

## SECTION 6 - AGGREGATE BASE ROADWAY AND CROSSINGS

### 6.1 GENERAL

The work covered by this Section shall consist of furnishing all necessary labor, materials, equipment, tools, supervision, subgrade preparation for the construction and installation of the Aggregate Base Roadway and Aggregate Base Equipment and Vehicle Crossings, at the locations shown on the Project Drawings or as directed by the County.

### 6.2 SUBMITTALS

- A. The Contractor shall submit Certificates of Compliance for class II and aggregate base materials used in this project. The certificates shall be signed by the manufacturer of the materials and shall state that materials involved shall comply in all respects with the requirements of these specifications.
- B. The Contractor shall submit to the County gradation test reports before delivery of aggregate base materials to the project site. The Contractor shall obtain the County's approval of the aggregate base material and material source in advance of the use of such materials in the work.
- C. The Contractor shall submit to the County product data sheets, and manufacture's application instruction for the geogrid material to the County for approval.

### 6.3 MATERIALS

- A. Material for the Class II Aggregate Base shall conform to the following gradation:

Sieve Size	Percentage Passing Sieve
1 inch	100
No. 4	35-60
No. 30	10-30
No. 200	2-9

- B. Material for the Crushed Aggregate Base shall consist entirely of crushed rock greater than 3 inches in size but smaller than 6 inches.
- C. Material for the equipment crossing shall consist of a rock layer (2" particle size) and class II base layer in accordance with the applicable details in the Project Drawings.
- D. Geogrid material shall be Biaxial Geogrid BX1220 as Manufactured by Tensar International or approved equal by the County

## 6.4 EXECUTION

- A. Subgrade preparation and base placement operations (adding water, spreading and compacting) shall be performed in accordance to Section 26 of the State Standard Specifications.
- B. Subgrade for Class II and Crushed Aggregate Base shall be compacted to a minimum of 90 percent relative compaction (or as otherwise noted on the Project Drawings) as determined by ASTM D1557.
- C. Subgrade and finished road surface within the grading limits shall be graded to ensure positive drainage towards the drainage structures as shown on the Project Drawings.
- D. The subgrade shall conform to the locations and cross sections as shown on the Project Drawings or as directed by the County.
- E. Contractor shall haul excavated material to the designated stockpile for excess material as shown on the Project Drawings.
- F. Geogrid material shall be installed at the specific locations shown on the Project drawings. The geogrid shall be laid smooth without wrinkles or folds on the prepared subgrade in the direction of the construction traffic. Tension should be applied to the geogrid until at least 70 percent of the geogrid area is covered with base material. Adjacent geogrid rolls shall have a minimum 12-inch overlap. Base is to be place in the direction in which the reinforcement was laid out, to aid in tensioning. Rubber-tired equipment is allowed to pass over bare geogrid at slow speeds (less than 10 mph) and without sudden braking. Track equipment should not be allowed onto uncovered geogrid. To avoid damaging the geogrid, a minimum of six (6) inches of base on top of the geogrid shall be placed before tracked equipment can be allowed on top of the geogrid.

## 6.5 MEASUREMENT AND PAYMENT

**Measurement and Payment** for the construction of 3-inch Thick Class II Base over 6-inch Thick Aggregate Base roadway, including, but not limited to; over-excavation, subgrade preparation, hauling and stockpiling excess material, supply and place 3-inch thick Class II Base, supply and place 6-inch thick Crushed Aggregate Base, compaction, and finish grading shall be made after County acceptance, at the unit price per square foot (true area including slope surface area) as stated in the Contractor's proposal **Bid Item No. 8 – “Construct Aggregate Base Roadway, 3” thick Class II Base over 6” thick Aggregate Base.**

**Measurement and Payment** for the construction of Equipment Crossing, including, but not limited to; over-excavation, subgrade preparation, supply and place 12-inch thick Class II Base, supply and place 6-inch thick Crushed Aggregate Base, compaction, supply and place biaxial geogrid, and finish grading shall be made after County acceptance, at the unit price per square foot (true area including slope surface area) as stated in the Contractor's proposal **Bid Item No. 9 – “Construct Aggregate Base Equipment Crossing”.**

END OF SECTION

## **SECTION 7 - SURFACE PREPARATION FOR HYDROSEEDING AND POSI-CUBE APPLICATIONS**

### **7.1 GENERAL**

The work in this section shall include furnishing all labor, supervision, tools, equipment, and materials necessary to repair the slope erosion on the existing landfill toe berm and also to prepare the slopes to receive hydroseeding and posi-cube applications as specified and within the limits shown on the Project Drawings. All costs associated with the slope repair and slope preparation for hydroseeding and posi-cube applications shall be included in *Bid Item No. 11, "Prepare Slopes for Hydroseeding & Posi-Cube Applications", and Bid Item No. 12, "Repair Slope erosion on Landfill Toe Berm"*. This work shall include, but is not limited to, clearing, grubbing, over-excavation of unsuitable material, excavating and transporting engineered fill, placement and compaction of engineered fill, and preparation of side slopes for hydroseeding and posi-cube applications as shown on the Project Drawings and as required by the Contract Documents.

Prior to the start of work, the Contractor shall discuss with the County, at a minimum, the procedures, equipment and techniques to be used to prepare side slope surfaces. The County shall have the authority to order an immediate stoppage of work because of non-standard preparation procedures, or for any condition which may result in a deficient side slope surface to receive hydroseed and Posi-Cube.

### **7.2 MATERIAL**

Earthen material to be utilized for slope repairs requiring engineered fill shall be excavated and transported by the Contractor from the North Soil Stockpile as shown in the Project Drawings. The suitability of all earthen material shall be subject to the approval of the County. Fill materials shall not contain brush, roots, sod, or other deleterious or unsuitable materials. The maximum particle size for general engineered fill material shall not exceed 6 inches. Organic material and particles greater than the specified size shall be deposited in a separate stockpile, as directed by the County.

### **7.3 EXECUTION**

#### **7.3.1 LANDFILL TOE BERM SLOPE REPAIR**

- A. Areas identified by the County during construction to require over-excavation shall be excavated to limits as determined by the County. After excavation, the area shall be backfilled and compacted to original subgrade elevations as directed by the County. Prior to placing engineered fill material, the Contractor shall clear all stabilization, buttress, and key-way fill areas within the limits of over-excavation of loose slough materials. Prior to the placement of any engineered fill, the County must approve any areas cleared of loose slough material.

- B. Under the direction of the County, only suitable material within the North Soil Stockpile area shall be utilized for the engineered fill material.
- C. Where compacted engineered fill is required, as directed by the County, on-site soil shall be placed and compacted in layers as specified herein. The Contractor shall spread soil evenly by mechanical equipment over the prepared subgrade. The Contractor shall place engineered fill material in lifts with an un-compacted thickness no greater than eight (8) inches. Each lift shall be spread evenly, thoroughly mixed, and compacted to obtain a near uniform condition in each layer. In areas of lift thickness greater than specified herein, the Contractor, prior to construction of additional lifts, must complete re-grading and compaction of the surface to the maximum specified lift thickness. The top of each previously compacted layer shall be scarified so that there is no lamination between layers.
- D. Engineered fill material within the landfill toe berm shall be compacted to a minimum of 95% relative compaction, based on the laboratory maximum dry density, determined by ASTM D1557 and shall be constructed to the lines and grades indicated on the Project Drawings or as directed by the County. The 95% compacted engineered fill shall be properly keyed into the existing landfill toe berm as directed by the County.
- E. All general on-site soil material used for engineered fill shall have moisture content between OMC and 2% above OMC in accordance with ASTM D1557 or as determined by the County. Additional water may need to be added at any time during construction. The moisture content of the engineered fill materials prior to and during compaction shall be uniform throughout each layer of the material.
- F. When the moisture content of the fill material is below optimum, water shall be added until the moisture content is within the limits required to assure an adequate bonding and compaction of all fill material. When the moisture content of the fill material is above the specified limits, the fill material shall be aerated by plowing, discing, blading, or other satisfactory methods until the moisture content is acceptable. All plowing, tamping, blending, discing, or air drying of material is considered incidental to the work and no additional compensation will be allowed. Wetting of materials by rain or artificial means to an unacceptable moisture content will require mixing or air drying to return this material to the required moisture content. Complying with this requirement is considered incidental to the work and no additional compensation will be allowed.
- G. Surfaces of all slopes shall be finished by track walking and left in a uniformly graded condition.
- H. The Contractor shall take proper precautions to protect the existing drains located at the toe of slope. Any sediment or debris in the existing drains after the erosion repair and hydroseeding application shall be removed by the Contractor.

### **7.3.2 SLOPE PREPARATION FOR HYDROSEEDING AND POSI-CUBE**

## APPLICATIONS

- A. Prior to the start of preparation of the earth subgrade surface to receive the hydroseeding or Posi-Cube applications on side slopes, a site inspection shall be conducted by the Contractor and the County to verify surface conditions required to support the hydroseeding and Posi-Cube applications. All areas receiving hydroseed and Posi-Cube shall be tracked walked (or approved equal) prior to application.
- B. Before final preparation of the side slope commences, it shall be free from abrupt breaks, erosion rills, loose soil, tumble weeds, and other foreign materials that may inhibit proper growth of seeds on the side slopes. For areas not accessible to equipment, final track walking of the earth subgrade surface shall be performed by approved mechanical or hand tamping methods, as approved by the County.
- C. The surfaces of the completed earth subgrade shall be track walked and uniform. Final subgrade preparation shall not precede the hydroseeding and Posi-Cube application by more than 48 hours, in order to minimize potential damage due to wind, rain, and the actions of man and animals. The surface of the earth subgrade shall be prepared to the tolerances and conditions specified in the Contract Documents.

## 7.4 MEASUREMENT AND PAYMENT

The **measurement** of the final quantity for **Bid Item No. 11 “Prepare Slopes for Hydroseeding & Posi-Cube Applications”** shall be based on final acreage of ground surface after it has been prepared to the satisfaction of the County. The area of the final ground surface shall be determined by the County based on conventional ground surveying method. Quantities shall be calculated to the nearest tenths of an acre. Limits of surface to be prepared are shown on the Project Drawings and may be subject to change based on field conditions as directed by the County. **Payment** for finished subgrade preparation shall be at the contract unit price per acre as stated in the Contractor’s Proposal, **Bid Item No. 11** and shall constitute full compensation to the Contractor for all work related to finished subgrade preparation on side slopes within the limits shown on the Project Drawings including but not limited to: furnishing all labor, supervision, materials, tools, and equipment necessary to finish the surfaces of the slopes to receive hydroseed and Posi-Cube in accordance with the Contract Documents.

The **measurement** of the final quantity for **Bid Item No. 12 – “Repair Slope Erosion on Landfill Toe Berm”** shall be determined by the County based on field measurements of the total acreage of slope repaired on the landfill toe berm as shown on the Project Drawings. **Payment** for slope repair application shall be at the contract unit price per acre as stated in the Contractor’s Proposal, **Bid Item No. 12** and shall constitute full compensation to the Contractor for all work related to the slope repair work in the project including but not limited to: furnishing all labor, supervision, materials, tools, and equipment, clearing and grubbing, over-excavation of unsuitable material, excavating and transporting engineered fill, placement and compaction of engineered fill, and preparation of side slopes for hydroseed application and any other requirements by the Contract

Documents for repairing the existing slope erosion on the landfill toe berm. The hydroseed application on the landfill toe berm shall be applied and paid in accordance with SECTION 8 - Hydroseed.

END OF SECTION

## **SECTION 8 - HYDROSEEDING AND POSI-CUBE APPLICATIONS**

### **8.1 GENERAL**

The work covered by this Section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for stabilizing slopes with hydroseeding and Posi-cube applications (or approved equal) at the locations shown on the Project Drawings or as directed by the County.

### **8.2 SUBMITTALS**

Prior to delivery of materials, the Contractor shall submit product data sheet, material specifications, manufacturer's application instructions, seed mix design, fertilizer type, and stabilizing agent for the hydroseeding and posi-cube applications to the County for approval.

### **8.3 MATERIALS**

- A. Seed Mixture - The seed mixture furnished by the Contractor shall be drought tolerant, shallow rooted grasses and annual plant species native and adaptable to the climate conditions at the Lamb Canyon Sanitary Landfill. The seed shall be less than two years old. Germination test of the seed shall be made less than six months prior to the seeding operations and a certificate of such test shall be furnished to the Department. The germination tests, for an acceptable seed, shall indicate a minimum of 85 percent germination. When directed by the Department, the above mixture may be varied to suit any special condition of soil peculiar to the areas to be seeded. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be acceptable.
- B. Fertilizer - A commercial grade fertilizer of 16N-16P-16K analysis shall be applied to all areas to be seeded, at the rate of 100 pounds per acre. The fertilizer shall be thoroughly mixed with seeds and appropriate amounts of water prior to hydroseeding.
- C. Stabilization - Stabilizing agent shall be derived from wood cellulose fiber combined with stabilizing binder.
- D. Mineral Binder – The mineral binder furnished by the Contractor shall be Posi-Cube Seed and Soil Guard as manufactured by LSC Environmental Products or approved equal.

### **8.4 EXECUTION**

- A. Prior to applying Hydroseed or Posi-Cube, the side slopes shall be cleared and grubbed of any loose soil, tumble weeds, or other unsuitable materials and any minor erosion rills shall be repaired by the Contractor in accordance with SECTION 7 - Surface Preparation for Hydroseeding and Posi-Cube Applications or as directed by the County.
- B. Hydroseeding shall consist of mixing and applying seed, commercial fertilizer and stabilizing agent with water in accordance with the manufacture's

application instructions, mixture rates, and recommendations. Mixing of materials for application with hydroseeding equipment shall be performed in a tank with a built-in continuous agitation system of sufficient operating capacity to produce a homogeneous mixture and a discharge system which will apply the mixture at a continuous and uniform rate.

- C. Posi-Cube application shall consist of mixing and applying seed mixture and Posi-Cube seed and soil guard with water in accordance with the manufacture's application instructions, mixture rates, and recommendations. Mixing of materials for application with Posi-Cube equipment or approved equal shall be performed in a tank with a built-in continuous agitation system of sufficient operating capacity to produce a homogeneous mixture and a discharge system which will apply the mixture at a continuous and uniform rate.

## **8.5 MEASUREMENT AND PAYMENT**

The **measurement** of the final quantity for **Bid Item No. 13 – “Apply Hydroseed on Side Slopes”** shall be determined by the County based on field measurements of the total acreage of hydroseed applied on side slopes at the locations shown on the Project Drawings. **Payment** for the hydroseed application shall be at the contract unit price per acre as stated in the Contractor's Proposal, **Bid Item No. 13** and shall constitute full compensation to the Contractor for all work related to the hydroseed application on side slopes in the project including but not limited to: furnishing all labor, supervision, materials, tools, equipment, slope preparation, hydroseeding, and any other requirements by the Contract Documents for applying hydroseed on side slopes.

The **measurement** of the final quantity for **Bid Item No. 14 – “Apply Posi-Cube on Side Slopes”** shall be determined by the County based on field measurements of the total acreage of Posi-Cube, or approved equal, applied on side slopes at the locations shown on the Project Drawings. **Payment** for the Posi-Cube application shall be at the contract unit price per acre as stated in the Contractor's Proposal, **Bid Item No. 14** and shall constitute full compensation to the Contractor for all work related to the Posi-Cube application on side slopes in the project including but not limited to: furnishing all labor, supervision, materials, tools, equipment, furnishing and applying Posi-Cube and seed mixture, and any other requirements by the Contract Documents for applying Posi-Cube on side slopes.

END OF SECTION



## **SECTION 9 - SEDIMENTATION BASIN MAINTENANCE AND IMPROVEMENTS**

### **9.1 GENERAL**

The work in this section shall include furnishing all labor, supervision, tools, equipment, and materials necessary to perform the required maintenance and improvements to the sedimentation basin. This work shall include, but is not limited to: surveying, removal of accumulated sediment and debris, hauling and stockpiling material, wrapping the existing 18" perforated pipe riser with geotextile (material to be supplied by County), furnish and place crushed aggregate base around perforated pipe riser, lower skimmer assembly, repair any damaged to the 4"-thick concrete pad as directed by the County and as required by the Contract Documents.

### **9.2 SUBMITTALS**

- A. The Contractor shall submit Certificates of Compliance for crushed aggregate base materials used in this project. The certificates shall be signed by the manufacturer of the materials and shall state that materials involved shall comply in all respects with the requirements of these specifications.
- B. The Contractor shall submit to the County gradation test reports before delivery of crushed aggregate base materials to the project site. The Contractor shall obtain the County's approval of the crushed aggregate base material and material source in advance of the use of such materials in the work.
- C. Submit Concrete mix design, certifications, and delivery load tickets in accordance with Section 4.3.

### **9.3 MATERIALS**

- A. Material for Crushed Aggregate Base shall consist entirely of crushed rock greater than 3 inches in size but smaller than 6 inches.
- B. Geotextile material required to wrap the 18" perforated pipe riser shall be supplied by the County and installed by the Contractor.
- C. Shotcrete used to repair the 4" thick concrete pad shall be in accordance with the material description in Section 4.4.

### **9.4 EXECUTION**

#### **9.4.1 SEDIMENTATION BASIN MAINTENANCE**

- A. The Contractor shall complete the removal of sediment and debris from the sedimentation basin within the first ten (10) Contract Working days of this project.
- B. The Contractor shall take proper precautions to protect the existing drainage structures, pipe risers, skimmer, and BMP measures (gabion baskets, chain-

link fence with coir matting, and k-rail barriers) located within and surrounding the sedimentation basin.

- C. Areas of excavation within the Sedimentation Basin shall be graded to drain at all times in accordance with the Project Drawings and as directed by the County and necessary precautions shall be taken to control dust and erosion. The Contractor's access roads shall be maintained as necessary for the Contractor and the County, including landfill operation access. Excavations and Stockpiles shall not be constructed beyond the limits and design parameters stated in these Special Provisions and Project Drawings, unless otherwise authorized by the County in writing. Unauthorized excavation outside the specified excavation limits shall be immediately corrected by backfilling to grade with engineered fill (as directed by the County) at the Contractor's expense.
- D. Excavated material shall be transported and placed by the Contractor within the designated South Soil Stockpile area as shown on the Project Drawings or as directed by the County. Surface drainage shall be maintained at all times in the excavation and stockpile areas. Surfaces of flat areas shall be graded to ensure positive drainage in accordance with the Project Drawings and finish-graded with a motor grader or approved equal. Final surface areas shall be finished by track walking and left in a uniformly graded condition to prevent or minimize erosion.

#### **9.4.2 SEDIMENTATION BASIN IMPROVEMENTS**

- A. Contractor shall remove sections of the existing 4"-thick concrete pad adjacent to the skimmer assembly to be able to access the buried flange and 90 Degree Bend. Contractor shall carefully disassemble the flanges, bends, restrains, steel pipe, and coupling adapters without causing damage to the parts.
- B. Contractor shall reassemble the skimmer inlet connection without the 8' diameter steel pipe and ensure the skimmer inlet connection is a maximum of 6" from the existing ground as shown in the Project Drawings and as directed by the County.
- C. Contractor shall repair and patch the damage concrete pad as directed by the County.
- D. Contractor shall wrap the 18" perforated pipe riser with geotextile material (supplied by the County) and furnish and place crushed aggregate base around the pipe riser in accordance with the Project Drawings.

#### **9.5 MEASUREMENT AND PAYMENT**

The **measurement** of the final sediment removal quantity for **Bid Item No. 15 "Remove Sediment and Re-grade Sedimentation Basin"** shall be based only on the total sediment quantity removed as determined by comparing the pre and post construction ground surfaces within the specified sediment removal limits in the project. The pre-construction ground surface shall be established by conventional ground survey prior to

commencement of work, and the post-construction ground surface for this work shall be established by ground surveying after the completion of sediment removal. **Payment** for the removal of sediment and debris within the sedimentation basin shall be at the contract unit price per cubic yard as stated in the Contractor's Proposal, **Bid Item No. 15** and shall constitute full compensation to the Contractor for all work related to the sediment and debris removal in the project including but not limited to: furnishing all labor, supervision, materials, tools, equipment, removal of sediment and debris, hauling material to designated stockpile, and any other requirements by the Contract Documents for removing sediment and debris from the sedimentation basin.

The **measurement** of the final quantity for **Bid Item No. 16 "Sedimentation Basin Outlet Improvements"** shall be determined by the County based upon the lump sum amount as stated in the Contractor's Proposal, **Bid Item No. 16. Payment** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing improvements to the sedimentation basin outlet system.

END OF SECTION

## **SECTION 10 - EARTHEN DIVERSION BERM**

### **10.1 GENERAL**

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the construction of earthen diversion berms. The work shall include but not be limited to grading, excavation, subgrade preparation, hauling material, and construction of earthen diversion berms to the elevations, lines and grades, and at the locations shown on the Project Drawings or as directed by the County.

### **10.2 MATERIALS**

Earthen materials for the construction of the earthen diversion berms shall be obtained from the North Soil Stockpile (as shown on the project Drawings) or from excess material generated from the surface drainage subgrade excavation construction. Earthen materials used to construct earthen diversion berms shall not contain brush, roots, sod, or other deleterious or unsuitable materials; and particle size shall not exceed three (3) inches.

### **10.3 EXECUTION**

- A. The subgrade for earthen diversion berms shall be firm, stable and unyielding, and contain no loose material as determined by the County. The subgrade shall adhere to the elevations and cross sections shown on the Project Drawings or as directed by the County.
- B. The earthen diversion berms shall be compacted to a minimum of 90% relative compaction.
- C. Contractor shall provide moisture conditioning to earthen materials used for earthen diversion berm construction, and shall maintain adequate moisture throughout berm construction as deemed acceptable to the County.

### **10.4 MEASUREMENT AND PAYMENT**

Payment for **Bid Item No. 18 “Construct Earthen Diversion Berms”** shall be based on the final in-place linear feet of earthen diversion berm constructed within the limits specified in the Project Drawings and as directed by the County. The final length of earthen diversion berms 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. 18. Payment** shall constitute full compensation to the Contractor for all work related to the furnishing and installation of earthen diversion berm including but not limited to all labor, supervision, material, tools, equipment, and incidentals, and any other material or other work required by the Contract Documents. No additional compensation shall be given for earthen diversion berms placed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

END OF SECTION

## SECTION 11 - GROUTED RIP-RAP SLOPE PROTECTION

### 11.1 GENERAL

The work covered by this section shall consist of furnishing all necessary labor, materials, tools, equipment, facilities, transportation, services, coordination, supervision, and all other items necessary for the construction of grouted rip-rap slope protection to the elevations, lines and grades, and at the locations shown on the Project Drawings or as directed by the County.

### 11.2 SUBMITTALS

Prior to delivery of materials, the Contractor shall submit rock supplier gradation results and ready-mix grout supplier mix design to the County for approval.

### 11.3 MATERIALS

- A. Stone shall be approved durable broken stone quarry run, and of such quality that it will not disintegrate on exposure to water or weathering and free from structural fractures and defects, and shall not contain shale, unsound sandstone, or other materials which will readily disintegrate.
- B. The rip rap shall be composed of a well-graded mixture of rocks. The gradation of rocks shall conform with the Table 200-1.6(A) of the Standard Specifications as follows:

Rock Size	500lb. (225 kg) Class	375lb. (170 kg) Class	Light (90 kg) Class	Facing (35 kg) Class
500 lbs.	50%- 100%	10%-50%	0-5%	-

- C. Unless otherwise indicated, the minimum thickness of the rip rap stones shall be eighteen (18) inches. Neither breadth nor thickness of any stone shall be less than one-third of its length. The rock shall be sized so as to permit its interlocking.
- D. When grouting is required, ready-mixed grout shall conform to Section 202-1.5.2 of the Standard Specifications.

### 11.4 EXECUTION

- A. Contractor shall temporarily remove the existing k-rails adjacent to the existing concrete inlet structure to allow for the construction of the grouted rip-rap slope protection. After the slope protection construction is completed, the Contractor shall reposition the k-rails adjacent to the slope as directed by the County.
- B. The subgrade for rip rap lining shall be prepared by either cutting or filling to the lines, grades and cross sections shown on the Project Drawings or as directed by the County. The subgrade shall be prepared to the specified

grades, compacted to 90% relative compaction (or as otherwise noted on the Project Drawings), contain no loose material, and be subject to the approval of the County.

- C. The rip rap stones shall be placed to the full thickness as shown on the Project Drawings in a single operation. In placing the riprap stones, the Contractor shall take adequate precautions to avoid displacement of underlying bedding material. The Contractor may move and place individual stones as necessary to obtain a reasonably well-graded distribution. The finish riprap lining shall be free of pockets of small stones or clusters of larger rocks and shall be approved by the County.
- D. The construction method of the grouted rip rap structures shall be performed in accordance to Section 72-5 of the State Standard Specifications, Method B placement.

### **11.5 MEASUREMENT AND PAYMENT**

The **measurement** of the final quantity for **Bid Item No. 19 “Construct Grouted Rip-Rap Slope Protection”** shall be determined by the County by measuring the surface area within the limits specified in the Contract Documents. Measurement shall be determined after the Grouted Rip-Rap Slope Protection Structure has been installed and verified by the County. The final surface shall be verified by the County based on field measurements and quantity shall be calculated to the nearest square foot. **Payment** for the grouted rip-rap structure shall be at the contract unit price per square feet as stated in the Contractor’s Proposal, **Bid Item No. 19** and shall constitute full compensation to the Contractor for all work related to the construction of grouted rip-rap slope protection structure in the project including but not limited to: furnishing all labor, materials, tools, equipment, repositioning k-rails, subgrade preparation, and incidentals, and for doing all the work involved in constructing the grouted rip-rap slope protection structure, complete in place, as shown on the Project Drawings or as directed by the County.

END OF SECTION

## SECTION 12 - SILT FENCE

### 12.1 GENERAL

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the installation of High-Density Polyethylene (HDPE) silt fence at the locations indicated on the Project Drawings or as directed by the County.

### 12.2 SUBMITTALS

The Contractor shall submit product data sheet, and manufacturer's application instructions for all materials to the County for approval.

### 12.3 MATERIALS

- A. The HDPE silt fence shall consist of an HDPE outer jacket with an integrated particle filter. HDPE silt fence shall be a minimum of 20" in height and come in sections of 7-feet in length. The HDPE silt fence shall be S-Fence, SF20, as manufactured by ERTEC Environmental Systems or approved equal.
- B. Steel stakes shall be a minimum of 1.5" (width) x 24" (height) x 3/8" (thick) in size or approved equal.

### 12.4 EXECUTION

HDPE Silt fence shall be installed as follows:

- A. Contractor shall furnish and install the HDPE Silt fence in strict conformance with the manufacturer's instructions, Contract Documents, or as directed by the County.
- B. Contractor shall excavate anchor trenches in accordance with the Project Drawings and as specified in the manufacturer's instructions.
- C. Contractor shall install the HDPE silt fence in slot against the downstream side of the trench wall and backfilled to grade level.
- D. Contractor shall provide a minimum of 4-inch overlap between adjacent HDPE silt fence sections. Steel stakes shall be installed on the downstream side of each overlap. Additional stakes shall be installed at the middle of each section. Contractor shall use zip-ties, bailing wires or approved equal to attach the silt fence to the steel stakes.
- E. HDPE silt fence shall be placed along the edges of drainage structures as shown on the Project Drawings.

### 12.5 MEASUREMENT AND PAYMENT

The **measurement** of the final quantity for **Bid Item No. 21 "Furnish & Install S-Fence"** shall be determined by the County based on field measurements of the axial length (linear feet) of silt fence installed at the locations and to the dimensions shown on the Project Drawings. Joining and overlapping of HDPE silt fence sections will not be measured. **Payment** for the HDPE silt fence shall be at the contract unit price per linear

foot as stated in the Contractor's Proposal, **Bid Item No. 21** and shall constitute full compensation to the Contractor for all work related to the supply and installation of HDPE silt fence in the project including but not limited to: furnishing all labor, supervision, materials, tools, equipment, excavating and backfilling trenches, hauling excavated material, steel stake anchors, installing silt fences, and any other requirements by the Contract Documents for the supply and installation of HDPE silt fence.

END OF SECTION



## **SECTION 13 - SANDBAGS**

### **13.1 GENERAL**

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the installation of sandbag checkdams at the locations indicated on the Project Drawings or as directed by the County.

### **13.2 SUBMITTALS**

The Contractor shall submit product data sheet, and manufacturer's application instructions for all materials to the County for approval.

### **13.3 MATERIAL**

Sandbags shall be Duraskrim 8BBR ultra violet resistance or approved equal. Sandbags shall be filled with clean soil and shall not contain brush, roots, sod, or other deleterious or unsuitable materials.

### **13.4 EXECUTION**

Sandbag checkdams shall consist of a total of four (4) sandbags stacked two high as shown in the Project Drawings or as directed by the County. Sandbags checkdams shall be placed behind all installed S-fences and spaced every 25' or as directed by the County.

### **13.5 MEASUREMENT AND PAYMENT**

The **measurement** of the final quantity for **Bid Item No. 22 "Furnish & Install Sandbags"** shall be determined by the County based on the specific number of individual sandbags installed at the locations and in conformance with the details shown on the Project Drawings and as required by the Contract Documents. **Payment** for the sandbag checkdams and related work shall be at the contract unit price for each individual sandbag installed as stated in the Contractor's Proposal, **Bid Item No. 22**. Payments shall constitute full compensation to the Contractor for all work related to the installation of sandbag checkdams in the project including but not limited to: furnishing all labor, materials, tools, equipment, filling and placing sandbags, and incidentals as specified in the Contract Documents and indicated in the Project Drawings.

END OF SECTION

## SECTION 14 - FIBER ROLLS

### 14.1 GENERAL

The work covered in this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the installation of fiber rolls at locations shown on the Project Drawings or as directed by the County.

### 14.2 SUBMITTALS

The Contractor shall submit product data sheet, and manufacturer's application instructions for all materials to the County for approval.

### 14.3 MATERIALS

- A. Fiber roll shall be a manufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a photodegradable plastic or biodegradable jute, sisal, or coir fiber netting. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the roll. Rolls shall be between 0.6 feet and 1 foot in diameter. Rolls between 0.6 feet and 0.8 feet in diameter shall have a minimum weight of 1.17lb/ft. and a minimum length of 18 feet. Rolls between 0.8 feet and 1 foot in diameter shall have a minimum weight of 3.3lb/ft. and a minimum length of 9 feet.
- B. Wood stakes shall be a minimum of ¾" x ¾" x 24" in size and shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended

### 14.4 EXECUTION

Fiber rolls shall be installed as follows:

- A. Furrows shall be constructed to a depth between 2" and 4", and to a sufficient width to hold the fiber roll. Stakes shall be installed 2 feet apart along the length of the fiber rolls and stopped at 1 foot from each end of the rolls. Stakes shall be driven to a maximum of 2" above, or flush with the top of the rolls.
- B. The bedding area for the fiber rolls shall be cleared of obstructions including rocks, clods, and debris greater than 1" in diameter before installation.
- C. Fiber rolls shall be placed along the edges of drainage structures and in front of inlet structures as shown on the Project Drawings.
- D. Fiber rolls shall be installed before application of other erosion control or soil stabilization materials in the same area.

### 14.5 MEASUREMENT AND PAYMENT

The **measurements** of the final quantity for **Bid Item No. 23 - "Furnish & Install Fiber Rolls"** shall be determined by the County based on field measurements of the axial length

(linear feet) of fiber rolls installed at the locations and to the dimensions shown on the Project Drawings. Joining and overlapping of rolls will not be measured, and the roll will be measured as a single installed roll. **Payment** for the fiber rolls shall be at the contract unit price per linear foot as stated in the Contractor's Proposal, **Bid Item No. 23** and shall constitute full compensation to the Contractor for all work related to the supply and installation of fiber rolls in the project including but not limited to: furnishing all labor, supervision, materials, tools, and equipment; excavating, hauling, loading, stake anchors, and any other requirements by the Contract Documents for the supply and installation of fiber rolls.

END OF SECTION

## **SECTION 15 - BOLLARDS**

### **15.1 GENERAL**

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the installation of bollards at the locations indicated on the Project Drawings or as directed by the County.

### **15.2 SUBMITTALS**

The Contractor shall submit product data sheet, and manufacturer's application instructions for all materials to the County for approval.

### **15.3 MATERIAL**

- A. The bollards shall be 4-inch diameter steel pipe (minimum thickness of ¼" steel) with a total length of 6' as shown in the Project Drawings. The bollards shall be filled with grout, painted with high visibility yellow paint, and have reflective tape.
- B. Ready-mixed grout shall conform to Section 202-1.5.2 of the Standard Specifications.

### **15.4 EXECUTION**

The Contractor shall install the bollards at the locations and to the dimensions shown on the Project Drawings. The bollards shall be 4' above the ground level and 2' below current ground elevation, the portion of the bollards that is below ground shall be backfilled with grout in accordance with the Project Drawings. The Contractor shall backfill the bollard with grout, paint the bollard with high visibility yellow paint, and place reflective tape at the top of the bollard.

### **15.5 MEASUREMENT AND PAYMENT**

The **measurement** of the final quantity for **Bid Item No. 24 "Furnish & Install Bollards"** shall be determined by the County based on the specific number of bollards installed at the locations and in conformance with the details shown on the Project Drawings and as required by the Contract Documents. **Payment** for the bollards and related work shall be at the contract unit price for each individual bollard installed as stated in the Contractor's Proposal, **Bid Item No. 24**. Payments shall constitute full compensation to the Contractor for all work related to the installation of bollards in the project including but not limited to: furnishing all labor, materials, tools, equipment, steel pipe bollard, trenching, grout backfill, painting, reflective tape, and incidentals as specified in the Contract Documents and indicated in the Project Drawings.

END OF SECTION

## **SECTION 16 - GREENWASTE APPLICATION**

### **16.1 GENERAL**

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the spreading of Processed Green Waste materials at the locations indicated on the Project Drawings or as directed by the County.

### **16.2 MATERIALS**

Processed Green Waste shall be supplied by the County and stockpiled near the Contractor's work area.

### **16.3 EXECUTION**

- A. The Contractor shall provide the equipment and manpower to evenly spread Processed Green Waste materials in a safe and efficient manner as determined by the County.
- B. Processed Green Waste material shall not be placed or spread over gravel roads or benches, or on hardscape (concrete or asphalt) structures. Any material placed within these areas shall be removed by the Contractor.
- C. Contractor shall ensure that three (3) to six (6) inches of Green Waste material shall be applied on the designated areas shown on the Project Drawings.
- D. Green Waste material shall be spread by use of a manure spreader or dozer or similar type of equipment as approved in advance by the County. In no case shall the depth of spread Green Waste material be less than three (3) inches or greater than six (6) inches in final placed form.
- E. Contractor shall apply adequate compaction to the spread green waste product as determined by the County, and shall apply adequate water for dust control purposes.
- F. Contractor heavy equipment and vehicles shall travel no closer than ten (10) feet to any environmental structure. Green 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.
- G. The Department may halt and suspend the work of the greenwaste provider at any time without notice in order to complete Department business, such as performing landfill operations, site maintenance, or groundwater/gas monitoring work.
- H. The greenwaste provider may stockpile a maximum of one hundred (100) tons of green waste materials at any time during spreading operations.

### **16.4 MEASUREMENT AND PAYMENT**

The **measurement** of the final quantity for **Bid Item No. 17 "Apply Processed Greenwaste"** shall be determined by the County by measuring the surface area

within the limits specified in the Contract Documents. Measurement shall be determined after the processed greenwaste has been applied by the Contractor. The final surface shall be verified by the County based on field measurements and quantity shall be calculated to the nearest square foot. **Payment** for the greenwaste application shall be at the contract unit price per square feet as stated in the Contractor's Proposal, **Bid Item No. 17** and shall constitute full compensation to the Contractor for all work related to the processed greenwaste application in the project including but not limited to: furnishing all labor, materials, tools, equipment, providing dust control, spreading, shaping, and compacting, processed greenwaste and for doing all the work involved in applying greenwaste material as shown on the Project Drawings or as directed by the County.

END OF SECTION

## **SECTION 17 - AUTHORIZED TIME & MATERIALS WORK**

### **17.1 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**

## **SECTION 18 - PERCOLATION BASIN**

### **18.1 GENERAL**

At the County's request the Contractor may be required to implement additional improvements at Lamb Canyon Sanitary Landfill that include the construction of a Percolation Basin and Appurtenances. If the County elects to authorize this optional work, the Contractor will be notified in writing by the County within the first ten (10) business days after the issuance of Notice to Proceed. This work shall include, but is not limited to: excavation and preparing final surface grades for percolation basin; furnishing and installing rock drainage layers; furnishing and installing 16 oz. geotextile layer; furnishing and installing a precast drop inlet structure; furnishing and installing a 12" HDPE pipe culvert and cleanouts; construction of aggregate base roadway; constructing asphalt concrete speed bumps, dikes, partially grouted slope protection structure, and shotcrete splash pad.

The work covered by this Section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the construction of the Percolation Basin and its appurtenances. The work shall include subgrade preparation and construction of the Percolation Basin and all its appurtenances at the locations shown on the Project Drawings or as directed by the County.

### **18.2 SUBMITTALS**

Prior to delivery of materials, the Contractor shall submit product data sheet, engineered drawings, material specifications and manufacturer's application instructions for all materials to the County for approval. Submittals for asphalt concrete, shotcrete, aggregate base, partially grouted slope protection materials shall be in accordance with Sections 3.2, 4.3, 6.2, 11.2, respectively.

### **18.3 SCHEDULE OF VALUES**

After notification of award and prior to the start of any work, the Contractor shall prepare and submit a satisfactory Schedule of Values for all percolation basin work. The Schedule of Values will establish unit prices for individual items of work and will form the basis for payment of contract work and will be used to establish payment for any extra work. An acceptable form for the Schedule of Values, representing the minimum level of detail required to quantify the scope of work is included at the end of this Section.

The quantities for the schedule of values work items in the Contract Documents are only estimates and may be individually increased, decreased, or deleted at the County discretion. The County will inform the Contractor within ten (10) business days of issuance of the Notice of Proceed of the Optional Bid Items and their respective quantities that will be implemented as part of the Contract.



## 18.4 MATERIALS

### 18.4.1 ROCK LAYERS

- A. Rock material to be used within the percolation basin and on top of the geotextile layer shall consist of a 1-foot thick layer of washed Crushed Aggregate Base consisting entirely of crushed rock with a maximum particle size of 1 inch.
- B. Rock material to be used within the percolation basin and under the geotextile layer (9-foot thick layer) and within the percolation trench shall consist of washed Crushed Aggregate Base consisting entirely of crushed rock greater than 3 inches in size but smaller than 6 inches.

### 18.4.2 16 OZ. GEOTEXTILE

The geotextile material shall be a new, high quality product designed and manufactured specifically for the purposes of this project. Its suitability and durability for this type of work shall have been adequately demonstrated by prior applications. The geotextile shall be 100 percent polyester or polypropylene, needle-punched, and non-woven. Geotextile rolls shall be shipped and stored in opaque and watertight wrappings. The geotextile fabric installation shall be performed under the ongoing observation of the County and according to the Contract Documents. The manufacturer's certification shall demonstrate that the geotextile meets or exceeds the following Minimum Average Roll Values MARV (in the weakest principal Direction):

Property	Unit	Test Method	Value 16 oz.
Mass per unit Area	oz./sy	ASTM D5261	16
Apparent Opening Size	US Std. Sieve	ASTM D4751	70-140
Permittivity	sec <sup>-1</sup>	ASTM D4491	0.7
Puncture Resistance	1bs	ASTM D4833	170
Static Puncture Strength	lbs.	ASTM D6241	900
Trapezoidal Tear Strength	1bs	ASTM D4533	145
Grab Tensile/Elongation	1bs/%	ASTM D4632	320/50
UV Resistance – 70% Strength Retained	hrs.	ASTM D4355	500

### 18.4.3 PRECAST DROP INLET

The drop inlet structure shall be precast. The substitution of cast-in-place units for precast will not warrant additional compensation. The precast drop inlet structure shall conform to ASTM C478 with the additional requirement that the cement used shall be Type IIA per ASTM C150. Frames and grates shall withstand H2O loading requirements and be hot-dip galvanized steel. Precast drop inlet, frames, and grates shall be as manufactured by Jensen Precast or approved equal. Mark date of manufacture and trademark of manufacturer shall be clearly labeled on precast units.

### 18.4.4 12” HDPE DRAINAGE PIPE

- A. HDPE pipes shall be sized as shown on the Project Drawings and described in these specifications. Twelve-inch (12”) nominal diameter pipes shall have a design working pressure of 160 psi or greater at 73.4°F and an SDR of 11 or less.
- B. Pipe material shall be of ultra-high molecular weight, high-density polyethylene conforming to ASTM 3350 Cell Classification PE 345434C through 355434C, manufactured from PE 3408 resin.
- C. The material shall exceed 1,500 hours on environmental stress crack resistance (ESCR) with no failures and no indication of stress crack initiation, as determined by ASTM D1693, Condition C. Certified laboratory test results documenting cell classification, melt flow index, and tensile strength of actual pipe to be used on the project shall be submitted to the County for approval prior to delivery.

Additional, nominal, engineering design specifications required are:

Property	Unit	Test Method	Value
Elongation at Break	%	ASTM D638	600-900
Modules of Elasticity	psi	ASTM D882	>100,000
Impact Strength	N/A	ASTM D256	no break
Resin Density	Gm/cm <sup>3</sup>	ASTM D1505/D792	0.95-0.96
Melt Index	gm/10 min	ASTM D1238*	0.11**
Hardness	shore “D”	ASTM D2240	62-65

\* Perform test at 216 kg/190oC

\*\* Average melt index value with a standard deviation of 0.01

- D. The HDPE pipe shall be homogeneous throughout, and shall be free of visible cracks, holes, foreign inclusions, or other defects. Any pipe with nicks, scrapes, or gouges deeper than 5% of the nominal wall thickness shall be

rejected. Pipe material shall be uniform in color, capacity, density, and other physical properties.

- E. The following shall be continuously printed on the pipe:
  - i. Name and trademark of the pipe manufacturer
  - ii. Nominal pipe size
  - iii. Standard dimension ratio (SDR)
  - iv. The letters HDPE, followed by the hydrostatic design basis in 100's of psi
  - v. Manufacturing standard reference (e.g. ASTM D-3035 or ASTM F-714)
  - vi. A production code from which date and place of manufacture can be determined
- F. HDPE fittings shall be molded from polyethylene compound having a cell classification equal to or exceeding the compound used in the pipe or shall be manufactured using polyethylene compound having a cell classification equal to or exceeding the cell classification of the pipe as specified herein.

#### **18.4.5 AGGREGATE BASE ROADWAY**

Materials utilized for the aggregate base roadway section shall be in accordance with Section 6.3 and applicable details from the Project Drawings.

#### **18.4.6 ASPHALT SPEED BUMPS AND DIKE**

Materials utilized for the asphalt concrete speed bumps and dike shall be in accordance with Section 3.3 and applicable details from the Project Drawings.

#### **18.4.7 PARTIALLY GROUTED SLOPE PROTECTION STRUCTURE AND SHOTCRETE SPLASH PAD**

Materials utilized for the partially grouted slope protection structure and shotcrete splash pad shall be in accordance with Section 11.3 and 4.4, respectively, and applicable details from the Project Drawings.

#### **18.4.8 TRAFFIC RATED VAULT**

Pipe Cleanout shall be installed in polymer concrete traffic rated vaults as shown on the Project Drawings. Vaults and grade risers shall be manufactured by Armorcast or approved equal.

### **18.5 EXECUTION**

- A. The Contractor shall prepare the subgrade for the percolation basin by excavation to the grades indicated on the Project Drawings. This work may include ripping, breaking, and dozing of materials using standard earthmoving equipment up to and including CAT D-9 with single ripper type equipment. This item shall also

- include keeping excavation areas neat and orderly, and completing the excavation to the satisfaction of the County.
- B. Excavated material shall be transported and placed by the Contractor in the designated stockpile for excess material as shown on the Project Drawings or as directed by the County. Surface drainage shall be maintained at all times in the excavation and stockpile areas. Surfaces of flat areas shall be graded to ensure positive drainage in accordance with the Project Drawings and finish-graded with a motor grader or approved equal. Final surface areas shall be finished by track walking and left in a uniformly graded condition to prevent or minimize erosion.
  - C. The Contractor shall excavate the percolation trench to the dimension stated in the Project Drawings and shall be immediately backfilled with rock material as specified in the Project Drawings. No personnel shall be allowed to enter the trench at any time. Percolation trench shall be excavated in such a manner as to ensure that trench sidewalls will be stable under all working conditions. The percolation trench shall be constructed in conformance with CAL-OSHA standards. All excavations shall be barricaded in conformance with Cal/OSHA standards. Prior to excavation, Contractor shall acquire and submit an exemption letter or trenching permit from CAL-OSHA and comply with Labor Code Section 6705, Excavation Plans for Worker Protection. If shoring/bracing is proposed, the Contractor's design and installation of shoring/bracing shall be in compliance with CAL-OSHA standards.
  - D. The Contractor shall furnish and install the rock and drainage layers in accordance with the Contract Documents and at the location specified in the Project Drawings or as directed by the County.
  - E. The Contractor shall furnish and install the 16 oz. geotextile layer material at the specific locations shown on the Project drawings. The geotextile shall be laid smooth without wrinkles or folds on the prepared subgrade in the direction of the construction traffic. Tension should be applied to the geogrid until at least 70 percent of the geogrid area is covered with base material. Adjacent geotextile rolls shall have a minimum 12-inch overlap. Base is to be place in the direction in which the geotextile was laid out, to aid in tensioning. Equipment should not be allowed onto uncovered geotextile material. To avoid damaging the geotextile, a minimum of six (6) inches of base on top of the geotextile shall be placed before tracked equipment can be allowed on top of the geogrid.
  - F. The Contractor shall saw cut and remove the existing asphalt section and remove the underlying material in order to install the precast drop inlet structure and all the necessary piping required at the locations shown in the Project Drawings or as directed by the County.
  - G. The existing shotcrete drainage channel adjacent to the proposed drop inlet location shall be protected at all times unless otherwise approved in writing by the County. Any damaged to the shotcrete drain cause by the Contractor shall be repaired by the Contractor at its sole expense and as directed by the County.
  - H. The Contractor shall core underneath the existing shotcrete channel in order to install the 12" HDPE pipe culvert. The 12" HDPE piping, cleanouts, vault, and fittings shall be laid, assembled, and installed in strict conformance with the

- Manufacture's specifications and at the lines, grades, and at locations as shown on the Project Drawings and/or as directed by the County.
- I. Maximum acceptable tolerances for positioning of the pipe shall be 0.05 feet vertically and 0.5 feet horizontally. All pipes must be placed to promote positive drainage along the entire length. Low areas where liquids may collect are not acceptable.
  - J. HDPE pipe lengths, fittings, and flange connections to be joined by thermal butt-fusion shall be of the same type, grade, and class of HDPE compound, and shall be supplied from the same raw material supplier. Butt-fusion of pipes and fittings shall be performed in accordance with the pipe manufacturer's recommendations for equipment and technique. Jointing can be performed inside or outside of the work area, at the Contractor's discretion.
  - K. Before covering the pipes, the pipe shall be surveyed by the County's surveyors for verification of alignment and proper drainage. Solid HDPE pipe shall be tested by the Contractor (Air Test) for any leaks as directed by the County.
  - L. Pipe and fittings shall be held firmly in position and protected from damage while the trench is being backfilled. All pipe and fittings shall be kept clean during the progress of the work. Any pipe that becomes either partially or fully clogged or damaged before final acceptance, shall be cleaned, repaired, or replaced to the satisfaction of the County, by the Contractor, at the expense of the Contractor.
  - M. The precast drop inlet structure shall be set level and flush with the surrounding asphalt section to ensure positive drainage into the drop inlet and shall be installed in accordance with the Manufacturer's recommendations. Any broken asphalt adjacent to the drop inlet shall be repaired by the Contractor as directed by the County.
  - N. The construction of the optional aggregate base roadway shall be in accordance with SECTION 6 -Aggregate Base Roadway and Crossings and applicable details in the Project Drawings.
  - O. The construction of the optional asphalt concrete speed bumps and asphalt dike shall be in accordance with SECTION 3 -Asphalt Structures and applicable details in the Project Drawings.
  - P. The construction of the optional partially grouted slope protection structure and shotcrete splash pad shall be in accordance with SECTION 11 -Grouted Rip-Rap Slope Protection and SECTION 4 -Reinforced Shotcrete Structures, respectively, and applicable details in the Project Drawings.

## **18.6 MEASUREMENT AND PAYMENT**

The Schedule of Values will establish unit prices for individual items of work and will be the basis for payment of contract work and will also be used to establish payment for any extra quantities. The acceptable form for the Schedule of Values, which represents the minimum level of detail required to quantify the scope of work is located at the end of this section. The Contractor's submitted Schedule of Values **MUST** include unit prices for Items No.1 through No. 9. The total cost for the items specified on the contractor's submitted Schedule of Values must match the lump sum bid price in the Contractor's proposal for **Optional Bid Item No. 26 – "Construct Percolation Basin and Appurtenances"**.

As stated above, the quantities for the schedule of value work items for Optional Bid Items No. 26 are only estimates and are subject to change and may be individually increased, decreased, or deleted at the County discretion. The unit prices stated in the Contractor's Proposal for each item of work will be the basis for payment of the actual work performed by the Contractor and will also be used to establish payment for any extra work.

The **Measurement** of the excavation and final grading for the percolation basin **Optional Bid Item No. 26-1 "Excavation and Final Grading"** shall be based only on the total material removed as determined by comparing the pre and post construction ground surfaces within the specified percolation basin removal limits in the project. The pre-construction ground surface shall be established by conventional ground survey prior to commencement of work, and the post-construction ground surface for this work shall be established by ground surveying after the completion of excavation and final grading. **Payment** for the earthwork within the percolation basin shall be at the contract unit price per cubic yard as stated in the Contractor's Proposal, **Optional Bid Item No. 26-1** and shall constitute full compensation to the Contractor for all work related to the excavation and final grading for the percolation basin in the project including but not limited to: furnishing all labor, supervision, materials, tools, equipment, removal of material, hauling material to designated stockpile, establishing finish grade in accordance with the Project Drawings, and any other requirements by the Contract Documents for the exaction of the percolation basin.

The **Measurement** of the final quantity for **Optional Bid Item No. 26-2 "Furnish & Install Rock Layer (1" Max Particle Size)"** shall be determined by the County based on field measurements of the total quantity of 1" max particle size rock furnished and installed by the Contractor. Payment for furnishing and installing this rock layer shall be made based on the unit price per cubic yard for the 1" max particle size rock, as stated in the Contractor's Proposal, **Optional Bid Item No. 26-2** and shall constitute full compensation to the Contractor for all work related to furnishing and installing the 1" max particle size rock layer.

The **Measurement** of the final quantity for **Optional Bid Item No. 26-3 "Furnish & Install Rock Layer (3" – 6" Max Particle Size)"** shall be determined by the County based on field measurements of the total quantity of 3" to 6" max particle size rock furnished and installed by the Contractor. **Payment** for furnishing and installing this rock layer shall be made based on the unit price per cubic yard for the 3" to 6" max particle size rock, as stated in the Contractor's Proposal, **Optional Bid Item No. 26-3** and shall constitute full compensation to the Contractor for all work related to furnishing and installing the 3" to 6" max particle size rock layer.

The **Measurement** of the final quantity for **Optional Bid Item No. 26-4 "Furnish & Install 16 oz./sy Geotextile Layer"** shall be based on the final in-place square footage of ground covered with material placed within the limits specified in the project and after it has been installed and verified by the County. The area of the final surface shall be

verified by the County based on conventional ground surveying. Quantity shall be calculated to the nearest square foot utilizing digital terrain modeling methods. **Payment** shall be made, after acceptance, at the unit price per square foot, as stated in the Contractor's Proposal, **Optional Bid Item No. 26-4**. Payment shall constitute full compensation to the Contractor for all work related to the furnishing and installation of geotextiles as required by the Contract Documents. No additional compensation shall be given for any geotextile waste materials (trimming of rolls, seam overlaps, patches, or related items).

**Measurement and Payment** for Precast Drop Inlet Structure shall include, but not limited to; furnishing all labor, materials, tools, equipment, and incidentals for precast drop inlet, galvanized steel frame and grates, connections, water stop, hardware, trench floor mortar, concrete collars, concrete encasement, waterproofing joints, and all other appurtenances, shall be made after County acceptance, at the unit price for each unit installed at the locations and in conformance with the details shown of the Project Drawings and as required by the Contract Documents. Payment for precast drop inlet structure and all related works shall be based upon the contract unit price per lump sum as stated in the Contractor's proposal **Optional Bid Item No. 26-5 – "Furnish and Install Precast Drop Inlet Structure"**.

**Measurement and Payment** for the 12" HDPE pipe for the culvert, including, but not limited to; trench excavation, subgrade preparation, coring, backfill, bedding materials, HDPE pipe boots, concrete encasement, pipe fittings, gaskets, waterstop, smooth exterior cylinder wall adapters, concrete collars, connections, cleanouts, vaults, and testing of pipe culvert shall be made after County acceptance, at the unit price per lineal feet of pipe culvert as stated in the Contractor's proposal **Optional Bid Item No. 26-6 – "Furnish & Install 12" Diameter HDPE Pipe Culvert and Accessories"**.

**Measurement and Payment** for the construction of 3-inch Thick Class II Base over 6-inch Thick Aggregate Base roadway, including, but not limited to; over-excavation, subgrade preparation, supply and place 3-inch thick Class II Base, supply and place 6-inch thick Crushed Aggregate Base, compaction, and finish grading shall be made after County acceptance, at the unit price per square foot (true area including slope surface area) as stated in the Contractor's proposal **Optional Bid Item No. 26-7 – "Construct Aggregate Base Roadway, 3" thick Class II Base over 6" thick Aggregate Base."**

The **Measurement** of the final quantity for **Optional Bid Item No. 26-8 "Construct Asphalt Speed Bumps"** shall be based on the pertinent details required by the Contract Documents as verified by the County through field measurements of the axial length (linear feet) along the centerline of the asphalt speed bumps. **Payment** for all Asphalt Speed bumps shall be at the contract unit price per linear foot as stated in the Contractor's Proposal, **Bid Item No. 26-8** and shall include surface preparation of existing roadway section, supply and application of tack coat, supply and installation of asphalt material as specified and required by the Contract Documents.

The **Measurement** of the final quantity for **Optional Bid Item No. 26-9**“**Construct Asphalt Dike**” shall be based on the pertinent details required by the Contract Documents as verified by the County through field measurements of these structures. **Payment** for 6-inch Cal-Trans Type A Dike shall be at the contract unit price per linear foot, as stated in the Contractor’s Proposal, **Bid Item No. 26-9**. Each and every asphalt concrete load ticket shall be delivered to the County by truck drivers at the point of delivery.

The **measurement** of the final quantity for **Optional Bid Item No. 26-10** – “**Construct Slope Protection and Shotcrete Splash Pad**” shall be determined by the County by measuring the surface area within the limits specified in the Contract Documents. Measurement shall be determined after the partially grouted slope protection structure and shotcrete splash pad have been installed and verified by the County. The final surface shall be verified by the County based on field measurements and quantity shall be calculated to the nearest square foot. **Payment** for the construction of the slope protection and shotcrete splash pad shall be at the contract unit price per square feet as stated in the Contractor’s Proposal, **Optional Bid Item No. 26-10** and shall constitute full compensation to the Contractor for all work related to the construction of the partially grouted slope protection structure and shotcrete splash pad in the project including but not limited to: furnishing all labor, materials, tools, equipment, subgrade preparation, and incidentals, and for doing all the work involved in constructing the partially grouted slope protection structure and shotcrete splash pad, complete in place, as shown on the Project Drawings or as directed by the County.



ITEM NO.	ITEM OF WORK	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Excavation and Final Grading	CY	10,000		
2	Furnish & Install Rock Layer (1" Max Particle Size)	CY	700		
3	Furnish & Install Rock Layer (3"-6" Max Particle Size)	CY	6,250		
4	Furnish & Install 16 oz./sy Geotextile Layer	SF	15,560		
5	Furnish & Install Precast Drop Inlet Structure	LS	1		
6	Furnish & Install 12" Diameter HDPE Pipe Culvert and Accessories	LF	160		
7	Construct Aggregate Base Roadway, 3" thick Class II Base over 6" thick Aggregate Base	SF	14,000		
8	Construct Asphalt Speed Bumps	LF	200		
9	Construct Asphalt Dike	LF	280		
10	Construct Slope Protection and Shotcrete Splash Pad	SF	150		
<b>TOTAL (must equal lump sum bid amount for Optional Bid Item No. 26 - "Construct Percolation Basin and Appurtenances")</b>					<b>\$ _____</b>

END OF SECTION

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# Appendix A

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# LAMB CANYON LANDFILL FACILITY

**OPEN: 6:00 am to 4:30 pm Monday through Saturday**

**NEXT HOLIDAY CLOSURE: \_\_\_\_\_**

For services/complaints contact the Riverside County Waste Management Department at (951) 486-3200 or via website [www.rivcowm.org](http://www.rivcowm.org)

## **LANDFILL RULES**

- **Obey County personnel and signs.** It is for your safety.
- **Anyone under 16 years of age and pets must remain in vehicle.**
- **High visibility safety vest must be worn at all times.**
- **Stay within 5 feet of your vehicle while unloading and 15 feet away from heavy equipment.**
- **No alcohol, drugs, weapons, smoking, salvaging, or loitering.**
- **Commercial refuse vehicles must have an operational back-up alarm.**

## **STAY ALERT – STAY ALIVE**

County is not responsible for damage to customer's vehicle and/or equipment due to customer's negligence or failure to follow site rules and reserves the right to deny access to anyone violating said rules or creating a safety hazard. Landfills are dangerous construction zones. Disposal is at customer's own risk.

## **ALL LOADS SUBJECT TO INSPECTION**

Disposal of hazardous, toxic, flammable, corrosive, explosive and radioactive waste/materials may be prosecuted under Health and Safety Code 25189.5 and Penal Code 374.8

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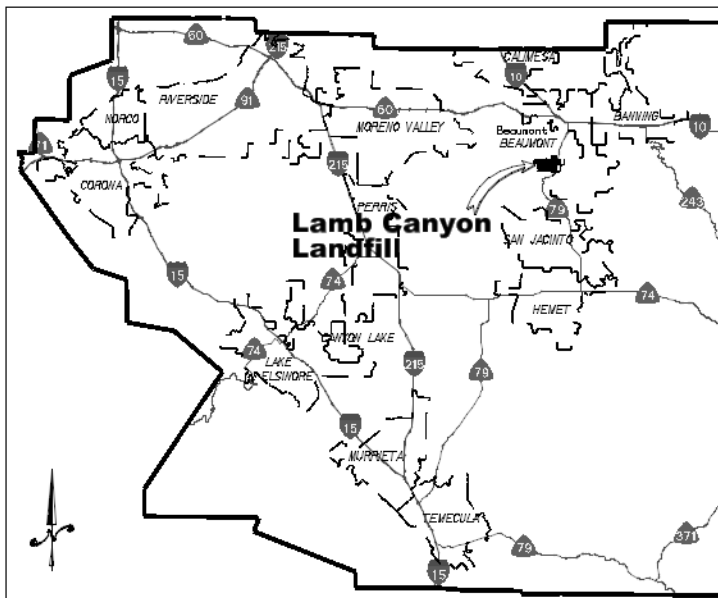
# **LAMB CANYON SANITARY LANDFILL**

## **CONSTRUCTION PLANS FOR SITE DRAINAGE IMPROVEMENTS**

### **AUGUST 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) 486-3205

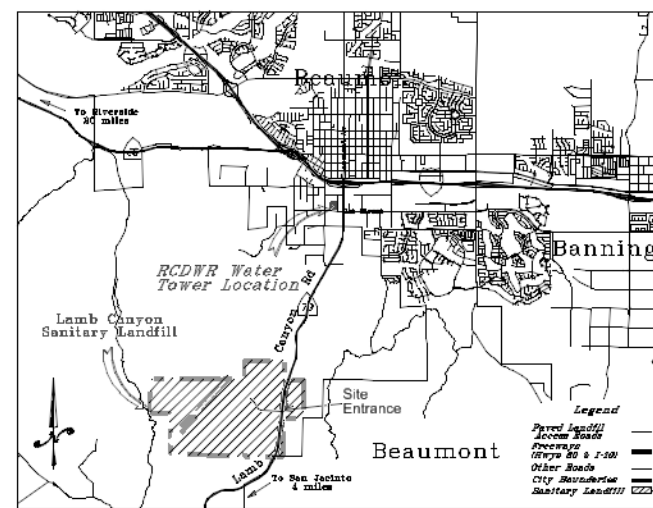




**LOCATION MAP**  
N.T.S.



**CALIFORNIA**



**VICINITY MAP**  
N.T.S.

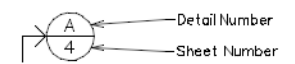
**LEGEND**

- Landfill footprint (unlined)
- Landfill footprint (lined)
- Topo Contours (Jan 2014 & July 2015)
- Property line
- Grade break
- Gradient & Direction
- Flow Line / Flow Direction
- Gas probe (protect in place)
- Ground water well (protect in place)
- Existing landfill gas collection system (protect in place)
- Paved Surface
- Slope
- Existing surveying control points (protect in place)
- Fiber Roll
- Existing access road
- Gas line (above ground)
- Gas line (buried)
- Landfill Operations Permit Limit
- K-Rail
- Welded Wire Fabric

**FILL PATTERNS**

- Asphalt
- Concrete
- Refuse
- Competent Subgrade
- Class II Base
- 1"-Minus Protective Cover Soil (PCS)

**DETAIL CALLOUTS**



**CONSTRUCTION NOTE CALLOUTS**



**ABBREVIATIONS**

- AB Aggregate Base
- AC Asphalt Concrete
- APPROX. Approximate
- BC Begin Curve
- C Cut
- CL or CL Center Line
- CMP Corrugated Metal Pipe
- CO Clean out
- DIA Diameter
- E Easting
- EC End Curve
- EL Elevation
- EOP Edge of Pavement
- Exist. Existing
- F Fill
- FL or FL Flow Line
- GB Grade Break
- Hor. Horizontal
- HP High Point
- ID Inside Diameter
- INV Invert
- L Length
- LDPE Low Density Polyethylene
- LF Linear Feet
- N Northing
- NAD North American Datum
- NTS Not To Scale
- PI Point of Intersection
- POC Point on Curve
- PL or PL Property Line
- PVI Point of Vertical Intersection
- R Radius
- RC Reinforced Concrete
- RCDWR Riverside County Department of Waste Resources
- RCE Registered Civil Engineer
- RCFC Riverside County Flood Control
- STA Station
- TOE Toe of Slope
- TS Top of Slope
- TYP Typical
- Vert. Vertical

**INDEX OF DRAWINGS**

SHEET	FILE NAME	TITLE	SCALE
1	LC_Improvements_S1_Title.dgn	Title Sheet	NTS
2	LC_Improvements_2_Index.dgn	Index, Legend, & Vicinity Map	NTS
3	LC_Improvements_S3_Map.dgn	General Site Map	1"=500'
4	LC_Improvements_S4_Details.dgn	Construction Details	NTS
5	LC_Improvements_S5_Details.dgn	Construction Details	NTS
6	LC_Improvements_S6_Details.dgn	Construction Details	NTS
7	LC_Improvements_S7_Details.dgn	Construction Details	NTS
8	LC_Improvements_S8_Details.dgn	Construction Details	NTS
9	LC_Improvements_S9_Details.dgn	Construction Details	NTS
10	LC_Improvements_S10_Details.dgn	Construction Details	NTS
11	LC_Improvements_S11_Details.dgn	Construction Details	NTS
12	LC_Improvements_S12_Basin_Grading.dgn	Sedimentation Basin Layout	1"=60'
13	LC_Improvements_S13_Perc_Basin.dgn	Percolation Basin Layout	1"=50'
14	LC_Improvements_S14_Perc_Basin_Details.dgn	Construction Details	NTS

NO.	REVISIONS	BY	APPROVED	DATE

Hans Kernkamp, General Manager/Chief Engineer  
NTS

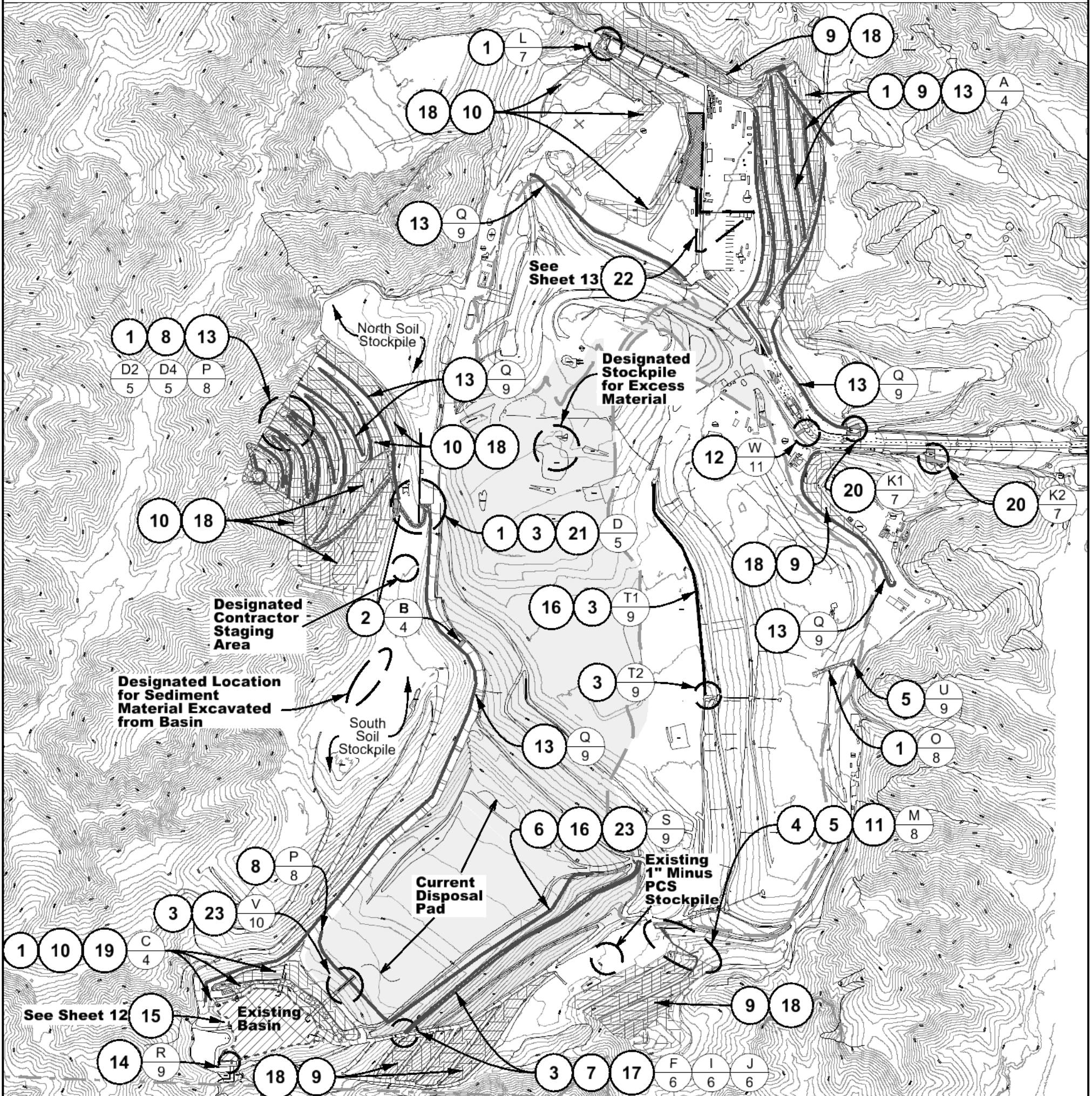
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Lamb Canyon Sanitary Landfill  
Site Drainage Improvements  
August 2015  
**Index, Legend, and  
Vicinity Map**

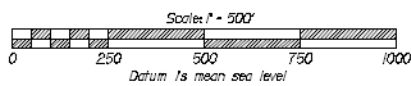


**CONSTRUCTION NOTES**

- ① CONSTRUCT 3" THICK CLASS 11 BASE OVER 6" THICK AGGREGATE ROADWAY IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 8)
- ② SAW CUT, REMOVE, & REPLACE DAMAGED ASPHALT ROADWAY SECTION IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 5)
- ③ CONSTRUCT AC DRAINAGE STRUCTURES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 2)
- ④ CONSTRUCT 4" THICK SHOTCRETE DRAINAGE STRUCTURES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 4)
- ⑤ CONSTRUCT EQUIPMENT CROSSING IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 9)
- ⑥ CONSTRUCT 20mil LDPE DRAINAGE CHANNEL IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 7)
- ⑦ REMOVE EXISTING 20mil LDPE DRAIN, PREPARE SUBGRADE USING 1"-MINUS PROTECTIVE COVER SOIL (PCS), FURNISH & INSTALL NEW 20mil LDPE DRAINAGE CHANNEL IN ACCORDANCE WITH APPLICABLE PROJECT SPECIFICATIONS & DETAILS PCS PROVIDED BY THE COUNTY AND STOCKPILED AS SHOWN ON SHEET 3 (BID ITEM NO. 6)
- ⑧ CONSTRUCT DIVERSION BERM IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 18)
- ⑨ FURNISH & APPLY POSI-CUBE OR APPROVED EQUAL ON SIDE SLOPES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS AND AT SPECIFIC LOCATIONS INDICATED BY COUNTY DESIGNATED REPRESENTATIVES (BID ITEM NO. 14)
- ⑩ FURNISH & APPLY HYDROSEED ON SIDE SLOPES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS AND AT SPECIFIC LOCATIONS INDICATED BY COUNTY DESIGNATED REPRESENTATIVES (BID ITEM NO. 13)
- ⑪ CONSTRUCT GROUTED RIP-RAP SLOPE PROTECTION ABOVE EXISTING CONCRETE INLET STRUCTURE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 19)
- ⑫ FURNISH AND INSTALL ASPHALT SPEED BUMP IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 10)
- ⑬ FURNISH & INSTALL HDPE SILT FENCE OR APPROVED EQUAL WITH SANDBAG CHECKDAMS IN ACCORDANCE WITH APPLICABLE PROJECT SPECIFICATIONS & DETAILS AND AT OTHER LOCATIONS AS DIRECTED BY THE COUNTY (BID ITEMS NO. 21 & 22)
- ⑭ CONSTRUCT SEDIMENTATION BASIN OUTLET IMPROVEMENTS IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 16)
- ⑮ REMOVE SEDIMENT AND RE-ESTABLISH ORIGINAL DESIGN GRADES WITHIN EXISTING SEDIMENTATION BASIN IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS AND SHEET 12 (BID ITEM NO. 15)
- ⑯ FURNISH & INSTALL FIBER ROLLS IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 23)
- ⑰ CONSTRUCT 6" CALTRANS TYPE A HOT MIX ASPHALT DIKE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 20)
- ⑱ PREPARE SIDE SLOPES AT LOCATIONS TO BE DESIGNATED BY COUNTY REPRESENTATIVES PRIOR TO HYDROSEED OR POSI-CUBE APPLICATION IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS (BID ITEM NO. 11)
- ⑲ REPAIR SLOPE EROSION ON LANDFILL TOE BERM IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS (BID ITEM NO. 12)
- ⑳ CONSTRUCT ASPHALT VEHICLE CROSSING IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 3)
- ㉑ FURNISH AND INSTALL STEEL BOLLARDS PAINTED HIGH VISIBILITY YELLOW WITH REFLECTIVE TAPE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 24)
- ㉒ FURNISH AND INSTALL PERCOLATION BASIN AND APPURTENANCES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (OPTIONAL BID ITEM NO. 26)  
THIS ITEM IS OPTIONAL AND MAY BE DELETED AT THE COUNTY DISCRETION
- ㉓ APPLY PROCESSED GREENWASTE ON SIDE SLOPES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS AND AT SPECIFIC LOCATIONS INDICATED BY COUNTY DESIGNATED REPRESENTATIVES (BID ITEM NO. 17)



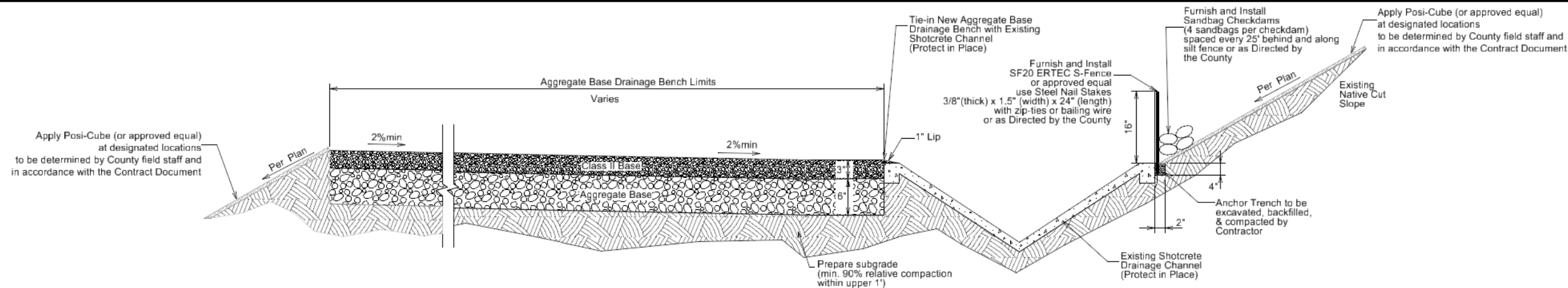
Hans Kernkamp, General Manager/Chief Engineer



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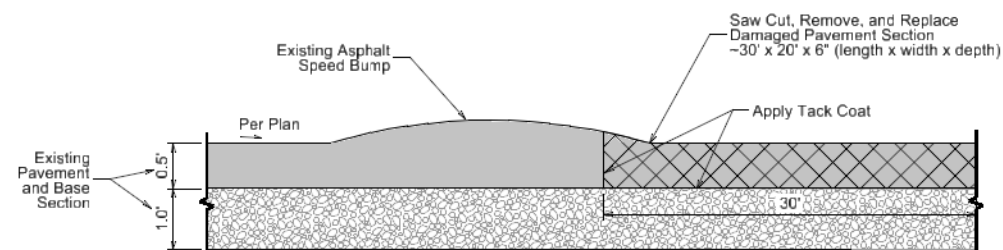
Lamb Canyon Sanitary Landfill  
Site Drainage Improvements  
August 2015

**General Site Map**



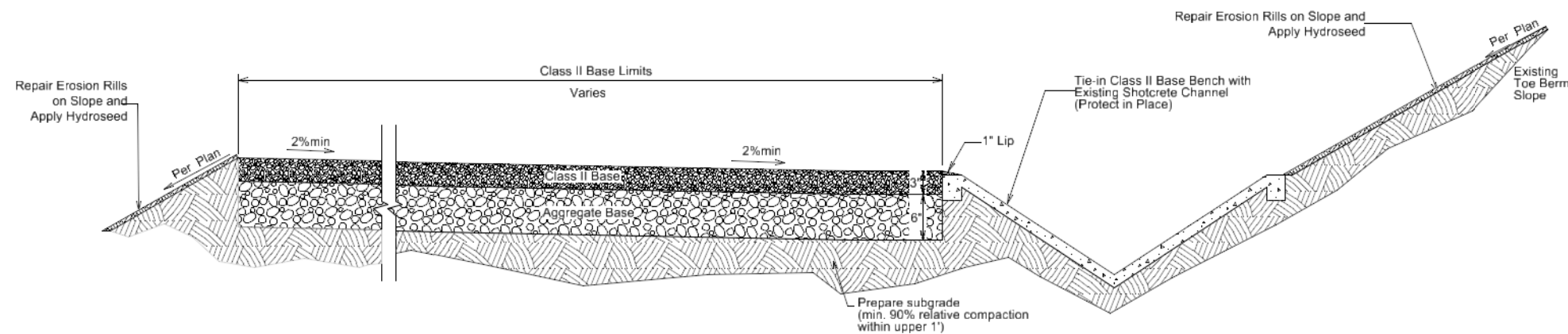
**A** Aggregate Base Drainage Bench Cross Section

Not To Scale



**B** Asphalt Road Repair

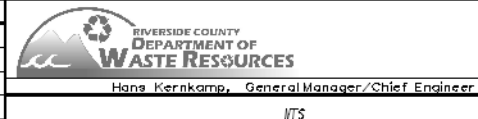
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**C** Landfill Toe Berm Aggregate Base Bench Cross Section

Not To Scale

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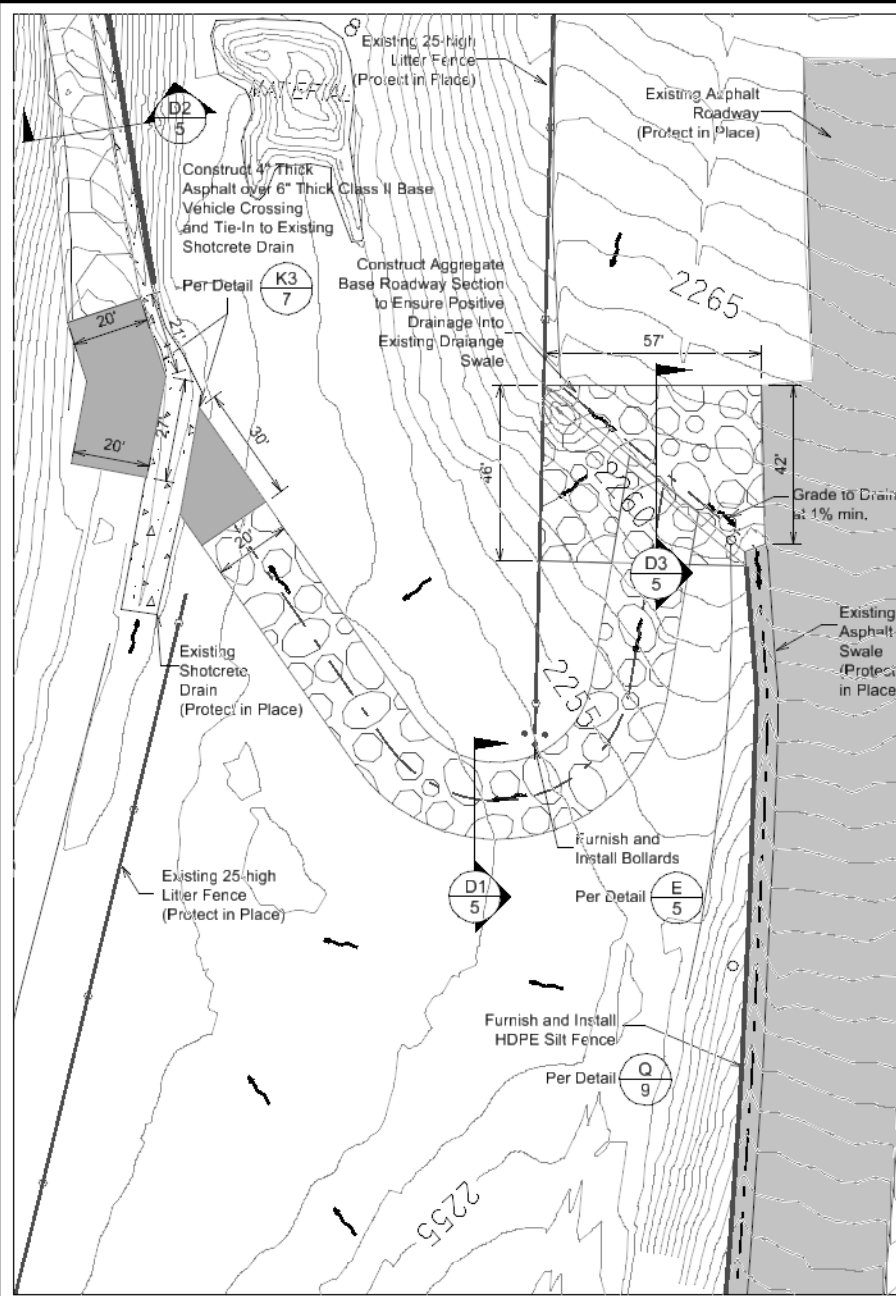


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Lamb Canyon Sanitary Landfill  
Site Drainage Improvements  
August 2015

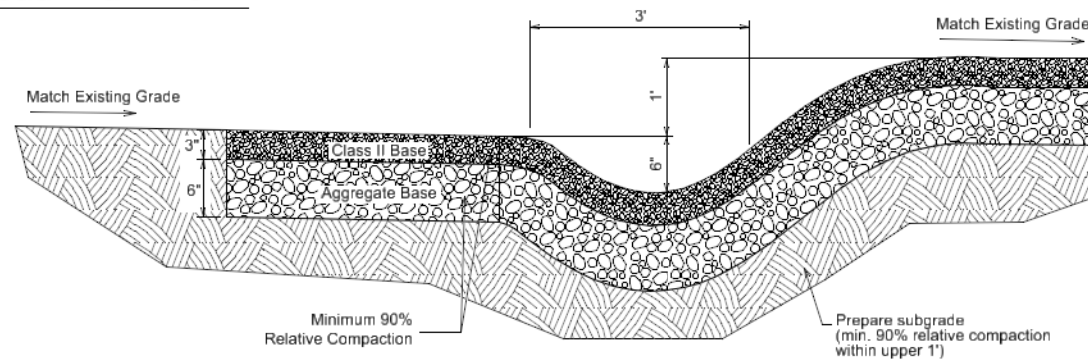
**Construction Details**





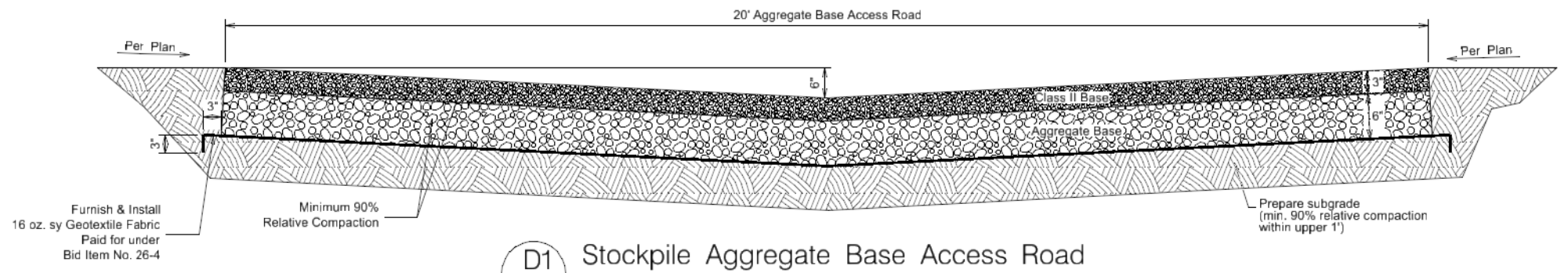
**D** Aggregate Base Access Road Plan View

Not To Scale

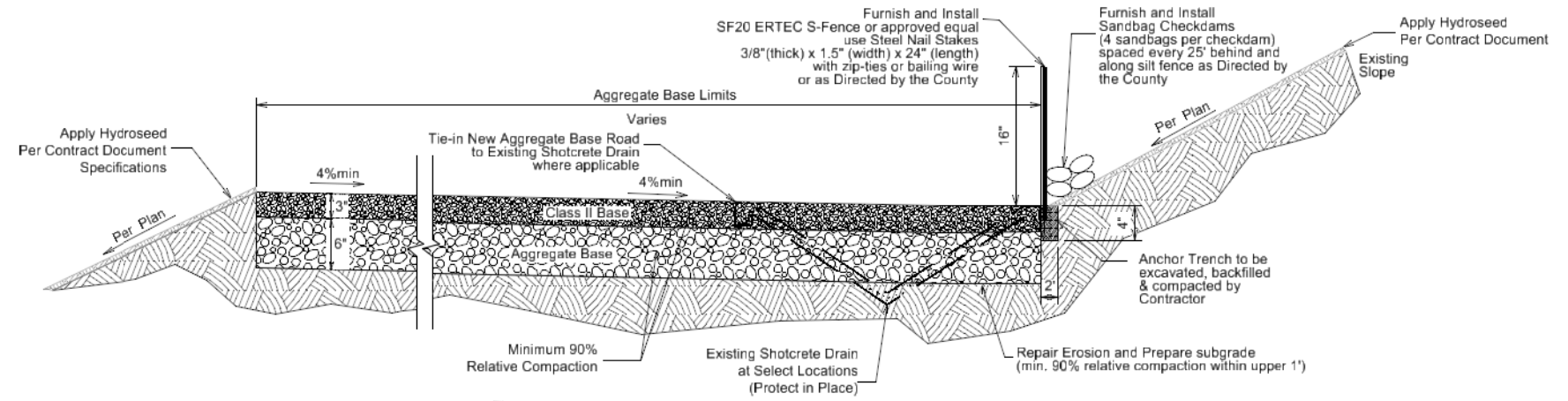


**D3** Aggregate Base Swale Cross Section

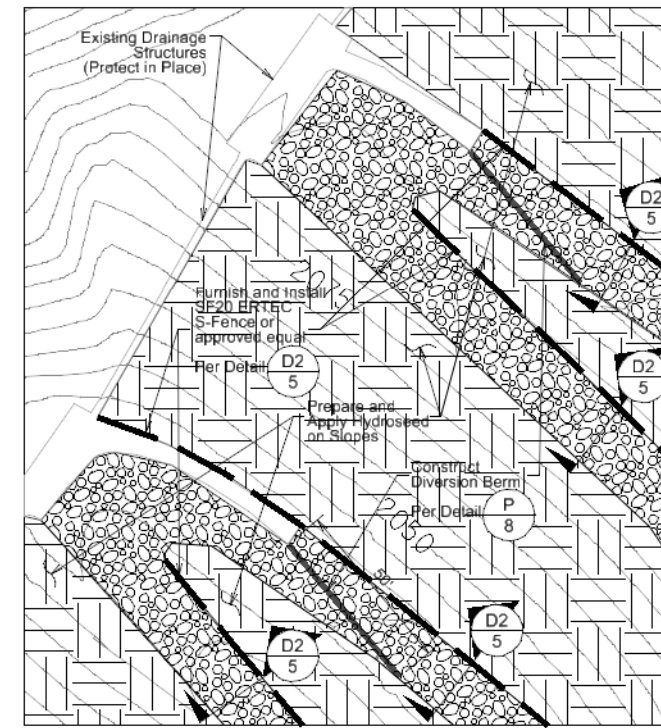
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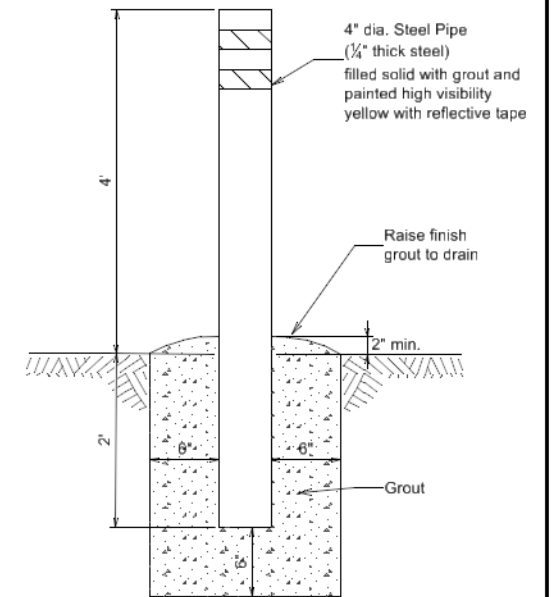


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**D4** North Soil Stockpile Access Bench Layout

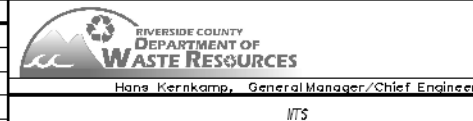
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**E** Bollard

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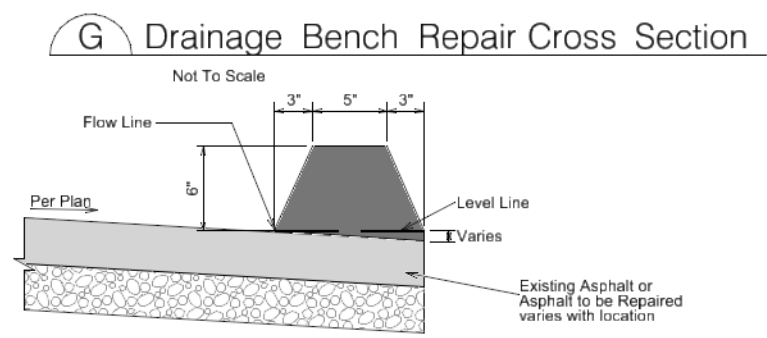
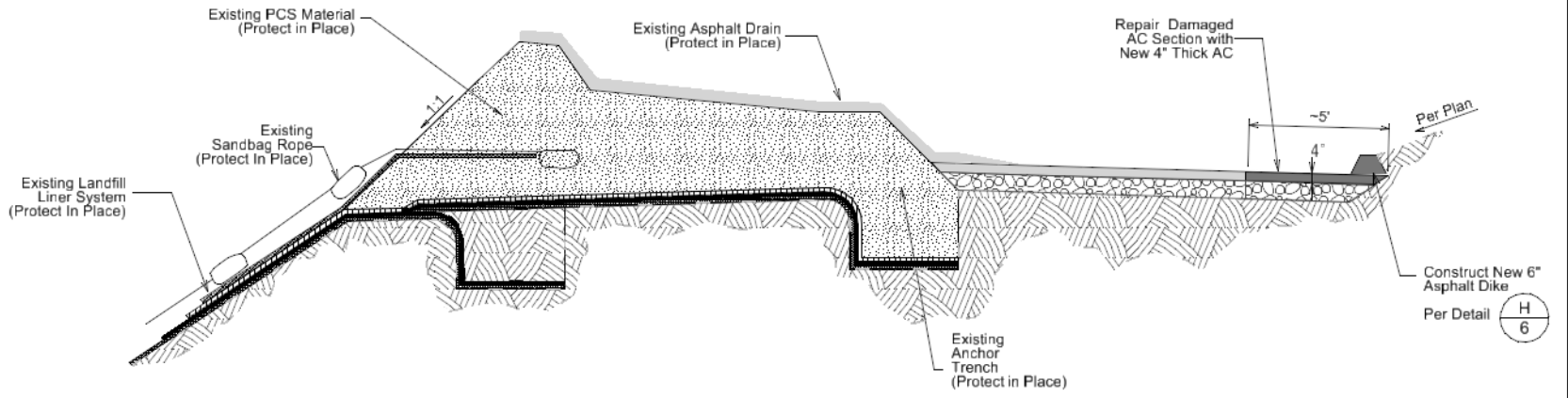
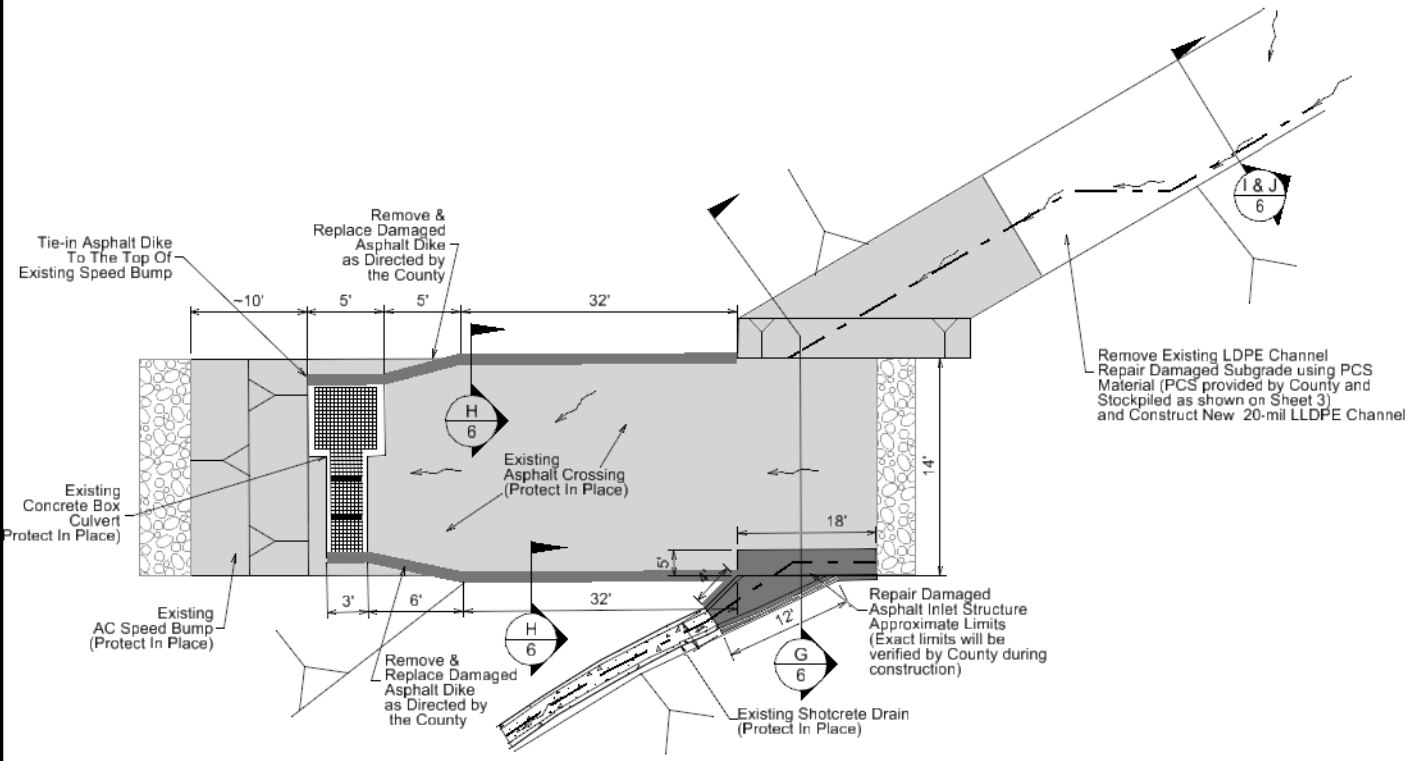
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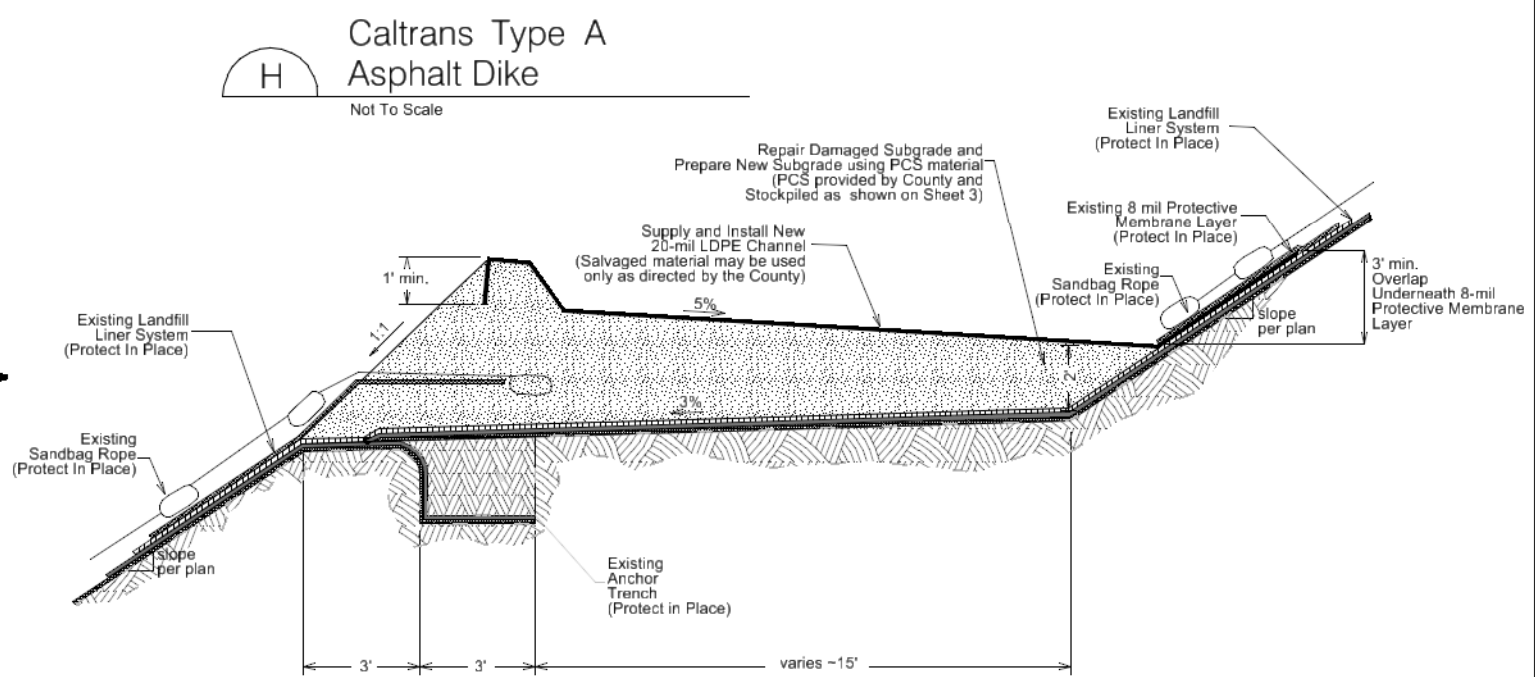
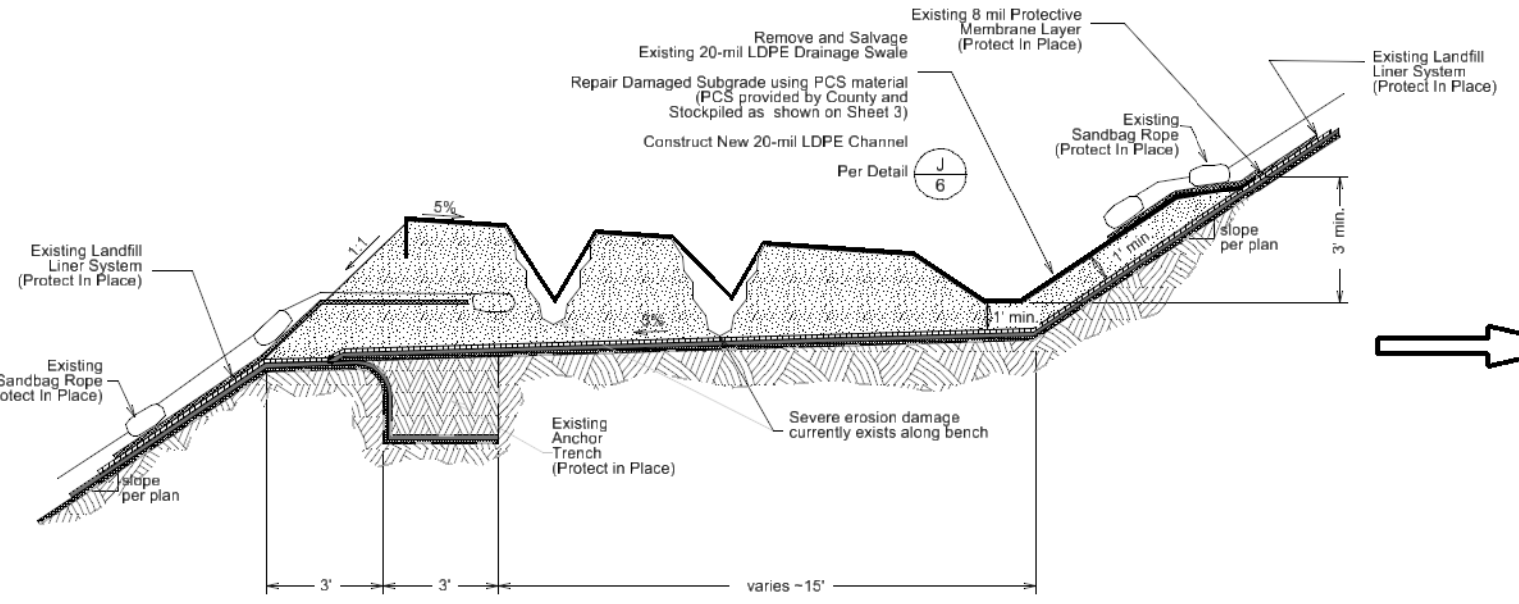
Lamb Canyon Sanitary Landfill  
Site Drainage Improvements  
August 2015

**Construction Details**



**F Drainage Bench Improvements**

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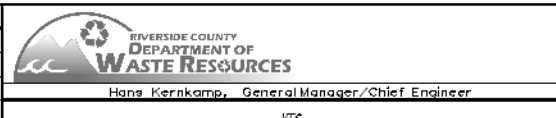
**I Intermediate Bench - Existing Condition**

Not To Scale

**J Intermediate Bench - New Construction**

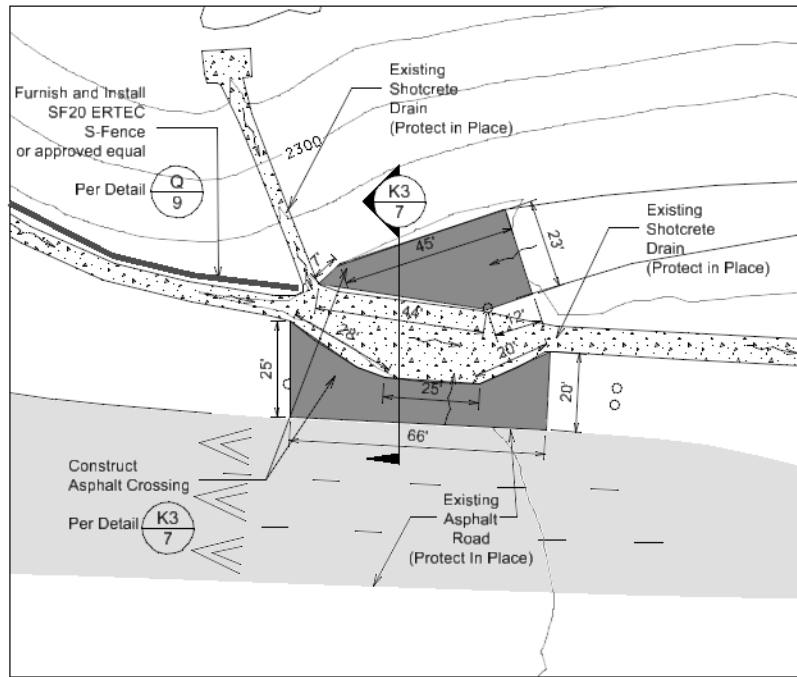
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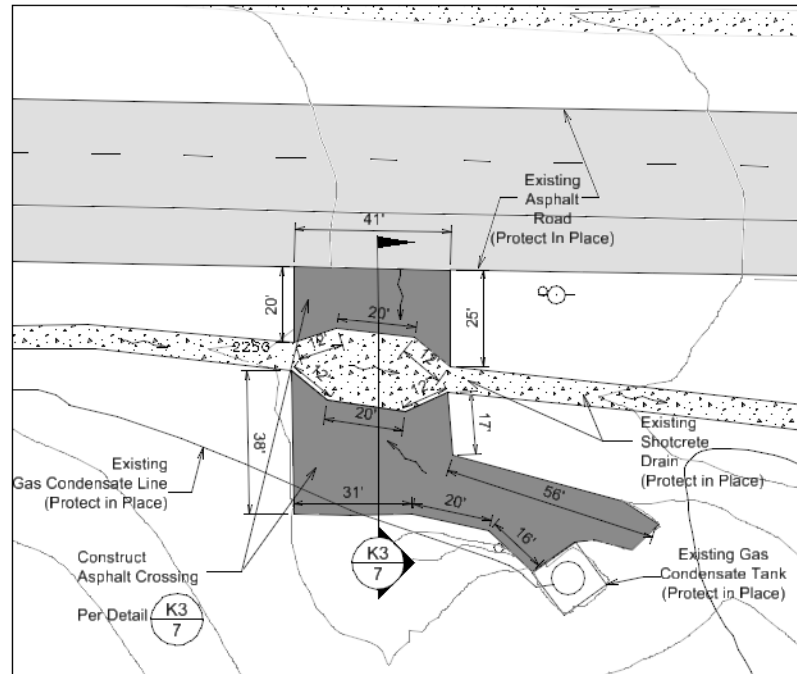
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Lamb Canyon Sanitary Landfill  
Site Drainage Improvements  
August 2015  
**Construction Details**



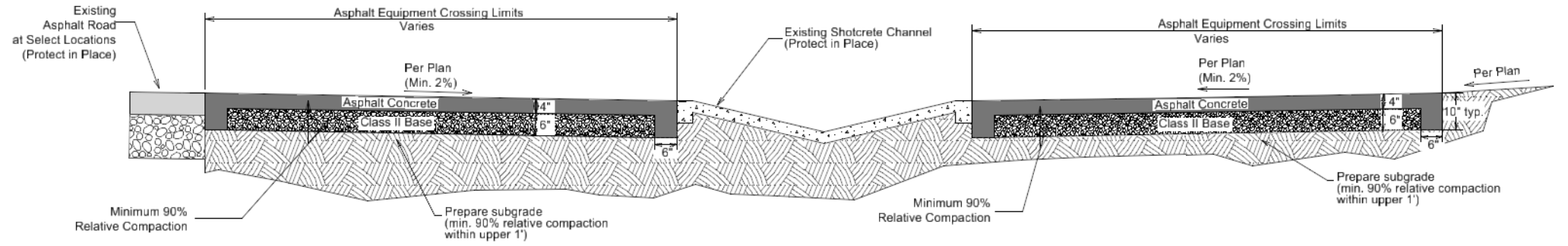
**K1** Asphalt Vehicle Crossing Detail North of Main Asphalt Road

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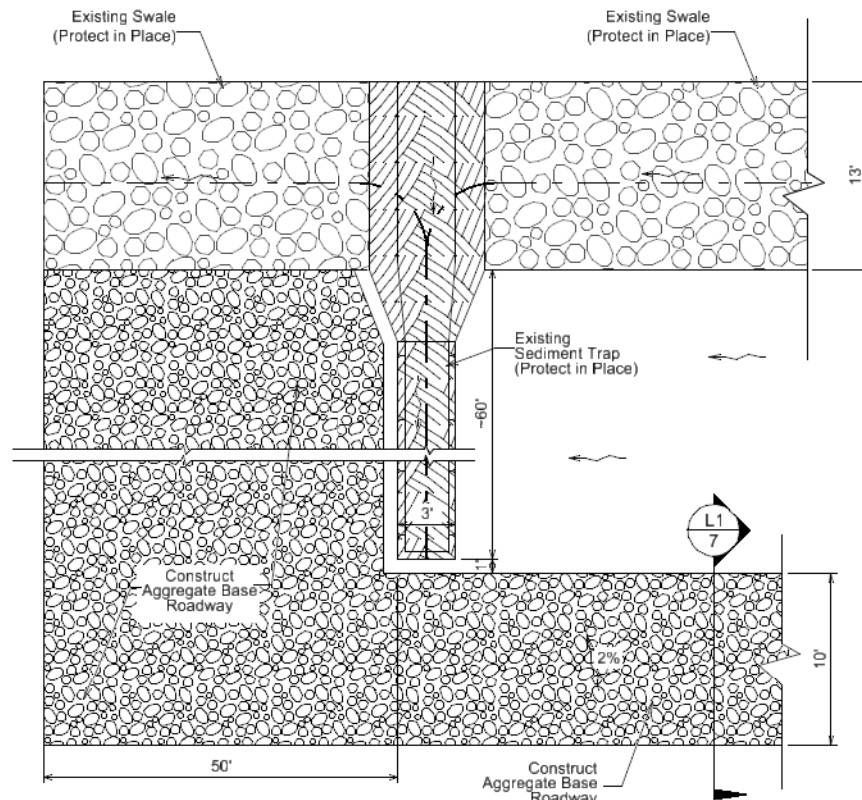
**K2** Asphalt Vehicle Crossing Detail South of Main Asphalt Road

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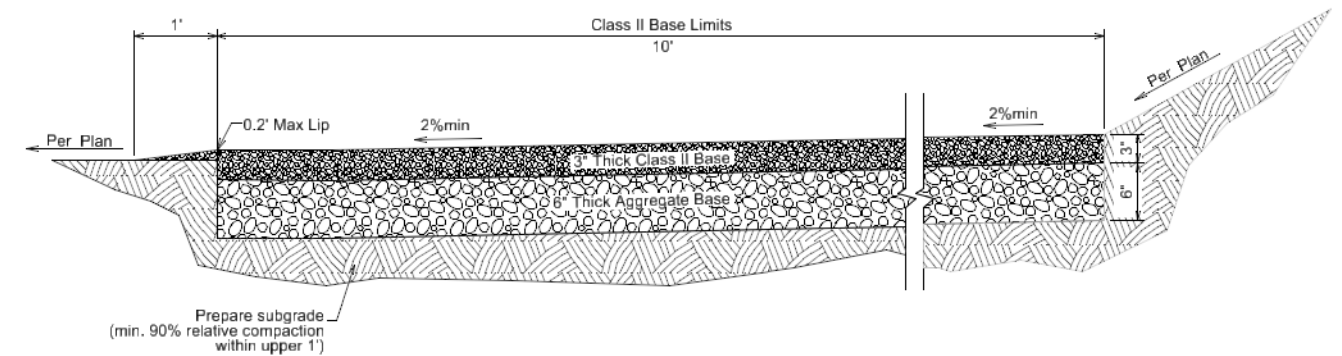
**K3** Asphalt Equipment Crossing Detail

Not To Scale



**L** Plan View of Aggregate Base Roadway

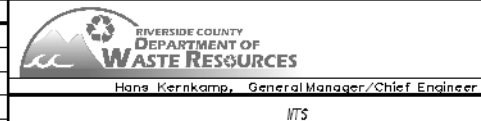
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**L1** Aggregate Base Roadway Cross Section

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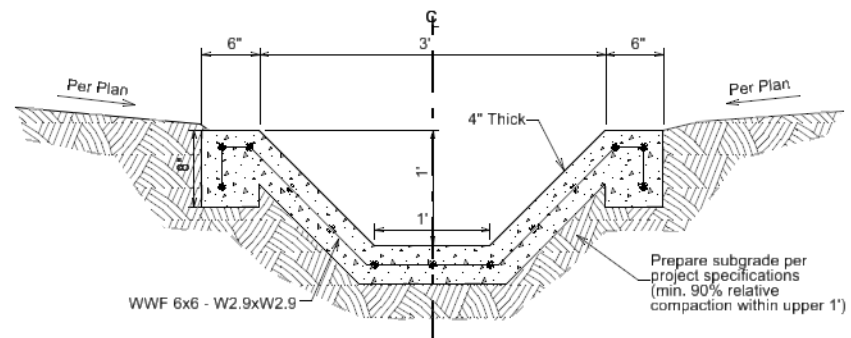
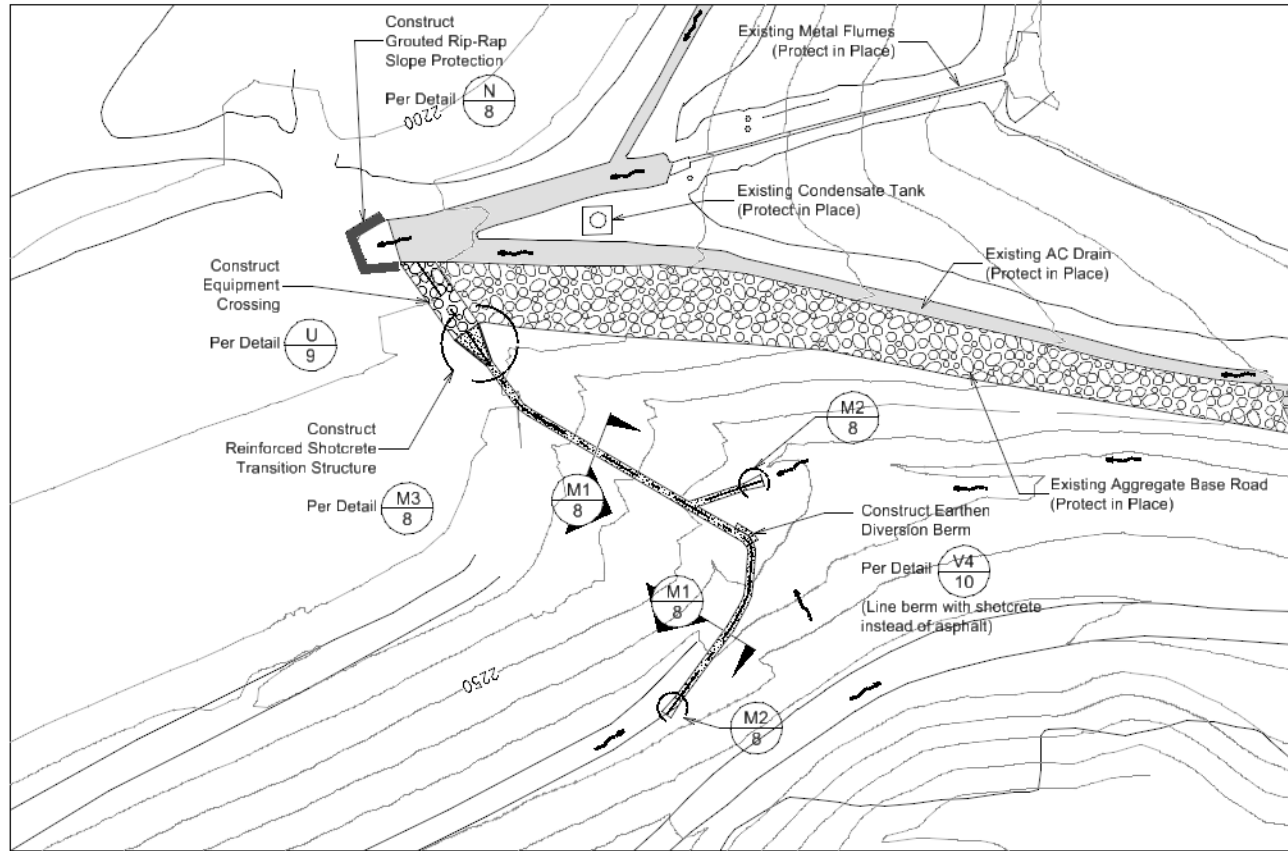
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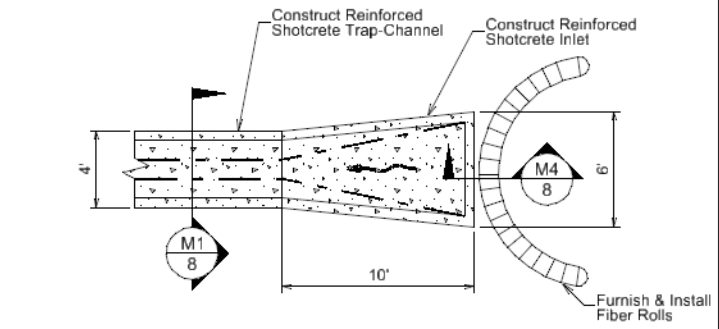
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Lamb Canyon Sanitary Landfill  
Site Drainage Improvements  
August 2015

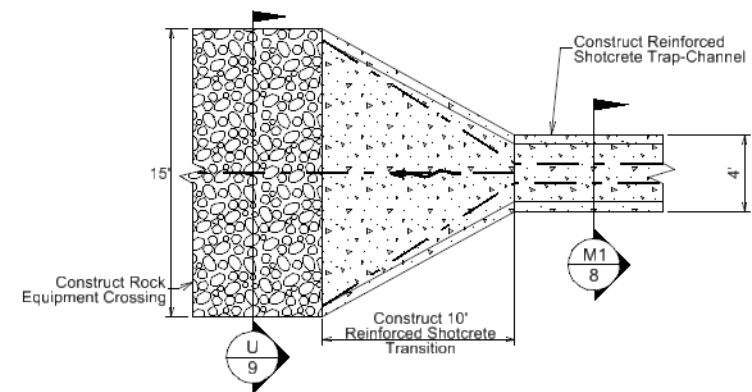
**Construction Details**



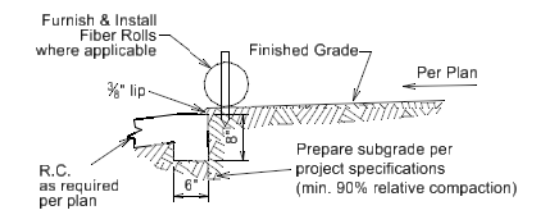
**M1 Reinforced Shotcrete Trap-Channel**  
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**M2 Reinforced Shotcrete Trap-Channel Inlet Structure**  
Not To Scale



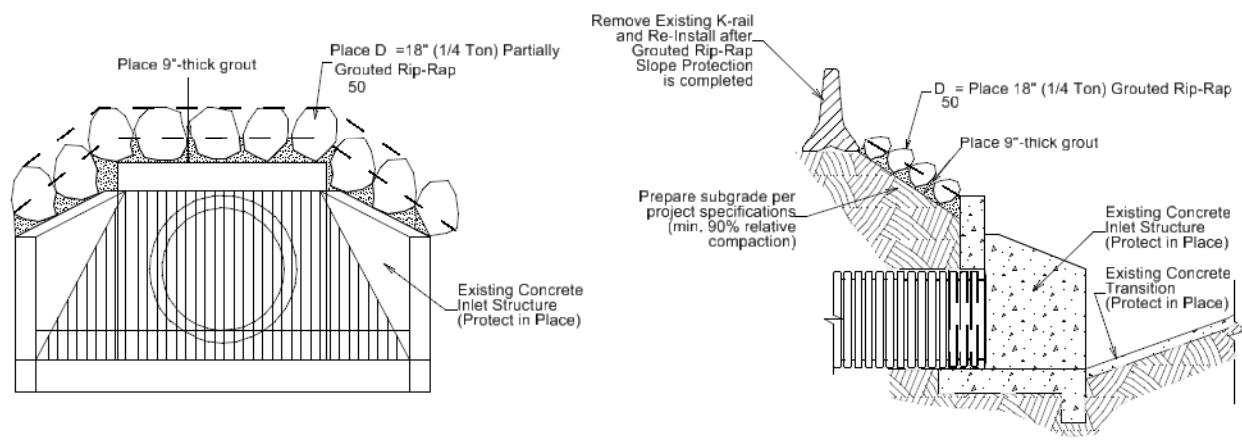
**M3 Reinforced Shotcrete Transition Structure**  
Not To Scale



- Notes:  
 ① Material type shall be as required in the specific detail  
 ② These dimensions shall be utilized unless otherwise specified or as requested by the County

**M4 Cut-off Wall Typical Section**  
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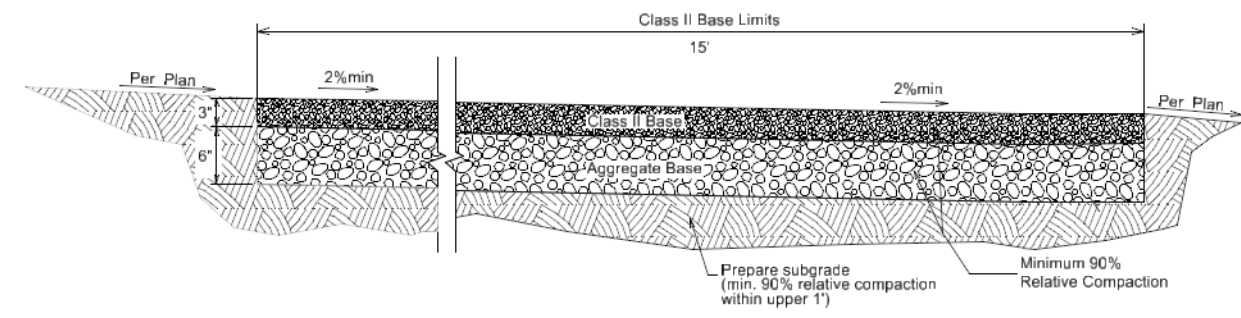
**M Reinforced Shotcrete Downdrain Layout**  
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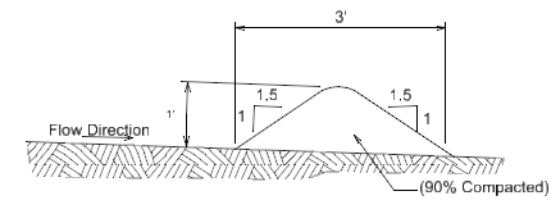
Front View

Side View

**N Grouted Rip-Rap Slope Protection**  
Not To Scale



**O Aggregate Base Roadway Cross Section**  
Not To Scale



**P Diversion Berm Typical Section**  
Not To Scale

NO.	REVISIONS	BY	APPROVED	DATE

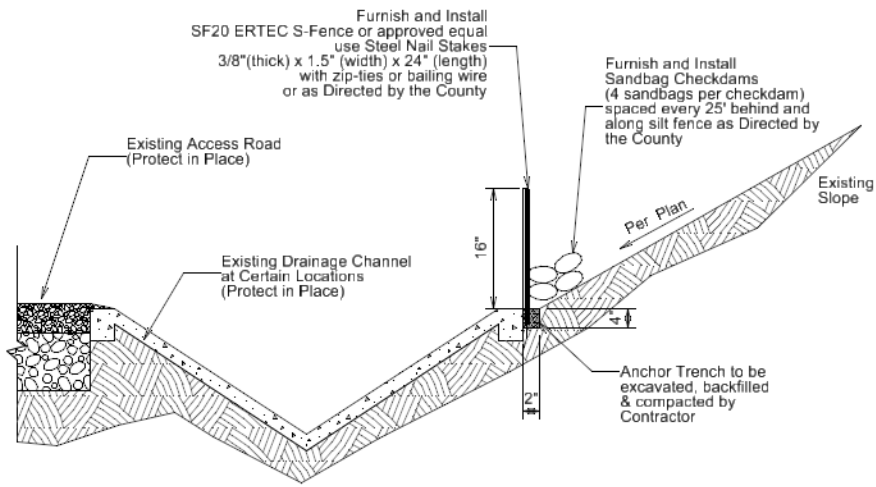
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Hans Kernkamp, General Manager/Chief Engineer  
 NTS

Lamb Canyon Sanitary Landfill  
 Site Drainage Improvements  
 August 2015

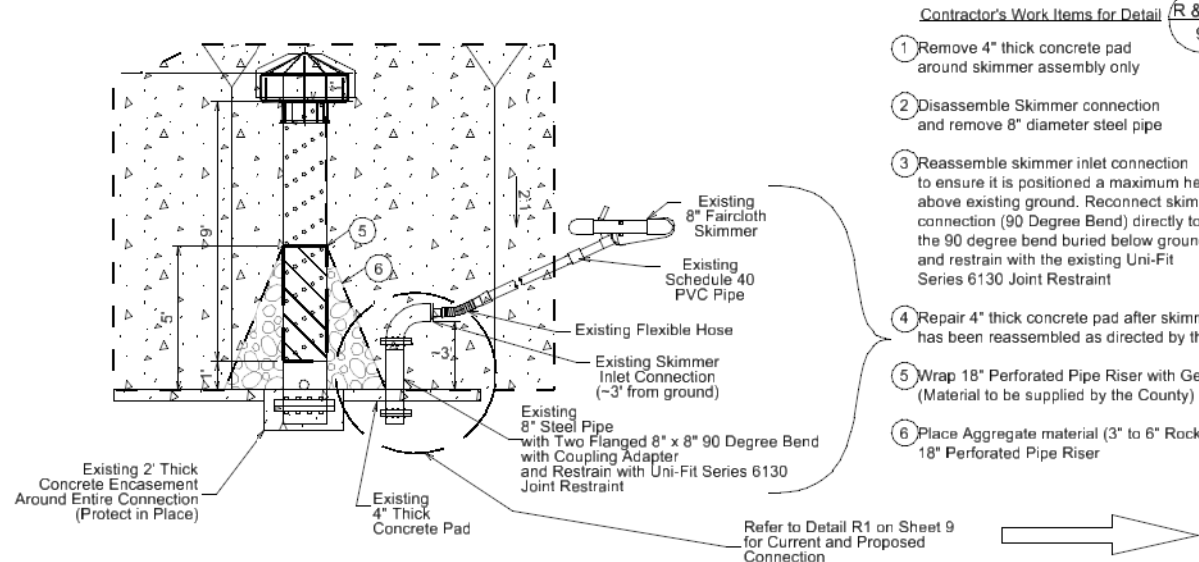
**Construction Details**





**Q** S-Fence Installation Cross Section

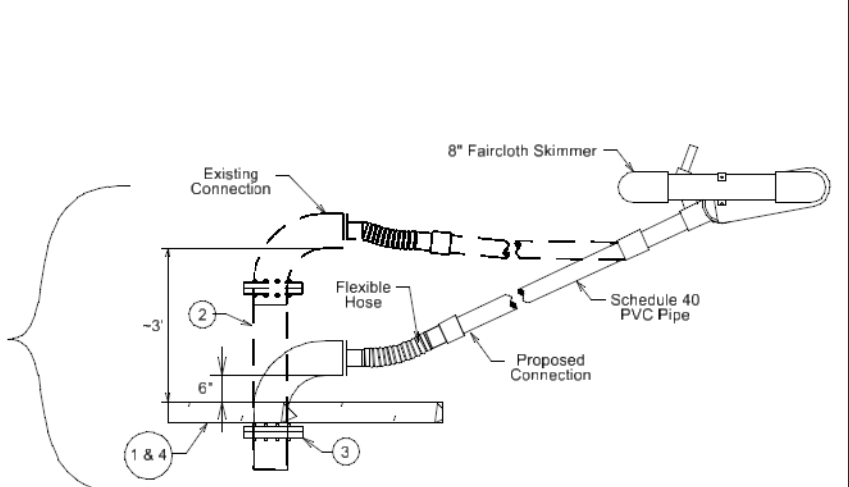
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**R** Sedimentation Basin Outlet Improvements

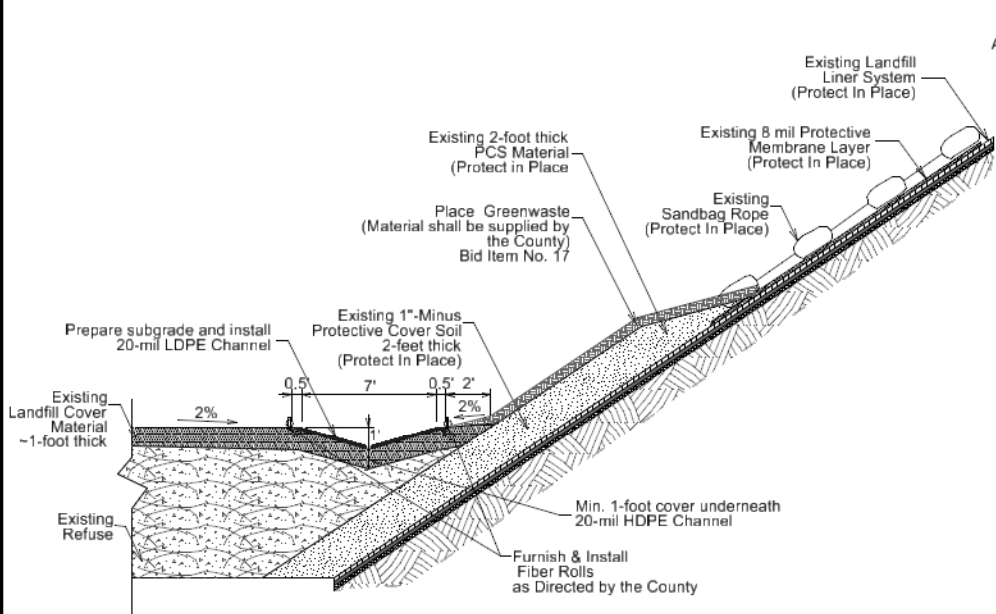
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- Contractor's Work Items for Detail R & R1**
- 1 Remove 4" thick concrete pad around skimmer assembly only
  - 2 Disassemble Skimmer connection and remove 8" diameter steel pipe
  - 3 Reassemble skimmer inlet connection to ensure it is positioned a maximum height of 6" above existing ground. Reconnect skimmer inlet connection (90 Degree Bend) directly to the 90 degree bend buried below ground and restrain with the existing Uni-Fit Series 6130 Joint Restrain
  - 4 Repair 4" thick concrete pad after skimmer connection has been reassembled as directed by the County
  - 5 Wrap 18" Perforated Pipe Riser with Geotextile (Material to be supplied by the County)
  - 6 Place Aggregate material (3" to 6" Rock) Around 18" Perforated Pipe Riser



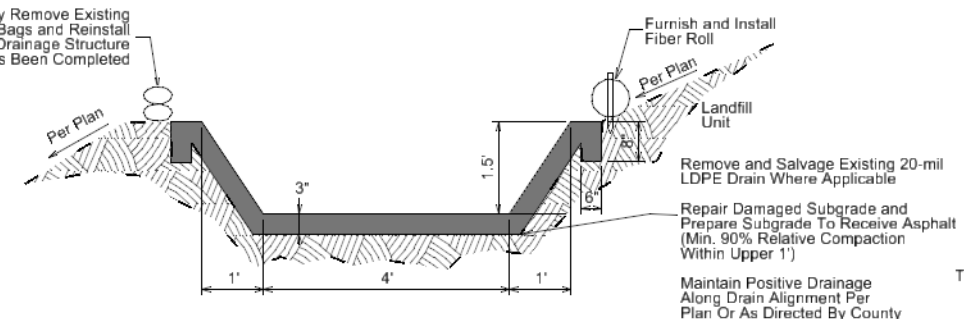
**R1** New Skimmer Inlet Connection

Not To Scale



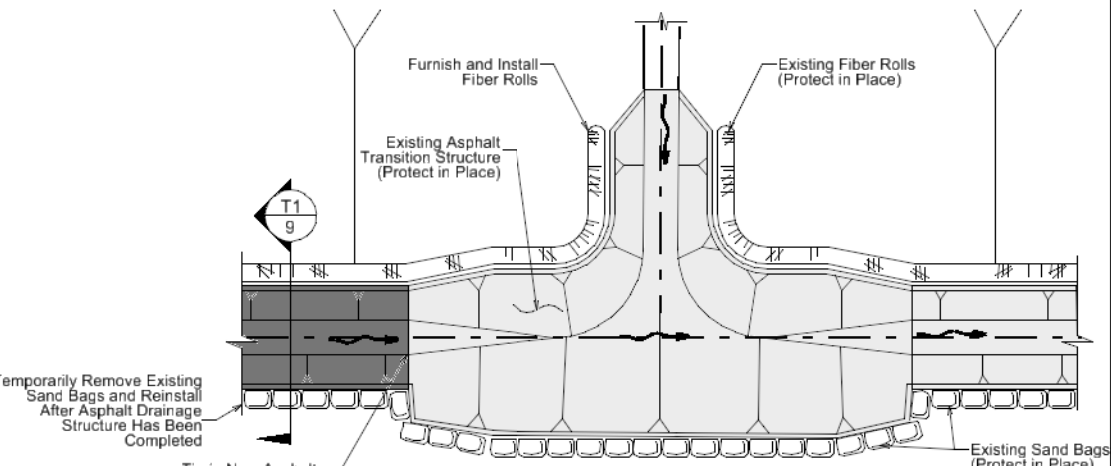
**S** 20-mil LDPE Channel Cross Section

Not To Scale



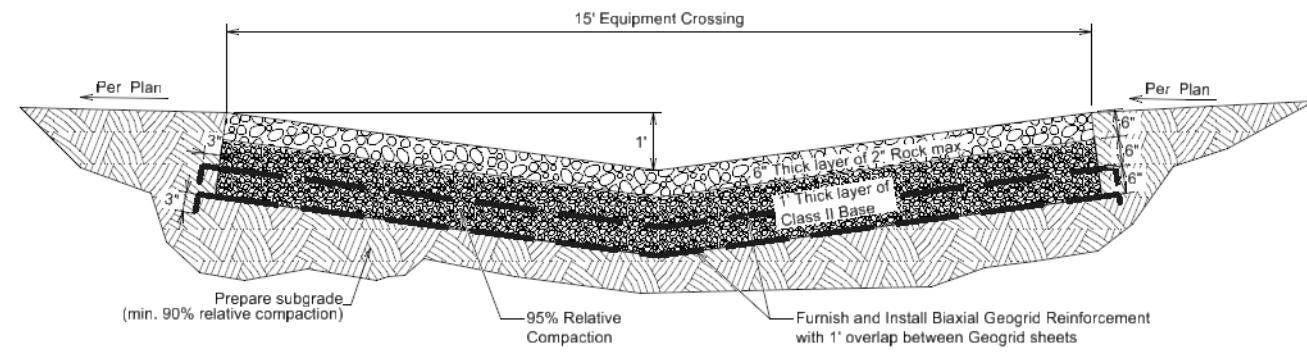
**T1** Asphalt Drainage Structure

Not To Scale



**T2** Asphalt Drainage Structure Transition

Not To Scale



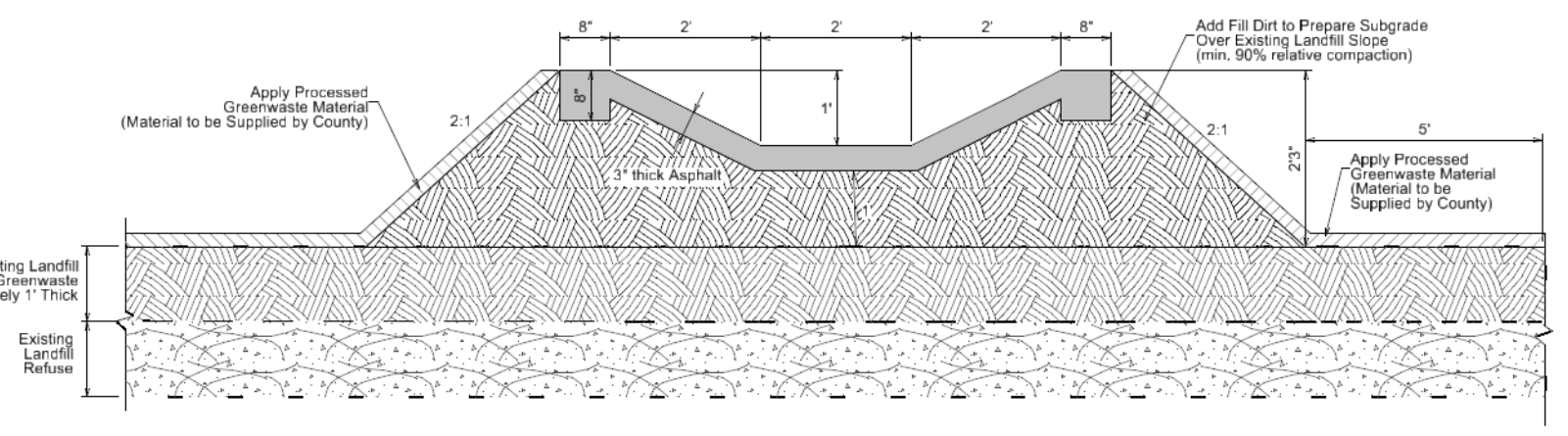
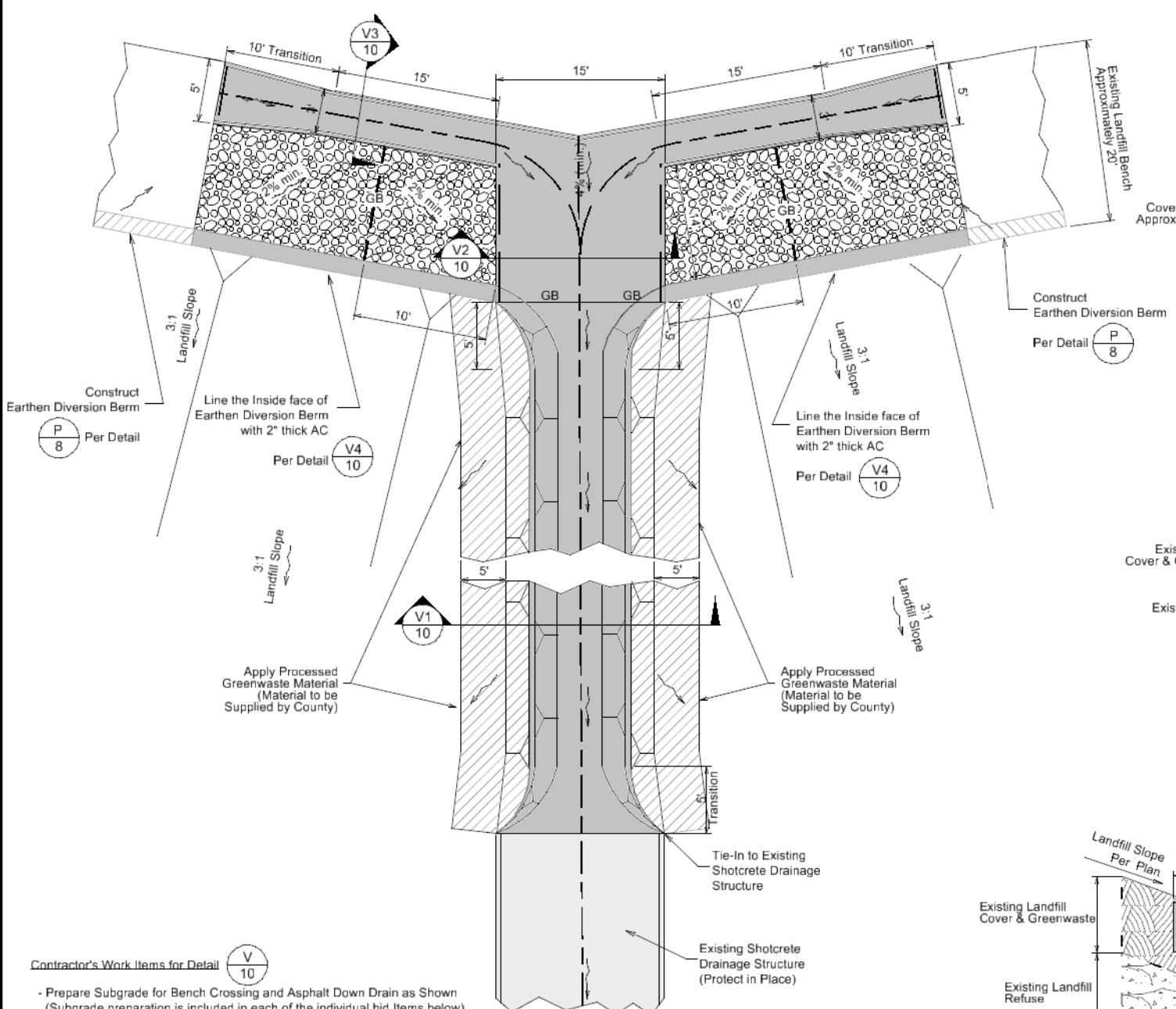
**U** Equipment Crossing Detail

NO.	REVISIONS	BY	APPROVED	DATE

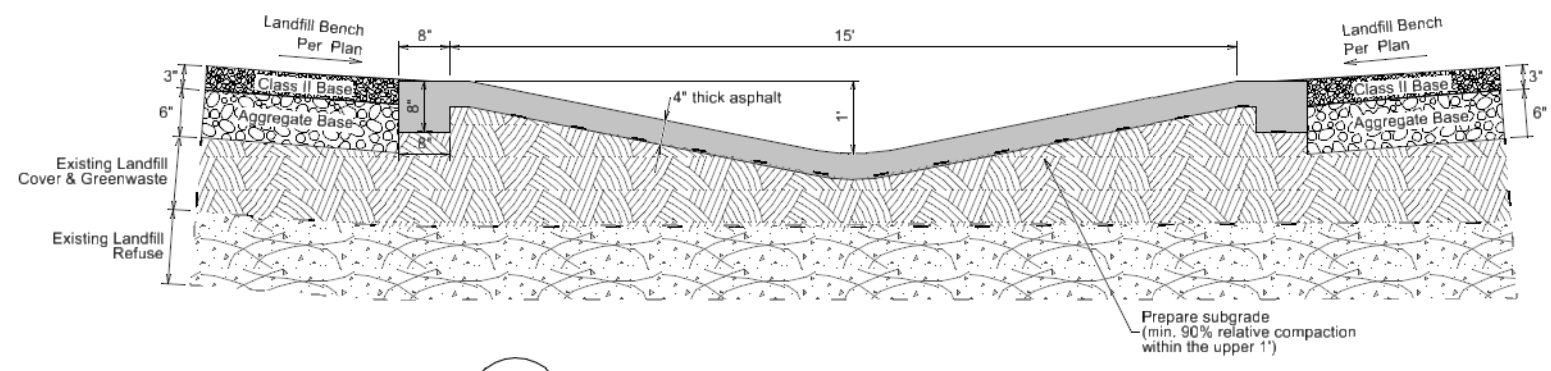
Hana Kernkamp, General Manager/Chief Engineer

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CHECKED BY:	FN
DRAWING DATE:	July 2015
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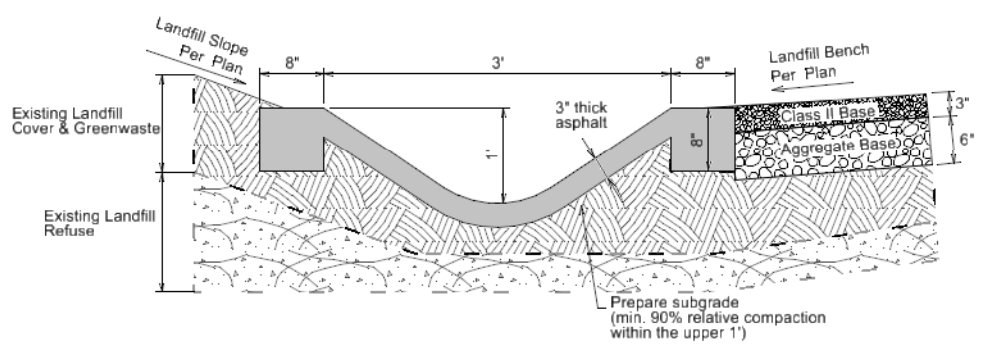
Lamb Canyon Sanitary Landfill  
 Site Drainage Improvements  
 August 2015  
**Construction Details**



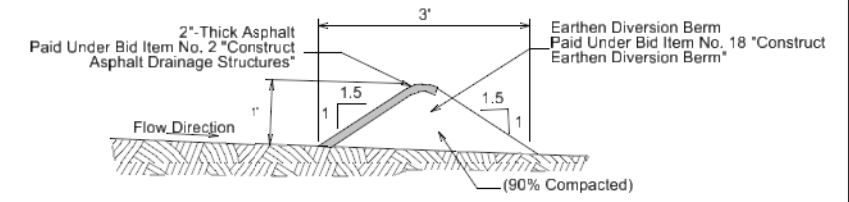
V1 Asphalt Trapezoidal Downdrain Detail  
Not To Scale



V2 Asphalt Bench Crossing Detail  
Not To Scale



V3 Asphalt Swale Detail  
Not To Scale

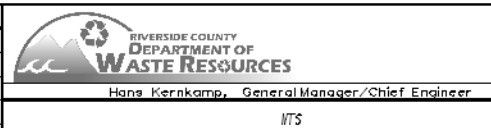


V4 Asphalt Lined Diversion Berm Detail  
Not To Scale

V Asphalt Bench Crossing and Down Drain Detail  
Not To Scale

- Contractor's Work Items for Detail**
- Prepare Subgrade for Bench Crossing and Asphalt Down Drain as Shown (Subgrade preparation is included in each of the individual bid items below)
  - Construct Asphalt Bench Crossing (Bid Item No. 2C)
  - Construct Asphalt Down Drain (Bid Item No. 2B)
  - Construct Aggregate Base Section (Bid Item No. 8)
  - Apply Processed Greenwaste (Material to be supplied by County) (Bid Item No. 17)
  - Construct Earthen Diversion Berm (Bid Item No. 18)
  - Lined Earthen Diversion Berm with 2"-Thick Asphalt (Bid Item No. 2A)

NO.	REVISIONS	BY	APPROVED	DATE

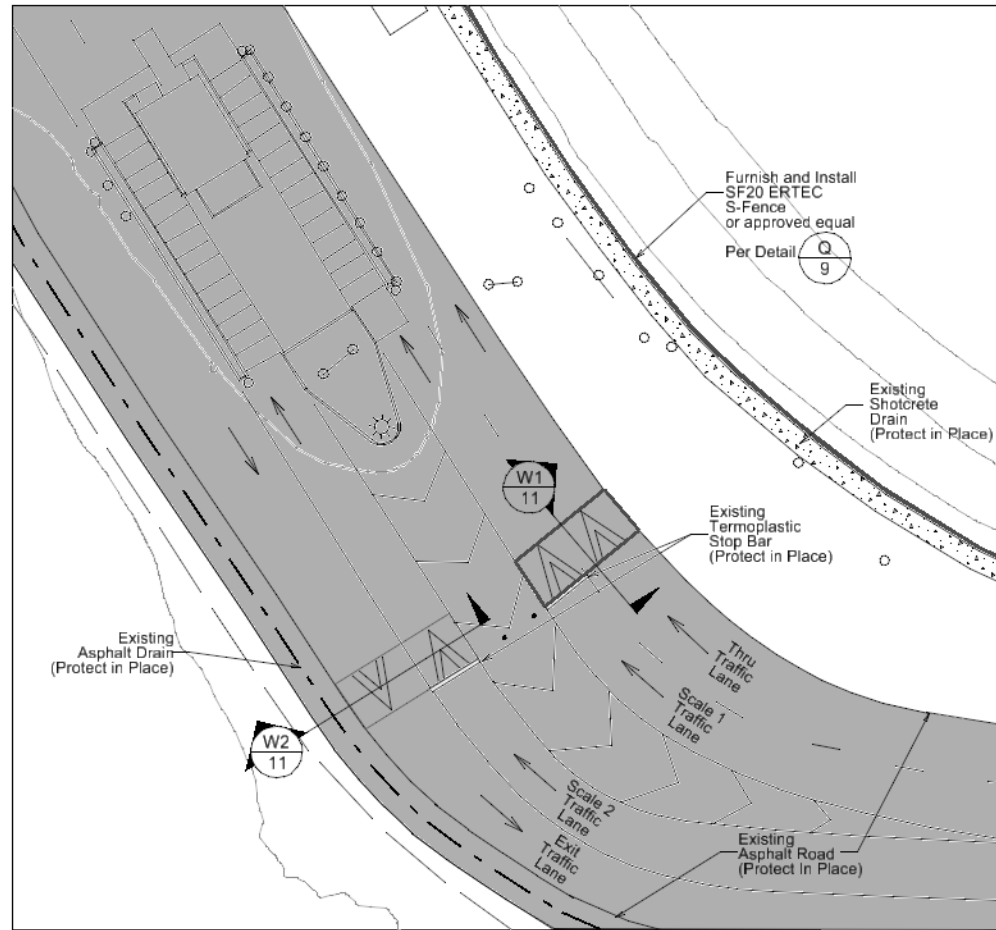


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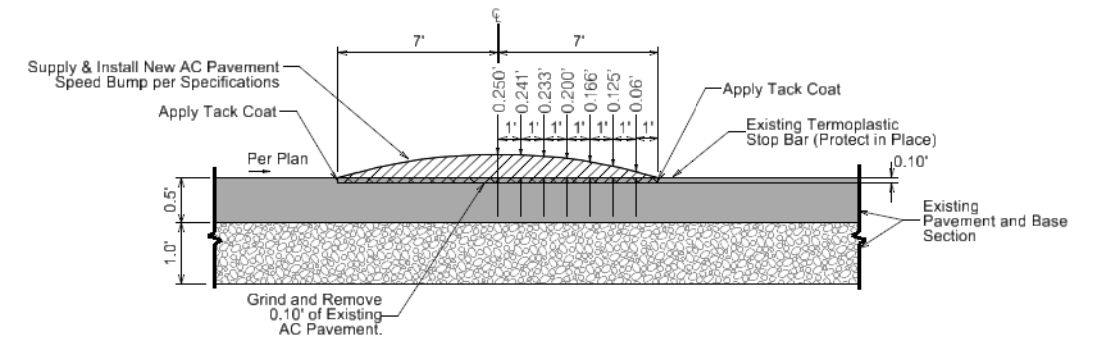
Lamb Canyon Sanitary Landfill  
Site Drainage Improvements  
August 2015

**Construction Details**

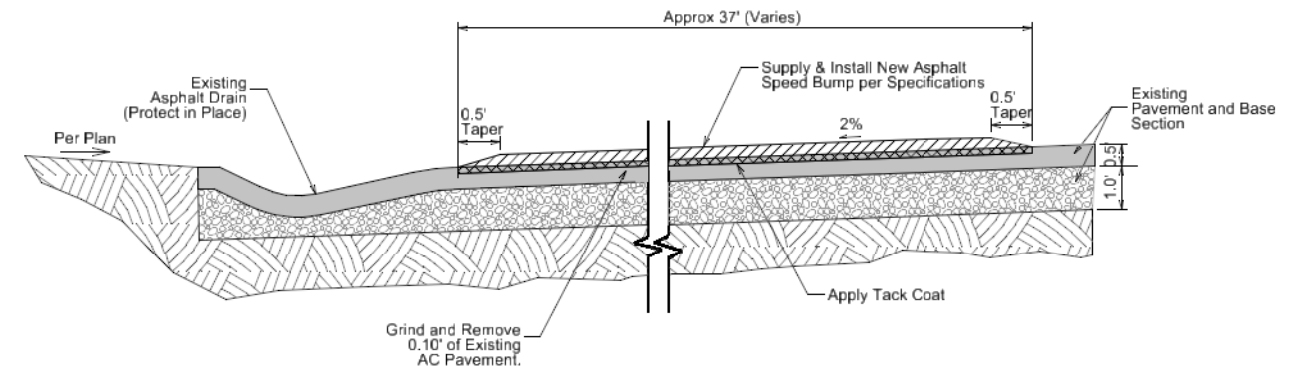




**W** Asphalt Speed Bump Layout  
Not To Scale



**W1** Asphalt Speed Bump Transverse Typical Cross Section  
Not To Scale



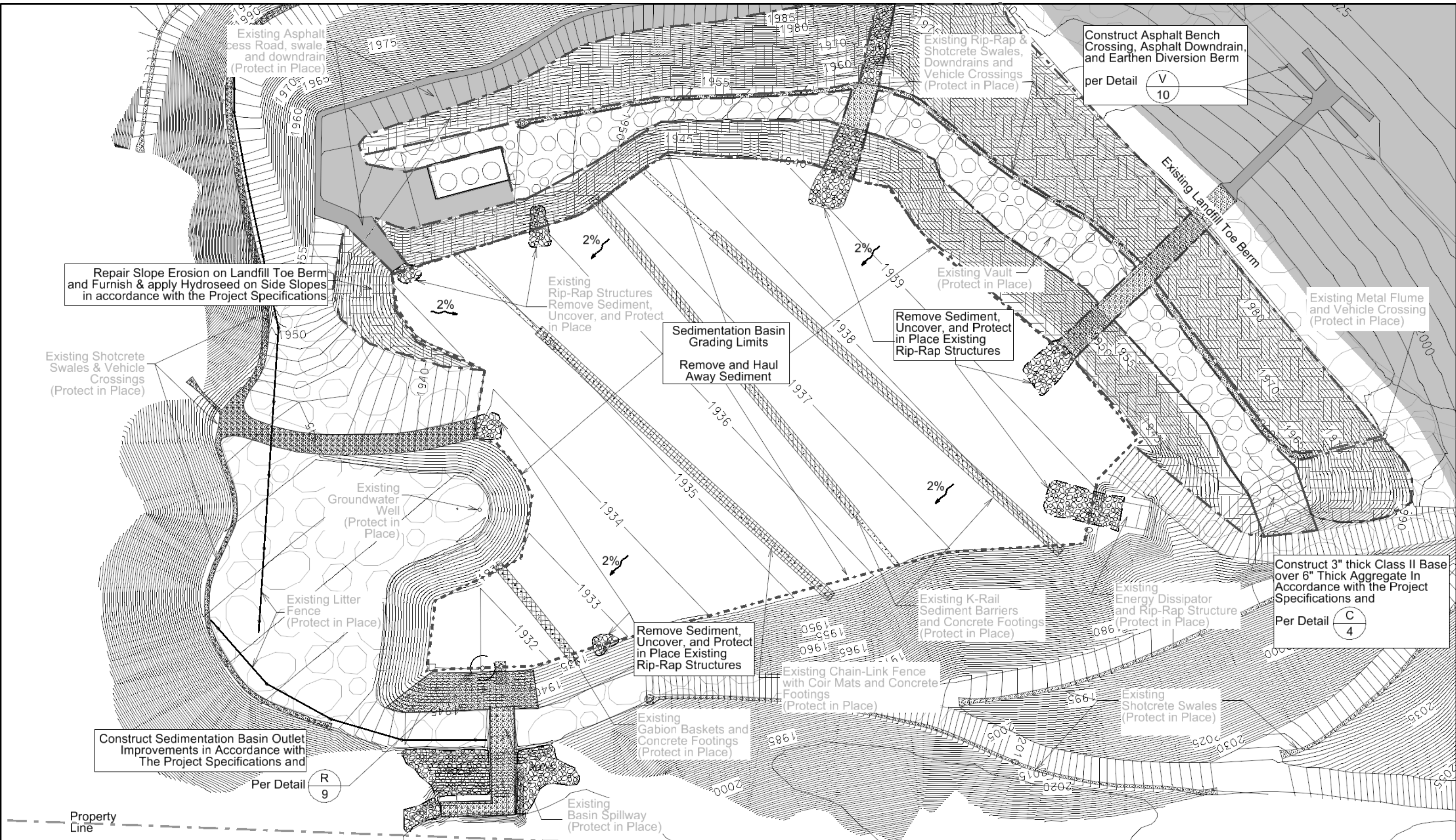
**W2** Asphalt Speed Bump Longitudinal Typical Cross Section  
Not To Scale

NO.	REVISIONS	BY	APPROVED	DATE

Hana Kernkamp, General Manager/Chief Engineer
   
 MTS

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Lamb Canyon Sanitary Landfill  
 Site Drainage Improvements  
 August 2015  
**Construction Details**



Construct Asphalt Bench Crossing, Asphalt Downdrain, and Earthen Diversion Berm  
per Detail  $\frac{V}{10}$

Repair Slope Erosion on Landfill Toe Berm and Furnish & apply Hydroseed on Side Slopes in accordance with the Project Specifications

Sedimentation Basin Grading Limits  
Remove and Haul Away Sediment

Remove Sediment, Uncover, and Protect in Place Existing Rip-Rap Structures

Existing Metal Flume and Vehicle Crossing (Protect in Place)

Construct 3" thick Class II Base over 6" Thick Aggregate In Accordance with the Project Specifications and  
Per Detail  $\frac{C}{4}$

Construct Sedimentation Basin Outlet Improvements in Accordance with The Project Specifications and  
Per Detail  $\frac{R}{9}$

Property Line

NO.	REVISIONS	BY	APPROVED	DATE

HANS KERNKAMP, General Manager/Chief Engineer

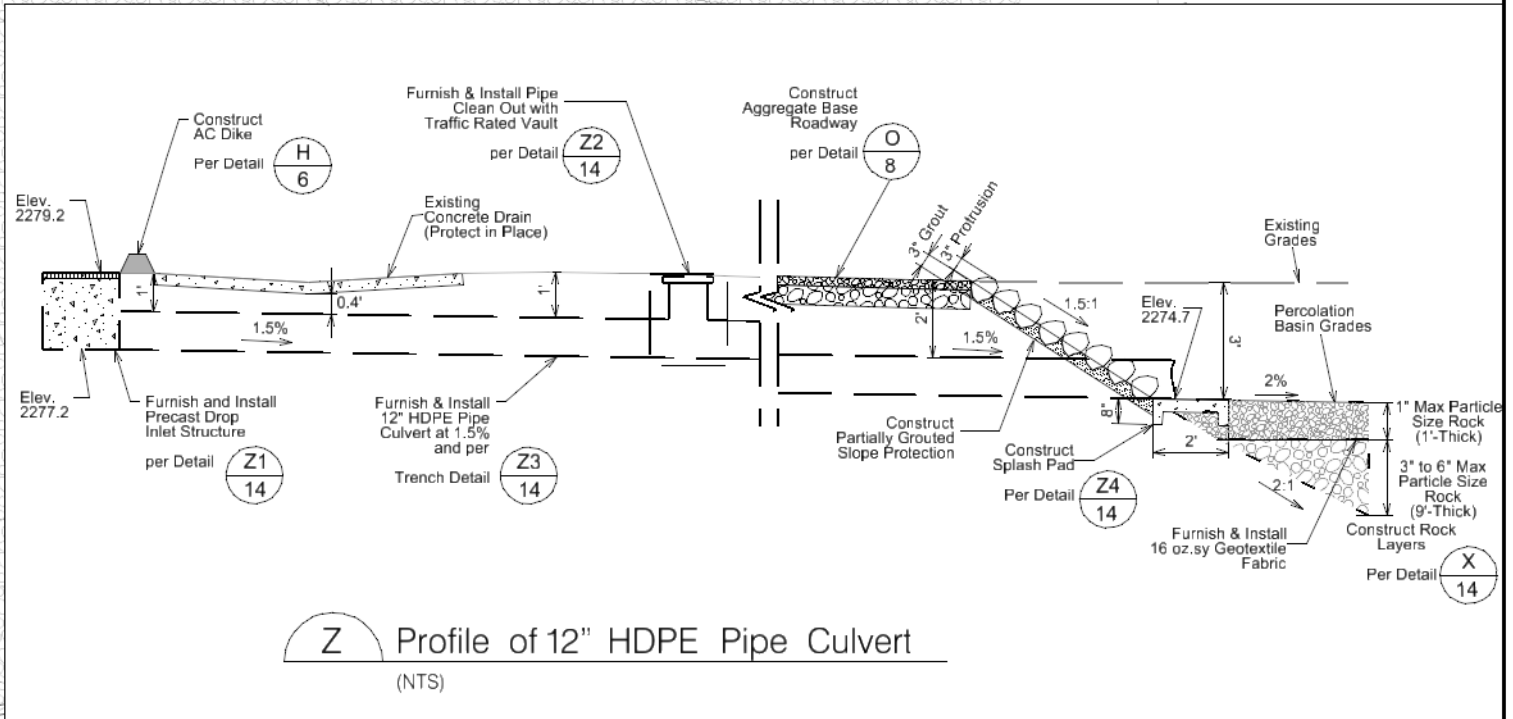
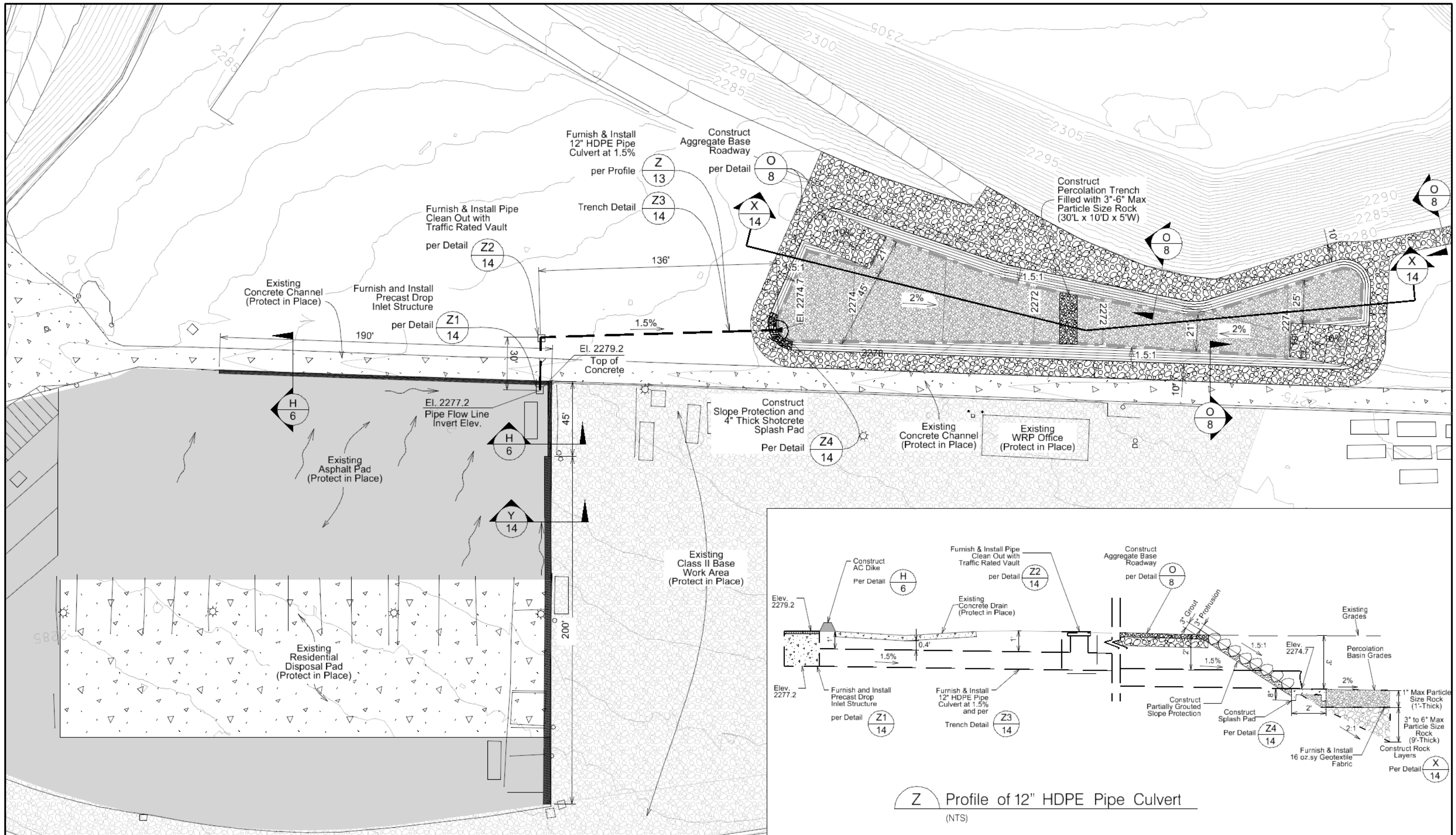
Scale: 1" = 60'

Datum is mean sea level

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CHECKED BY:	FM
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Lamb Canyon Sanitary Landfill  
 Site Drainage Improvements  
 August 2015  
**Sedimentation Basin Layout**  
 SHEET 12 OF 14



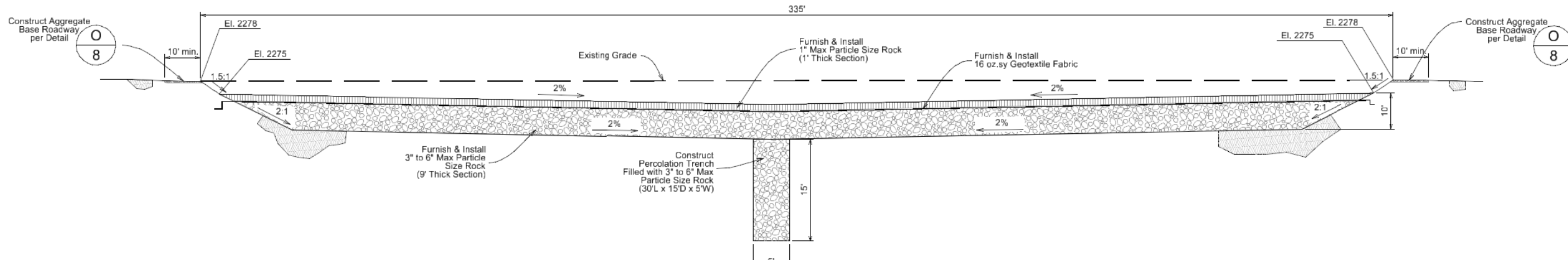


Z Profile of 12" HDPE Pipe Culvert (NTS)

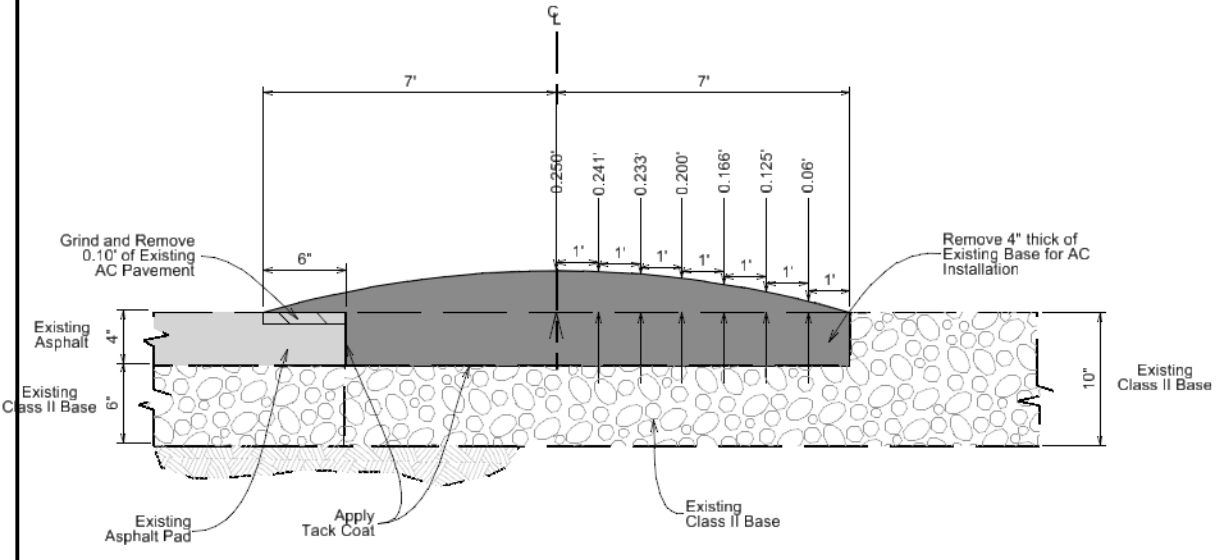
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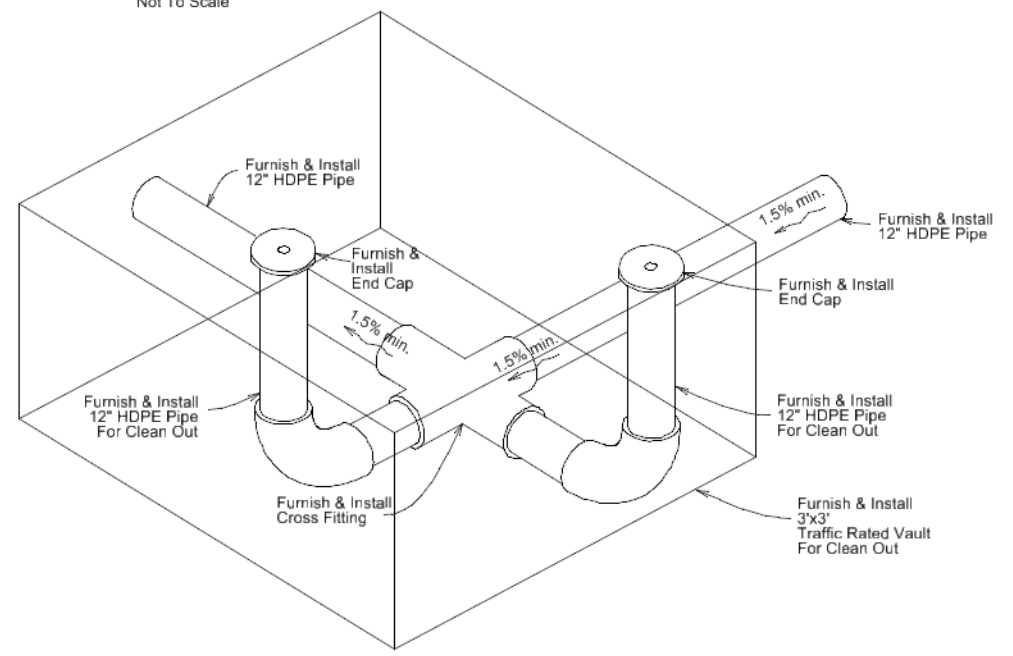
Lamb Canyon Sanitary Landfill  
 Site Improvements  
 August 2015  
**Percolation Basin Layout**



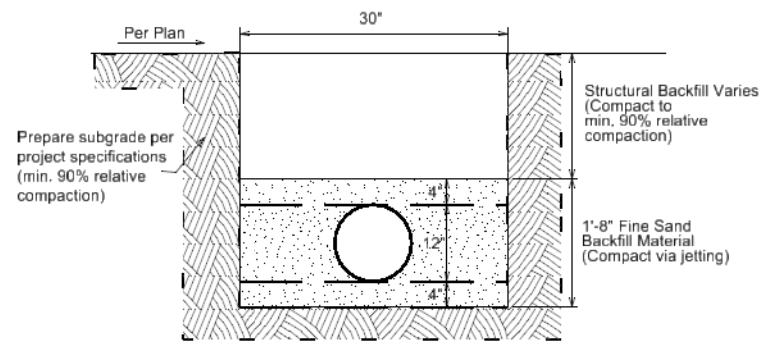
**X** Percolation Basin Cross Section  
Not To Scale



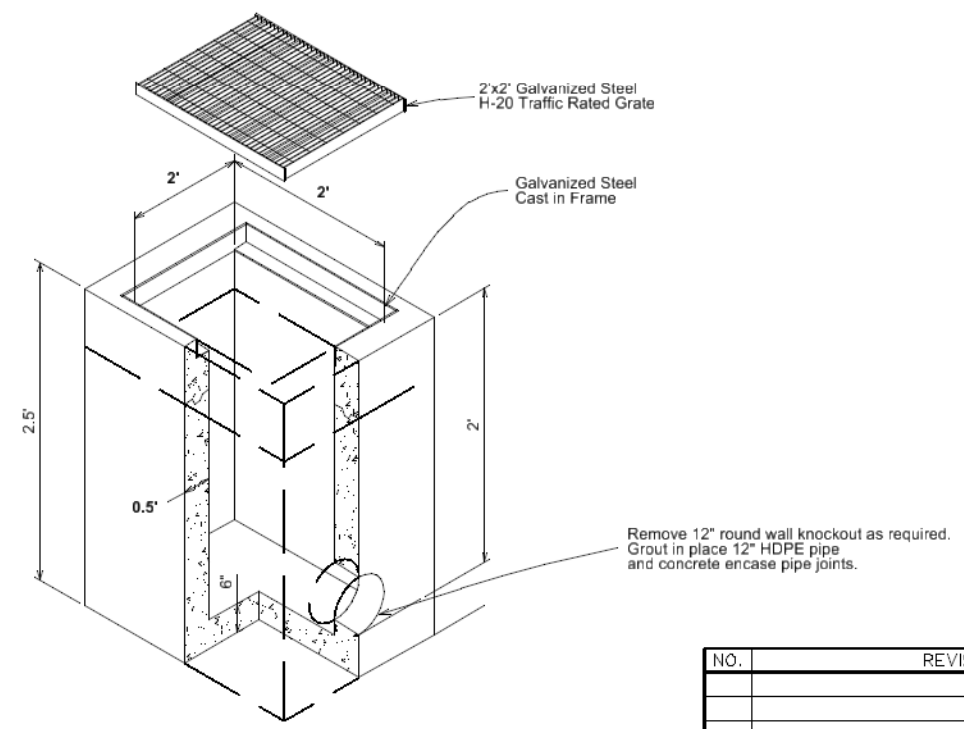
**Y** Diversion Berm Typical Section  
Not To Scale



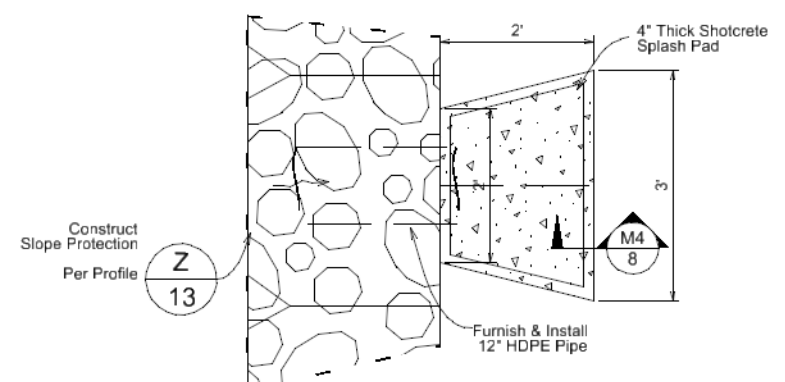
**Z2** HDPE Pipe Clean Out Detail  
Not To Scale



**Z3** Pipe Trench Backfill Detail  
Not To Scale



**Z1** Precast Drop Inlet Detail  
Not To Scale  
Jensen Precast Model: 2424 or Approved Equal



**Z4** Shotcrete Splash Pad  
Not To Scale

NO.	REVISIONS	BY	APPROVED	DATE



Hans Kernkamp, General Manager/Chief Engineer

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DRAWN BY:	EWE
CHECKED BY:	FW/EC
DRAWING DATE:	July 2015
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SCALE:	NTS
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Lamb Canyon Sanitary Landfill  
Site Improvements  
August 2015  
**Percolation Basin  
Details**