (SSP 07-346)

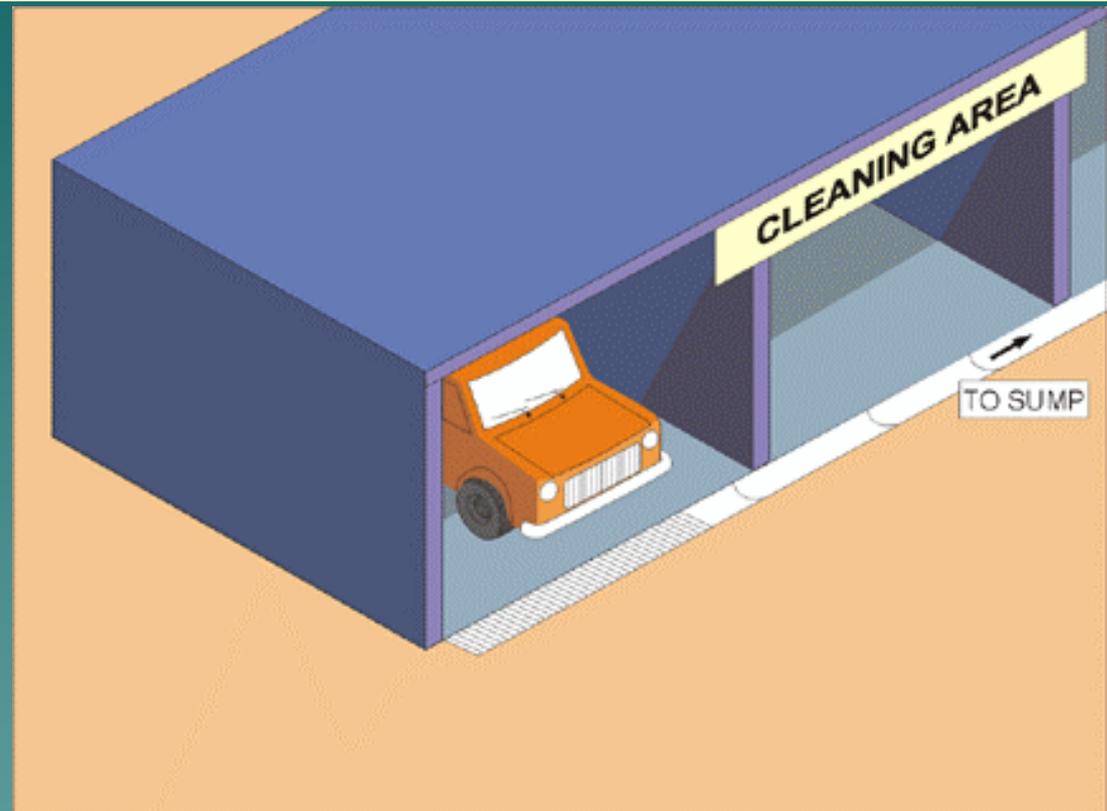


**This hydrant flusher diffuser/de-chlorinator and leak detection survey are good practices to reduce the discharge of pollutants**



# NS-8 Vehicle and Equipment Cleaning (SSP 07-346)

- ◆ Limit cleaning or washing to control tracking or hazardous waste
- ◆ RE approval required when soaps, solvent, or steam is used
- ◆ Contain waste and recycle or dispose (refer to Liquid Waste and Hazardous Waste section of 07-356 SSP)
- ◆ Conduct cleaning in a structure equipped with disposal facility



# NS-8 Vehicle and Equipment Cleaning (SSP 07-346)

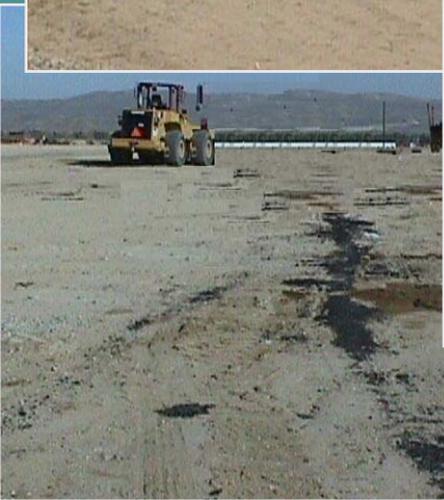
- ◆ Outside wash areas:
  - Located 50 ft from storm drains and watercourses
  - Paved area
  - Surrounded by containment berm
  - Sump to collect wash water
- ◆ Minimize water usage
- ◆ Use hoses equipped with positive shutoff valve



**Don't allow this on your site!**

**Vehicles and equipment  
should be cleaned in  
designated areas...preferably  
off site**

# NS-9 Vehicle and Equipment Fueling (SSP 07-346)

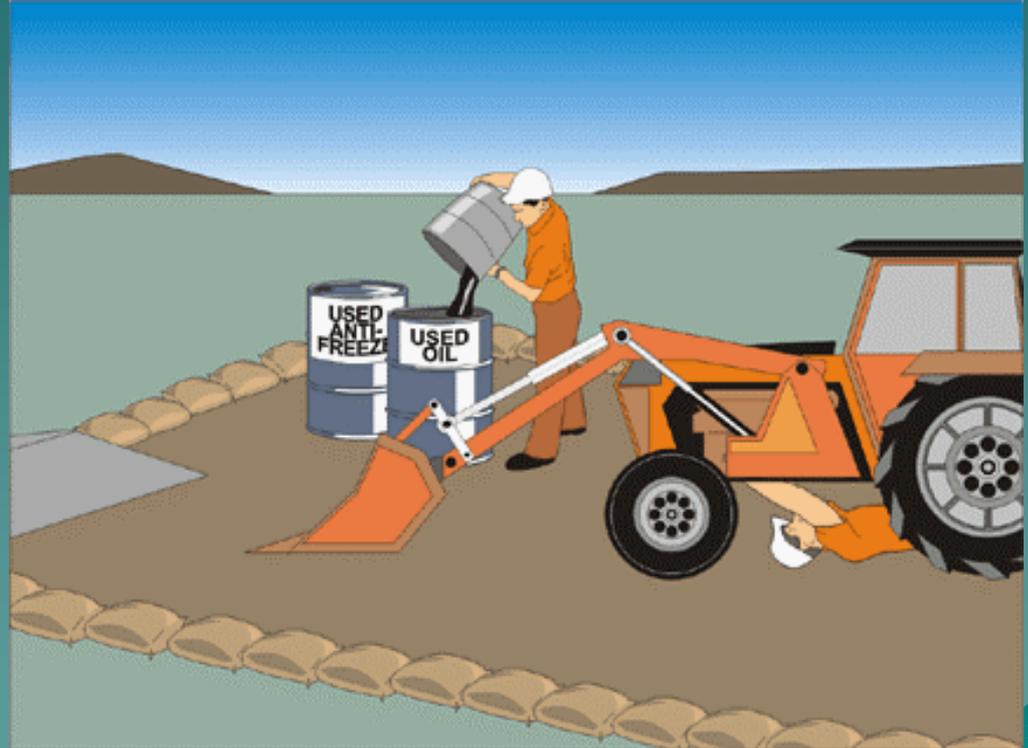


- ◆ Fuel on site only when impractical to go off site
- ◆ Use a designated area approved by RE; level ground; 50 feet from storm drain inlets and water courses
- ◆ Mobile fueling kept to minimum
- ◆ Have spill kits in fueling area and on fueling trucks
- ◆ Clean up spilled materials immediately and spill kits available
- ◆ Use containment berms or dikes around fueling areas
- ◆ Use drip pans or absorbent pads when fueling on permeable areas
- ◆ Fueling nozzles shall have automatic shutoff control

# NS-10 Vehicle and Equipment Maintenance (SSP 07-346)

---

- ◆ Spill prevention and control
- ◆ Use of drip pans and absorbents
- ◆ Dedicated maintenance areas
- ◆ Proper waste disposal (e.g., tires and batteries)
- ◆ Leak repair
- ◆ Secondary containment



# NS-11 Pile Driving Operations (SSP 07-346)



Pile Driving Operations

- ◆ Caltrans Requirements
- ◆ Use drip pans or absorbent pads during fueling, maintenance, cleaning and storage
- ◆ Park equipment over plastic sheeting or equivalent where possible. Plastic sheeting is not a substitute for drip pans or absorbent pads
- ◆ Use less hazardous products instead of hydraulic fluid when practicable
- ◆ Store equipment at least 50 feet from concentrated flows, drainage courses, or inlets
- ◆ Inspect equipment daily for leaks

# NS-12 Concrete Curing (SSP 07-346)

---

- ◆ Cover drain inlets before applying curing compound
- ◆ Prevent overspray of curing compound
- ◆ Minimize drift by applying as close to concrete as possible
- ◆ Use wet blankets to minimize discharge of water when curing concrete

# NS-13 Material and Equipment Use Over Water (SSP 07-346)



- ◆ Place drip pans and absorbent pads under vehicles and equipment
- ◆ Maintain a supply of spill cleanup material and keep it with the vehicle or equipment
- ◆ Place equipment and vehicles on plastic sheeting when located on docks, barges or other surfaces over water when equipment will be idle for more than one hour
- ◆ Use watertight curbs or toe boards on barges, platforms, docks, or other surfaces to contain material, debris, and tools
- ◆ Secure material to prevent spill or discharge

# NS-14 Concrete Finishing (SSP 07-346)

---

- ◆ Collect and dispose of water and solid waste
- ◆ Cover drain inlets located within 50 feet of sandblasting operation
- ◆ Minimize drift of sandblasted material by keeping nozzle close to the surface
- ◆ Inspect containment structures for damage each day and before predicted precipitation
- ◆ Remove solid waste from containment structure after each work shift

# NS-15 Structure Demolition / Removal Over Water (SSP 07-346)

---

- ◆ Prevent demolished material from entering storm drain system and watercourses
- ◆ Debris covers and platforms must be approved by the RE
- ◆ Empty debris capturing devices regularly and handle using 07-346 Waste Management
- ◆ WPCM to conduct daily inspections of site within 50 feet of storm drain system or watercourses

# Course Highlights

- ◆ Introduction
- ◆ Planning for Erosion and Sediment Control
- ◆ Erosion Control (Soil Stabilization) BMPs
- ◆ Sediment Control BMPs
- ◆ Wind Erosion Control BMPs
- ◆ Tracking Control BMPs
- ◆ Non-Stormwater Management BMPs
- ◆ ***Waste Management and Materials Pollution Control BMPs***
- ◆ Class Exercise
- ◆ Field Demonstration of BMPs



# Waste Management and Materials Pollution Control (Construction Site Management SSP 07-346)

---

- ◆ WM-1 Material Delivery and Storage
- ◆ WM-2 Material Use
- ◆ WM-3 Stockpile Management
- ◆ WM-4 Spill Prevention and Control
- ◆ WM-5 Solid Waste Management
- ◆ WM-6 Hazardous Waste Management
- ◆ WM-7 Contaminated Soil Management
- ◆ WM-8 Concrete Waste Management (SSPs 07-405 and 07-406)
- ◆ WM-8 Temporary Concrete Washout Facility
- ◆ WM-9 Sanitary/Septic Waste Management
- ◆ WM-10 Liquid Waste Management

# WM-1 Material Delivery and Storage (SSP 07-346)



Well maintained temporary containment facility



Substances that require storage in a containment facility



- ◆ Properly label materials
- ◆ Store bagged or boxed material on pallets and cover during non-working days and when rain is predicted
- ◆ Facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25-year storm, plus 10% of the aggregate volume of all containers or 100% of the capacity of the largest container whichever is greater

# WM-1 Material Delivery and Storage (SSP 07-346)



- ◆ Facility shall be impervious to the materials for 72 hours
- ◆ Cover secondary containment facilities during non-working days and when precipitation is predicted
- ◆ Maintain secondary containment facility free from accumulated rainwater and spills; place into drums within 24 hours and handle as hazardous waste

Temporary containment facility for fuel

# WM-1 Material Delivery and Storage

## (SSP 07-346)

---

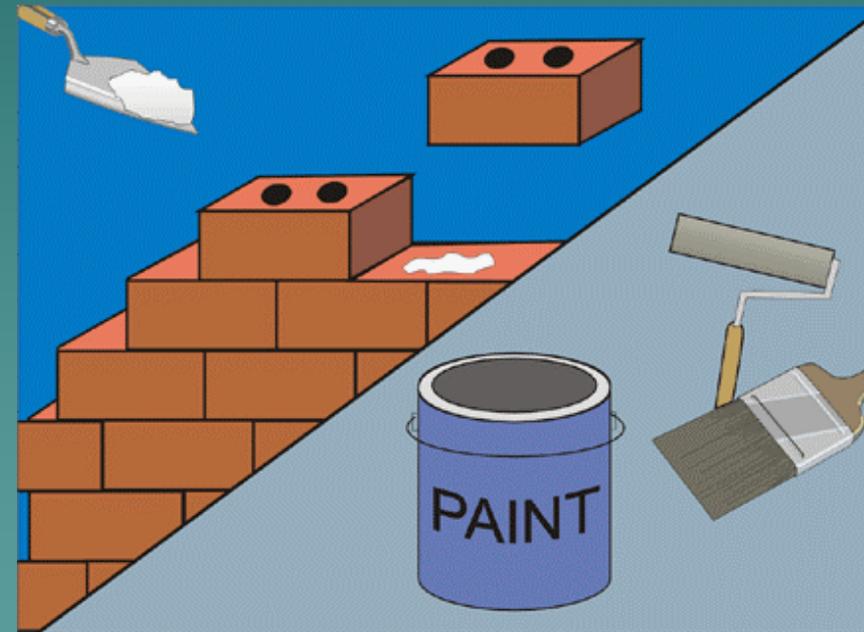
- ◆ Curing compound requires proper storage



# WM-2 Material Use

## (SSP 07-346)

- ◆ Minimize or eliminate discharges of materials to the air, storm drain system, or watercourses
- ◆ Contractor to provide MSDSs to RE
- ◆ Train employees in emergency spill cleanup procedures
- ◆ Use recycled or less hazardous products
- ◆ Herbicides and pesticides must be applied by licensed applicator
- ◆ Contractor to complete and submit Report of Chemical Spray form to RE when applying herbicides or pesticides



# WM-3 Stockpile Management

(SSP 07-346)



- ◆ Locate out of flood plains and 50 feet from concentrated flow, drainage courses, inlets
- ◆ Applies to stockpiles of soil, concrete rubble, asphalt concrete, asphalt rubble, aggregate base and subbase
- ◆ Active stockpile - up to 21 days without adding or removing material
- ◆ Active stockpiles (prior to predicted precipitation)
  - Cover with plastic, geotextile cover, or soil stabilizer
  - Install linear sediment barrier
  - Store cold mix on impermeable surface and cover with plastic

# WM-3 Stockpile Management

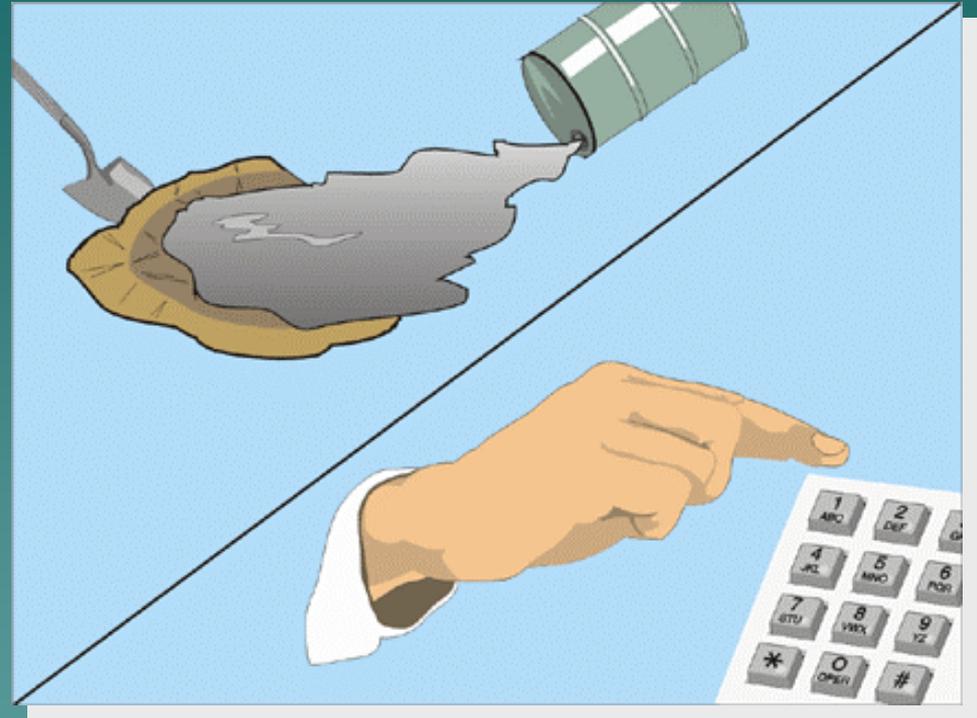
(SSP 07-346)



- ◆ Inactive stockpiles (all times during rainy season and prior to predicted storms during non-rainy season)
  - Cover with plastic, geotextile cover, or soil stabilizer
  - Install linear sediment barrier
  - Store cold mix on impermeable surface and cover with plastic
- ◆ Place treated wood on pallets and cover with impermeable material during rainy season and when precipitation is predicted during non-rainy season
- ◆ Control wind erosion using Section 10, Dust Control Standard Specification

# WM-4 Spill Prevention and Control (SSP 07-346)

- ◆ Contractor shall implement spill and leak prevention procedures when chemicals or hazardous substances are stored
- ◆ WPCM shall oversee and enforce spill prevention and control measures
- ◆ Spills shall be reported to the WPCM; WPCM shall report to RE immediately
- ◆ Spills shall be prevented from contacting stormwater before and during cleanup
- ◆ Spills shall not be buried or washed with water



# WM-5 Solid Waste Management

## (SSP 07-346)

---

- ◆ Solid waste includes litter generated by the public
- ◆ Watertight dumpsters of sufficient size and number shall be provided
- ◆ Debris and waste shall be collected and removed weekly and when refuse reaches the fill line
- ◆ Additional containers required during demolition phase
- ◆ Provide trash receptacles in Contractor's yard, field trailers, and lunch areas

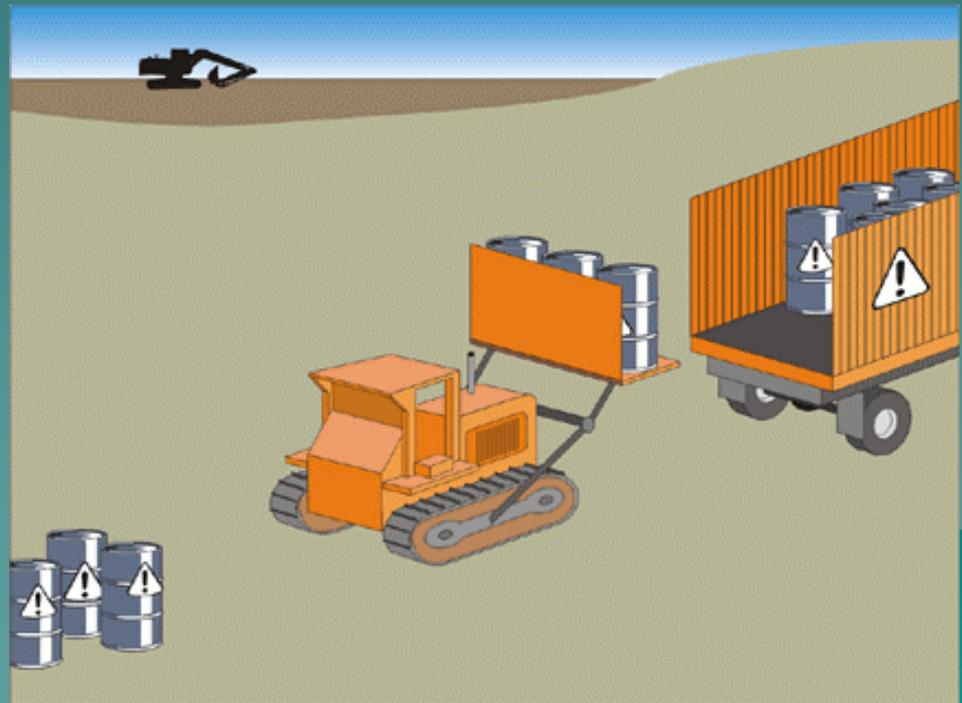


# WM-6 Hazardous Waste Management (SSP 07-346)

---

The following types of wastes are considered hazardous:

petroleum products, concrete curing compounds, palliatives, septic wastes, paints, stains, wood preservatives, asphalt products, pesticides, acids, solvents, and roofing tar.





# WM-6 Hazardous Waste Management (SSP 07-346)

---

- ◆ WPCM shall oversee and enforce hazardous waste management practices
- ◆ Potentially hazardous waste shall be segregated from non-hazardous waste
- ◆ Hazardous waste shall be handled, stored, and disposed of as required by CCR Title 22, Division 4.5, Section 66262.34, and CFR Title 19, Parts 261, 262, and 263
- ◆ Store in sealed containers, labeled with content, and date of accumulation
- ◆ Store waste away from storm drains, watercourses, moving vehicles, and equipment
- ◆ Clean paint brushes and equipment in containment areas
- ◆ Dispose of hazardous waste within 90 days of being generated
- ◆ Contractor to provide RE a copy of manifest

# WM-7 Contaminated Soil Management (SSP 07-346)

- ◆ Contractor to identify contaminated soil from spills or leaks
- ◆ Prevent flow of water, including groundwater from mixing with contaminated soil by using
  - ◆ Berms
  - ◆ Cofferdams
  - ◆ Freeze walls
  - ◆ Concrete seal course
- ◆ Sample water if it comes in contact with contaminated soil
- ◆ Hazardous contaminated soil shall be disposed of as hazardous waste

Typical soil contamination is due to spills, illicit discharges, and underground storage tank leaks, or aerially deposited lead (ADL). Contaminated soils tend to occur on projects in urban or industrial areas



# WM-8 Concrete Waste Management (SSPs 07-346, 07-405, and 07-406)



Concrete washout



Uncontrolled concrete washouts

# WM-8 Concrete Waste Management

(SSPs 07-346, 07-405, and 07-406)



**Below Grade  
concrete washout**

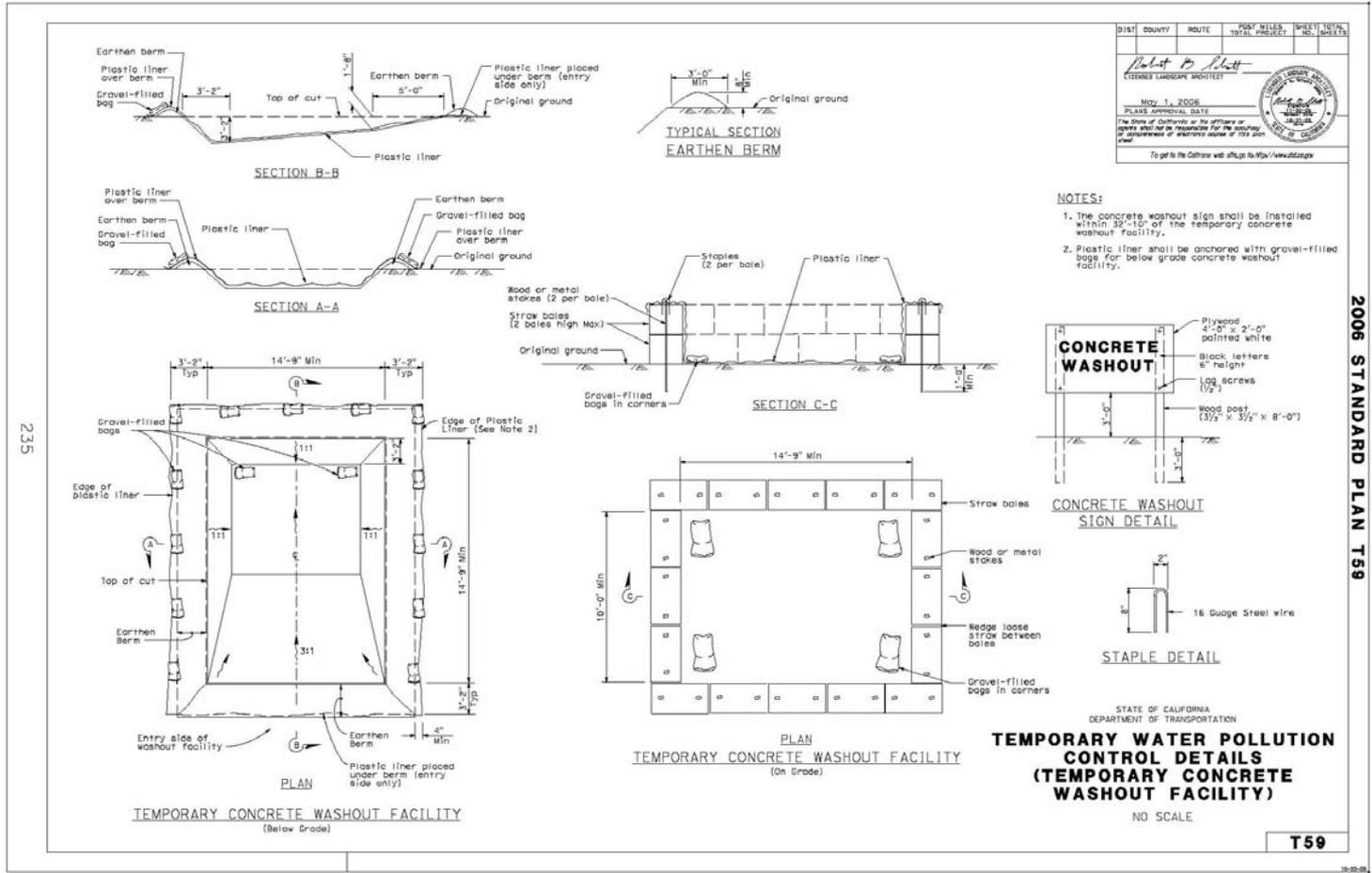


**Above Grade concrete  
washout**



- ◆ PCC and AC waste shall not be allowed to enter storm drains and watercourses
- ◆ Line all washouts with 10-mil polyethylene sheeting
- ◆ Install signs designating temporary washout areas
- ◆ Locate washout facilities a minimum of 50ft from storm drains, water courses
- ◆ Disposal of PCC waste offsite

# WM-8 Temporary Concrete Washout Facility (SSPs 07-346, 07-405, and 07-406)



# WM-9 Sanitary / Septic Waste Management (SSP 07-346)

---



- ◆ Locate sanitary facilities away from storm drains, water courses
- ◆ Do not discharge or bury within Department right-of-way
- ◆ WPCM to monitor weekly

# WM-10 Liquid Waste Management (SSP 07-346)



- ◆ Liquid waste cannot enter storm drain or watercourses
- ◆ Contain liquid in leak-proof containers of sufficient capacity
- ◆ Locate containers at least 50 feet from storm drains, watercourses, and moving vehicles
- ◆ Drilling fluids and residue shall be disposed outside the Department right-of-way
- ◆ Disposal of certain liquid waste may be subject to specific laws or regulations

Tie Back wall construction

# Erosion and Sediment Control Labor Estimates

---

## ◆ Soil Stabilization\*

- Hydroseeding
  - ◆ 150,000 ft<sup>2</sup> a day (flat turf)
  - ◆ 22 bales @ 50lb a bale in a 3000 gal truck
- Hydro Mulch (BFM)
  - ◆ 12,000 ft<sup>2</sup> per 3000 gal truck
  - ◆ 5 loads per day
- Straw Mulch
  - ◆ 2.5 acres an hour
  - ◆ 1 to 2 bales a min
  - ◆ 74 lb bale covers 800 ft<sup>2</sup> @ 2 tons per acre

## ◆ Sediment Controls\*

- Silt Fence
  - ◆ Foreman and 5 laborers
  - ◆ 1000 linear ft a day
- Fiber Rolls
  - ◆ Foreman and 5 laborers
  - ◆ 1500 linear ft a day

\*Estimates are based on vendor quotes actual installation time will vary based on site location, Slope steepness, and accessibility.



# Erosion and Sediment Control Temporary BMP Cost Data

State of California - Department of Transportation  
CONTRACT ITEM COST DATA

ITEM CODE	ITEM DESCRIPTION	UNIT	DIST	NO. OF PROJ	QUANTITY	AVE PRICE PER UNIT	TOTAL AMOUNT
<b>Item Code 074018</b>				<b>Total No. of Proj.</b>	<b>5</b>	<b>Total Amount</b>	<b>\$23,300.00</b>
074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1	7	7.00	\$1,778.57	\$12,450.00
		LS	2	18	18.00	\$4,222.22	\$76,000.00
		LS	3	16	16.00	\$3,122.19	\$49,955.00
		LS	4	19	19.00	\$4,167.11	\$79,175.00
		LS	5	18	18.00	\$2,498.17	\$44,967.00
		LS	6	12	12.00	\$3,608.33	\$43,300.00
		LS	7	28	28.00	\$8,159.39	\$228,463.00
		LS	8	3	3.00	\$6,416.67	\$19,250.00
		LS	9	1	1.00	\$1,000.00	\$1,000.00
		LS	10	6	6.00	\$4,791.67	\$28,750.00
		LS	11	11	11.00	\$4,039.55	\$44,435.00
		LS	12	9	9.00	\$4,875.00	\$43,875.00
<b>Unit Sub Total</b>		<b>LS</b>		<b>148</b>	<b>148.00</b>	<b>\$4,537.97</b>	<b>\$671,620.00</b>
<b>Item Code 074019</b>				<b>Total No. of Proj.</b>	<b>148</b>	<b>Total Amount</b>	<b>\$671,620.00</b>
074020	WATER POLLUTION CONTROL	LS	1	33	33.00	\$7,354.25	\$242,690.40
		LS	2	46	46.00	\$9,355.70	\$430,362.00
		LS	3	43	43.00	\$12,503.26	\$537,640.00
		LS	4	61	61.00	\$8,288.88	\$505,621.92
		LS	5	42	42.00	\$8,052.05	\$338,186.00
		LS	6	62	62.00	\$9,031.85	\$559,975.00
		LS	7	86	86.00	\$34,234.83	\$2,944,195.59
		LS	8	35	35.00	\$10,660.80	\$373,128.13
		LS	9	12	12.00	\$11,716.67	\$140,600.00
		LS	10	36	36.00	\$8,956.67	\$322,440.00
		LS	11	36	36.00	\$21,504.92	\$774,177.00
		LS	12	33	33.00	\$12,395.03	\$409,036.00
<b>Unit Sub Total</b>		<b>LS</b>		<b>525</b>	<b>525.00</b>	<b>\$14,434.38</b>	<b>\$7,578,052.04</b>
<b>Item Code 074020</b>				<b>Total No. of Proj.</b>	<b>525</b>	<b>Total Amount</b>	<b>\$7,578,052.04</b>
074023	TEMPORARY EROSION CONTROL	M2	3	2	12,500.00	\$1.64	\$20,500.00
		M2	10	1	16,200.00	\$1.00	\$16,200.00
		M2	11	13	219,919.00	\$0.45	\$99,111.00

State of California - Department of Transportation  
CONTRACT ITEM COST DATA

ITEM CODE	ITEM DESCRIPTION	UNIT	DIST	NO. OF PROJ	QUANTITY	AVE PRICE PER UNIT	TOTAL AMOUNT
<b>Unit Sub Total</b>		<b>M2</b>		<b>16</b>	<b>248,619.00</b>	<b>\$0.55</b>	<b>\$135,811.00</b>
<b>Item Code 074023</b>				<b>Total No. of Proj.</b>	<b>16</b>	<b>Total Amount</b>	<b>\$135,811.00</b>
074025	TEMPORARY SOIL STABILIZER	KG	6	1	1,020.00	\$2.50	\$2,550.00
		KG	8	1	20.00	\$320.00	\$6,400.00
<b>Unit Sub Total</b>		<b>KG</b>		<b>2</b>	<b>1,040.00</b>	<b>\$8.61</b>	<b>\$8,950.00</b>
<b>Item Code 074025</b>				<b>Total No. of Proj.</b>	<b>2</b>	<b>Total Amount</b>	<b>\$8,950.00</b>
074026	TEMPORARY MULCH	M3	4	2	880.00	\$15.94	\$14,025.00
		M3	10	2	41.70	\$28.06	\$1,170.00
		M3	12	1	130.00	\$150.00	\$19,500.00
<b>Unit Sub Total</b>		<b>M3</b>		<b>5</b>	<b>1,051.70</b>	<b>\$32.99</b>	<b>\$34,695.00</b>
<b>Item Code 074026</b>				<b>Total No. of Proj.</b>	<b>5</b>	<b>Total Amount</b>	<b>\$34,695.00</b>
074027	TEMPORARY EROSION CONTROL BLANKET	M2	2	1	3,000.00	\$6.00	\$18,000.00
		M2	5	1	60.00	\$40.00	\$2,400.00
<b>Unit Sub Total</b>		<b>M2</b>		<b>2</b>	<b>3,060.00</b>	<b>\$6.67</b>	<b>\$20,400.00</b>
<b>Item Code 074027</b>				<b>Total No. of Proj.</b>	<b>2</b>	<b>Total Amount</b>	<b>\$20,400.00</b>
074028	TEMPORARY FIBER ROLL	M	2	6	7,820.00	\$7.66	\$59,930.00
		M	3	7	4,752.00	\$12.37	\$58,775.00
		M	4	2	385.00	\$12.52	\$4,820.00
		M	5	3	1,240.00	\$13.53	\$16,775.00
		M	6	1	38.00	\$100.00	\$3,800.00
		M	10	2	3,410.00	\$12.15	\$41,415.00
		M	11	6	8,384.00	\$13.28	\$111,300.00
		M	12	2	300.00	\$15.00	\$4,500.00
<b>Unit Sub Total</b>		<b>M</b>		<b>29</b>	<b>26,329.00</b>	<b>\$11.44</b>	<b>\$301,315.00</b>
<b>Item Code 074028</b>				<b>Total No. of Proj.</b>	<b>29</b>	<b>Total Amount</b>	<b>\$301,315.00</b>
074029	TEMPORARY SILT FENCE	M	1	3	2,230.00	\$11.24	\$25,060.00
		M	2	6	4,900.00	\$15.38	\$75,350.00
		M	3	7	4,828.00	\$11.07	\$53,470.00
		M	4	8	3,815.00	\$12.31	\$46,964.00
		M	5	6	1,930.00	\$17.42	\$33,630.00



# Erosion and Sediment Control Temporary BMP Cost Data

State of California - Department of Transportation  
CONTRACT ITEM COST DATA

ITEM CODE	ITEM DESCRIPTION	UNIT	DIST	NO. OF PROJ	QUANTITY	AVE PRICE PER UNIT	TOTAL AMOUNT
074029	TEMPORARY SILT FENCE	M	6	3	830.00	\$20.24	\$16,800.00
		M	8	1	420.00	\$5.00	\$2,100.00
		M	9	1	110.00	\$20.00	\$2,200.00
		M	12	3	1,140.00	\$11.67	\$13,300.00
<b>Unit Sub Total</b>		<b>M</b>		<b>38</b>	<b>20,203.00</b>	<b>\$13.31</b>	<b>\$268,874.00</b>
<b>Item Code 074029</b>		<b>Total No. of Proj.</b>		<b>38</b>	<b>Total Amount</b>		<b>\$268,874.00</b>
074030	TEMPORARY STRAW BALE	EA	2	1	20.00	\$30.00	\$600.00
		<b>Unit Sub Total</b>		<b>EA</b>	<b>1</b>	<b>20.00</b>	<b>\$30.00</b>
<b>Item Code 074030</b>		<b>Total No. of Proj.</b>		<b>1</b>	<b>Total Amount</b>		<b>\$600.00</b>
074031	TEMPORARY GRAVEL BAG BERM	EA	3	1	320.00	\$10.00	\$3,200.00
		<b>Unit Sub Total</b>		<b>EA</b>	<b>1</b>	<b>320.00</b>	<b>\$10.00</b>
074031	TEMPORARY GRAVEL BAG BERM	M	5	1	13.00	\$10.00	\$130.00
		M	6	1	100.00	\$70.00	\$7,000.00
		M	8	4	142.00	\$61.13	\$8,880.00
		<b>Unit Sub Total</b>		<b>M</b>	<b>6</b>	<b>255.00</b>	<b>\$62.00</b>
<b>Item Code 074031</b>		<b>Total No. of Proj.</b>		<b>7</b>	<b>Total Amount</b>		<b>\$19,010.00</b>
074032	TEMPORARY CONCRETE WASHOUT FACILITY	EA	1	7	12.00	\$2,104.17	\$25,250.00
		EA	2	13	26.00	\$1,811.35	\$47,095.00
		EA	3	7	8.00	\$2,640.63	\$21,125.00
		EA	4	20	132.00	\$1,101.14	\$145,350.00
		EA	5	15	31.00	\$1,969.52	\$61,055.00
		EA	6	17	30.00	\$2,836.80	\$85,104.00
		EA	8	2	2.00	\$1,500.00	\$3,000.00
		EA	10	14	36.00	\$3,268.06	\$117,650.00
		EA	11	6	20.00	\$1,987.50	\$39,750.00
		EA	12	3	11.00	\$1,909.09	\$21,000.00
<b>Unit Sub Total</b>		<b>EA</b>		<b>104</b>	<b>308.00</b>	<b>\$1,838.89</b>	<b>\$566,379.00</b>
074032	TEMPORARY CONCRETE WASHOUT FACILITY	LS	3	2	2.00	\$3,250.00	\$6,500.00
		LS	5	1	1.00	\$15,000.00	\$15,000.00
		LS	7	1	1.00	\$3,580.00	\$3,580.00
		LS	10	1	1.00	\$5,000.00	\$5,000.00

State of California - Department of Transportation  
CONTRACT ITEM COST DATA

ITEM CODE	ITEM DESCRIPTION	UNIT	DIST	NO. OF PROJ	QUANTITY	AVE PRICE PER UNIT	TOTAL AMOUNT		
		<b>Unit Sub Total</b>		<b>LS</b>	<b>5</b>	<b>5.00</b>	<b>\$6,016.00</b>		
		<b>Item Code 074032</b>		<b>Total No. of Proj.</b>		<b>109</b>	<b>Total Amount</b>		
074033	TEMPORARY CONSTRUCTION ENTRANCE	EA	2	4	12.00	\$2,916.25	\$34,995.00		
		EA	3	3	9.00	\$3,055.56	\$27,500.00		
		EA	4	12	88.00	\$1,386.94	\$122,050.40		
		EA	5	4	7.00	\$2,214.29	\$15,500.00		
		EA	6	2	3.00	\$27,666.67	\$83,000.00		
		EA	10	3	8.00	\$1,993.75	\$15,950.00		
		EA	11	10	27.00	\$6,322.22	\$170,700.00		
		EA	12	2	10.00	\$3,650.00	\$36,500.00		
		<b>Unit Sub Total</b>		<b>EA</b>		<b>40</b>	<b>164.00</b>	<b>\$3,086.56</b>	<b>\$506,195.40</b>
		<b>Item Code 074033</b>		<b>Total No. of Proj.</b>		<b>41</b>	<b>Total Amount</b>		<b>\$516,195.40</b>
074033	TEMPORARY CONSTRUCTION ENTRANCE	LS	3	1	1.00	\$10,000.00	\$10,000.00		
		<b>Unit Sub Total</b>		<b>LS</b>	<b>1</b>	<b>1.00</b>	<b>\$10,000.00</b>	<b>\$10,000.00</b>	
<b>Item Code 074033</b>		<b>Total No. of Proj.</b>		<b>41</b>	<b>Total Amount</b>		<b>\$516,195.40</b>		
074034	TEMPORARY COVER	M2	3	2	1,000.00	\$9.00	\$9,000.00		
		M2	4	8	10,960.00	\$3.49	\$38,250.50		
		M2	5	5	9,120.00	\$1.90	\$17,336.00		
<b>Unit Sub Total</b>		<b>M2</b>		<b>15</b>	<b>21,080.00</b>	<b>\$3.06</b>	<b>\$64,586.50</b>		
<b>Item Code 074034</b>		<b>Total No. of Proj.</b>		<b>15</b>	<b>Total Amount</b>		<b>\$64,586.50</b>		
074035	TEMPORARY CHECK DAM	M	2	1	360.00	\$6.00	\$2,160.00		
		M	3	2	245.00	\$18.61	\$4,560.00		
		M	4	1	88.00	\$50.00	\$4,400.00		
		M	5	2	295.00	\$27.61	\$8,145.00		
		M	11	1	6.00	\$27.00	\$162.00		
<b>Unit Sub Total</b>		<b>M</b>		<b>7</b>	<b>994.00</b>	<b>\$19.54</b>	<b>\$19,427.00</b>		
<b>Item Code 074035</b>		<b>Total No. of Proj.</b>		<b>7</b>	<b>Total Amount</b>		<b>\$19,427.00</b>		
074036	TEMPORARY STRAW BALE BARRIER	M	1	1	800.00	\$20.00	\$16,000.00		
		M	2	3	280.00	\$21.87	\$6,122.50		
		M	11	1	180.00	\$290.00	\$52,200.00		
		<b>Unit Sub Total</b>		<b>M</b>		<b>5</b>	<b>1,260.00</b>	<b>\$58.99</b>	<b>\$74,322.50</b>



# Erosion and Sediment Control Temporary BMP Cost Data

State of California - Department of Transportation  
CONTRACT ITEM COST DATA

ITEM CODE	ITEM DESCRIPTION	UNIT	DIST	NO. OF PROJ	QUANTITY	AVE PRICE PER UNIT	TOTAL AMOUNT	
<b>Item Code 074036</b>		<b>Total No. of Proj.</b>		<b>5</b>	<b>Total Amount</b>		<b>\$74,322.50</b>	
074037	MOVE-IN/MOVE-OUT (TEMPORARY EROSION CONTROL)	EA		3	2	24.00	\$245.83	\$5,900.00
		EA		4	1	9.00	\$400.00	\$3,600.00
		EA		11	3	16.00	\$365.63	\$5,850.00
<b>Unit Sub Total</b>		<b>EA</b>		<b>6</b>	<b>49.00</b>	<b>\$313.27</b>	<b>\$15,350.00</b>	
<b>Item Code 074037</b>		<b>Total No. of Proj.</b>		<b>6</b>	<b>Total Amount</b>		<b>\$15,350.00</b>	
074038	TEMPORARY DRAINAGE INLET PROTECTION	EA		2	1	20.00	\$200.00	\$4,000.00
		EA		3	1	2.00	\$750.00	\$1,500.00
		EA		4	9	715.00	\$133.74	\$95,624.40
		EA		5	1	4.00	\$150.00	\$600.00
		EA		6	2	66.00	\$363.41	\$23,985.00
		EA		8	3	115.00	\$81.63	\$9,387.00
		EA		10	1	1.00	\$1,200.00	\$1,200.00
		EA		11	13	151.00	\$598.41	\$90,360.00
		EA		12	1	3.00	\$400.00	\$1,200.00
<b>Unit Sub Total</b>		<b>EA</b>		<b>32</b>	<b>1,077.00</b>	<b>\$211.57</b>	<b>\$227,856.40</b>	
<b>Item Code 074038</b>		<b>Total No. of Proj.</b>		<b>32</b>	<b>Total Amount</b>		<b>\$227,856.40</b>	
074041	STREET SWEEPING	LS		4	1	1.00	\$100,000.00	\$100,000.00
		LS		5	1	1.00	\$34,600.00	\$34,600.00
		LS		6	1	1.00	\$4,000.00	\$4,000.00
		LS		8	2	2.00	\$17,250.00	\$34,500.00
		LS		10	1	1.00	\$13,500.00	\$13,500.00
		LS		11	19	19.00	\$24,215.79	\$460,100.00
<b>Unit Sub Total</b>		<b>LS</b>		<b>25</b>	<b>25.00</b>	<b>\$25,868.00</b>	<b>\$646,700.00</b>	
<b>Item Code 074041</b>		<b>Total No. of Proj.</b>		<b>25</b>	<b>Total Amount</b>		<b>\$646,700.00</b>	
074042	TEMPORARY CONCRETE WASHOUT (PORTABLE)	EA		4	1	5.00	\$500.00	\$2,500.00
		EA		12	1	3.00	\$4,000.00	\$12,000.00
<b>Unit Sub Total</b>		<b>EA</b>		<b>2</b>	<b>8.00</b>	<b>\$1,812.50</b>	<b>\$14,500.00</b>	
074042	TEMPORARY CONCRETE WASHOUT (PORTABLE)	LS		4	7	7.00	\$3,914.29	\$27,400.00
		LS		6	3	3.00	\$1,333.33	\$4,000.00
		LS		8	3	3.00	\$7,300.00	\$21,900.00

State of California - Department of Transportation  
CONTRACT ITEM COST DATA

ITEM CODE	ITEM DESCRIPTION	UNIT	DIST	NO. OF PROJ	QUANTITY	AVE PRICE PER UNIT	TOTAL AMOUNT	
074042	TEMPORARY CONCRETE WASHOUT (PORTABLE)	LS		11	20	20.00	\$4,822.40	\$96,448.00
<b>Unit Sub Total</b>		<b>LS</b>		<b>33</b>	<b>33.00</b>	<b>\$4,537.82</b>	<b>\$149,748.00</b>	
<b>Item Code 074042</b>		<b>Total No. of Proj.</b>		<b>35</b>	<b>Total Amount</b>		<b>\$164,248.00</b>	
120090	CONSTRUCTION AREA SIGNS	EA		3	1	5.00	\$750.00	\$3,750.00
		EA		12	1	12.00	\$250.00	\$3,000.00
<b>Unit Sub Total</b>		<b>EA</b>		<b>2</b>	<b>17.00</b>	<b>\$397.06</b>	<b>\$6,750.00</b>	
120090	CONSTRUCTION AREA SIGNS	LS		1	28	28.00	\$12,192.44	\$341,388.28
		LS		2	43	43.00	\$17,181.33	\$738,797.00
		LS		3	35	35.00	\$13,097.97	\$458,429.00
		LS		4	56	56.00	\$9,886.05	\$542,419.02
		LS		5	42	42.00	\$6,756.31	\$283,765.00
		LS		6	62	62.00	\$15,871.71	\$984,046.00
		LS		7	84	84.00	\$11,277.12	\$947,277.87
		LS		8	34	34.00	\$9,860.35	\$335,252.00
		LS		9	12	12.00	\$48,252.42	\$579,029.00
		LS		10	36	36.00	\$6,915.31	\$248,951.00
		LS		11	34	34.00	\$12,742.97	\$433,261.00
		LS		12	32	32.00	\$8,349.02	\$267,168.60
<b>Unit Sub Total</b>		<b>LS</b>		<b>498</b>	<b>498.00</b>	<b>\$12,369.04</b>	<b>\$6,159,783.77</b>	
<b>Item Code 120090</b>		<b>Total No. of Proj.</b>		<b>500</b>	<b>Total Amount</b>		<b>\$6,166,533.77</b>	
120100	TRAFFIC CONTROL SYSTEM	LS		1	31	31.00	\$65,888.61	\$2,042,547.00
		LS		2	45	45.00	\$101,760.13	\$4,579,206.00
		LS		3	41	41.00	\$75,353.96	\$3,089,512.50
		LS		4	58	58.00	\$81,857.22	\$4,747,718.49
		LS		5	42	42.00	\$57,616.07	\$2,419,874.90
		LS		6	62	62.00	\$89,493.08	\$5,548,571.00
		LS		7	85	85.00	\$250,371.08	\$21,281,541.48
		LS		8	34	34.00	\$92,094.40	\$3,131,209.50
		LS		9	12	12.00	\$151,992.75	\$1,823,913.00
		LS		10	36	36.00	\$89,736.36	\$3,230,509.00
		LS		11	32	32.00	\$94,946.77	\$3,038,296.50
		LS		12	32	32.00	\$62,116.06	\$1,987,714.00
<b>Unit Sub Total</b>		<b>LS</b>		<b>510</b>	<b>510.00</b>	<b>\$111,609.05</b>	<b>\$56,920,613.37</b>	

---

# Class Exercise

# Millionaire Review Question #1

---

---

The letters BMP are also known as?

a) Best Materials Practical

b) Big Major Problem

c) Best Method Practice

d) Best Management Practice

# Millionaire Review Question #2

---

Which one of the six BMP categories found in the BMP Manual, includes Scheduling?

a) Soil Stabilization

b) Non-Storm Water Management

c) Sediment Control

d) Tracking Control

# Millionaire Review Question #3

---

Which one of the following is not a Soil Stabilization BMP?

a) Hydraulic Mulch

b) Slope Drains

c) Earth Dikes

d) Desilting Basin

# Millionaire Review Question #4

---

What is the Caltrans minimum required application rate for straw mulch?

a) 10 tons per acre

b) 1 ton per acre

c) 20 ton per acres

d) 2 tons per acre

# Millionaire Review Question #5

---

---

**“Keying in the bottom” is an installation requirement of which BMP?**

a) Gravel Bag Berms

b) Grocery Bag Berms

**c) Silt Fence**

d) Geotextiles / Plastic Covers

# Millionaire Review Question #6

What is a common way for construction sites to achieve/maintain the rainy season DSA requirement?

a) Apply temporary SC regularly

b) Apply temporary EC regularly

c) Install both silt fence and straw bales

d) Apply permanent SC ASAP

# Questions ?

---

