

- a) Work area is located alongside the south hardscape drainage channel upstream from the Western Basin as shown on Project Drawings. Excavated earthen material quantity taken from the Access Bench Re-grade limits shall be placed within the erosion area limits adjacent to the hardscape channel.
- b) Earthen material used as fill alongside the hardscape channel shall be moisture conditioned and compacted in place in such manner to facilitate a firm, stable and unyielding earthen backfill. Contractor shall make every reasonable effort, as agreed upon by the Contractor and County prior to the start of this work, to ensure placement methodology does not damage the hardscape channel.
- c) Finished surfaces of repaired areas shall be flush with adjacent hardscape structures and adjacent earthen slope surfaces, and graded to drain as shown on the Project Drawings and as directed by the onsite County representative.

5.3.7. CMP Clean-out (Edom Hill)

- a) Contractor shall implement and maintain traffic control devices and flagmen as required by the Contractor Site Safety Plan per Special Provisions Section 1.6.2.
- b) Contractor shall remove all sediment/debris from the existing 18-inch CMP which crosses under the landfill entrance road north of, and downstream of, the Compost Facility Sedimentation Basin. Sediment from this CMP shall be relocated to the Basin Excavation Stockpile limits and left in a grade to drain condition acceptable to the County. Removed debris that is not earthen material shall be considered refuse, and disposed of properly at the onsite Transfer Station facility.
- c) Contractor shall reconfigure the original shape to this damaged/bent pipe inlet and outlet. Work shall provide free-flowing inlet and outlet that does not inhibit drainage.
- d) Contractor shall grade to drain the parkway inlet and outlet areas to this CMP crossing as shown on the Project Drawings or as directed by the onsite County representative. Sediment from these parkways shall be relocated to the Basin Excavation Stockpile limits and left in a grade to drain condition acceptable to the County. Removed debris that is not earthen material shall be considered refuse, and disposed of properly at the onsite Transfer Station facility.

5.4. Measurement and Payment

- A. Payment for Bid Item No. 1 “Bench Grading/Erosion Repair” shall be based on the final in-place linear feet of Bench Grading/Erosion Repair constructed within the limits specified in the Project Drawings and as directed by the County. The final length of Bench Grading/Erosion Repair shall be verified by the County based on conventional ground measurement, and shall be measured to the nearest linear foot along the toe of slope. Payment shall be made, after acceptance, at the contract unit price per linear foot as stated in the Contractor’s Proposal, Bid Item

No. 1. Payment shall constitute full compensation to the Contractor for all work related to the furnishing and installation of Bench Grading/Erosion Repair including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. Payment shall also constitute full compensation for furnishing all labor, supervision, materials, tools, and equipment necessary to install Bench Grading/Erosion Repair in accordance with the Contract Documents. No additional compensation shall be given for Bench Grading/Erosion Repair completed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

B. Payment for Bid Item No. 2 "Slope & Top Deck Erosion Repair" shall be based on the final in-place square feet of Slope Erosion Repair constructed within the limits specified in the Project Drawings and as directed by the County. The final area of Slope & Top Deck Erosion Repair shall be verified by the County based on conventional ground measurement, and shall be measured to the nearest square foot. Payment shall be made, after acceptance, at the contract unit price per square foot as stated in the Contractor's Proposal, Bid Item No. 2. Payment shall constitute full compensation to the Contractor for all work related to the furnishing and installation of Slope & top Deck Erosion Repair including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. Payment shall also constitute full compensation for furnishing all labor, supervision, materials, tools, and equipment necessary to install Slope & Top Deck Erosion Repair in accordance with the Contract Documents. No additional compensation shall be given for Slope & top Deck Erosion Repair completed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

C. Payment for Bid Item No. 3a "Berm Installation" shall be based on the final in-place linear feet of Earthen Berm constructed within the limits specified in the Project Drawings and as directed by the County at the Edom Hill Landfill. Payment for Bid Item No. 3b "Berm Installation" shall be based on the final in-place linear feet of Earthen Berm constructed within the limits specified in the Project Drawings and as directed by the County at the Beaumont Landfill. The final length of Earthen Berm shall be verified by the County based on conventional ground measurement, and shall be measured to the nearest linear foot. Payment shall be made, after acceptance, at the contract unit price per linear foot as stated in the Contractor's Proposal, Bid Item No. 3a and 3b, respectively. Payment shall constitute full compensation to the Contractor for all work related to the furnishing and installation of Earthen Berm including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. Payment shall also constitute full compensation for furnishing all labor, supervision, materials, tools, and equipment necessary to install Earthen Berm in accordance with the Contract Documents. No additional compensation shall be given for Earthen Berms placed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

- D. The measurement of the final quantity for Bid Item No. 4 “Basin Excavation, Haul, Stockpile” shall be made, after acceptance, at the contract lump sum price as stated in the Contractor’s Proposal, Bid Item No. 4. Payment shall constitute full compensation to the Contractor for all work related to Basin Excavation, Haul, Stockpile including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for Basin Excavation, Haul, Stockpile outside the specified limits and dimensions unless otherwise ordered in writing by the County.
- E. The measurement of the final quantity for Bid Item No. 5 “Engineered Fill” shall be made, after acceptance, at the contract lump sum price as stated in the Contractor’s Proposal, Bid Item No. 5. Payment shall constitute full compensation to the Contractor for all work related to Engineered Fill including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for Engineered Fill outside the specified limits and dimensions unless otherwise ordered in writing by the County.
- F. The measurement of the final quantity for Bid Item No. 6 “Access Bench Re-Grade/Erosion Backfill” shall be made, after acceptance, at the contract lump sum price as stated in the Contractor’s Proposal, Bid Item No. 6. Payment shall constitute full compensation to the Contractor for all work related to Access Bench Re-Grade/Erosion Backfill including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for Access Bench Re-Grade/Erosion Backfill outside the specified limits and dimensions unless otherwise ordered in writing by the County.
- G. The measurement of the final quantity for Engineered Fill within the Edom Hill Compost Facility Basin Area and CMP Clean-out as shown in Project Drawing Sheet 5 - Detail A shall be made, after acceptance, at the contract lump sum price as stated in the Contractor’s Proposal, Bid Item No. 15. Work under Bid Item #15 includes Earthwork - Engineered Fill for reconstructing the basin buttress, Earthwork - CMP Clean-out, and new Shotcrete Drainage Structures within the limits shown in Project Drawing Sheet 5 - Detail A. Payment shall constitute full compensation to the Contractor for all work related to Compost Facility Basin Area Improvements including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for Compost Facility Basin Area Improvements outside the specified limits and dimensions unless otherwise ordered in writing by the County.

END OF SECTION 5

SECTION 6) HARDSCAPE STRUCTURES (Edom Hill & Beaumont)

6.1. General

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools and supervision for the construction of Concrete and Shotcrete Structures, Masonry Splash Walls, and Rip-Rap. The work shall include but not be limited to grading, excavation, hauling, subgrade preparation, and construction of the structures, walls and rip-rap to the elevations, lines and grades and at the locations shown on the Project Drawings and as directed by the County. This work shall also include any cut or backfill necessary to achieve finished elevations adjacent to structures and walls once construction/installation is complete.

Materials, Execution and Payment for Engineered Fill (Section 5), CMP Clean-out (Section 5) and Shotcrete Drainage Structures (Section 6) within the Edom Hill Compost Facility Basin Area limits shown on Project Drawing Sheet 5 - Detail A shall be considered items of work within the Compost Facility Basin Area, and paid under Bid Item #15 as described in these Special Provisions and Contract Documents.

6.2. Materials

- A. The Contractor shall adhere to Stormwater Best Management Practice (BMP) WM-8 – Concrete Waste Management as published by the California Stormwater Quality Association. This will include but not limited to the installation and removal of onsite temporary concrete washout facilities. Contractor shall provide application of this BMP at the direction of, and location(s) directed by, the County.
- B. Portland Cement Concrete (PCC) for drainage inlets shall be Class 520-A-2500 in conformance with Section 201-1 of the Standard Specifications.
- C. Reinforcing steel (rebar) for drainage inlets shall be grade 60 and shall conform to subsection 201-2.2.1 of the Standard Specifications. The rebar size is shown on the Project Drawings.
- D. PCC material for V-ditch channels shall be Class 650-D-3250P (Shotcrete) in conformance with Section 201-1 of the Standard Specifications and shall be air-placed in conformance with sub-section 303-2.1.3 Method B (Shotcrete) of the Standard Specifications.
- E. Fiber Reinforcement for Class 650-D-3250P (Shotcrete) shall conform to sub-section 201-2.3 Type III of the Standard Specifications.
- F. Welded Wire Reinforcement (WWR) for the V-ditch channels shall conform to sub-section 201-2.2.3 of the Standard Specifications. The gage of the wire and dimensions of the mesh are specified in the Project Drawings.

- G. Type II white-pigmented curing compound for PCC structures shall conform to sub-section 201-4.1.1 of the Standard Specifications.
- H. Masonry Splash Wall –
 - a. Concrete block masonry units (CMU) for wall structure shall be six-inch by eight-inch by eighteen-inch (6" x 8" x 18") CMU and shall conform to sub-section 202-2.2 of the Standard Specifications.
 - b. Reinforced concrete for wall footing shall be Class 560-C-3250 in conformance Section 201-1 of the Standard Specifications.
 - c. Reinforcing steel (rebar) for wall footing shall be grade 60 and shall conform to sub-section 201-2.2.1 of the Standard Specifications. The rebar size is shown on the Project Drawings.
 - d. Mortar, grout, and water used in construction of CMU shall conform to sub-section 202-2.1 and Section 202-3 of the Standard Specifications. Mortar shall attain a minimum compressive strength of 1,800 psi and grout shall attain a minimum compressive strength of 2,000 psi in 28 days when tested in accordance with ASTM C109.
- I. Rip-Rap –
 - a. Contractor shall utilize the existing demotion pile of unreinforced concrete v-ditch located adjacent to the transfer station sedimentation basin as shown on the Project Drawings.

6.3. Execution

- A. PCC structures shall be placed at locations shown on the Project Drawings and as directed by the onsite County representative.
- B. The subgrade for PCC structures shall be prepared either by excavating or filling, and shall conform to lines and grades of existing drainage structures, and be located as shown on the Project Drawings. Where the structures are in native cut, the upper six (6) inches of subgrade shall be compacted to a minimum of 90% of the maximum density as determined per ASTM D1557. This shall be achieved by scarifying the exposed surface to a depth of six (6) inches and re-compacting this earthen section as required by the Specifications. For areas requiring engineered fill, the finished subgrade shall be firm and suitable for placement of PCC structures, and shall be compacted to a minimum of ninety-percent (90%) of the maximum density as determined per ASTM D1557. Clearing, grubbing and excavation for the PCC structures shall comply with the provisions of Section 300-7 of the Standard Specifications.

- C. Contractor shall saw-cut existing concrete/shotcrete structures as necessary or as directed by the County to provide a competent edged surface for tie-in to new hardscape structures.
- D. Mortar blocks with wire ties, or other means acceptable to the County shall be used to secure welded wire mesh reinforcement firmly in place.
- E. Contractor shall notify County site personnel at least one day prior to delivery of PCC materials to the Edom Hill and Beaumont Landfills for each day of delivery. Delivery trucks shall access work areas by use access routes approved in advance by the County.
- F. Concrete mixing shall comply with Section 201-1.4 of the Standard Specifications.
- G. Concrete shall be installed and finished to provide positive drainage towards downstream drainage structures.
- H. Concrete for shotcrete “V” ditch and trapezoidal channels shall be air-placed concrete in accordance with sub-section 303-2.1.3 Method B (Shotcrete), part 2 of 303-2.2 for Method B, 303-2.4, 303-2.6, 303-2.7, 303-2.8, 303-2.9 and 303-1.10 of the Standard Specifications. Concrete shall be installed and finished to provide positive drainage towards downstream drainage structures.
- I. Weakened plane joints for PCC structures shall be installed perpendicular to the water flow direction at ten (10) foot intervals along the water flow direction as directed by the County. Depth of joint shall be one (1) inch.
- J. Type II white-pigmented curing compound shall be applied to all concrete and shotcrete structures in accordance with the requirements of sub-sections 201-4.1.2 and 303-1.10.
- K. Open joints shall be constructed using a suitable material that is subsequently removed. PCC corners shall not be chipped or broken when removing material. Reinforcement shall not be extended through an open joint. Joint filler shall be placed in position before PCC is placed. Joints shall be filled with mastic to prevent the passage of concrete. PCC edges at joints shall be finished using an edger.
- L. As deemed necessary by the County, sets of three (3) test cylinders of PCC being placed will be cast and tested by the County. One (1) of the test cylinders shall be tested at 7 days for 70 percent of project-specified design strength. The remaining two cylinders shall be tested at 14 days and 28 days (for full design strength) respectively. PCC compressive strength testing shall be per ASTM C39 and ASTM C31. The cylinders shall be paid for by the County.

- M. Contractor shall collect and retain possession of each and every PCC load ticket at the time of material delivery to the project site. Contractor shall present a complete set of daily load tickets to the County on the day PCC material(s) is placed.
- N. Masonry Splash Walls shall be constructed in accordance with Section 303-4 of the Standard Specifications; and shall be placed at locations adjacent to existing hardscape structures as shown on the Project Drawings and as directed by the onsite County representative.
- O. Subgrade surfaces for Masonry Splash Wall footings shall be prepared either by excavating or filling, and shall conform to lines and grades of existing adjacent drainage structures. Where the structures are in native cut, the upper six (6) inches of subgrade shall be compacted to a minimum of 90% of the maximum density as determined per ASTM D1557. This shall be achieved by scarifying the exposed surface to a depth of six (6) inches and re-compacting this earthen section as required by the Specifications. For areas requiring engineered fill, the finished subgrade shall be firm and suitable for placement of PCC structures, and shall be compacted to a minimum of ninety-percent (90%) of the maximum density as determined per ASTM D1557.
- P. Masonry Splash Wall footings shall be placed adjacent to the outside vertical edge of existing hardscape structures for the purpose of preventing water infiltration/erosion between the splash wall and the drainage structure along the entire length of the splash wall. The entire outside edge of the hardscape structure shall be clean, and free of soil or loose particles when the masonry wall footing is installed.
- Q. Contractor shall provide grade-to-drain condition adjacent to newly-installed hardscape drainage structures as directed/accepted by the onsite County representative. Contractor shall provide grade-to-drain condition adjacent to newly-installed Masonry Splash Walls as shown on the Project Drawings.
- R. Rip-Rap - Contractor shall break existing concrete v-ditch sections into 4-foot to 6-foot sections acceptable to the County, and place these sections as rip-rap at the existing down drain outlet located on the Project Drawings in such position and configuration acceptable to the onsite County representative.

6.4. Measurement and Payment

- A. Payment for Bid Item No. 7 “Concrete Drainage Structures” shall be based on the final in-place square footage of ground covered with Concrete Drainage Structures within the limits specified in the Project Drawings and as directed by the County. The area of the final surface shall be verified by the County based on conventional ground surveying. Quantity shall be calculated based on the “true” area and to the nearest square foot utilizing digital terrain modeling method. Payment shall be made, after acceptance, at the contract unit price per square foot

as stated in the Contractor's Proposal, Bid Item No. 7. Payment shall constitute full compensation to the Contractor for all work related to the furnishing and installation of Concrete Drainage Structures including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. Payment shall also constitute full compensation for furnishing all labor, supervision, materials, tools, and equipment necessary to install Concrete Drainage Structures in accordance with the Contract Documents. No additional compensation shall be given for Concrete Drainage Structures placed outside the specified limits and dimensions, or for PCC keyways, unless otherwise ordered in writing by the County.

- B. Payment for Bid Item No. 8 "Shotcrete Drainage Structures" shall be determined by the County based on field measurements of the axial length (linear feet) of Shotcrete Drainage Structures as shown on the Project Drawings and as directed by the County. Payment shall be made, after acceptance, at the contract unit price per linear foot as stated in the Contractor's Proposal, Bid Item No. 8. Payment shall constitute full compensation to the Contractor for all work related to the furnishing and installation of Shotcrete Drainage Structures including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. Payment shall also constitute full compensation for furnishing all labor, supervision, materials, tools, and equipment necessary to install Shotcrete Drainage Structures in accordance with the Contract Documents. No additional compensation shall be given for Shotcrete Drainage Structures placed outside the specified limits and dimensions, or for PCC keyways, unless otherwise ordered in writing by the County.
- C. The measurement of the final quantity for Bid Item No. 9 "Masonry Splash Wall" shall include reinforced concrete footing, and shall be determined by the County based on the field measurements of the axial length (linear feet) along the centerline of the completed masonry splash wall. Payment for the masonry splash wall shall be based upon the unit price per linear foot as stated in the Contractor's Proposal, Bid Item No. 9. Payment for the masonry splash wall shall include subgrade preparation and construction of reinforced concrete footing and masonry wall including reinforcing steel and grout material as specified in the Contract Documents and indicated in the Project Drawings. Payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the masonry splash wall completed in place.
- E. The measurement of the final quantity for Bid Item No. 10 "Rip-Rap" shall be made, after acceptance, at the contract lump sum price as stated in the Contractor's Proposal, Bid Item No. 10. Payment shall constitute full compensation to the Contractor for all work related to Rip-Rap including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for Rip-Rap outside the specified limits and dimensions unless otherwise ordered in writing by the County.

- G. The measurement of the final quantity for Shotcrete Drainage Structures within the Edom Hill Compost Facility Basin Area as shown in Project Drawing Sheet 5 - Detail A shall be made, after acceptance, at the contract lump sum price as stated in the Contractor's Proposal, Bid Item No. 15. Work under Bid Item #15 includes Earthwork - Engineered Fill for reconstructing the basin buttress, Earthwork - CMP Clean-out, and new Shotcrete Drainage Structures within the limits shown in Project Drawing Sheet 5 - Detail A. Payment shall constitute full compensation to the Contractor for all work related to Compost Facility Basin Area Improvements including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for Compost Facility Basin Area Improvements outside the specified limits and dimensions unless otherwise ordered in writing by the County.

END OF SECTION 6

SECTION 7) ROCK BOULDER RELOCATION/PLACEMENT (*Mead Valley*)

7.1. General

The work covered in this section shall consist of furnishing all necessary labor, materials, equipment, tools and supervision for relocating rock boulders from the designated onsite procurement area to selected locations along the property boundary, and resetting existing rock boulders along selected locations along the property boundary as shown on the Project Drawings and as directed by the County.

7.2. Materials

- A. Acceptable rock size from the onsite procurement area shall have approximate mean spherical diameter of forty-eight (48) inches; or typical rectangular shape with 75-inch average length and 26-inch average height; and weight in excess of 2.5 ton (5,000 pounds).
- B. Rocks from the onsite procurement area shall be of such shape as to form stable rock barrier along property line as determined by the onsite County project representative.

7.3. Execution

- A. Contractor shall notify County ten (10) calendar days prior to Contractor start date for Rock Boulder Relocation/Placement. County shall schedule and perform a biological clearance survey for the Rock Removal Secondary Area Limits during this interim period. If approved by the County, Contractor may utilize this area for Rock Boulder selection. Contractor would then have thirty (30) calendar days to complete rock removal within this secondary area under this survey.
- B. Contractor shall perform rock boulder resetting, and relocation/placement work within the areas designated on the Project Drawings, including but not limited to the rock procurement area, selected property boundary locations, and the access road(s) designed by the County for Contractor use.
- C. Rock boulder removal work from the onsite procurement area shall be performed so as to avoid impacts to drainages, wetlands, and waterways as solely determined by the County.
- D. County representatives shall monitor work areas, including procurement locations and associated access routes, for environmentally sensitive plant/animal species per the Multiple Species Habitat Conservation Plan (MSHCP) for this site. Site conditions could require suspension of work in a given area for additional evaluation.
- E. Contractor shall place rock boulders adjacent to and inside the landfill property

line or chain-link fencing so that placed rock boulders remain entirely within the landfill property.

- F. Rock boulders shall be placed so that longitudinal axis is normal to the ground surface, and arraigned so that each rock has a stable, multi-point (or continuous) contact with the ground surface. Rock boulders shall be placed in contact with adjacent boulders in such manner for blocking two wheeled vehicular access to the landfill site as determined by the onsite County representative. Placing of rock boulders by dumping shall not be permitted.
- G. Contractor shall provide dust control throughout the duration of this work which shall adhere to South Coast Air Quality Management District Rule 403 Fugitive Dust regulations throughout this rock relocation operation.
- H. Contractor shall notify the County at least 48 hours prior to mobilizing for Onsite Rock Relocation work so that the County representative may meet the Contractor onsite to point out Do Not Enter zones, confirm work area limits, access roads, etc.

7.4. Measurement and Payment

- A. Payment for Bid Item No. 13 “Onsite Rock Boulder Relocation/Placement” shall be made, after acceptance, at the contract linear foot price for placement lengths shown on the Project drawings as stated in the Contractor’s Proposal, Bid Item No. 13. Payment shall constitute full compensation to the Contractor for all work related to Onsite Rock Boulder Relocation/Placement/Resetting including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. Payment shall also constitute full compensation for furnishing all labor, supervision, materials, tools, and equipment necessary for Onsite Rock Boulder Relocation / Placement / Resetting in accordance with the Contract Documents. No additional compensation shall be given for Onsite Rock Boulder Relocation/Placement/Resetting placed outside the specified limits and dimensions unless otherwise ordered in writing by the County. No additional compensation shall be given for relocation of procurement work resulting from MSHCP considerations.

END OF SECTION 7

SECTION 8) GREEN WASTE/PALM WASTE APPLICATIONS (Edom Hill, Mead Valley and Coachella)

8.1. General

The work covered in this section shall consist of furnishing all necessary labor, materials, equipment, tools and supervision for: (1) coordinating delivery; and placing, spreading and track-walking Processed Palm Waste material within designated areas at the Edom Hill landfill; and (2) spreading, relocating and track-walking of in-place Processed Green Waste and Palm Waste materials within designated areas at the Mead Valley and Coachella landfill sites located in Riverside County as shown on the Project Drawings and as directed by the County.

8.2. Materials

- A. Palm Waste Installation (Bid Item #11 – Edom Hill)
Processed Palm Waste shall be delivered from the Burrtec compost facilities at the Edom Hill and Coachella landfill sites under agreement between Burrtec Industries and the County. This Processed Palm Waste is defined as palm waste material which has been ground so that the maximum dimension in any direction is six (6) inches or less; and shall be composed of palm waste material only, and free of refuse and contaminants as determined by the County.
- B. Green Waste/Palm Waste - Spread, Relocate and Track-Walk (Bid Item 14a – Mead Valley and Bid Item 14b - Coachella)
In-place Green Waste and Processed Palm Waste at the Mead Valley and Coachella landfill units are defined as green waste materials and palm waste materials, respectively, which have been ground so that the maximum dimension in any direction is six (6) inches or less. In-place material at the Mead Valley Landfill subject to this project work includes Processed Green Waste on designated slope areas shown on the Project Drawings. In-place and stockpiled Palm Waste material at the Coachella Landfill subject to this project work is located in the southwest corner area of the landfill unit as shown on the Project Drawings.

8.3. Execution

8.3.1. Palm Waste Installation (Edom Hill)

- A. Contractor shall perform Palm Waste Installation within the bench and slope areas shown on the Project Drawings.
- B. The Contractor shall coordinate delivery of Palm Waste loads with the Burrtec Waste Industries (Burrtec) representative designated by the County; Contractor shall work directly with that Burrtec representative. To maximize the efficient operation and progress of Contractor work, Contractor shall determine a required Palm Waste quantity for each work area, and the location where each load is

delivered by Burrtec. Contractor shall coordinate delivery schedules with Burrtec in such manner to expedite progress of the work.

- C. County shall verify Palm Waste load deliveries are acceptable prior to handling by the Contractor.
- D. The Contractor shall provide the equipment and manpower to evenly place, spread and track-walk Processed Palm Waste in a safe and efficient manner.
- E. Processed Palm Waste material shall not be placed or spread on hardscape (concrete or asphalt) structures. Any material placed within these areas shall be removed by the Contractor.
- F. Contractor shall provide a three (3) to six (6) inch layer of Processed Palm Waste material over designated areas shown on the Project Drawings and as directed by the onsite County representative.
- G. Processed Palm Waste material shall be spread by use of a manure spreader or similar type of equipment as approved in advance by the County. In no case shall the depth of spread Palm Waste material be less than three (3) inches or greater than six (6) inches in final placed form.
- H. Contractor shall apply adequate compaction to the spread Palm Waste as determined by the County, and shall apply adequate water for dust control purposes. Track-walking shall be performed by a CAT D-6 type dozer or larger as approved by the County.
- I. Contractor heavy equipment and vehicles shall travel no closer than ten (10) feet to any environmental structure. Palm Waste material shall be hand-placed within ten (10) feet of environmental structures including but not limited to, above-ground pipe system, wells, bollards, etc. Any material placed on these structures shall be removed by the Contractor. Green Waste material shall be placed no closer than five (5) feet from vault boxes.

Provider may stockpile a combined maximum of one hundred (100) tons of Palm Waste material at any time during spreading operations.

8.3.2. Green Waste/Palm Waste – Spread & Track-Walk (Mead Valley & Coachella)

- A. Contractor shall spread, relocate and track-walk Green Waste material within designated slope areas at the Mead Valley Landfill within the limits shown on the Project Drawings.
- B. Contractor shall spread, relocate and track-walk Palm Waste material within designated bench and slope areas at the Coachella Landfill within the limits shown on the Project Drawings.
- C. Contractor heavy equipment and vehicles shall travel no closer than ten (10) feet to any environmental structure. Palm Waste material shall be hand-placed within

ten (10) feet of environmental structures including but not limited to, above-ground pipe system, wells, bollards, etc. Any material placed on these structures shall be removed by the Contractor. Green Waste material shall be placed no closer than five (5) feet from vault boxes.

- D. Contractor shall apply adequate compaction to the spread Green Waste and Palm Waste as determined by the County, and shall apply adequate water for dust control purposes. Track-walking shall be performed by a CAT D-6 type dozer or larger as approved by the County.
- E. Mead Valley – The existing Green Waste layer along slopes shall be spread to provide a uniform thickness material mat. Contractor shall rework this Green Waste layer to eliminate visible piles, minimize undulations, and provide access for tractor/bobcat-type vegetative mowing equipment. Any excess material generated from this work shall be relocated and spread along the designated Top Deck placement area limits shown on the Project Drawings. This top deck area currently contains no green waste-type layer. In no case shall the depth of spread Green Waste material on this top deck area be less than three (3) inches or greater than six (6) inches in final placed form.
- F. Coachella - The Palm Waste stockpiles shall be relocated and spread to provide a uniform thickness material mat on benches and slopes within the area limits shown on the Project Drawings. Contractor shall provide a three (3) to six (6) inch layer of Processed Palm Waste material over designated areas shown on the Project Drawings and as directed by the onsite County representative.

8.4. Measurement and Payment

- A. The measurement of the final quantity for Bid Item No. 11 “Edom Hill - Palm Waste Installation” shall be made, after acceptance, at the contract lump sum price as stated in the Contractor’s Proposal, Bid Item No. 11. Payment shall constitute full compensation to the Contractor for all work related to “Edom Hill - Palm Waste Installation” including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for “Edom Hill - Palm Waste Installation” outside the specified limits and dimensions unless otherwise ordered in writing by the County.
- B. The measurement of the final quantity for Bid Item No. 14a “Mead Valley - Green Waste – Spread, Relocate, and Track-Walk” and No. 14b “Coachella - Palm Waste – Spread, Relocate and Track-Walk” shall be made, after acceptance, at the contract lump sum price as stated in the Contractor’s Proposal, Bid Item No. 14a and Bid Item No. 14b. Payment shall constitute full compensation to the Contractor for all work related to spreading, relocating and track-walking Green Waste and Palm Waste including but not limited to all labor, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for Bid Item No.

14a “Mead Valley - Green Waste – Spread, Relocate, and Track-Walk” and No. 14b “Coachella - Palm Waste – Spread, Relocate and Track-Walk” outside the specified limits and dimensions unless otherwise ordered in writing by the County.

END OF SECTION 8

SECTION 9) AUTHORIZED TIME & MATERIALS WORK (All Sites)

9.1. General

The County shall have the right to add work of a different character or function, and have the Contractor perform such added work when such work is considered by the County to be appurtenant to the satisfactory completion of the project. "Authorized Time and Materials" shall be made when prior authorization and approval has been provided to the Contractor by the County for work of a different character or function and for which no basis for payment is prescribed in the Contract Documents.

The Contractor shall provide a rate schedule for all labor and equipment that may reasonably be anticipated for use during the project. Labor rates shall be consistent with those required by the prevailing wage rate requirements of the Contract and shall reflect all benefits and employer costs. Once the labor and equipment rates have been approved by the Project Manager, they will become the basis for compensation for any Time and Material work requested by the County. The Contractor is advised, however, that there will be no compensation from the Time and Material Allocation unless the work has been authorized in writing by the Project Manager. Additionally, use of the Time and Material Allocation will be at the sole discretion of the County. All or any portion of the allocation amount may be deleted from the Contract.

The signing of the contract by the Contractor will be deemed to be an agreement on his part to perform the added work, as and when ordered by the County. If the required added work results in delay to the project, the Contractor will be given an appropriate extension of time.

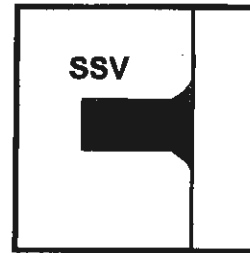
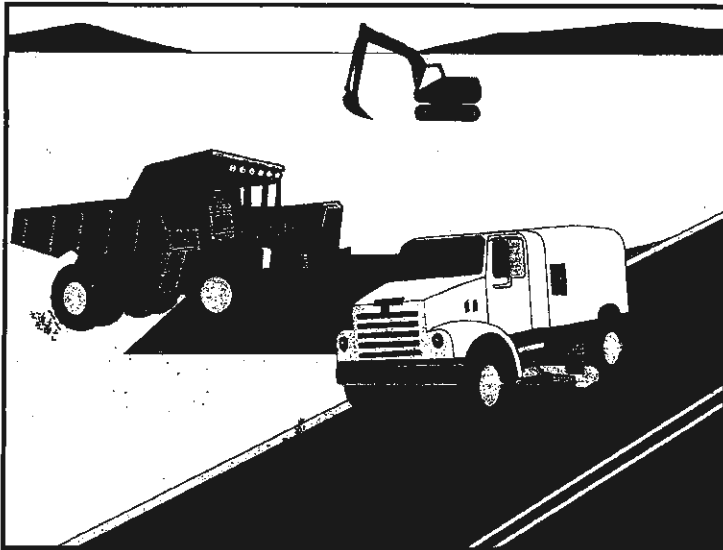
The cost of all work performed by the Contractor on an "Authorized Time and Material" basis will be computed in the manner described in Section 7.3. of the General Provisions in the Contract Documents, and the compensation thus provided shall be full payment to the Contractor related to the authorized time and material work.

END OF SECTION 9

Appendix A
BMP Installation Details
from the
CASQA/Cal-Trans Stormwater BMP Handbook

Street Sweeping and Vacuuming

SC-7



Standard Symbol

BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose Practices to remove tracked sediment to prevent the sediment from entering a storm drain or watercourse.

Appropriate Applications These practices are implemented anywhere sediment is tracked from the project site onto public or private paved roads, typically at points of ingress/egress.

Limitations Sweeping and vacuuming may not be effective when soil is wet or muddy.

Standards and Specifications

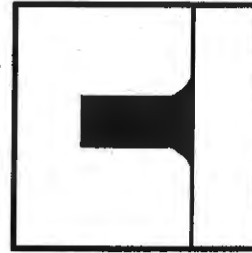
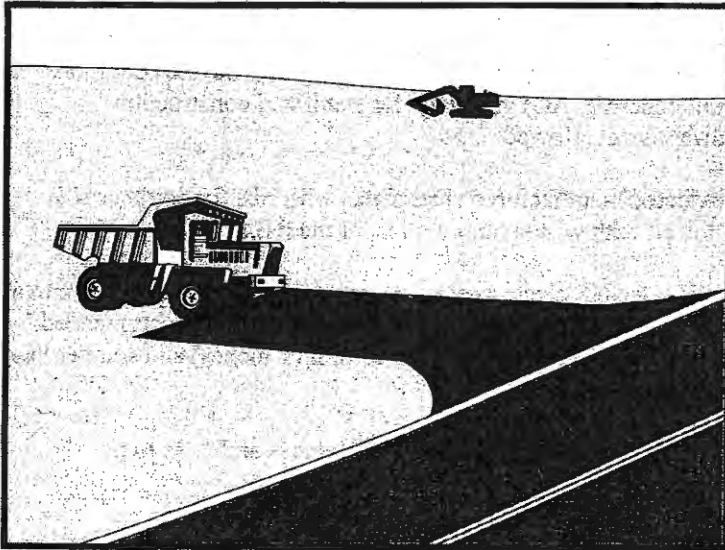
- Kick brooms or sweeper attachments shall not be used.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking shall be swept and/or vacuumed daily.
- If not mixed with debris or trash, consider incorporating the removed sediment back into the project.

Maintenance and Inspection

- Inspect ingress/egress access points daily and sweep tracked sediment as needed, or as required by the Resident Engineer (RE).
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite in conformance with the provisions in Standard Specifications Section 7-1.13 .



Stabilized Construction Entrance/Exit **TC-1**



Standard Symbol

BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Appropriate Applications

- Use at construction sites:
 - Where dirt or mud can be tracked onto public roads.
 - Adjacent to water bodies.
 - Where poor soils are encountered.
 - Where dust is a problem during dry weather conditions.
- This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Site conditions will dictate design and need.

Standards and Specifications

- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment-trapping device before discharge.
- Design stabilized entrance/exit to support the heaviest vehicles and equipment that will use it.



Stabilized Construction Entrance/Exit **TC-1**

- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. The use of asphalt concrete (AC) grindings for stabilized construction access/roadway is not allowed.
- Use of constructed/manufactured steel plates with ribs for entrance/exit access is allowed with written approval from the RE.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 300 mm (12 in) depth, or place aggregate to a depth recommended by the RE. Crushed aggregate greater than 75 mm (3 inches) and smaller than 150 mm (6 inches) shall be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Implement BMP SC-7, "Street Sweeping and Vacuuming" as needed and as required.
- Require all employees, subcontractors, and suppliers to utilize the stabilized construction access.
- All exit locations intended to be used continuously and for a period of time shall have stabilized construction entrance/exit BMPs (TC-1 "Stabilized Construction Entrance/Exit" or TC-3 "Entrance/Outlet Tire Wash").

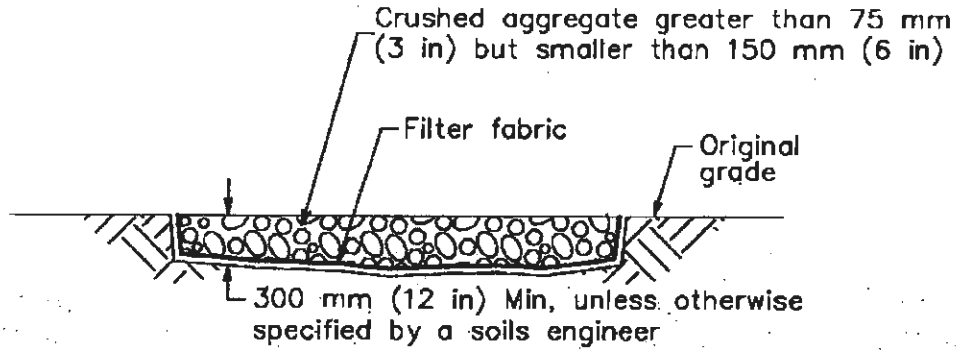
Maintenance and Inspection

- Inspect routinely for damage and assess effectiveness of the BMP. Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment or as directed by the RE.
- Keep all temporary roadway ditches clear.
- Inspect for damage and repair as needed.

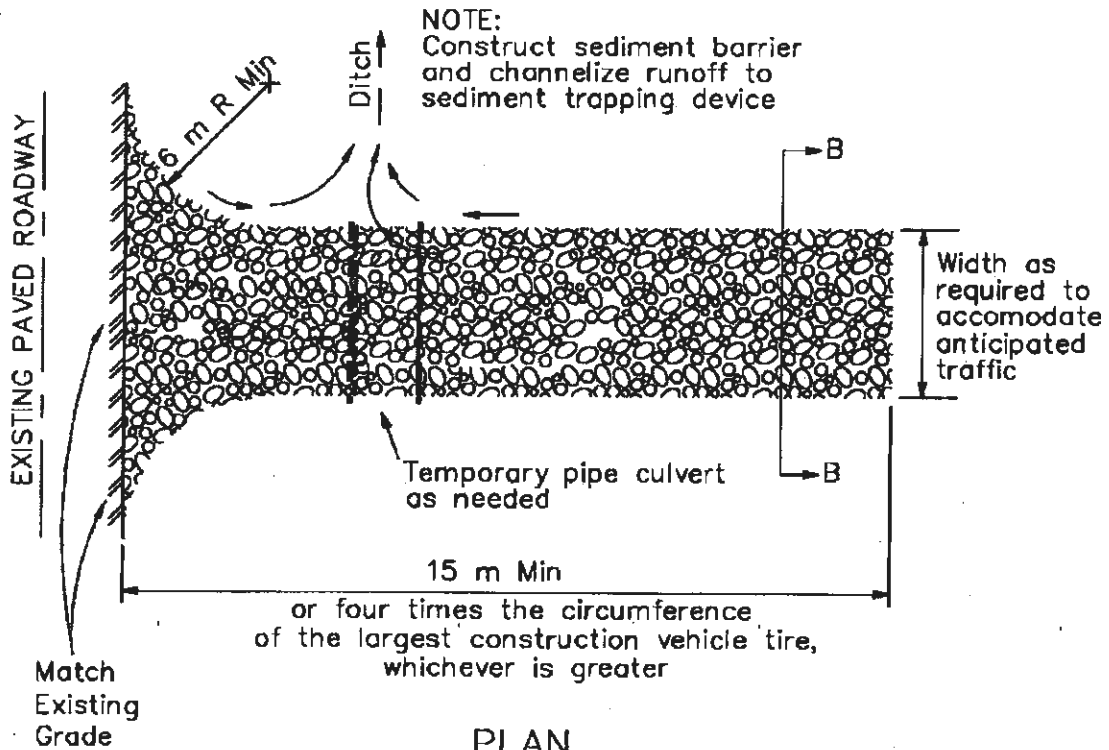


Stabilized Construction Entrance/Exit

TC-1



SECTION B-B
NTS



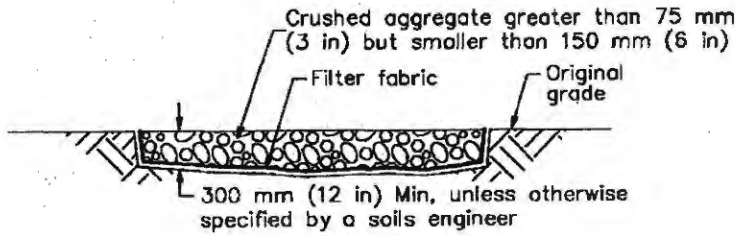
PLAN
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Stabilized Construction Entrance/Exit (Type 1)

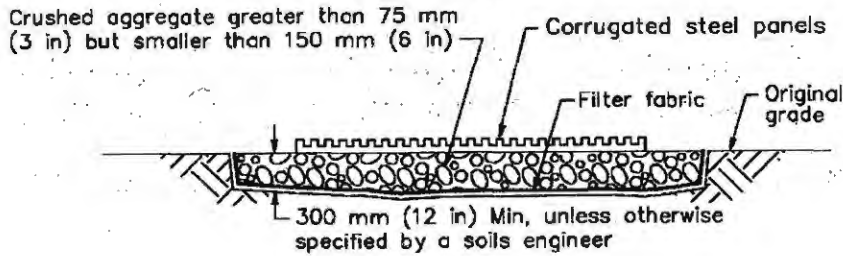


Stabilized Construction Entrance/Exit

TC-1

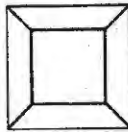


SECTION B-B
NTS

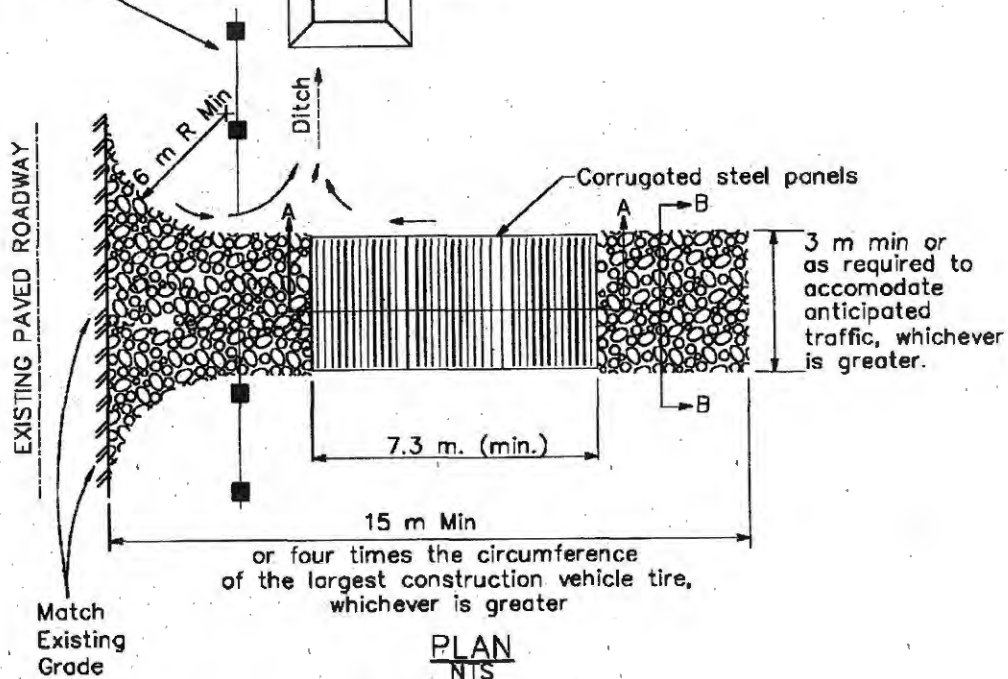


SECTION A-A
NOT TO SCALE

NOTE:
Construct sediment barrier and channelize runoff to sediment trapping device



Sediment trapping device



Stabilized Construction Entrance/Exit (Type 2)



Description

Drain inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris. There are a multitude of inserts of various shapes and configurations, typically falling into one of three different groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are one box; that is, the setting area and filtration through media occur in the same box. Some products consist of one or more trays or mesh grates. The trays may hold different types of media. Filtration media vary by manufacturer. Types include polypropylene, porous polymer, treated cellulose, and activated carbon.

California Experience

The number of installations is unknown but likely exceeds a thousand. Some users have reported that these systems require considerable maintenance to prevent plugging and bypass.

Advantages

- Does not require additional space as inserts as the drain inlets are already a component of the standard drainage systems.
- Easy access for inspection and maintenance.
- As there is no standing water, there is little concern for mosquito breeding.
- A relatively inexpensive retrofit option.

Limitations

Performance is likely significantly less than treatment systems that are located at the end of the drainage system such as ponds and vaults. Usually not suitable for large areas or areas with trash or leaves than can plug the insert.

Design and Sizing Guidelines

Refer to manufacturer's guidelines. Drain inserts come any many configurations but can be placed into three general groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are

Design Considerations

- Use with other BMPs
- Fit and Seal Capacity within Inlet

Targeted Constituents

- ✓ Sediment
- ✓ Nutrients
- ✓ Trash
- ✓ Metals
- Bacteria
- ✓ Oil and Grease
- ✓ Organics

Removal Effectiveness

See New Development and Redevelopment Handbook-Section 5.



one box; that is, the setting area and filtration through media occurs in the same box. One manufacturer has a double-box. Stormwater enters the first box where setting occurs. The stormwater flows into the second box where the filter media is located. Some products consist of one or more trays or mesh grates. The trays can hold different types of media. Filtration media vary with the manufacturer: types include polypropylene, porous polymer, treated cellulose, and activated carbon.

Construction/Inspection Considerations

Be certain that installation is done in a manner that makes certain that the stormwater enters the unit and does not leak around the perimeter. Leakage between the frame of the insert and the frame of the drain inlet can easily occur with vertical (drop) inlets.

Performance

Few products have performance data collected under field conditions.

Siting Criteria

It is recommended that inserts be used only for retrofit situations or as pretreatment where other treatment BMPs presented in this section area used.

Additional Design Guidelines

Follow guidelines provided by individual manufacturers.

Maintenance

Likely require frequent maintenance, on the order of several times per year.

Cost

- The initial cost of individual inserts ranges from less than \$100 to about \$2,000. The cost of using multiple units in curb inlet drains varies with the size of the inlet.
- The low cost of inserts may tend to favor the use of these systems over other, more effective treatment BMPs. However, the low cost of each unit may be offset by the number of units that are required, more frequent maintenance, and the shorter structural life (and therefore replacement).

References and Sources of Additional Information

Hrachovec, R., and G. Minton, 2001, Field testing of a sock-type catch basin insert, Planet CPR, Seattle, Washington

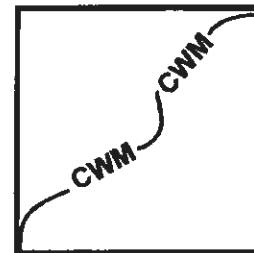
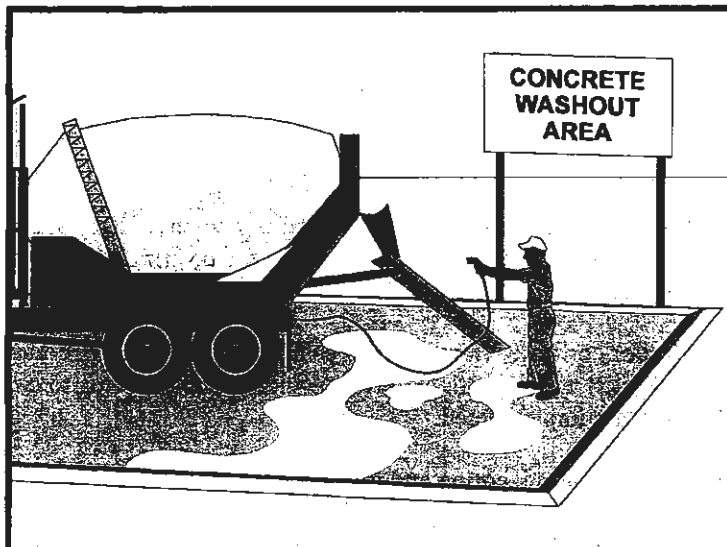
Interagency Catch Basin Insert Committee, Evaluation of Commercially-Available Catch Basin Inserts for the Treatment of Stormwater Runoff from Developed Sites, 1995

Larry Walker Associates, June 1998, NDMP Inlet/In-Line Control Measure Study Report

Manufacturers literature

Santa Monica (City), Santa Monica Bay Municipal Stormwater/Urban Runoff Project - Evaluation of Potential Catch basin Retrofits, Woodward Clyde, September 24, 1998

Woodward Clyde, June 11, 1996, Parking Lot Monitoring Report, Santa Clara Valley Nonpoint Source Pollution Control Program.



Standard Symbol

BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose These are procedures and practices that are designed to minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.

- Appropriate Applications**
- Concrete waste management procedures and practices are implemented on construction projects where concrete is used as a construction material or where concrete dust and debris result from demolition activities.
 - Where slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from sawcutting, coring, grinding, grooving, and hydro-concrete demolition.
 - Where concrete trucks and other concrete-coated equipment are washed on site, when approved by the Resident Engineer (RE). See also NS-8, "Vehicle and Equipment Cleaning."
 - Where mortar-mixing stations exist.

Limitations ■ None identified.

Standards and Specifications *Education*

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.
- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce concrete waste management procedures.

Concrete Demolition Wastes

- Stockpile concrete demolition wastes in accordance with BMP WM-3, "Stockpile Management."
- Disposal of hardened PCC and AC waste shall be in conformance with

Standard Specifications Section 7-1.13 or 15-3.02.

Concrete Slurry Waste Management and Disposal

- PCC and AC waste shall not be allowed to enter storm drainage systems or watercourses.
- A sign shall be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities as shown on Page 7.
- A foreman and/or construction supervisor shall monitor onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.
- Residue from saw cutting, coring and grinding operations shall be picked up by means of a vacuum device. Residue shall not be allowed to flow across the pavement and shall not be left on the surface of the pavement. See also BMP NS-3, "Paving and Grinding Operations."
- Vacuumed slurry residue shall be disposed in accordance with BMP WM-5, "Solid Waste Management" and Standard Specifications Section 7-1.13. Slurry residue shall be temporarily stored in a facility as described in "Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures" below), or within an impermeable containment vessel or bin approved by the Engineer.
- Collect and dispose of all residues from grooving and grinding operations in accordance with Standard Specifications Section 7-1.13, 42-1.02 and 42-2.02.

Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures

- Temporary concrete washout facilities shall be located a minimum of 15 m (50 ft) from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by the RE. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. The sign shall be installed as shown on the plans and in conformance with the provisions in Standard Specifications Section 56-2, Roadside Signs.
- Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Temporary washout facilities shall have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete



materials generated during washout procedures.

- Perform washout of concrete mixers, delivery trucks, and other delivery systems in designated areas only.
- Wash concrete only from mixer chutes into approved concrete washout facility. Washout may be collected in an impermeable bag or other impermeable containment devices for disposal.
- Pump excess concrete in concrete pump bin back into concrete mixer truck.
- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed offsite.
- Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of in conformance with the provisions in Standard Specifications Section 7-1.13 or 15-3.02.

Temporary Concrete Washout Facility Type "Above Grade"

- Temporary concrete washout facility Type "Above Grade" shall be constructed as shown on Page 6 or 7, with a recommended minimum length and minimum width of 3 m (10 ft), but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense, upon approval from the RE.
- Straw bales, wood stakes, and sandbag materials shall conform to the provisions in BMP SC-9, "Straw Bale Barrier."
- Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Liner seams shall be installed in accordance with manufacturers' recommendations.
- Portable delineators shall conform to the provisions in Standard Specifications Section 12-3.04, "Portable Delineators." The delineator bases shall be cemented to the pavement in the same manner as provided for cementing pavement markers to pavement in Standard Specifications Section 85-1.06, "Placement." Portable delineators shall be applied only to a clean, dry surface.

Temporary Concrete Washout Facility (Type Below Grade)

- Temporary concrete washout facility Type "Below Grade" shall be constructed as shown on page 6, with a recommended minimum length and minimum width of 3m (10 ft). The quantity and volume shall be sufficient to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense,



upon approval of the RE. Lath and flagging shall be commercial type.

- Plastic lining material shall be a minimum of 10-mil polyethylene sheeting and shall be free of holes, tears or other defects that compromise the impermeability of the material. Liner seams shall be installed in accordance with manufacturers' recommendations.
- The soil base shall be prepared free of rocks or other debris that may cause tears or holes in the plastic lining material.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, as determined by the RE, the hardened concrete shall be removed and disposed of in conformance with the provisions in Standard Specifications Section 7-1.13 or 15-3.02. Disposal of PCC dried residues, slurries or liquid waste shall be disposed of outside the highway right-of-way in conformance with provisions of Standard Specifications Section 7-1-13. Materials used to construct temporary concrete washout facilities shall become the property of the Contractor, shall be removed from the site of the work, and shall be disposed of outside the highway right-of-way in conformance with the provisions of the Standard Specifications, Section 7-1.13.
- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and repaired in conformance with the provisions in Standard Specifications Section 15-1.02, "Preservation of Property."

Maintenance and Inspection

- The Contractor's Water Pollution Control Manager (WPCM) shall monitor on site concrete waste storage and disposal procedures at least weekly or as directed by the RE.
- The WPCM shall monitor concrete working tasks, such as saw cutting, coring, grinding and grooving daily to ensure proper methods are employed or as directed by the RE.
- Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 100 mm (4 inches) for above grade facilities and 300 mm (12 inches) for below grade facilities. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with the provisions in Standard Specifications Section 7-1.13 or 15-3.02.
- Existing facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.
- Temporary concrete washout facilities shall be inspected for damage (i.e.



Concrete Waste Management

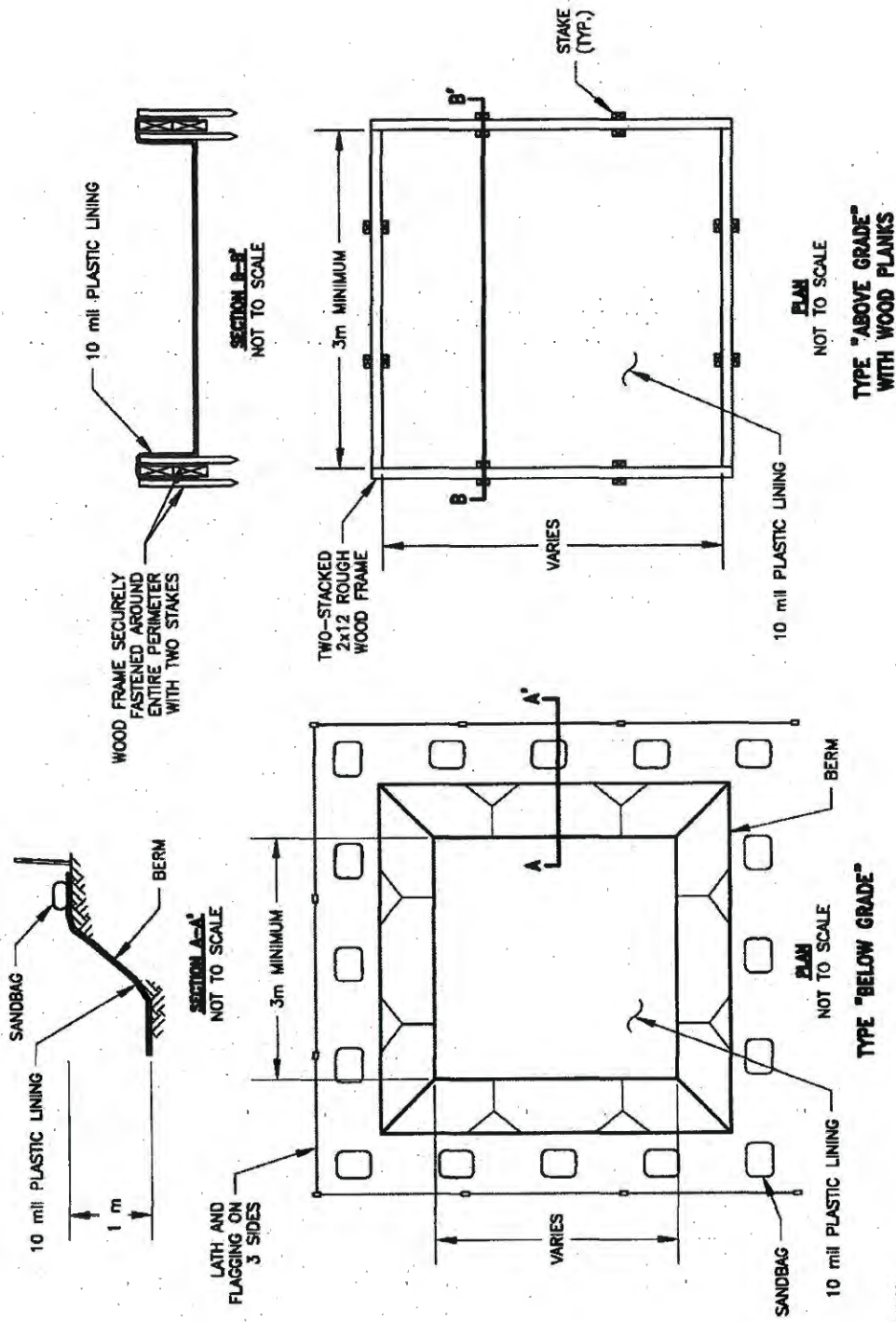
WM-8

tears in polyethylene liner, missing sandbags, etc.). Damaged facilities shall be repaired.



Concrete Waste Management

WM-8

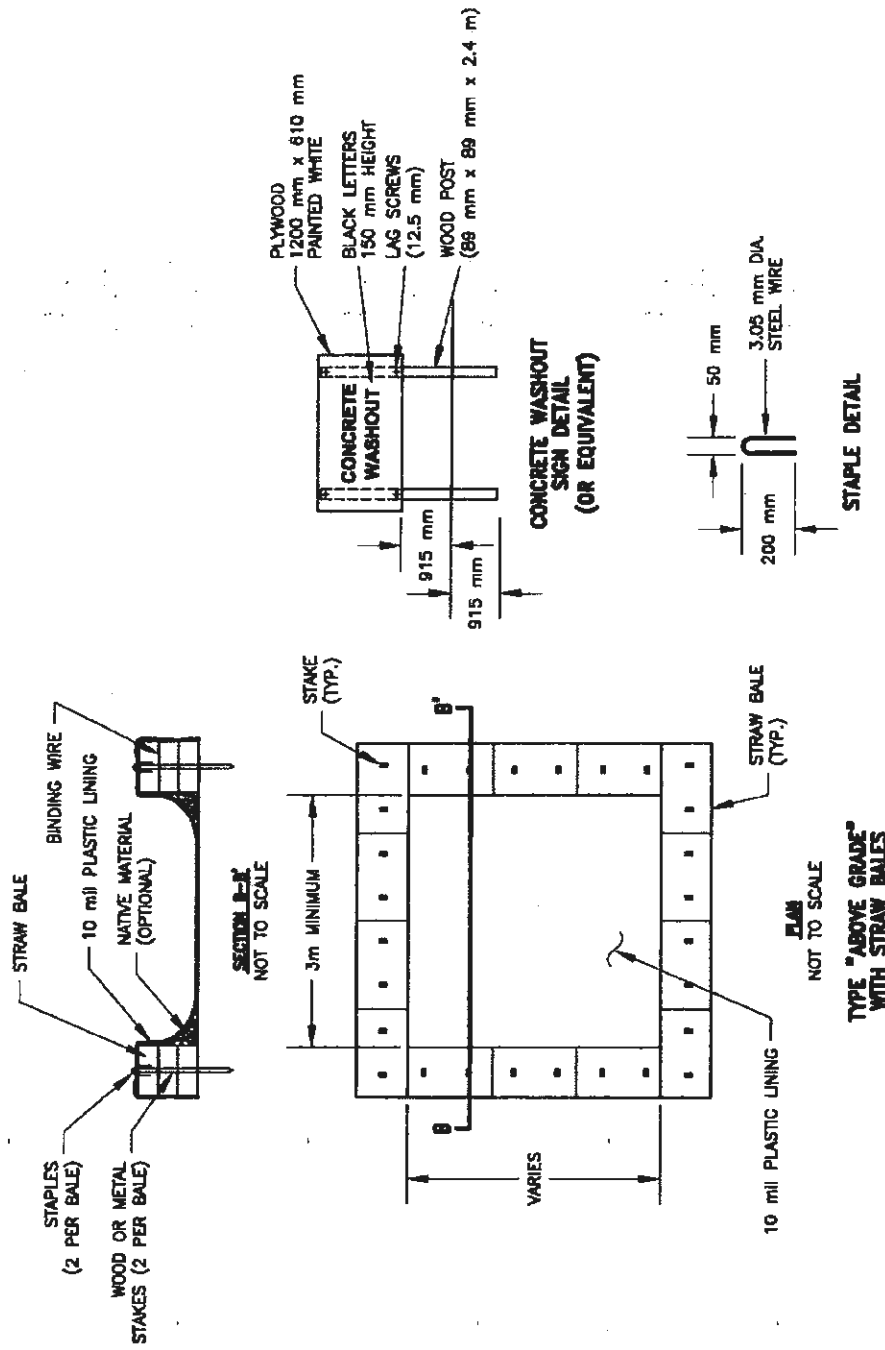


NOTES:

1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCRETE WASHOUT SIGN (SEE PAGE 6) SHALL BE INSTALLED WITHIN 10 m OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Concrete Waste Management

WM-8

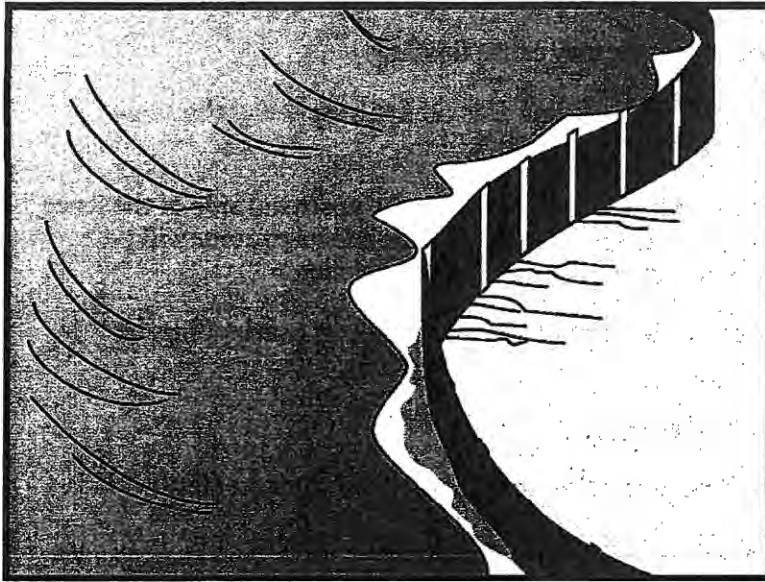


NOTES:

1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCRETE WASHOUT SIGN (SEE FIG. 4-15) SHALL BE INSTALLED WITHIN 10 m OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

CALTRANS/RS&A-14.DWG SAC 8-14-02





Description and Purpose

A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They should also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion. Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Below other small cleared areas.

Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.

Objectives

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input type="checkbox"/>
TR	Tracking Control	<input type="checkbox"/>
WE	Wind Erosion Control	<input type="checkbox"/>
NS	Non-Stormwater Management Control	<input type="checkbox"/>
WM	Waste Management and Materials Pollution Control	<input type="checkbox"/>

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	<input type="checkbox"/>
Trash	<input type="checkbox"/>
Metals	<input type="checkbox"/>
Bacteria	<input type="checkbox"/>
Oil and Grease	<input type="checkbox"/>
Organics	<input type="checkbox"/>

Potential Alternatives

- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-9 Straw Bale Barrier



- Do not use in locations where ponded water may cause flooding.
- Do not place fence on a slope, or across any contour line. If not installed at the same elevation throughout, silt fences will create erosion.
- Filter fences will create a temporary sedimentation pond on the upstream side of the fence and may cause temporary flooding. Fences not constructed on a level contour will be overtopped by concentrated flow resulting in failure of the filter fence.
- Improperly installed fences are subject to failure from undercutting, overlapping, or collapsing.
 - Not effective unless trenched and keyed in.
 - Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
 - Do not allow water depth to exceed 1.5 ft at any point.

Implementation

General

A silt fence is a temporary sediment barrier consisting of filter fabric stretched across and attached to supporting posts, entrenched, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

Silt fences are preferable to straw bale barriers in many cases. Laboratory work at the Virginia Highway and Transportation Research Council has shown that silt fences can trap a much higher percentage of suspended sediments than can straw bales. While the failure rate of silt fences is lower than that of straw bale barriers, there are many instances where silt fences have been improperly installed. The following layout and installation guidance can improve performance and should be followed:

- Use principally in areas where sheet flow occurs.
- Don't use in streams, channels, or anywhere flow is concentrated. Don't use silt fences to divert flow.
- Don't use below slopes subject to creep, slumping, or landslides.
- Select filter fabric that retains 85% of soil by weight, based on sieve analysis, but that is not finer than an equivalent opening size of 70.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- The maximum slope perpendicular to the fence line should be 1:1.

- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft² of ponding area should be provided for every acre draining to the fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.
- Silt fences should remain in place until the disturbed area is permanently stabilized.

Design and Layout

Selection of a filter fabric is based on soil conditions at the construction site (which affect the equivalent opening size (EOS) fabric specification) and characteristics of the support fence (which affect the choice of tensile strength). The designer should specify a filter fabric that retains the soil found on the construction site yet that it has openings large enough to permit drainage and prevent clogging. The following criteria is recommended for selection of the equivalent opening size:

1. If 50 percent or less of the soil, by weight, will pass the U.S. Standard Sieve No. 200, select the EOS to retain 85 % of the soil. The EOS should not be finer than EOS 70.
2. For all other soil types, the EOS should be no larger than the openings in the U.S. Standard Sieve No. 70 except where direct discharge to a stream, lake, or wetland will occur, then the EOS should be no larger than Standard Sieve No. 100.

To reduce the chance of clogging, it is preferable to specify a fabric with openings as large as allowed by the criteria. No fabric should be specified with an EOS smaller than U.S. Standard Sieve No. 100. If 85% or more of a soil, by weight, passes through the openings in a No. 200 sieve, filter fabric should not be used. Most of the particles in such a soil would not be retained if the EOS was too large and they would clog the fabric quickly if the EOS were small enough to capture the soil.

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Filter fabric material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Materials

- Silt fence fabric should be woven polypropylene with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.
- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.
- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.
- There are new products that may use prefabricated plastic holders for the silt fence and use bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement.

Installation Guidelines

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line the proposed silt fence.
- Bottom of the silt fence should be keyed-in a minimum of 12 in.
- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.
- When standard strength filter fabric is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy-duty wire staples at least 1 in. long. The mesh should extend into the trench. When extra-strength filter fabric and closer post spacing are used, the mesh support fence may be eliminated. Filter fabric should be purchased in a long roll, then cut to the length of the barrier. When joints are necessary, filter cloth should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.
- The trench should be backfilled with compacted native material.
- Construct silt fences with a setback of at least 3 ft from the toe of a slope. Where a silt fence is determined to be not practicable due to specific site conditions, the silt fence may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and difficult to maintain.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case should the reach exceed 500 ft.

Costs

- Average annual cost for installation and maintenance (assumes 6 month useful life): \$7 per lineal foot (\$850 per drainage acre). Range of cost is \$3.50 - \$9.10 per lineal foot.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence must be inspected and maintained.
- Holes, depressions, or other ground disturbance caused by the removal of the silt fences should be backfilled and repaired.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

Sedimentation and Erosion Control Practices, and Inventory of Current Practices (Draft), UESPA, 1990.

Southeastern Wisconsin Regional Planning Commission (SWRPC). Costs of Urban Nonpoint Source Water Pollution Control Measures. Technical Report No. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI. 1991

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

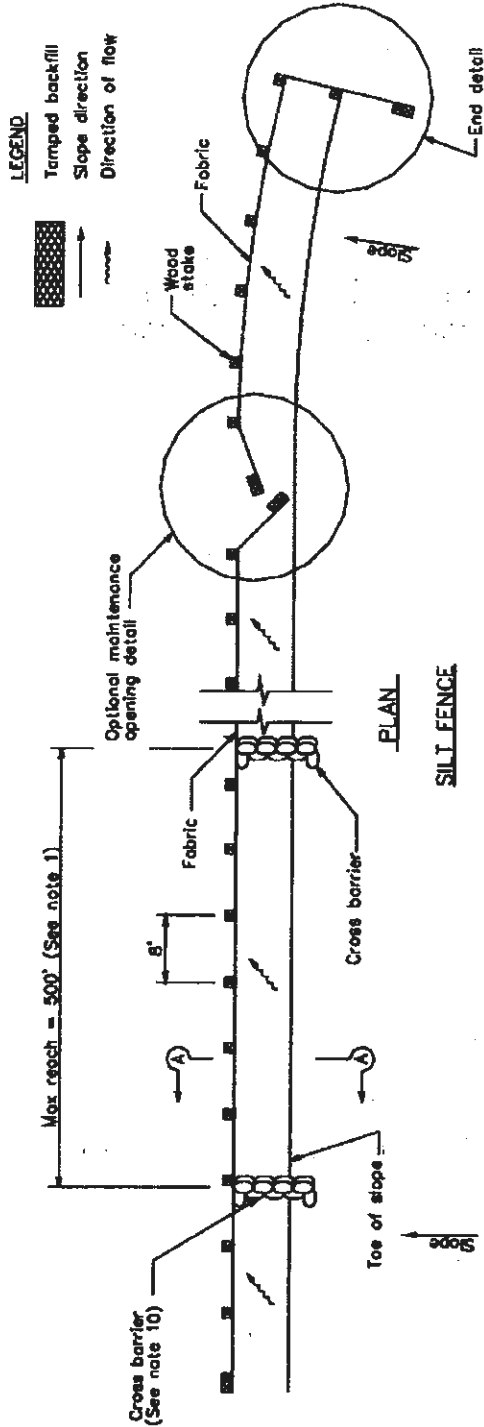
Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

U.S. Environmental Protection Agency (USEPA). Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1992.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

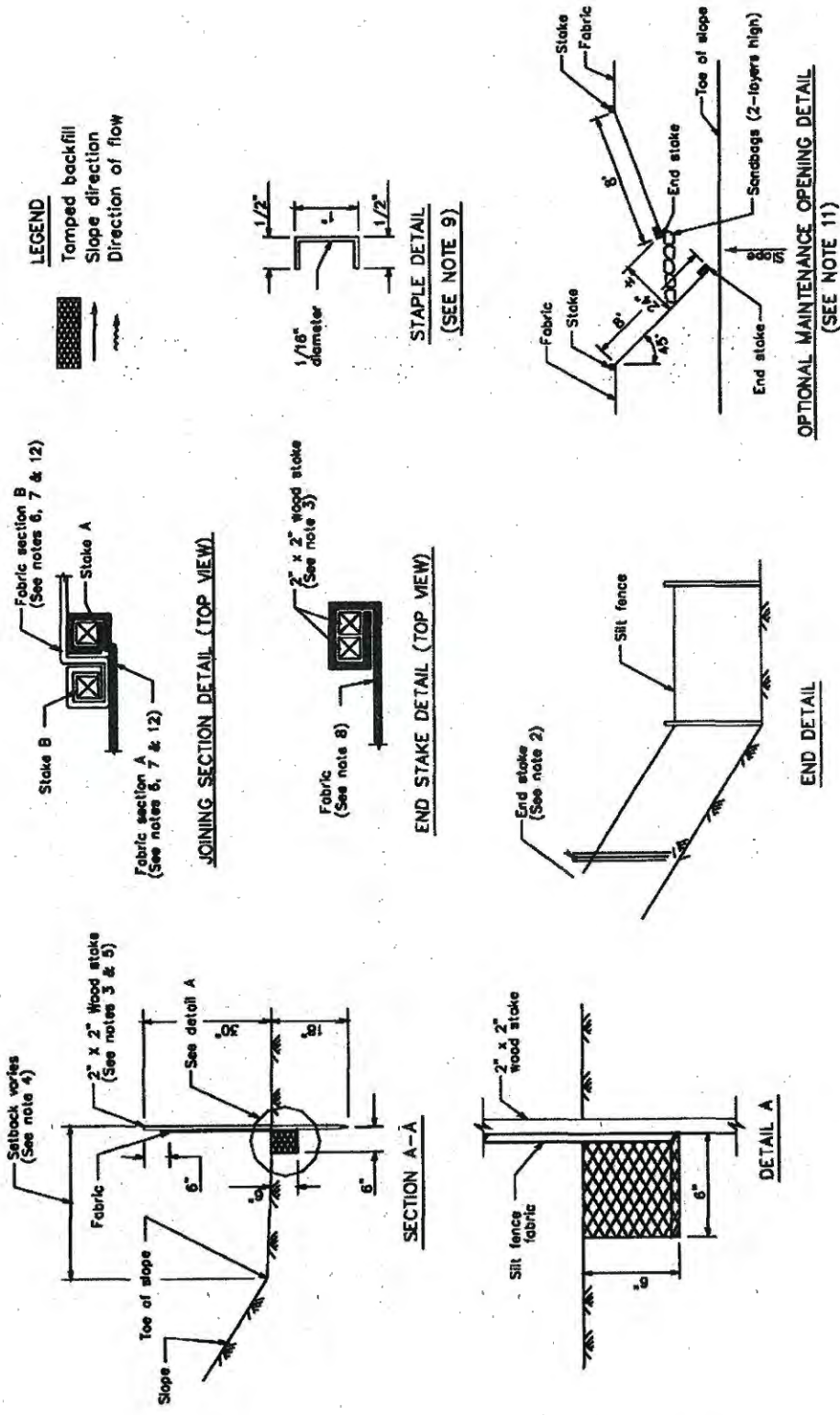
Silt Fence

SE-1



NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier, in no case shall the reach length exceed 500'.
2. The last 8'-0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'-0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stakes with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow-through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.





Description and Purpose

A check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reducing erosion.

Suitable Applications

Check dams may be appropriate in the following situations:

- To promote sedimentation behind the dam.
- To prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales.
- In small open channels that drain 10 acres or less.
- In steep channels where stormwater runoff velocities exceed 5 ft/s.
- During the establishment of grass linings in drainage ditches or channels.
- In temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings.

Limitations

- Not to be used in live streams or in channels with extended base flows.

Objectives

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Objective
- Secondary Objective

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier



- Not appropriate in channels that drain areas greater than 10 acres.
- Not appropriate in channels that are already grass-lined unless erosion is expected, as installation may damage vegetation.
- Require extensive maintenance following high velocity flows.
- Promotes sediment trapping which can be re-suspended during subsequent storms or removal of the check dam.

Implementation

General

Check dams reduce the effective slope and create small pools in swales and ditches that drain 10 acres or less. Reduced slopes reduce the velocity of stormwater flows, thus reducing erosion of the swale or ditch and promoting sedimentation. Use of check dams for sedimentation will likely result in little net removal of sediment because of the small detention time and probable scour during longer storms. Using a series of check dams will generally increase their effectiveness. A sediment trap (SE-3) may be placed immediately upstream of the check dam to increase sediment removal efficiency.

Design and Layout

Check dams work by decreasing the effective slope in ditches and swales. An important consequence of the reduced slope is a reduction in capacity of the ditch or swale. This reduction in capacity must be considered when using this BMP, as reduced capacity can result in overtopping of the ditch or swale and resultant consequences. In some cases, such as a "permanent" ditch or swale being constructed early and used as a "temporary" conveyance for construction flows, the ditch or swale may have sufficient capacity such that the temporary reduction in capacity due to check dams is acceptable. When check dams reduce capacities beyond acceptable limits, there are several options:

- Don't use check dams. Consider alternative BMPs.
- Increase the size of the ditch or swale to restore capacity.

Maximum slope and velocity reduction is achieved when the toe of the upstream dam is at the same elevation as the top of the downstream dam. The center section of the dam should be lower than the edge sections so that the check dam will direct flows to the center of the ditch or swale.

Check dams are usually constructed of rock, gravel bags, sandbags, and fiber rolls. A number of products manufactured specifically for use as check dams are also being used, and some of these products can be removed and reused. Check dams can also be constructed of logs or lumber, and have the advantage of a longer lifespan when compared to gravel bags, sandbags, and fiber rolls. Straw bales can also be used for check dams and can work if correctly installed; but in practice, straw bale check dams have a high failure rate. Check dams should not be constructed from straw bales or silt fences, since concentrated flows quickly wash out these materials.

Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel. The dam must completely span the ditch

or swale to prevent washout. The rock used must be large enough to stay in place given the expected design flow through the channel.

Log check dams are usually constructed of 4 to 6 in. diameter logs. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.

Gravel bag and sandbag check dams are constructed by stacking bags across the ditch or swale, shaped as shown in the drawings at the end of this fact sheet.

Manufactured products should be installed in accordance with the manufacturer's instructions.

If grass is planted to stabilize the ditch or swale, the check dam should be removed when the grass has matured (unless the slope of the swales is greater than 4%).

The following guidance should be followed for the design and layout of check dams:

- Install the first check dam approximately 16 ft from the outfall device and at regular intervals based on slope gradient and soil type.
- Check dams should be placed at a distance and height to allow small pools to form between each check dam.
- Backwater from a downstream check dam should reach the toes of the upstream check dam.
- A sediment trap provided immediately upstream of the check dam will help capture sediment. Due to the potential for this sediment to be resuspended in subsequent storms, the sediment trap must be cleaned following each storm event.
- High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale.
- Gravel bags may be used as check dams with the following specifications:

Materials

Gravel bags used for check dams should conform to the requirements of SE-6, Gravel Bag Berms. Sandbags used for check dams should conform to SE-8, Sandbag Barrier. Fiber rolls used for check dams should conform to SE-5, Fiber Rolls. Straw bales used for check dams should conform to SE-9, Straw Bale Barrier.

Installation

- Rock should be placed individually by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage.
- Tightly abut bags and stack according to detail shown in the figure at the end of this section. Gravel bags and sandbags should not be stacked any higher than 3 ft.
- Fiber rolls and straw bales must be trenched in and firmly staked in place.

Costs

Cost consists of only installation costs if materials are readily available. If material must be imported, costs may increase. For material costs, see SE-5, SE-6, SE-8 and SE-9.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Replace missing rock, bags, bales, etc. Replace bags or bales that have degraded or have become damaged.
- If the check dam is used as a sediment capture device, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- If the check dam is used as a grade control structure, sediment removal is not required as long as the system continues to control the grade.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed.

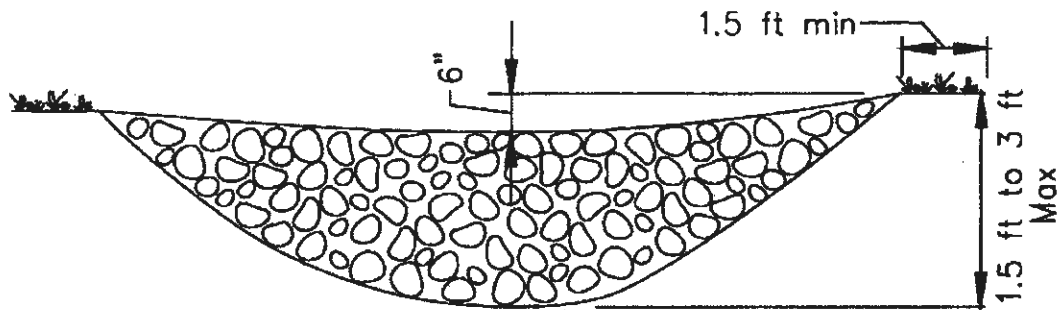
References

Draft – Sedimentation and Erosion Control, and Inventory of Current Practices, USEPA, April 1990.

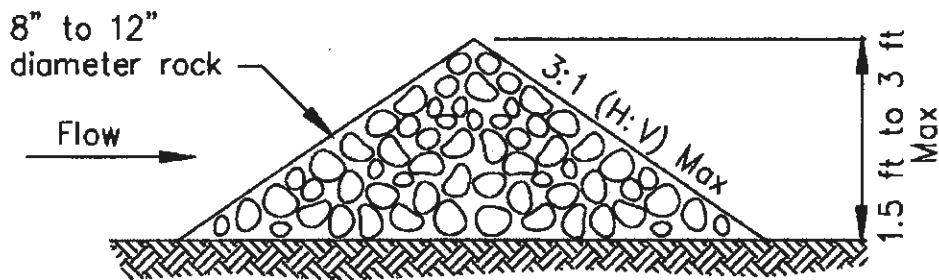
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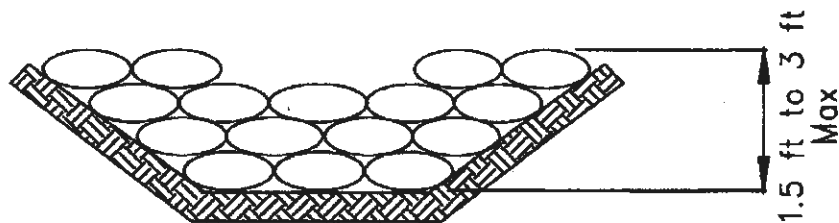


ELEVATION

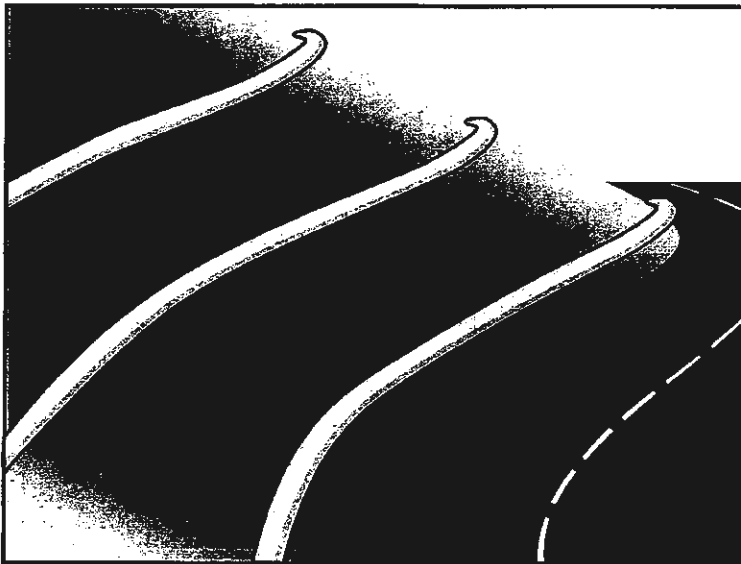


TYPICAL ROCK CHECK DAM SECTION

ROCK CHECK DAM
NOT TO SCALE



GRAVEL BAG CHECK DAM ELEVATION
NOT TO SCALE



Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- Primary Category
- Secondary Category

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-1 Silt Fence
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-14 Biofilter Bags



- Around temporary stockpiles.

Limitations

- Fiber rolls are not effective unless trenched in and staked.
- Not intended for use in high flow situations.
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.
- Rolls typically function for 12-24 months depending upon local conditions.

Implementation

Fiber Roll Materials

- Fiber rolls should be prefabricated.
- Fiber rolls may come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll. Fiber rolls impregnated with PAM provide additional sediment removal capabilities and should be used in areas with fine, clayey or silty soils to provide additional sediment removal capabilities. Monitoring may be required for these installations.
- Fiber rolls are made from weed free rice straw, flax, or a similar agricultural material bound into a tight tubular roll by netting.
- Typical fiber rolls vary in diameter from 9 in. to 20 in. Larger diameter rolls are available as well.

Installation

- Locate fiber rolls on level contours spaced as follows:
 - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
 - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
 - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth should be $\frac{1}{4}$ to $\frac{1}{3}$ of the thickness of the roll, and the width should equal the roll diameter, in order to provide area to backfill the trench.

- It is critical that rolls are installed perpendicular to water movement, and parallel to the slope contour.
- Start building trenches and installing rolls from the bottom of the slope and work up.
- It is recommended that pilot holes be driven through the fiber roll. Use a straight bar to drive holes through the roll and into the soil for the wooden stakes.
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into the trench.
 - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
 - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.
- See typical fiber roll installation details at the end of this fact sheet.

Removal

- Fiber rolls can be left in place or removed depending on the type of fiber roll and application (temporary vs. permanent installation). Typically, fiber rolls encased with plastic netting are used for a temporary application because the netting does not biodegrade. Fiber rolls used in a permanent application are typically encased with a biodegradable material and are left in place. Removal of a fiber roll used in a permanent application can result in greater disturbance.
- Temporary installations should only be removed when up gradient areas are stabilized per General Permit requirements, and/or pollutant sources no longer present a hazard. But, they should also be removed before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.

Costs

Material costs for regular fiber rolls range from \$20 - \$30 per 25 ft roll.

Material costs for PAM impregnated fiber rolls range between 7.00-\$9.00 per linear foot, based upon vendor research.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP should be periodically removed

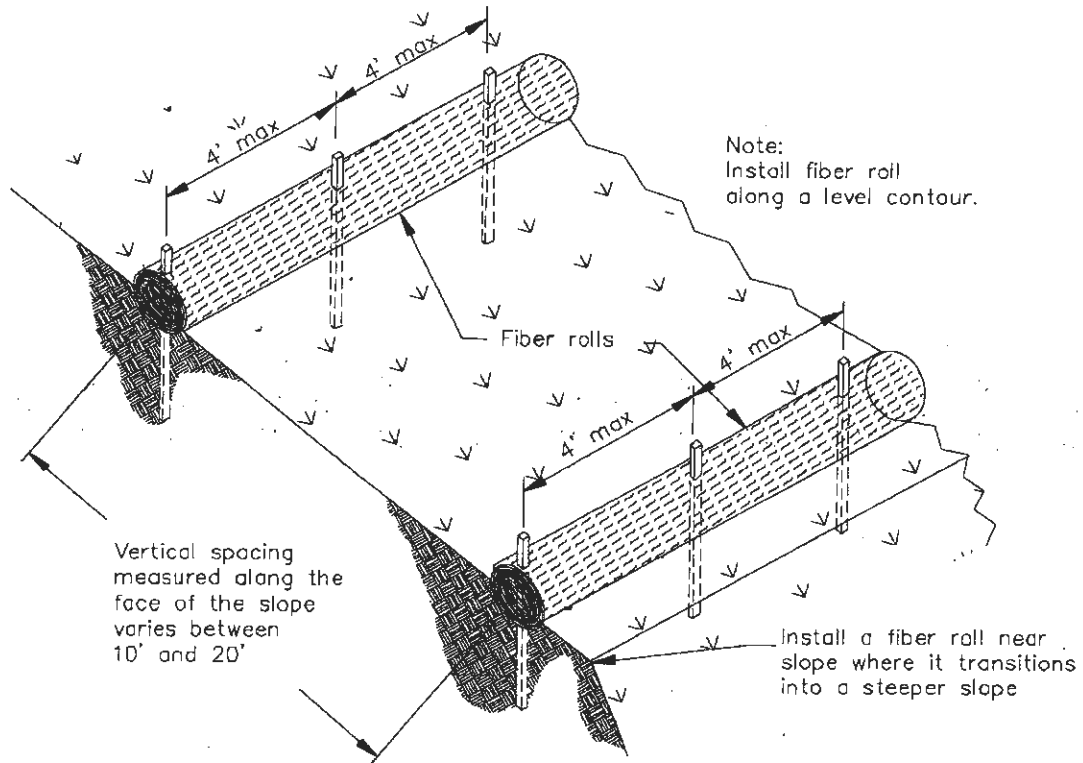
in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-third the designated sediment storage depth.

- If fiber rolls are used for erosion control, such as in a check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.
- Repair any rills or gullies promptly.

References

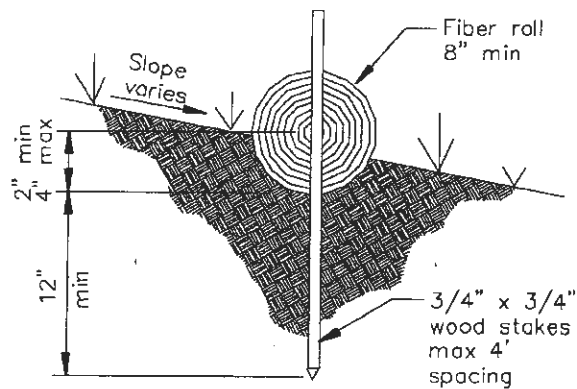
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



TYPICAL FIBER ROLL INSTALLATION

N.T.S.



ENTRENCHMENT DETAIL

N.T.S.

Construction Drawings for The Public Works Project at the Beaumont, Coachella, Edom Hill & Mead Valley (Closed) Landfills


July 2015


PREPARED BY
DEPARTMENT OF WASTE RESOURCES
HANS KERNKAMP, General Manager - Chief Engineer
14310 FREDERICK STREET
MORENO VALLEY, CALIFORNIA 92553
TEL. (951) 486-3200 FAX. (951) 486-3250


Index of Sheets

Sheet	Landfill	Title
1		Cover Sheet
2	Edom Hill	General Site & Vicinity Maps
3	Edom Hill	Repair & Drainage Improvements Plan
4	Edom Hill	Plan View Details
5	Edom Hill	Construction Details
6	Beaumont	General Site & Vicinity Maps
7	Beaumont	Improvement Plan
8	Beaumont	Construction Details
9	Mead Valley	Boulder Relocation/ Placement of Green/Palm Waste
10	Coachella	Green & Palm Waste Map

DEPARTMENT OF WASTE RESOURCES

APPROVED: 
Hans Kernkamp, General Manager - Chief Engineer, R.C.E. 45668 Exp. 12/31/2016

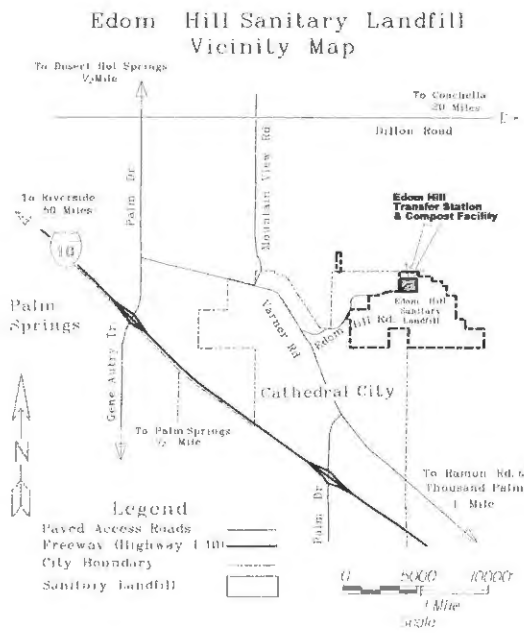
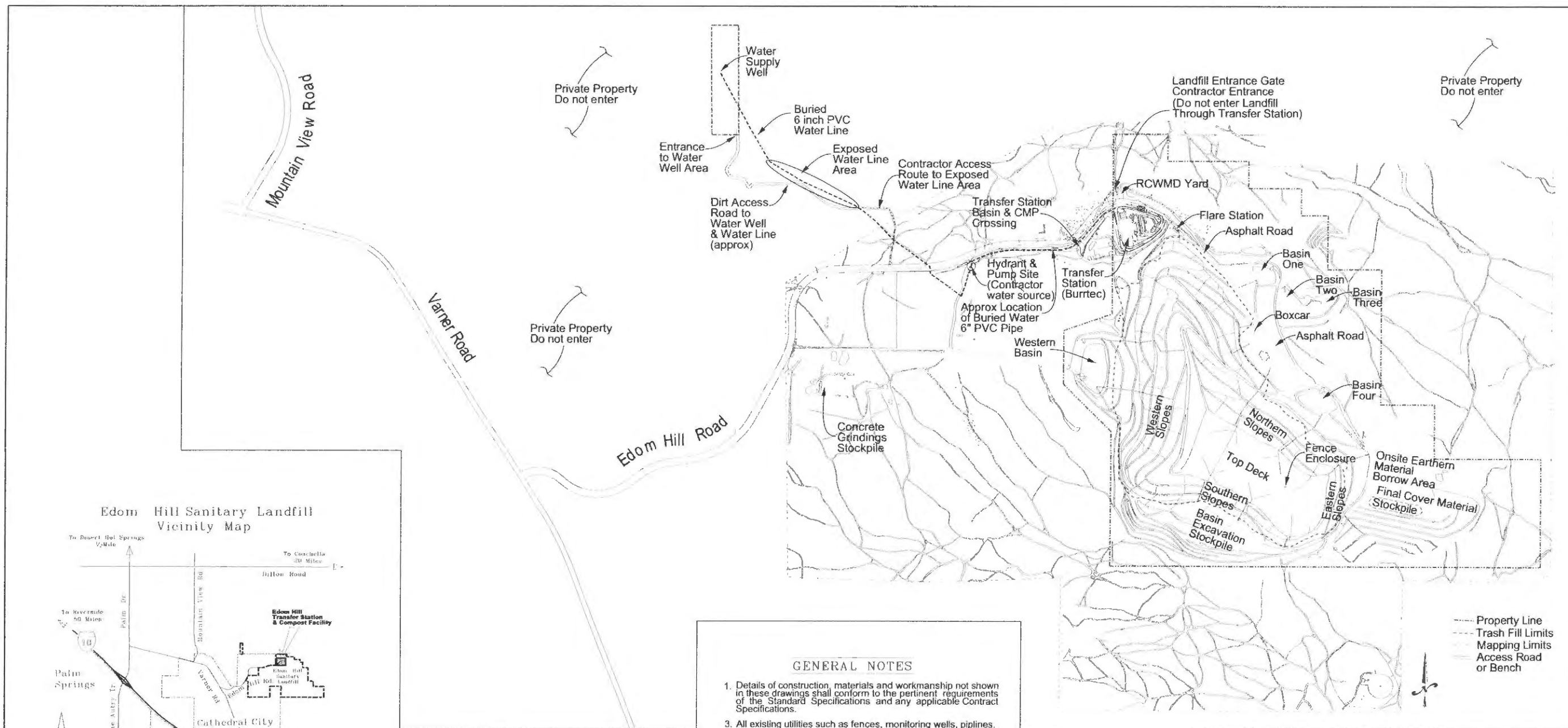
RECOMMENDED: 
Joseph R. McCain, Assistant Chief Engineer, R.C.E. 51694 Exp. 6/30/2016

SUBMITTED: 
Andrew Cortez, Principal Civil Engineer, R.C.E. 62528 Exp. 12/31/2015

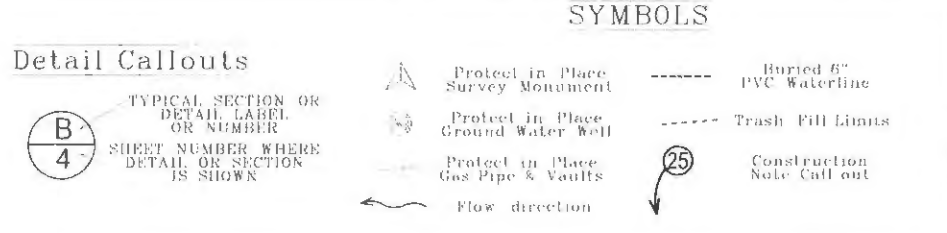


RIVERSIDE COUNTY

DEPARTMENT OF WASTE RESOURCES

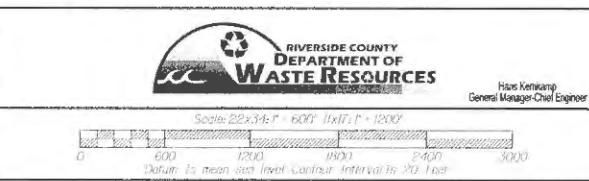


- GENERAL NOTES**
- Details of construction, materials and workmanship not shown in these drawings shall conform to the pertinent requirements of the Standard Specifications and any applicable Contract Specifications.
 - All existing utilities such as fences, monitoring wells, pipelines, gas lines, probes, etc. shall be protected from damage or replaced at Contractor's expense.
 - All existing and proposed dimensions shall be verified by the Contractor prior to starting work. The Department shall be notified of all discrepancies immediately.
 - Topography is developed by digital photogrammetric methods and field topographic survey. Grid ticks are based on North American datum of 1983 (NAD83). California coordinate system Zone VI NAVD 88 is to be used for all survey work.
 - Topographic features, both contours and plan data are based on Riverside County Flood Control and Water Conservation District Photogrammetry mapping.
 - All elevations are in feet, based on U.S.C. & G.S. Datum.



NO	REVISIONS	BY	APPROVED	DATE

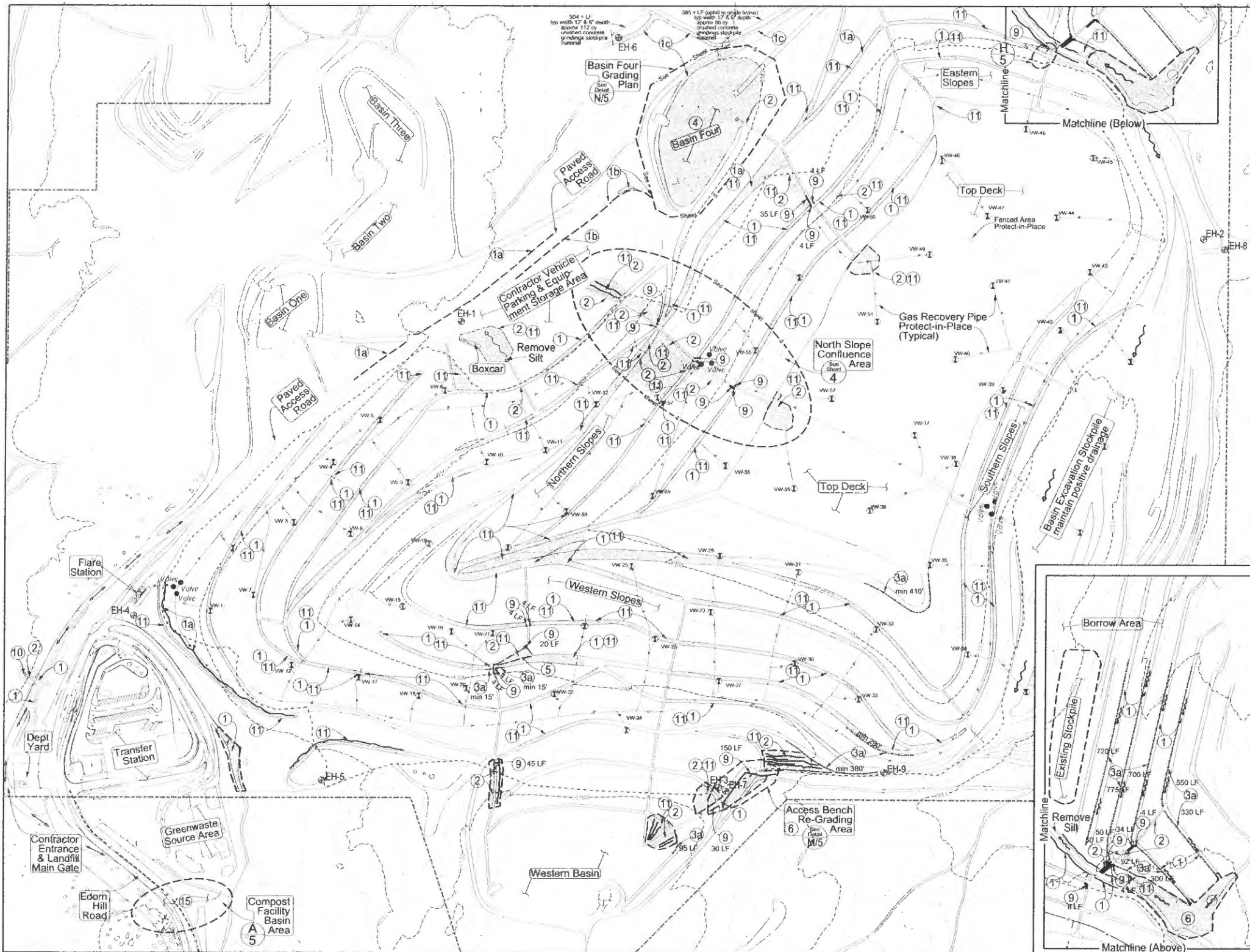
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DRAWN BY:	mwm
CHECKED BY:	AC/R
DATE:	23 July 2015
DATE OF PHOTOGRAPHY:	Feb 2014



**Edom Hill (Closed) Sanitary Landfill
Post Storm Repair and Drainage Improvements**

General Site & Vicinity Maps

SCALE:	22x34: 1"=600' 11x17: 1"=1200'
SERIAL:	web2k-06
FOLDER:	sites/edom/15eh/projects/Storm Repair
FILE:	EH-2015-01-s02-sitemap.dgn
MODEL:	Main Map
SHEET:	2 OF 10

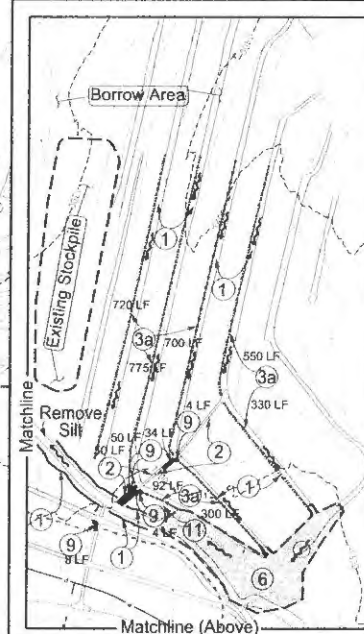


Construction Notes/Bid Items

- ① Earthwork - Bench Grading / Erosion Repair
- ② Earthwork - Slope & Top Deck Erosion Repair
- ③a Earthwork - Berm Install
- ④ Earthwork - Basin Excavation, Haul & Stockpile
- ⑤ Earthwork - Engineered Fill
- ⑥ Earthwork - Access Bench Re-Grading / Erosion Backfill
- ⑨ Masonry Splash Walls
- ⑩ Rip-Rap
- ⑪ Palm Waste Installation
- ⑮ Compost Facility Basin Area Improvements

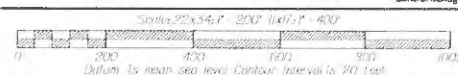
Map Legend

- Property Line
- - - Trash Fill Limits
- Mapping Limits
- Existing Contours
- Proposed Berm
- - - 6" Buried Water Line
- Erosion Rills or Cuts
- ⊕ Water Well (Protect-in-Place)
- ⊕ Gas Recovery Pipe & Vaults (Protect-in-Place)
- Water flow direction
- Contractor Entrance Route
- ▲ Survey Point (Protect-in-Place)



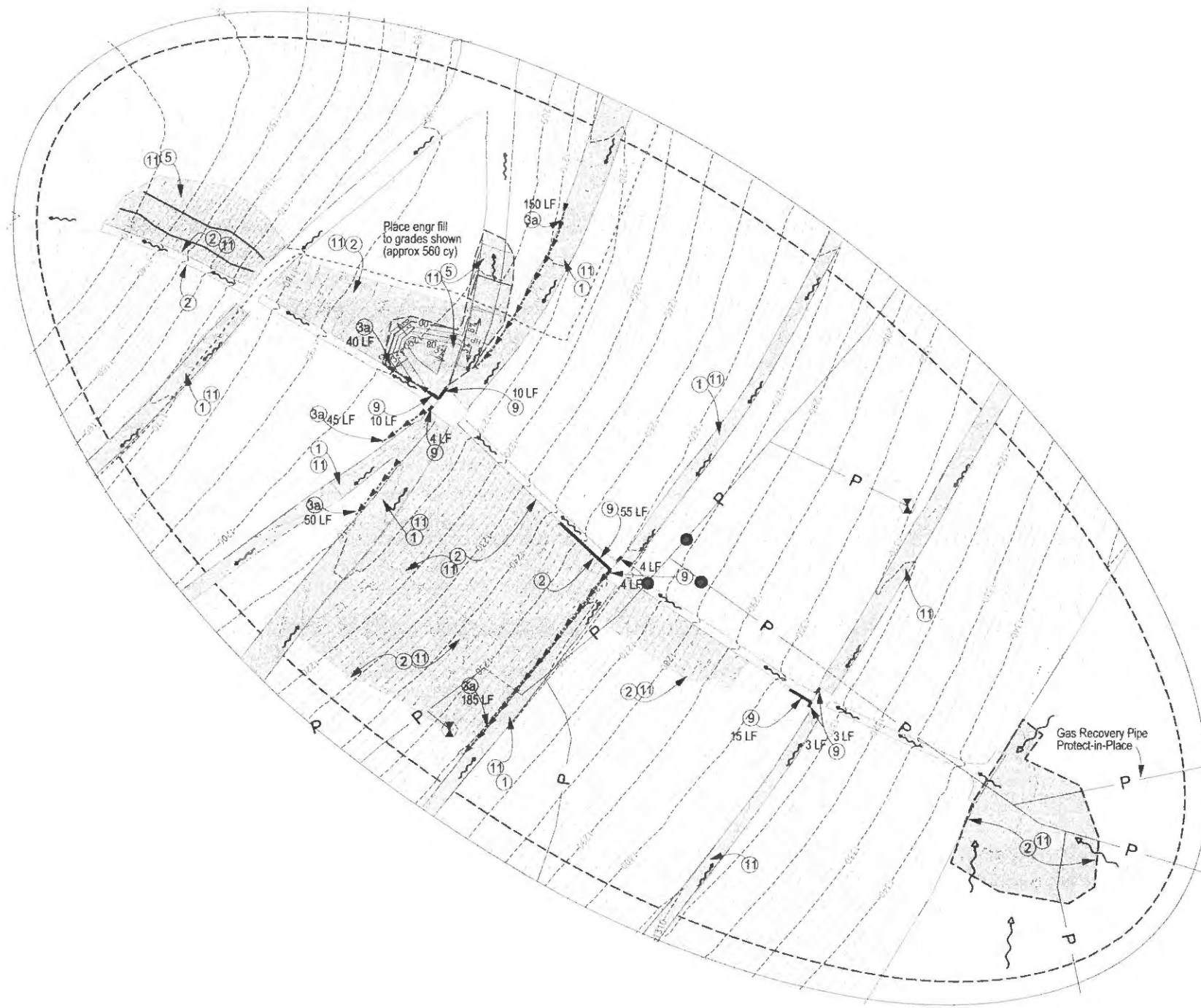
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DESIGNED BY	mwm
DRAWN BY	mwm
CHECKED BY	AC/RJ
DATE	23 July 2015
DATE OF PHOTOGRAPHY	Feb 2014



**Edom Hill (Closed) Sanitary Landfill
Post Storm Repair and Drainage Improvements
Repair and Drainage Improvements Plan**

SCALE	22x34: 1"=200' 11x17: 1"=400'
SERVER	web2k-06
FOLDER	sites/edom/15eh/projects/Storm Repair
FILE	EH-2015-01-s02-5-work.dgn
MODEL	Main Map
SHEET	3 OF 10



Construction Notes/Bid Items

- ① Earthwork - Bench Grading / Erosion Repair
- ② Earth work - Slope Erosion Repair
- ③a Earthwork - Berm Install
- ⑤ Earthwork - Engineered Fill
- ⑨ Masonry Splash Walls
- ⑪ Palm Waste Installation

Map Legend

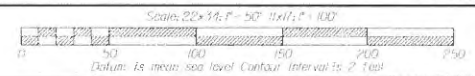
- Gas Recovery Pipe (Protect-in-Place)
- Existing Contours
- Posposed 1' high berm
- Flow Direction
- Design Contours

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DRAWN BY:	mwm
CHECKED BY:	AC/RI
DATE:	23 July 2015
DATE OF PHOTOGRAPHY:	Feb 2014



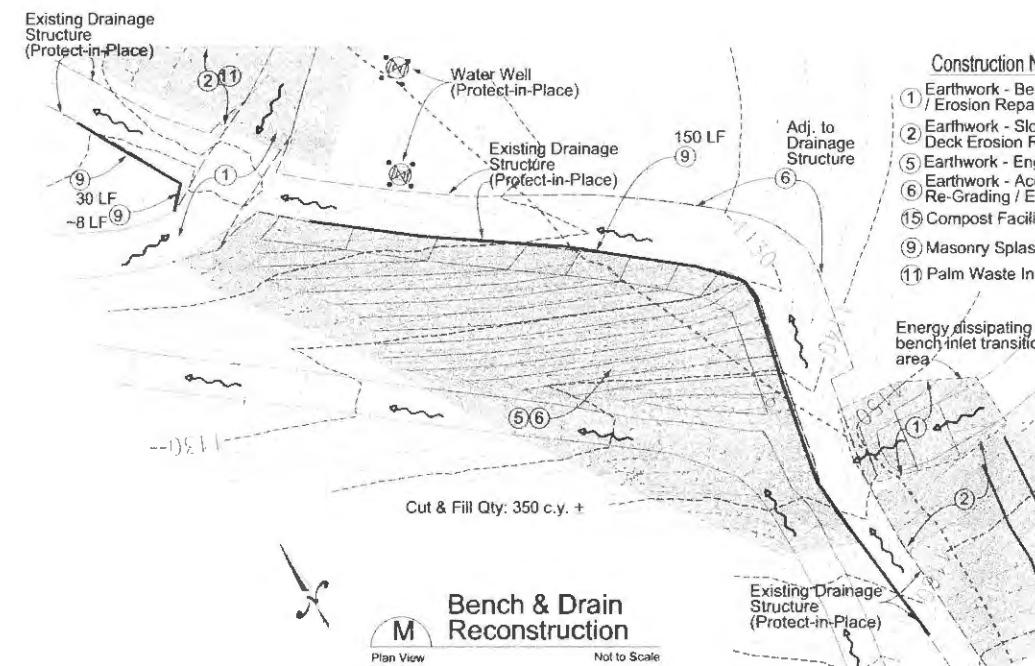
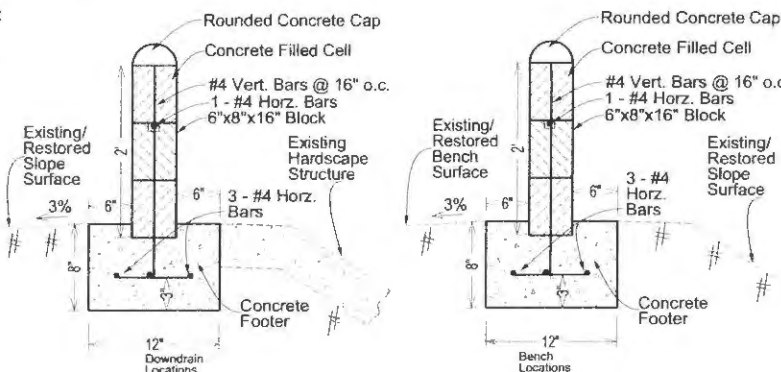
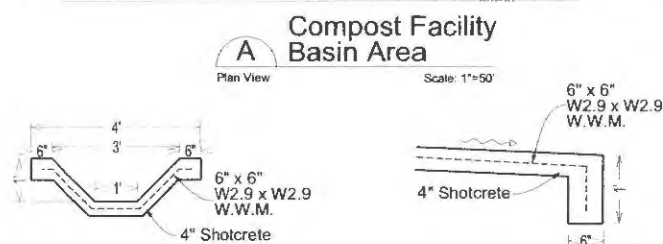
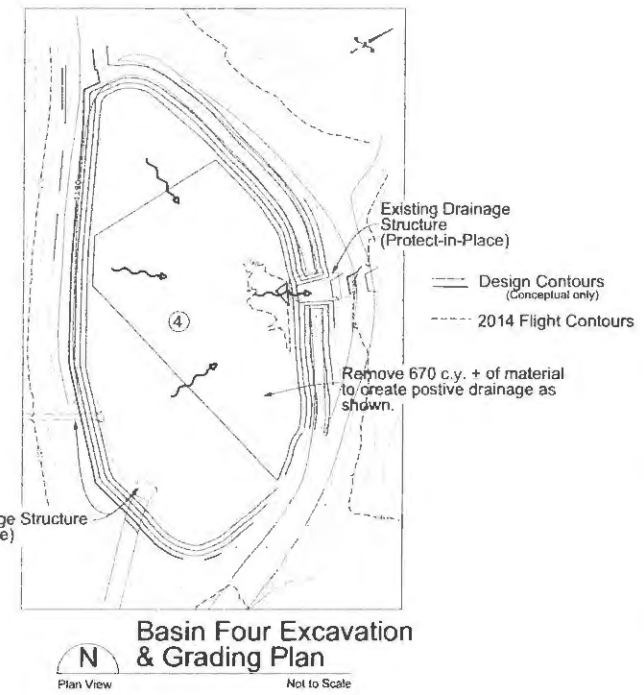
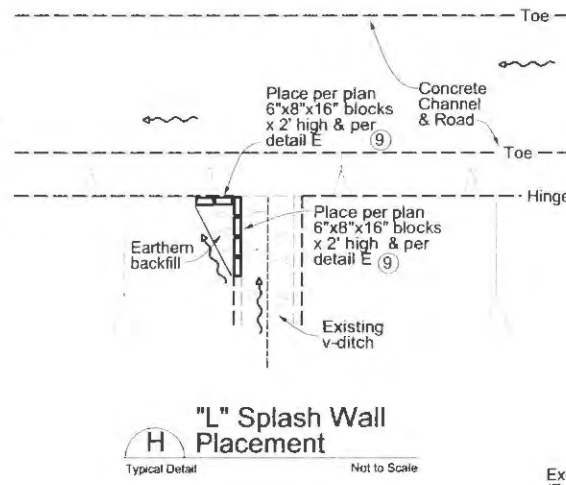
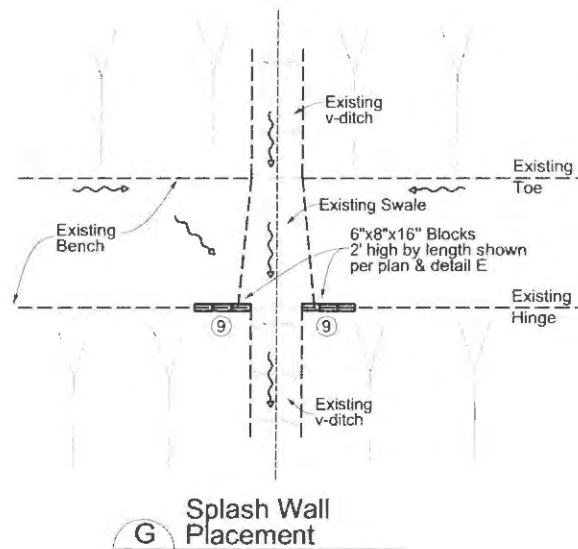
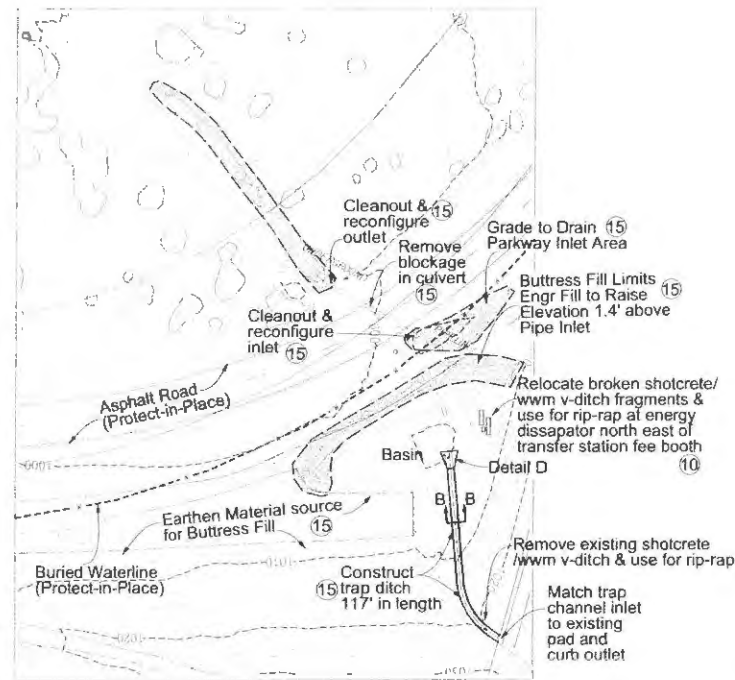
Hans Kenkamp
General Manager/Chief Engineer



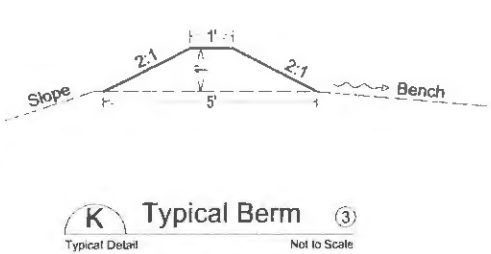
Edom Hill (Closed) Sanitary Landfill
Post Storm Repair and Drainage Improvements

Plan View Details

SCALE:	22x34: 1"=300' 11x17: 1"=600'
SERVER:	web2k-06
FOLDER:	sites/edom/15eh/projects/Storm Repair
FILE:	EH-2015-01-s03-5-work.dgn
MODEL:	s4-Details North Slope
SHEET:	4 OF 10



- Construction Notes**
- 1 Earthwork - Bench Grading / Erosion Repair
 - 2 Earthwork - Slope & Top Deck Erosion Repair
 - 3 Earthwork - Engineered Fill
 - 4 Earthwork - Access Bench Re-Grading / Erosion Backfill
 - 5 Compost Facility Improvements
 - 6 Masonry Splash Walls
 - 7 Palm Waste Installation



NO	REVISIONS	BY	APPROVED	DATE

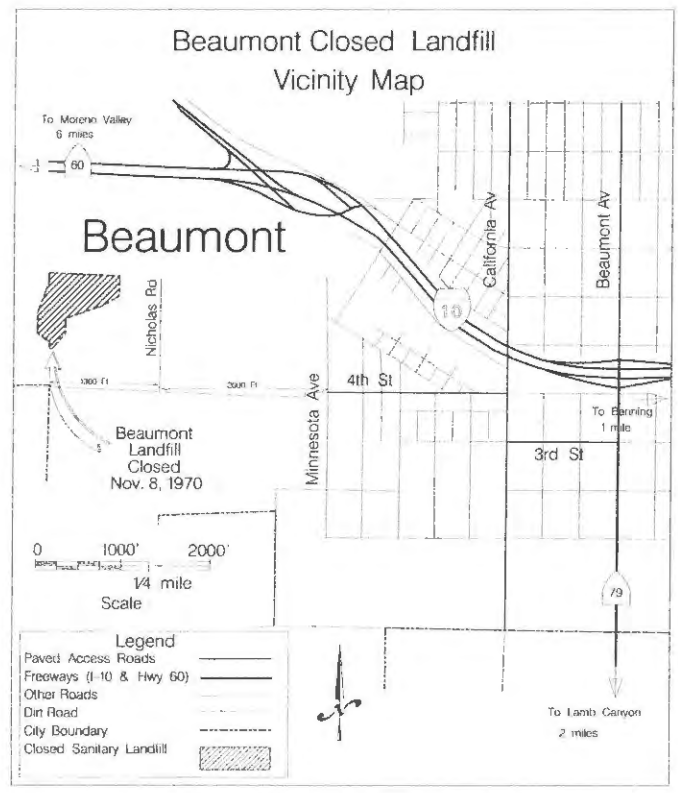
DESIGNED BY	mwm
DRAWN BY	mwm
CHECKED BY	AC/RI
DATE	23 July 2015
DATE OF PHOTOGRAPHY	Feb 2014



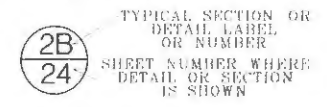
Edom Hill (Closed) Sanitary Landfill
Post Storm Repair and Drainage Improvements

Details

SCALE	22x34: 1"=300' 11x17: 1"=600'
SERVER	web2k-06
FOLDER	sites/edom/15eh/projects/Storm Repair
FILE	EH-2015-01-s03-5-work.dgn
MODEL	Details
SHEET	5 OF 10



Detail Callouts

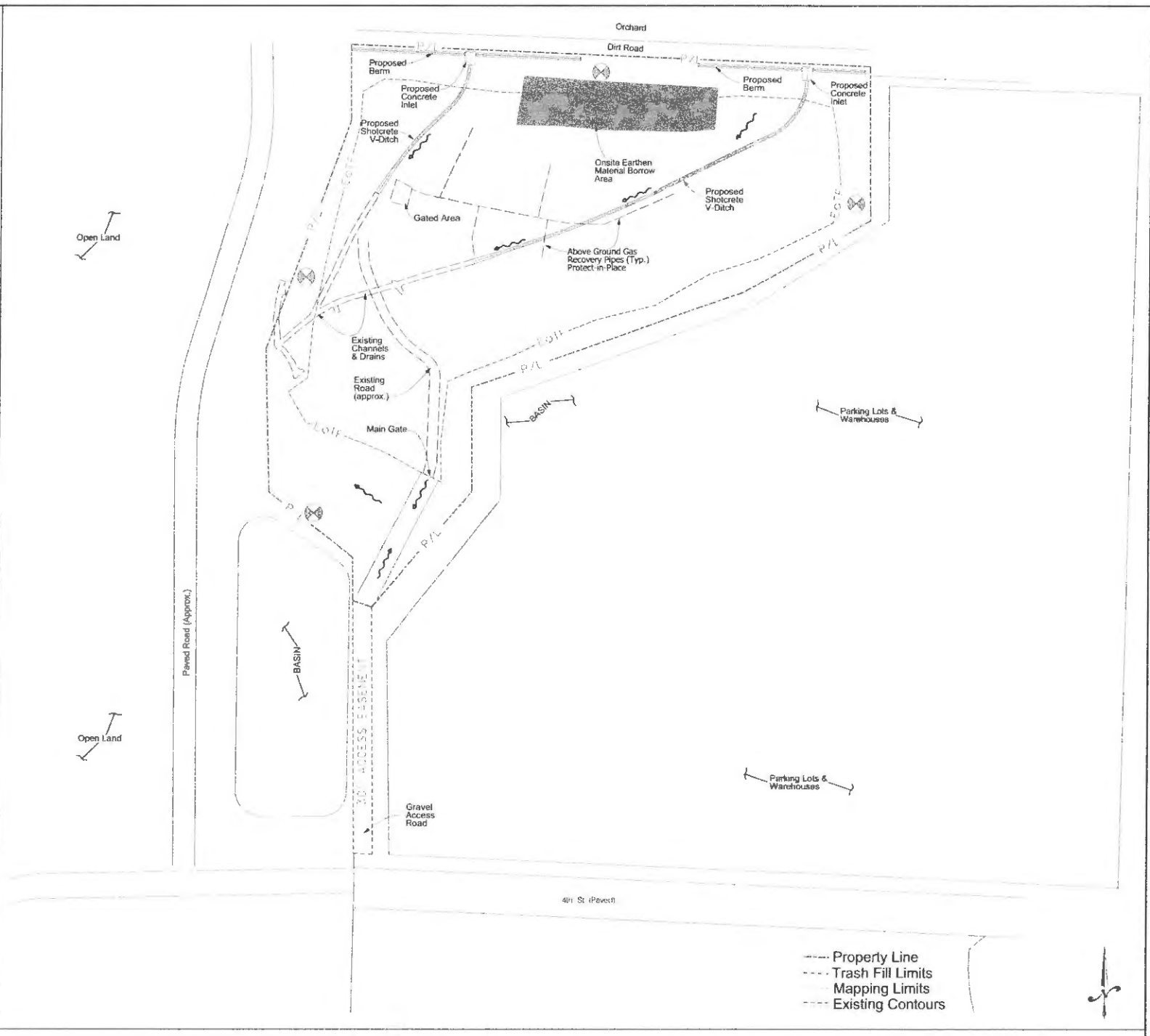


GENERAL NOTES

1. Details of construction, materials and workmanship not shown in these drawings shall conform to the pertinent requirements of the Standard Specifications and any applicable Contract Specifications.
2. All existing utilities such as fences, monitoring wells, pipelines, gas lines, probes, etc. shall be protected from damage or replaced at Contractor's expense.
3. All existing and proposed dimensions shall be verified by the Contractor prior to starting work. The Department shall be notified of all discrepancies immediately.
4. Topography is developed by digital photogrammetric methods and field topographic survey. California coordinate system Zone VI NAVD 88 is to be used for all survey work.
5. Topographic features, both contours and plan data are based on Riverside County Flood Control and Water Conservation District Photogrammetry mapping.
6. All elevations are in feet, based on U.S.C. & G.S. Datum.

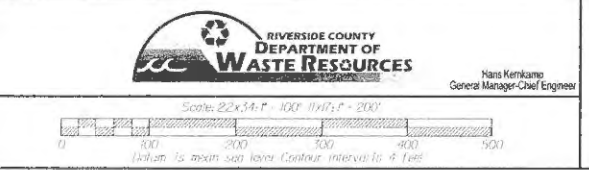
SYMBOLS

- Protect in Place Ground Water Well
- Protect in Place Gas Well
- Flow direction
- Construction Note Call out



NO.	REVISIONS	BY	APPROVED	DATE

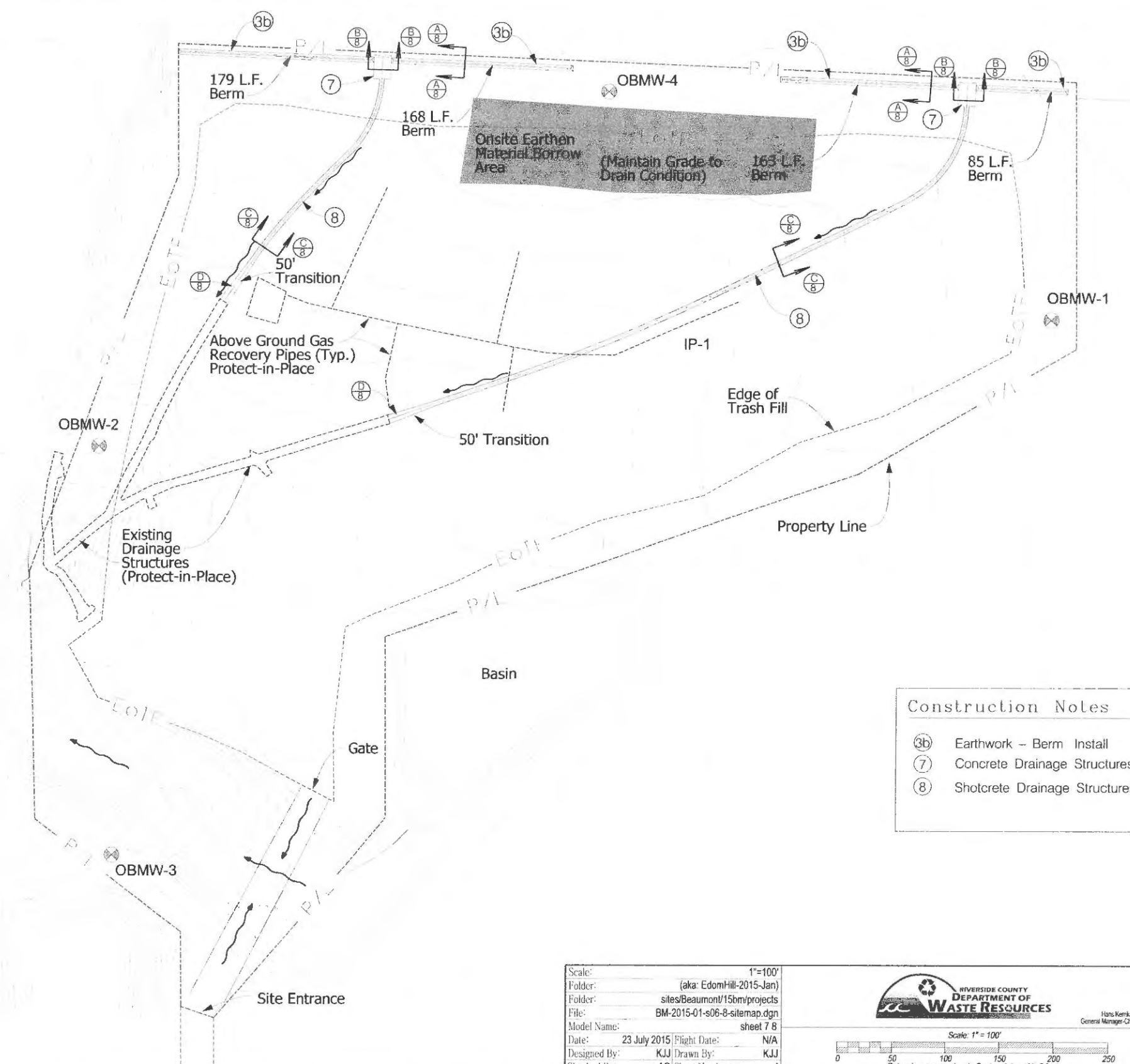
DESIGNED BY: **rwmm**
 DRAWN BY: **rwmm**
 CHECKED BY: **AC/RI**
 DATE: **23 July 2015**
 DATE OF PHOTOGRAPHY: **Feb 2014**



**Beaumont (Closed) Sanitary Landfill
Drainage Improvements**

General Site & Vicinity Maps

SCALE: 22x34: 1"=300' 11x17: 1"=600'
 SERVER: web2k-06
 FOLDER: sites/edom/15eh/projects/Storm Repair
 FILE: BM-2015-01-s06-8-sitemap.dgn
 MODEL: sheet 6
 SHEET 6 OF 10



Construction Notes	
ⓑ	Earthwork – Berm Install
⑦	Concrete Drainage Structures
⑧	Shotcrete Drainage Structures



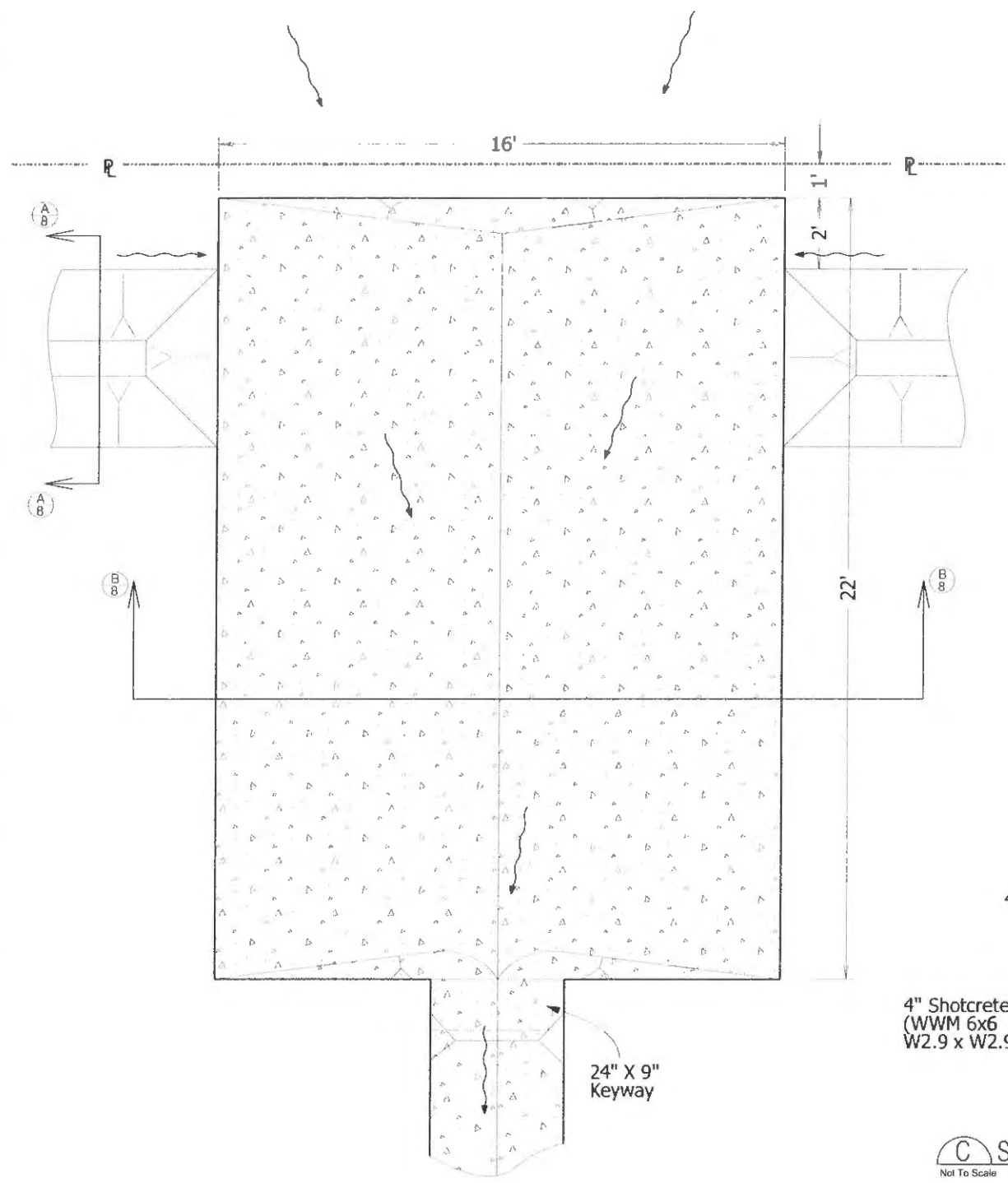
Scale: 1"=100'
 Folder: (aka: EdomHill-2015-Jan)
 Folder: sites/Beaumont/15bm/projects
 File: BM-2015-01-s06-8-sitemap.dgn
 Model Name: sheet 7 8
 Date: 23 July 2015 Flight Date: N/A
 Designed By: KJJ Drawn By: KJJ
 Checked By: AC Sheet Number: 1

RIVERSIDE COUNTY
 DEPARTMENT OF
WASTE RESOURCES

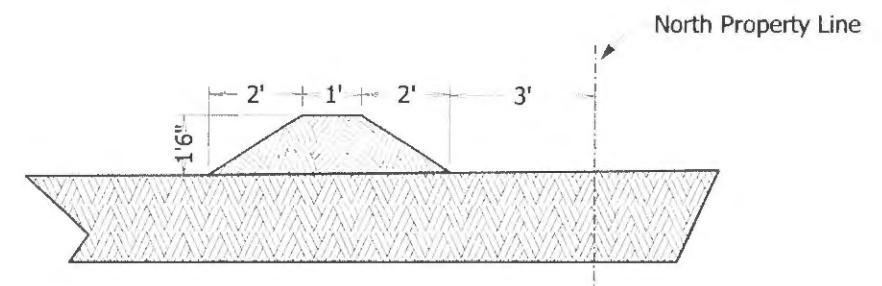
Hans Kemkamp
 General Manager-Chief Engineer

Scale: 1" = 100'

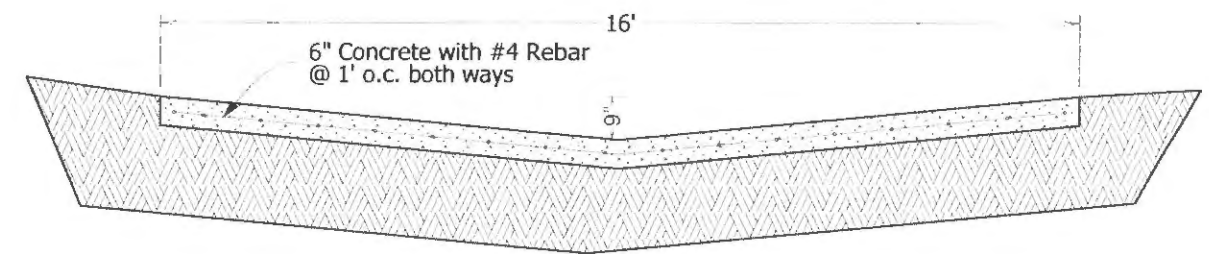
 Datum is mean sea level Contour Interval is 2 feet



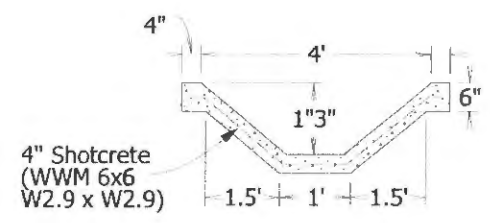
D Concrete Inlet/Crossing Structure
Not To Scale
Bid Item #7



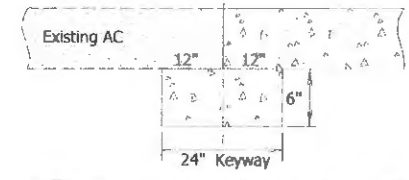
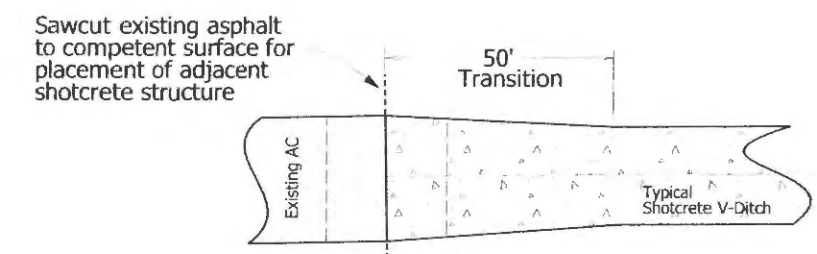
A Earthen Diversion Berm
Not To Scale
Bid Item #3b



B Concrete Inlet/Crossing Structure Crosssection
Not To Scale
Bid Item #7



C Shotcrete Drainage Trap Channel
Not To Scale
Bid Item #8



D Tie-in to Existing Asphalt
Not To Scale
Bid Item #8

Scale:	1"=100'
Folder:	(aka: EdomHill-2015-Jan)
Folder:	sites/Beaumont/15bm/projects
File:	BM-2015-01-s06-8-sitemap.dgn
Model Name:	sheet 7 8
Date:	23 July 2015 Flight Date: N/A
Designed By:	KJJ Drawn By: KJJ
Checked By:	AC Sheet Number: 2



Hans Kerkamp
General Manager, Chief Engineer

Beaumont Landfill
Drainage Improvements
Construction Details
Sheet 8 of 10

Legend

- Burrowing Owl Habitat*
- Landfill Footprint
- Chain Link Fencing
- Existing Water Wells (Protect in Place)
- Existing Gas Probes, Bollards, and Vaults (Protect in Place)
- Existing Vertical Gas Well (Protect in Place)
- Existing Horizontal Gas Pipe (Protect in Place)
- Property Line (237.75 acres)
- Hardscape Drainage Structures (Protect in Place)

- General Notes**
1. Details of construction, materials and workmanship not shown in these drawings shall conform to the pertinent requirements of the Standard Specifications and any applicable Contract Specifications.
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 5. Topographic features, both contours and plan data are based on Riverside County Flood Control and Water Conservation District Photogrammetry mapping.
 6. All elevations are in feet, based on U.S.C. & G.S. Datum.

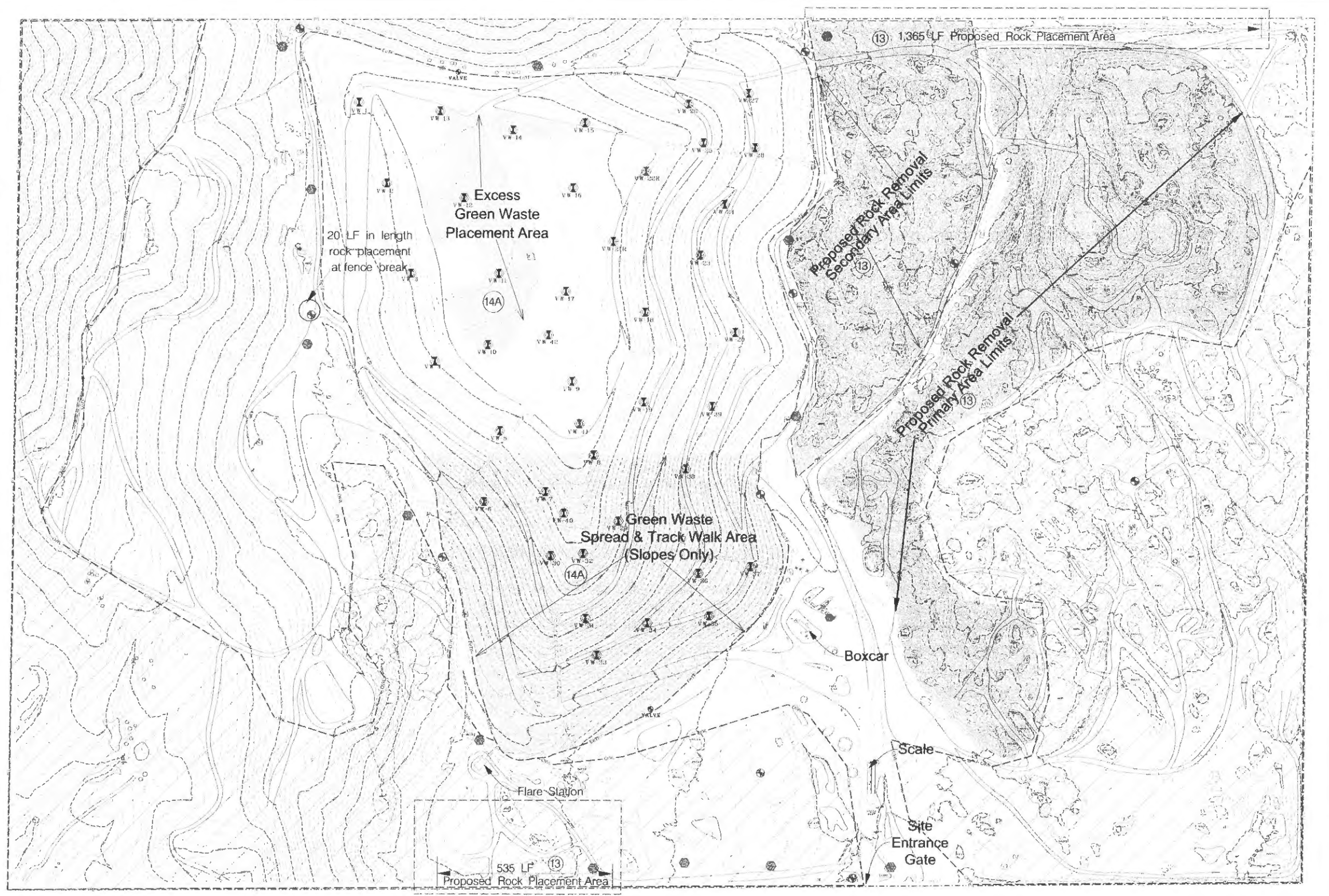
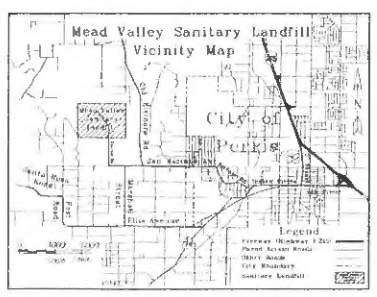
- Construction Notes**
- (14A) Green Waste / Palm Waste Spread, Relocate, and Track Walk
 - (13) Rock Boulder Relocation / Placement

Detail Callouts

TYPICAL SECTION OR DETAIL LABEL OR NUMBER

(2B) SHEET NUMBER WHERE DETAIL OR SECTION IS SHOWN

*Approximate Limits Taken From Site - MSHCP Map
 www.sirma.com/resources/isp/germanaa.htm



NO.	REVISIONS	BY	APPROVED	DATE

DESIGNED BY: bm
 DRAWN BY: bm
 CHECKED BY: AC/RI
 DATE: 23 July 2015
 DATE OF PHOTOGRAPHY: May 2013

RIVERSIDE COUNTY
 DEPARTMENT OF
 WASTE RESOURCES

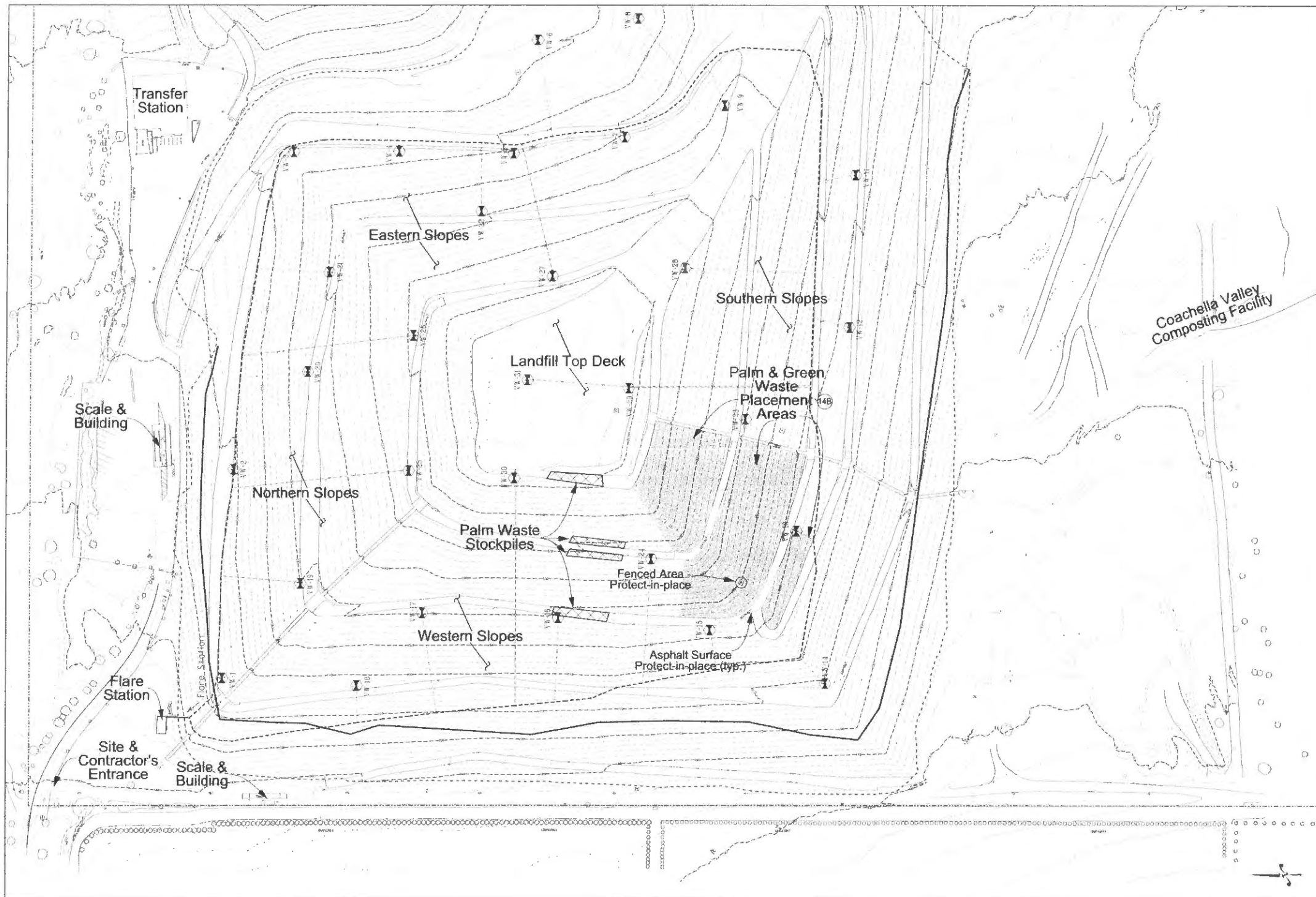
Scale: 22x34: 1" = 150' 11x17: 1" = 300'

0 150 300 450 600 750
 Datum is mean sea level Contour Interval is 2 feet

Mead Valley (Closed) Sanitary Landfill

Barrier - Rock Removal & Track Rolling Map

SCALE	22x34: 1"=150' 11x17: 1"=300'
SERVER	web2k-06
FOLDER	sites/mead/15mvi/post closure/winterization/
FILE	mv Winterization Security Fencing - Rock Area.dgn
MODEL	Main Map
SHEET	9 OF 10

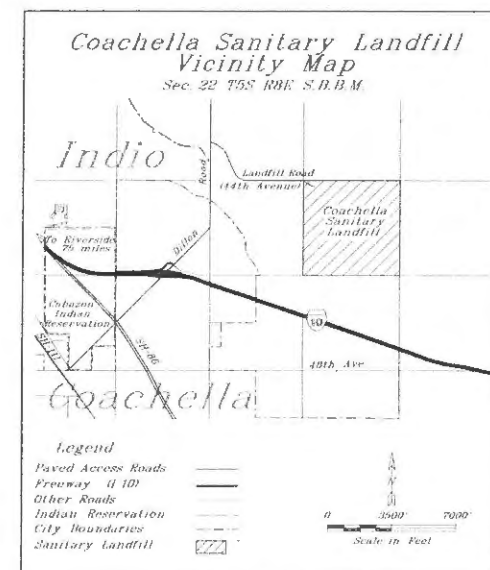


Construction Notes

- 14B Palm Waste - Spread, Relocate & Track Walk.

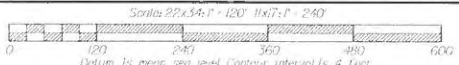
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6. Topographic features, both contours and plan data are based on Riverside County Flood Control and Water Conservation District Photogrammetry mapping.
7. All elevations are in feet, based on U.S.C. & G.S. Datum.



NO.	REVISIONS	BY	APPROVED	DATE

DESIGNED BY: RT
 DRAWN BY: mwm
 CHECKED BY: AC/RI
 DATE: 23 July 2015
 DATE OF PHOTOGRAPHY: Feb 2014



**Coachella (Closed) Sanitary Landfill
 Drainage Improvements
 Green & Palm Waste Map**

SCALE:	22x34: 1"=120' 11x17: 1"=240'
SERVER:	web2k-06
FOLDER:	sites/edom/15eh/projects/Storm Repair
FILE:	CO-2015-01-s10-sitemap.dgn
MODEL:	Main Map
SHEET	10 OF 10