

SECTION 10 - SILT FENCE WITH SANDBAG CHECKDAMS

10.1 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 with sandbags checkdams at the locations indicated on the Project Drawings or as directed by the County.

10.2 SUBMITTALS

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

10.3 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 36" (height) x 3/8" (thick) in size or approved equal.
- C. 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.

10.4 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 backfill 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 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 the existing drainage structure as shown on the Project Drawings.
- F. Sandbags checkdams shall consist of a total of four (4) sandbags stacked two high as shown on the Project Drawings or as directed by the County.

Sandbag checkdams shall be placed behind all installed s-fences and spaced every 25-feet or as directed by the County.

10.5 MEASUREMENT AND PAYMENT

The measurement of the final quantity for **Bid Item No. 10 "Furnish & Install S-Fence with Sandbag Checkdams"** shall be determined by the County based on field measurements of the axial length (linear feet) of silt fence delivered and installed at the locations and to the dimensions shown on the Project Drawings. Axial length of joining and overlapping of silt fence sections shall be measured and included in the final quantity. **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. 10** and shall constitute full compensation to the Contractor for all work related to the supply and installation of HDPE silt fence with sandbag checkdams in the project including but not limited to: furnishing all labor, supervision, materials, tools, equipment, excavating and backfilling trenches, hauling excavated material, furnishing and installing steel stake anchors and bailing wire, installing silt fences, furnishing and installing sandbag checkdams, and any other requirements by the Contract Documents for the supply and installation of HDPE silt fence with sandbag checkdams.

END OF SECTION

SECTION 11 - PERCOLATION SHAFTS

11.1 GENERAL

The work in this section shall include furnishing all labor, supervision, tools, equipment, and materials necessary to construct percolation shafts within the existing shotcrete channels as specified and at the locations shown on the Project Drawings. All costs associated with the construction of the percolation shafts shall be included in **Bid Item No. 11, "Construct Percolation Shafts"**. This work shall include, but is not limited to, saw cutting shotcrete drain, drilling shafts, removing spoils, furnishing and backfilling shafts with rock material at the locations shown on the Project Drawings and as required by the Contract Documents.

11.2 SUBMITTALS

- A. The Contractor shall submit Certificates of Compliance for rock 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 rock materials to the project site. The Contractor shall obtain the County's approval of the rock materials and material source in advance of the use of such materials in the work.

11.3 MATERIAL

Crushed aggregate rock material used for backfilling percolation shafts shall consist entirely of crushed rock greater than 3 inches in size but smaller than 6 inches.

11.4 EXECUTION

- A. The Contractor shall saw cut the bottom of the reinforced shotcrete sediment traps prior to drilling shafts as shown on the Project Drawings.
- B. The shafts shall be drilled 2-foot in diameter and 20-feet deep. All spoils from the drilling operations shall be hauled to the designated material stockpile within the landfill unit or as directed by the County.
- C. The shafts shall be backfilled with crushed aggregate rock as shown on the Project Drawings.
- D. The geotextile fabric layer shall be installed in accordance with the applicable details shown on the Project Drawings or as directed by the County. Geotextile material shall be provided by the County.
- E. All loose material or debris caused by the Contractor's operation in the drainage channel shall be removed by the Contractor. Any damaged to the existing shotcrete channel caused by the Contractor during the construction of percolation shafts shall be repaired at the Contractor's sole expense.

11.5 MEASUREMENT AND PAYMENT

The **measurement** of the final quantity for **Bid Item No. 11 “Construct Percolation Shafts”** shall be determined by the County based on the specific number of individual 20-foot percolation shafts constructed at the locations and in conformance with the details shown on the Project Drawings and as required by the Contract Documents. **Payment** for the construction of percolation shafts and related work shall be at the contract unit price for each individual percolation shaft constructed as stated in the Contractor’s Proposal, **Bid Item No.11. Payment** shall constitute full compensation to the Contractor for all work related to the construction of percolation shafts at the locations shown on the Project Drawings including but not limited to: furnishing all labor, supervision, materials, tools, and equipment necessary to saw cut existing shotcrete drain, drill shafts, remove spoils, furnish rock material, backfill shafts with rock material, and install geotextile layer in accordance with the Contract Documents.

END OF SECTION

SECTION 12 - SHOTCRETE STRUCTURES AND CONCRETE CURB & GUTTER

12.1 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 shotcrete drainage structures and Cal-Trans Type A2-8 concrete curb and gutter to the elevations, lines and grades, and at the locations shown on the Project Drawings or as directed by the County including but not limited to:

- a. Prepare subgrade for shotcrete drainage structures and concrete curb and gutter, including saw-cut and remove existing asphalt curb.
- b. Supply and install welded wire mesh reinforcement.
- c. Supply, install, and finish air-placed concrete (shotcrete).
- d. Supply, install, and finish slip-form placed concrete for curb and gutter.
- e. Supply and apply concrete curing compounds.
- f. Excavate or backfill any necessary soil to achieve finished elevations adjacent to the shotcrete drainage structures and concrete curb and gutter.

12.2 REFERENCES

Reference Standards and Specifications: The following standards and specifications, including documents referenced therein, form part of these Special Provisions and are incorporated herein by reference.

American Society for Testing Materials (ASTM)

- A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
- C33 Standard Specification for Concrete Aggregates
- C94 Standard Specification for Ready Mixed Concrete
- C131 Standard Test Method for Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- C150 Standard Specification for Portland Cement
- D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- D1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction

12.3 SUBMITTALS

A. Mix design and certifications

The Contractor shall submit mix designs and certifications to the County for review and acceptance at least one (1) week prior to beginning placement of concrete.

B. Concrete delivery load tickets

Each and every concrete load ticket shall be delivered to the County by truck drivers at the point of delivery. The mix plant shall supply delivery ticket for

each batch of concrete. The Contractor shall submit delivery tickets to the County. Delivery tickets shall show the following:

- i. Name of ready-mix batch plant
- ii. Serial number
- iii. Date and truck number
- iv. Name of Contractor
- v. Name and location of job
- vi. Specific classes or designation of shotcrete in conformance with that required in job specification
- vii. Amount of concrete
- viii. Time loaded
- ix. Type, name, and amount of admixtures used
- x. Amount and type of cement
- xi. Total water content
- xii. Water added by receiver of concrete with his or her signature initials

C. Concrete Reinforcing Steel

The Contractor shall provide mill certificates to the County for approval prior to delivery of material to the job site.

D. Concrete Curing Compounds

The Contractor shall submit the manufacturer's product data and installation instructions.

12.4 MATERIALS

A. SHOTCRETE and CONCRETE

Shotcrete and Concrete materials shall be of primary quality and of domestic manufacture and shall conform to Section 201, "Concrete, Mortar and Related Materials" requirements of the Standard Specifications.

- a. Portland cement, fine aggregates, admixtures, and water shall be in accordance with Section 201-1.2 of the Standard Specifications.
- b. Compressive Strength - Concrete mix classification for drainage structures shall be Class 650-D-3250 and shall be air-placed in conformance with Part 3, Section 303-2, Method B (Shotcrete) of the Standard Specifications.
- c. Compressive Strength - Concrete mix classification for concrete curb and gutter shall be Class 520-D-2500 and shall be placed using slip-form equipment or approved equal in conformance with Part 3, Section 303-5 of the Standard Specifications.
- d. Shotcrete shall consist of concrete or mortar pneumatically applied onto surface. Shotcrete shall be applied by the wet-mix (shotcrete) process and the Contractor, subject to County approval, may have the option to cast-in-place structural concrete in accordance with this specification in lieu of shotcrete. The substitution of shotcrete for cast-in-place structural concrete will not warrant additional compensation.

- e. Welded wire mesh reinforcement shall be as specified on the Project Drawings and shall conform to Part 2, Section 201-2.2 of the Standard Specifications.

B. REINFORCEMENT

Reinforcing steel shall conform to ASTM A615 requirements and also conform to Section 201-2.2.1, "Reinforcing Steel" requirements of the Standard Specifications. Reinforcing steel shall be Grade 60 and have identification inscriptions and also conform to ASTM A 615-89, "Specification for Deformed & Plain Billet-Steel Bars for Concrete Reinforcement" requirements. Reinforcing steel shall be free of rust, scale, or other bond-reducing coatings.

C. PATCHING

If patching is necessary and approved by the County, a bonding agent such as Weld-Crete as manufactured by Larsen Products, or approved equal, shall be used.

D. CURING COMPOUND

Concrete curing compound shall be Type 1-D – Clear or translucent with fugitive dye and shall conform to Section 201-4.1, "Membrane Curing Compounds" requirements of the Standard Specifications.

12.5 EXECUTION

- A. The subgrade for reinforced shotcrete drainage structures and concrete curb and gutter shall be prepared either by excavating or filling, and shall conform to lines, grades, and cross sections and be located as shown on the Project Drawings. Where the structures are in native cut, the upper six (6) inches of subgrade shall be compacted to a minimum of 90% (or as otherwise noted on the Project Drawings) of the maximum density as determined per ASTM D1557. This shall be achieved by scarifying the exposed surface to a depth of six (6) inches and re-compacting it as required by the Specifications. For areas requiring Engineered Fill the finished subgrade shall be firm and unyielding and suitable for placement of Reinforced Shotcrete Drainage Structures, and shall be compacted to a minimum of 90% (or as otherwise noted on the Project Drawings) of the maximum density as determined per ASTM D1557. Clearing, grubbing, and excavation for the Reinforced Shotcrete Drainage Structures shall comply with the provisions of sub-section 300-7 of the Standard Specifications.
- B. Contractor shall saw-cut and remove existing asphalt curb at the locations shown on the Project Drawings and as directed by the County.
- C. Forms and ground wires for reinforced shotcrete drainage structures shall be installed in accordance with sub-section 303-2.7 of the Standard Specifications. Ground wires shall be placed at approximately 5-foot intervals.

- D. Welded wire mesh shall be spliced not less than two meshes. Mortar blocks with wire ties, or other means acceptable to the County shall be used to secure the reinforcement firmly in the position shown on the Project Drawings.
- E. Concrete placement for reinforced shotcrete drainage structures shall be in accordance with Part 3, Section 303-2 of the Standard Specifications. Nozzle shall be directed in such a manner as to result in minimum rebound of the shotcrete. The velocity of the material as it leaves the nozzle shall maintained uniform and at a rate determined for the given job conditions.
- F. Concrete placement for curbs and gutters shall be in accordance with Part 3, Section 303-5.2.2 of the Standard Specifications. Slip-form equipment shall be provided with traveling side and top forms of suitable dimensions, shapes, and strength to support the concrete for a sufficient length of time during placement to produce curb and gutter of the required cross section shown on the Project Drawings. The dimensions of concrete curb and gutter shall be in accordance with Cal-Trans Standard detail Type A2-8 as shown on Project Drawings.
- G. Materials that have been mixed for more than 90 minutes shall not be used.
- H. Weakened plane joints for structures shall be installed perpendicular to the water flow direction at ten (10) foot intervals along the water flow direction and as directed by the County. Weakened plane joints for platforms shall be installed in two perpendicular directions at ten (10) foot intervals and as directed by the County. Depth of joints shall be one (1) inch.
- I. After the concrete has been placed as nearly as practicable to the required depth, the surface shall be checked with a straightedge, and any low spots or depressions shall be brought to grade by placing additional shotcrete in such a manner that the finished surface will be reasonably smooth and uniform for the type of work involved. Loose areas of shotcrete shall be removed and replaced by the Contractor at the Contractor's expense.
- J. The County may elect to take concrete test cylinders on each day that concrete installation work occurs or as deemed necessary by the County. Cylinder breaks will be performed at the direction of the County to ensure that in-place materials meet full design strength.
- K. Sequencing and Scheduling
The Contractor shall allow County to verify locations, grades, subgrade preparation, installation of embedded concrete components, and shall notify the County at least two (2) working days prior to the placement of concrete.
- L. Curing Compound
Curing compound in accordance with Section 12.4 shall be applied. All concrete shall be cured after the completion of the specified finishing operations and as soon as the condition of the concrete will permit without

damaging the concrete. All exposed surfaces of concrete shall be protected from premature drying and freshly placed concrete shall be protected against wash by rain.

M. All exposed surface of concrete shall be cured by application of curing compound as required by Section 201-4.1, "Membrane Curing Compound" of the Standard Specifications and the manufacturer's recommendations and application instructions.

N. Concrete Tolerances

ACI Standards shall govern concrete work except where specified differently. Variation in Thickness: 1/4" to 1/2" standard

O. Clean Up

Upon completion of all concrete work and before final acceptance, Contractor shall remove all tools, surplus materials, apparatus, debris, etc., from the site and the site shall be left in a clean, neat, and acceptable condition to the County. Hardened concrete material accumulated in the designated washout area for this project shall be disposed of by the Contractor at the Lamb Canyon Landfill site as directed by the County.

P. Defective Concrete

Concrete that is not in accordance with these specifications, out of line, level, or plumb; showing structural cracks, rock pockets, voids, spalls, honeycombing, exposed reinforcing or other damaged surfaces shall be considered as defective concrete. Non repairable defective concrete shall be removed and replaced at the Contractor's expense.

All fines and irregularities shall be removed from exposed concrete surfaces while the concrete is still green. Where patching is required and approved by the County, all loose and uniform concrete shall be removed prior to patching.

12.6 MEASUREMENT AND PAYMENT

A. The measurement of the final quantity for **Bid Item No. 12 "Construct Shotcrete Drainage Structures"** shall be determined by the County based on the final in-place square footage of shotcrete drainage channel constructed at the locations and in conformance with the details shown on the Project Drawings and as required by the Contract Documents or as directed by the County. The final surface area shall be verified by the County based on conventional ground measurement, and shall be measured to the nearest square foot. **Payment** for construction of shotcrete drainage structures and related work shall be made, after acceptance, at the contract unit price per square foot (true area including slope surface area) as stated in the Contractor's Proposal, **Bid Item No. 12. Payment** shall constitute full compensation to the Contractor for all work related to the construction of shotcrete drainage structures including but not limited to all labor, supervision, material, tools, equipment, subgrade preparation, over-excavation, formwork, reinforcing steel, grounding wires, shotcrete, finishing, and curing compound, or other work required by the Contract

Documents. No additional compensation shall be given for shotcrete installed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

- B. The **measurement** of the final quantity for **Bid Item No. 15 "Construct Concrete Curb and Gutter"** 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 concrete curb and gutter. **Payment** for Cal-Trans Type A2-8 Concrete Curb and Gutter shall be at the contract unit price per linear foot, as stated in the Contractor's Proposal, **Bid Item No. 15** and shall include surface preparation, saw-cut and remove existing asphalt curb, supply and installation of concrete material as specified and required by the Contract Documents. Payment shall constitute full compensation to the Contractor for all work related to the construction of concrete curbs and gutters including but not limited to all labor, supervision, material, tools, equipment, subgrade preparation, over-excavation, saw-cut and remove existing asphalt curb, formwork, shotcrete, finishing, curing compound, or other work required by the Contract Documents. No additional compensation shall be given for curb and gutter constructed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

END OF SECTION

SECTION 13 - ASPHALT STRUCTURES

13.1 GENERAL

The work covered in this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the construction of Asphalt Concrete (A.C.) Structures which shall include, but is not limited to: asphalt drainage structures, equipment crossings, pad, and speed bumps. The work shall include subgrade preparation and installation of asphalt concrete pavement to the specified lines and grades and at the locations shown on the Project Drawings, as required by the Contract Document, and as directed by the County.

At the County's request the Contractor may be required to remove an existing aggregate base crossing section and replace it with an asphalt road section (6" thick asphalt over 12" thick class II base). 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 removal of existing aggregate base crossing, preparing subgrade, saw cutting existing road section, furnishing and installing 12"-thick layer of class II base, application of tack coat, and furnishing and installing 6" thick asphalt layer.

13.2 SUBMITTALS

- A. The Contractor shall submit Certificates of Compliance for bituminous materials used in asphalt concrete pavement and asphaltic emulsion mixes proposed for 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 prepare and submit a mix design to the County for review and approval at least two (2) weeks prior to beginning placement of A.C. pavement for each mix design incorporated for use in this project.
- C. Asphalt Concrete delivery load tickets
Each and every asphalt concrete load ticket shall be submitted to the County by the Contractor at the point of delivery. The plant shall supply delivery ticket for each load of asphalt. Delivery tickets shall show following:
 - i. Name of plant
 - ii. Serial number
 - iii. Date and truck number
 - iv. Name of Contractor
 - v. Name and location of job
 - vi. Specific designation of asphalt in conformance with that required in job specification
 - vii. Amount of asphalt in tons
 - viii. Time loaded
- D. The Contractor shall submit Certificates of Compliance for class II 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.

- E. The Contractor shall submit to the County gradation test reports before delivery of base materials to the project site. The Contractor shall obtain the County's approval of the base materials and material source in advance of the use of such materials in the work.

13.3 MATERIALS

- A. A.C. pavement shall consist of hot mineral aggregate uniformly mixed with hot bituminous material.
- B. Asphalt paving material for all asphalt structures shall be D1-PG 70-10, and shall conform to Part 2, Sections 203-6 and 400-4 of the Standard Specifications.
- C. Tack Coat: Tack Coat shall conform to Section 302-5.4, "Tack Coat" of the Standard Specifications and shall be PG 70-10 paving asphalt, or SS-1h emulsified asphalt applied at the rates as specified.
- D. Class II aggregate base material for the asphalt pad shall conform to the specifications and requirements stated in SECTION 9 -Aggregate Base .

13.4 EXECUTION

- A. The Contractor shall arrange and conduct a pre-job paving meeting no later than 48 hours prior to the scheduled paving date. The General Contractor, the Paving Subcontractor, and County personnel shall attend this meeting. Discussion topics shall include Contractor-proposed: paving machine and asphalt roller equipment spread, methodology for paving pass sequence, paving pass widths, longitudinal joint locations, and traffic control plan implementation and maintenance specific to each paving operation.
- B. The subgrade for all asphalt structures in this project, prepared either by excavation or engineered fill, shall conform to the locations and cross sections as shown on the Project Drawings or as directed by the County. Where the structures are in native cut, the upper six (6) inches of subgrade shall be compacted to a minimum of 90 percent (or as otherwise noted on the Project Drawings) of the maximum density as determined per ASTM D1557. This shall be achieved by scarifying the exposed surface to a depth of six (6) inches and re-compacting. For areas requiring engineered fill, the finished subgrade shall be firm and suitable for placement of asphalt pavement, and shall be compacted to a minimum of 90 percent (or as otherwise noted on the Project Drawings) of the maximum density within the upper one foot, as determined by ASTM D1557.
- C. The Contractor shall install the class II base material on a prepared and approved subgrade as stated above and as required by the Contract Documents. The class II base material shall be in accordance with

SECTION 9 -Aggregate Base . The base material shall be compacted to a minimum of 90 percent of the maximum density as determined per ASTM D1557.

- D. Distribution and spreading shall conform to the requirements of Section 302-5.5, "Distribution and Spreading" of the Standard Specifications. All transitions and edges shall be feathered to conform to the existing surface and provide a smooth transition. The Contractor shall install 2"x4" wooden headers using 12"-2"x4" stakes set a maximum of 6-foot on center at all locations where the vertical edges of new asphalt pavement are not in contact with an existing pavement or permanent structures. Wooden headers shall remain in place upon completion of work.
- E. Rolling shall conform to the requirements of Section 302-5.6, "Rolling" of the Standard Specifications. Hand and mechanical tampers will not be permitted for compaction of road way section.
- F. The asphalt pavement for the speed bumps shall be placed on the newly constructed asphalt concrete pad and shall conform to the cross sections and locations as shown on the Project Drawings or as directed by the County.
- G. Prior to pavement application, surface preparation shall consist of cleaning the underlying surface of foreign or objectionable matter where necessary. A tack coat shall be applied to the areas receiving pavement in accordance with Section 302-5.4,"Tack Coat" of the Standard Specifications.
- H. If authorized by the County to perform the optional work of constructing the asphalt road section, the Contractor shall excavate and remove the existing aggregate base crossing and evenly saw cut the edges of the adjacent asphalt road sections along the specific lines marked by the County staff. The Contractor shall clean the surface of the remaining in-place asphalt to ensure an adequate bonding surface between the existing asphalt and new asphalt. A tack coat shall be applied to the areas receiving pavement in accordance with Section 302-5.4,"Tack Coat" of the Standard Specifications. The supply and installation of asphalt material for this repair work shall be in accordance with the sections above.

13.5 MEASUREMENT AND PAYMENT

- A. The **measurement** of the final quantity for **Bid Item No. 13 "Construct Asphalt Pad"** shall be based on the pertinent details required by the Contract Documents as verified by the County through field measurements of this pad. **Payment** for the construction of the asphalt pads shall be at the contract unit price per square foot, as stated in the Contractor's Proposal, **Bid Item No. 13** and shall include surface preparation, supply, installation, and compaction of asphalt material as specified and required by the Contract Documents. Payment shall constitute full compensation to the Contractor for all work related to the construction of asphalt pads including but not limited to all labor,

supervision, material, tools, equipment, subgrade preparation, over-excavation, furnish and install class II base, asphalt, compaction, tack coat application, incidentals, or other work required by the Contract Documents. No additional compensation shall be given for asphalt pad constructed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

- B. The **measurement** of the final quantity for **Bid Item No. 14** "**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. 14** and shall include surface preparation, supply and application of tack coat, supply, installation, and compaction of asphalt material as specified and required by the Contract Documents. Payment shall constitute full compensation to the Contractor for all work related to the construction of asphalt speed bumps including but not limited to all labor, supervision, material, tools, equipment, subgrade preparation, asphalt, compaction, tack coat application, incidentals or other work required by the Contract Documents. No additional compensation shall be given for asphalt speed bump constructed outside the specified limits and dimensions unless otherwise ordered in writing by the County.
- C. The **measurement** of the final quantity for **Bid Item No. 19** "**Construct Asphalt Drainage Structures**" shall be based on the pertinent details required by the Contract Documents as verified by the County through field measurements of these drainage structures. **Payment** for the construction of the asphalt drainage structures shall be at the contract unit price per square foot, as stated in the Contractor's Proposal, **Bid Item No. 19** and shall include surface preparation, supply, installation, and compaction of asphalt material as specified and required by the Contract Documents. Payment shall constitute full compensation to the Contractor for all work related to the construction of asphalt drainage structures including but not limited to all labor, supervision, material, tools, equipment, subgrade preparation, over-excavation, asphalt, compaction, tack coat application, incidentals or other work required by the Contract Documents. No additional compensation shall be given for asphalt pad constructed outside the specified limits and dimensions unless otherwise ordered in writing by the County.
- D. The **measurement** of the final quantity for **Optional Bid Item No. 26** "**Construct Asphalt Road Section**" shall be based on the pertinent details required by the Contract Documents as verified by the County through field measurements of this road section. **Payment** for the construction of the asphalt road section shall be at the contract unit price per square foot, as stated in the Contractor's Proposal, **Optional Bid Item No. 26** and shall include removal of existing aggregate base crossing, surface preparation, saw cutting existing asphalt section, supply, installation, and compaction

of class II base and asphalt material as specified and required by the Contract Documents. **Payment** shall constitute full compensation to the Contractor for all work related to the construction of the asphalt road section including but not limited to all labor, supervision, material, tools, equipment, removal of existing aggregate base crossing, subgrade preparation, saw cutting existing asphalt road section, furnish and install class II base and asphalt materials, compaction, tack coat application, incidentals, or other work required by the Contract Documents. No additional compensation shall be given for asphalt placed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

END OF SECTION

SECTION 14 - HDPE CORRUGATED PIPE AND DROP INLET STRUCTURE

14.1 GENERAL

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision necessary to furnish and install 24-inch diameter high density polyethylene (HDPE) corrugated and smooth-lined pipe culvert and precast drop inlet structure at the locations indicated on the Project Drawings or as directed by the County. The HDPE corrugated pipes and precast drop inlet structure shall be of the sizes, type, and dimensions shown on the Project Drawings, and as described in this specification. The pipe culvert system shall include, but not limited to: HDPE corrugated pipe, precast drop inlet, fittings, couplings, adapters, inlets, concrete encasement, saw cutting and patching existing channel and all other appurtenances as may be required to complete an operable culvert system.

14.2 REFERENCES

Reference Standards and Specifications: The following standards and specifications, including documents referenced therein, form part of these Special Provisions and are incorporated herein by reference.

American Association of State Highway and Transportation Officials (AASHTO)

- M252** Standard Specification for Corrugated Polyethylene Drainage Pipe
M294 Standard Specification for Corrugated Polyethylene Pipe (12 to 60-inch diameter)

American Society for Testing Materials (ASTM)

- C150** Standard Specification for Portland Cement
C858 Underground Precast Concrete Utility Structures
D2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
D2412 Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
D3350 Standard Specification for Polyethylene Plastic Pipe and Fittings Materials
F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
F1417 Standard Practice for Installation Acceptance of Plastic Non-Pressure Sewer Lines using Low-Pressure Air
F2306 Standard Specification for 12 to 60 inch Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications

F2648

Standard Specification for 2 to 60 inch Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications

14.3 SAFETY

The Contractor shall be familiar and comply with all applicable state, county, and municipal rules and regulations pertaining to sanitation, fire protection and safety, and all provisions of the Contract Documents. Prior to pipe culvert installation, the Contractor shall instruct the workmen on the safety procedures pursuant to local, State, and Federal requirements. The Contractor shall ensure that workers have and use safety gear and equipment in accordance with local, State, and Federal requirements. No person shall enter a pipe that has not been checked for hazardous gases and oxygen concentration. Contractor shall comply and enforce all CAL-OSHA confined space requirements.

14.4 SUBMITTALS

The Contractor shall submit in advance complete material specifications and descriptive literature for approval by the County.

The Contractor shall submit written certification by the pipe manufacturer that the pipe materials conform to the requirements of the Contract Documents; are similar and of same formulation as that for which certification is submitted; and have been demonstrated by actual usage to be satisfactory for the intended application.

The Contractor shall submit for approval by the County a method of handling and storing pipe material(s) prior to installation. The pipeline (sub)contractor shall install the pipe only on surface(s) that have been accepted by the County.

A. Precast Drop Inlet Structure

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 H20 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.

B. Corrugated HDPE Pipe

- i. HDPE pipes shall be smooth interior wall with annular exterior corrugations that meet or exceed ASTM F2648 (virgin and recycled compounds) or ASTM F2306 and AASHTO M294 Type S (virgin compound), or the latest version thereof. Material for pipe production shall be either an engineered compound of virgin and recycled HDPE or 100% virgin HDPE conforming to the minimum requirements of cell classification 435400C, as defined in the latest version of ASTM D3350, except that carbon black content shall not exceed 4%. If 100% virgin pipe

material is used, the material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306 respectively. Minimum pipe stiffness at five (5) percent deflection shall be as described in ASTM F2306 when tested in accordance with ASTM D2412.

- ii. Pipe joints shall consist of integral bell and spigot with watertight gaskets according to the requirements of ASTM D3212 and ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant from the manufacturer shall be used on the gasket and bell during assembly. Pipes shall have a reinforced bell with a polymer composite band and tolerance device installed by manufacturer. Bell shall span over a minimum of three (3) spigot corrugations.
- iii. Fittings shall conform to AASHTO M252, AASHTO M294 or ASTM F 2306. All fitting joints shall consist of integral bell and spigot with watertight rubber gaskets. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight joint performance requirements of AASHTO M252, AASHTO M294, ASTM F 2306, and ASTM D3212. Gaskets shall meet requirements of ASTM F477.

14.5 EXECUTION

A. Precast Drop Inlet Structure

- i. The Contractor shall 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.
- ii. 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. The pipe joint of the precast drop inlet structure shall be concrete encased and watertight.

B. HDPE Corrugated Pipe

- i. The Contractor shall saw cut the existing shotcrete channel to install the HDPE pipe and shall patch any portion of the channel that was removed or damaged in accordance with SECTION 12 -Shotcrete Structures and Concrete Curb. The 24" Corrugated HDPE pipe culvert 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.
- ii. During storage and installation, caution shall be exercised to avoid compression, damage, or deformation to the pipe. If pipe is to be exposed to direct sunlight for more than 14 days, pipe must be covered with an opaque material while permitting adequate air circulation above and around the pipe to prevent excessive heat accumulation.

- iii. The interior, as well as all seating surfaces of pipe, fittings, and other accessories shall be kept free from dirt and foreign matter. Gaskets shall be protected from excessive exposure to heat, direct sunlight, oil, and grease. Contractor shall not drag or strike pipe while transporting.
- iv. Pipe, fittings, and accessories shall be carefully inspected before and after installation and those determined to be defective shall be rejected. Pipe and fittings shall be free from fins and burrs. Before being placed in position, pipe, fittings, and accessories shall be cleaned and shall be maintained in a clean condition. Proper equipment shall be provided for lowering sections of pipe into trenches. Under no circumstances shall pipe, fittings, or any other material be dropped or dumped into trenches.
- v. Installation of pipe shall start at the downstream end of each section and proceed upgrade. Bell end of pipe shall be laid upgrade.
- vi. Trenches shall be excavated in such a manner as to ensure that trench sidewalls will be stable under all working conditions. Trench walls shall be sloped and/or supported in conformance with CAL-OSHA standards. All excavations shall be barricaded in conformance with Cal/OSHA standards. Prior to excavation and if necessary, 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. Shoring, sheeting, or trench shields shall be utilized in such a manner as to minimize disturbance of the backfill material beneath the pipe crown. Trench sheeting that extends below the crown should either be left permanently in place or consist of adequately supported steel sheets one (1) inch thick or less which can be extracted with minimal disturbance to the pipe embedment. Where movable trench shields are used, the following steps shall be followed unless an alternate technique that does not disturb the pipe embedment can be demonstrated:
 - Excavation of the trench below the elevation of the pipe crown shall be done from inside of the trench shield to prevent the accumulation of loose or sloughed material along the outside of the shield. Excavation of the trench ahead of the shield at an elevation below the pipe crown is not permitted unless approved by the County.
 - After laying the pipe in the trench, bedding and pipe embedment shall be place in lifts and the shield must be lifted in steps. As the shield is lifted, embedment material shall be shoveled under the shield so as to fill all voids left by the removal of the shield.
- vii. Pipe shall be laid in trench with any elongation oriented vertically. Trench details; including width, foundation over-excavation, bedding, pipe embedment, and trench backfill details are shown on the Project Drawings. All pipes shall be laid in a bed prepared by hand work, dug

true to line and grade, to provide a true and firm bearing for the pipe throughout its entire length, and not by blocking or wedging. Backfill material placed under and above the pipe shall be fine sand material compacted via jetting, as shown on the Project Drawings. Native soil material excavated from the site may be used to backfill the remaining portion of the trench, as shown on the Project Drawings. This backfill material shall be placed in six (6) inch loose lifts and compacted to a minimum 90% standard proctor density. Backfill materials shall be compacted by mechanical means, including, vibratory plates and/or impact tampers. Pipe shall not be subject to a roller or wheel loads until a minimum of two (2) feet of backfill has been placed over the top of the pipe. Where concrete pipe embedment/encasement is specified on the Project Drawings, Class 560-C-3250 concrete as specified by the latest edition of the Standard Specifications for Public Works Construction shall be used.

- viii. Pipe shall be laid and assembled in strict conformance with the manufacturer's requirements.
- ix. Joints shall be installed such that the connection of pipe sections will form a continuous line free from irregularities in the flow line. All joints shall be watertight (10.8 psi) per laboratory test ASTM D3212 and utilize bell and spigot design with a gasket meeting ASTM F477. Pipe connections to concrete structures shall include a combination of smooth exterior wall cylinder adapter and installation of water-stop at mid-wall of structure, and opening shall be filled with Type IIA cement mortar. Water-stop shall be installed per pipe Manufacturer's recommendations to ensure watertight connection to concrete structures.
- x. Pipe shall be laid to alignment and grade shown on the Project Drawings. Alignment shall be obtained by plumbing and measuring from a tightly stretched wire or line running parallel with the flow line grade and supported over the centerline of the pipe by batterboards or bars accurately placed and firmly fastened in place across the trench. Alternate use of commercial LASER grade setting systems in lieu of string lines are acceptable provided the following conditions and requirements are met:
 - The Contractor shall have the responsibility of providing an instrument operator who is qualified and trained in the operation of the LASER and said operator must adhere to the provisions of the State of California Construction Safety Orders issued by the Division of Industrial Safety. Attention is particularly directed to Section 1516, and 1800 through 1801, of said Orders for applicable requirements.
 - All LASER control points shall be established bench marks or construction off-set stakes identified on cut sheets and set in the field for the work. LASER set up points shall be on these control points or on points set directly from them by instrument.

Horizontal pipe alignment shall not deviate from that shown on the Project Drawings by more than two (2) inches over 20 feet of pipe. Pipe invert elevations shall be laid to grade within a tolerance of 0.02', or 0.05' cumulative deviation from elevations set at 100' stations.

After each length of pipe has been laid to line and grade, it shall be jointed to the preceding section as hereinafter specified, and after said jointing procedure has commenced, there shall be no movement of the pipe whatsoever in subsequent operations.

- xi. Before each length of pipe is placed, the interior of the preceding pipe shall be carefully cleaned of all dirt and debris. At all times when the work of installing pipe is not in progress, all openings into the pipe and the ends of the pipe in the trench shall be tightly closed to prevent entrance of animals and foreign materials.
- xii. The Contractor shall take all necessary precautions to prevent the pipe from floating due to placing concrete embedment or water entering the trench from any source. Contractor shall assume full responsibility for any damage due to this cause and shall at his own expense restore and replace the pipe to its specified condition and grade if it is displaced due to floating.

14.6 MEASUREMENT AND PAYMENT

The measurement of the final quantity for **Bid Item No. 16 "Furnish and Install Precast Drop Inlet Structure"** shall be determined by the County based on the specific number of individual precast drop inlet structures installed at the location and in conformance with the details shown on the Project Drawings and as required by the Contract Documents or as directed by the County. **Payment** for furnishing and installing of precast inlet structure and related work shall be made, after acceptance, at the contract unit price for each individual precast inlet structure installed as stated in the Contractor's Proposal, **Bid Item No.16** and shall constitute full compensation to the Contractor for all work related to the installation of precast inlet structures at the locations shown on the Project Drawings including but not limited to: furnishing all labor, supervision, materials, tools, equipment, galvanized steel frame and grates, connections, hardware, trench floor mortar, concrete encasement, waterproofing joints, and all other appurtenances necessary to install precast drop inlet structure in accordance with the Contract Documents.

The measurement of the final quantity for **Bid Item No. 17 "Furnish & Install 24" Diameter Corrugated HDPE Pipe Culvert"** shall be determined by the County based on the final in-place linear feet of 24" diameter Corrugated HDPE pipe installed at the locations and in conformance with the details shown on the Project Drawings and as required by the Contract Documents or as directed by the County. The final length of HDPE piping shall be verified by the County based on conventional ground measurement, and shall be measured to the nearest linear foot. **Payment** for furnishing and installing HDPE piping and related work shall be made, after acceptance, at the contract unit price per linear foot as stated in the Contractor's Proposal, **Bid Item No. 17**. **Payment** shall constitute full compensation to the Contractor for all work related to the furnishing and installation of Corrugated HDPE piping including but not limited to all labor, supervision, material, tools, equipment, trench excavation, subgrade preparation, saw cutting and patching existing shotcrete drainage channel, backfill, bedding materials, pipe fittings, gaskets, waterproofing joints, connections, testing of pipe, and incidentals for pipe installation, or other work required by the Contract Documents. No additional compensation shall be given for HDPE piping installed outside the specified limits and dimensions unless otherwise ordered in writing by the County.

END OF SECTION

SECTION 15 - RELOCATE K-RAILS

15.1 GENERAL

The work in this section shall include furnishing all labor, supervision, tools, equipment, and materials necessary to relocate and install k-rail barriers as specified and at the locations shown on the Project Drawings. All costs associated with the relocation and installation of k-rail barriers shall be included in **Bid Item No. 18, "Relocate & Install K-Rail Barriers"**. This work shall include, but is not limited to, relocated k-rail barriers from current stockpile location to access road and installing them in place as directed by the County at the locations shown on the Project Drawings and as required by the Contract Documents.

15.2 MATERIAL

K-rail barriers to be utilized for this item of work are provided by the County and shall be relocated by the Contractor from the existing k-rail stockpile location, as shown on the Project Drawings.

15.3 EXECUTION

- A. K-rail barriers shall be transported from the stockpile location to the base access road after the subgrade for this road has been prepared and accepted by the County. The k-rail stockpile and base road are shown on the Project Drawings. Existing k-rails within the Waste Recycle Park area shall be temporarily relocated away from the work area until the base section has been installed and accepted by the County. The k-rails to be relocated in the Waste Recycle park area are shown on the Project Drawings.
- B. The k-rails barriers shall be installed in accordance with detail T3 of the State Standard Plans and at the location shown on the Project Drawings.
- C. The Contractor shall set the k-rails barrier on firm, stable surface as required by the Contract Documents in order to provide a uniform bearing throughout the entire length of the railing.
- D. Abutting ends of k-rail barriers shall be pinned and maintained in alignment without substantial offset to each other. The k-rail barriers shall be positioned straight on tangent and on a true arc on curved alignment.
- E. The completed k-rail barrier units shall present a smooth uniform appearance in their final position, conforming closely to the horizontal and vertical lines shown on the Project Drawings and as directed by the County.

15.4 MEASUREMENT AND PAYMENT

The measurement of the final quantity for **Bid Item No. 18 "Relocated & Install K-Rail Barriers"** shall be determined by the County based on the specific number of individual k-rail barriers relocated and 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 relocation and installation of k-rails and related work shall be at the contract unit price for each individual k-rail relocated and installed as stated in the Contractor's Proposal, **Bid Item No.18** and shall constitute full compensation to the Contractor for all work related to the relocation and installation of k-rail barriers at the locations shown on the Project Drawings including but not limited to: furnishing all labor, supervision, materials, tools, and equipment necessary to relocate and install the k-rail barriers in accordance with the Contract Documents.

END OF SECTION

SECTION 16 - SEAL COAT APPLICATION FOR ASPHALT STRUCTURES

16.1 GENERAL

The work covered in this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for seal coat application along asphalt structures at the locations shown on the Project Drawings or as directed by the County.

16.2 SUBMITTALS

The Contractor shall submit product data sheet, material specifications, manufacturer's application instructions of crack sealant and seal coat to the County for approval.

16.3 MATERIALS

- A. Crack Sealant – The crack sealant furnished by the Contractor shall be DEERY 200 Hot Applied Sealant or approved equal.
- B. Seal Coat – The seal coat furnished by the Contractor shall be GuardTop latex sealer, Gold Coat Seal HP 310, or approved equal.

16.4 EXECUTION

- A. The County shall remove any large amount of wind-blown litter, vegetation, debris, and sediment from the asphalt structures prior to construction. The Contractor shall also prepare the asphalt structures by removing any remaining wind-blown litter, vegetation, debris, sediment, and loose asphalt materials from the surface of the asphalt structures immediately prior to applying crack sealant and seal coat. The Contractor shall utilize a power pressure washer, or approved equal, to ensure the asphalt surface is clean and free of all litter, dirt, debris, and loose asphalt material.
- B. The Contractor shall apply crack sealant along all cracks, within the existing asphalt structures indicated on the Project Drawings, that measure one-quarter (1/4) inch or greater in width and shall cover the full-depth section of each asphalt crack void.
- C. The Contractor shall heat the crack sealant material in a hot-oil jacketed melter capable of constant mechanical agitation and equipped with a calibrated thermometer to monitor sealant temperature. Crack sealant material shall be heated to and maintained at the manufacture's recommended application temperature. Sealant material can be cooled and then reheated, but only if prolonged heating is avoided. Contractor shall ensure prolonged heating at or above manufacture's recommended application temperature does not occur, as this may severely damage the sealant material. If overheating damage occurs, the Contractor shall immediately drain the machine completely and refill with new crack sealant material.

- D. The crack sealant, DEERY 200, is pre-reacted and can be applied immediately after heating to the manufacture's recommended application temperature. With pavement temperature at 40°F (4°C) or higher, Contractor shall place material into clean, dry crack or prepared reservoir by means of a hand-held pour pot, wheeled push bander, or wand applicator. The Contractor shall squeegee any excess sealant tight to pavement surface. If necessary, asphalt structures may be warmed to 40°F (4°C) or higher with a Hot Air Lance.
- E. The Contractor shall furnish and apply the seal coat in accordance with Standard Specifications Section 203-9 and 302-8, manufactures' recommendations and instructions, and Contract Documents.
- F. Contractor shall not apply Seal Coat when the ambient temperature is below seventy (70) degrees, or in accordance with the Manufacturer's instructions. If ambient temperatures exceed ninety-five (95) degrees, Contractor shall take extra care in preparing the surface by misting pavement surface with fog system prior to application in accordance with manufacturer's recommendations. Contractor shall not apply seal coat within forty-eight (48) hours of forecasted rain.
- G. Contractor shall spray the asphalt surface with a mist of water in an amount that will leave the surface damp and free of standing water or puddles. The misting procedure is critical when the ambient temperature is hot and on bright sunny days or when the pavement is excessively aged and porous. In these instances, the pavement will draw the water out of the seal coat at a more rapid rate than recommended unless the surface is pre-watered.
- H. The Contractor may mix the seal coat with water to obtain a desired consistency for the application area as determined by manufacture's recommendations and instructions. The maximum dilution for the seal coat is 20% water to 80% seal coat; and as pavement increases in roughness, the amount of dilution should be decreased.
- I. Seal Coat application rate shall be 30-35 gallons per 1,000 square feet for GuardTop sealant and 15-30 gallons per 1,000 square feet for Gold Coat Seal HP 310 based on two coats prior to water dilution of the product or as recommended by the manufacture.
- J. First Seal Coat - Prior to applying the first seal coat, Contractor shall mist the surface with water. Contractor shall then apply Seal Coat using a truck mounted tank, wheeled container, can, or approved equal method. Contractor shall spread the product in continuous parallel lines by means of spray application, rubber-faced squeegees, or by broom. Contractor may complete this process by hand or machine. Contractor tools shall be misted wet before use to avoid product adhesion. After material has been applied to the surface, Contractor shall spread the application by pulling the material toward the operator in a manner that will eliminate all ridges and air pockets.

- K. Second Seal Coat - After the first coat has completely dried, Contractor shall re-mist the surface with water, check to see that the surface is clean and free of all debris, and apply the second coat using the same application process as the first coat.
- L. Contractor shall allow Seal Coat to dry a minimum of 24 hours before traffic is permitted; if air temperature is below 75 degrees drying time may need to be extended.

16.5 MEASUREMENT AND PAYMENT

The measurement of the final quantity for **Bid Item No. 20 "Apply Seal Coat on Asphalt Structures"** shall be based on the pertinent details required by the Contract Documents as verified by the County through field measurements of the surface areas that received seal coat application. Payment for the application of the seal coat shall be at the contract unit price per square foot, as stated in the Contractor's Proposal, **Bid Item No. 20** and shall include asphalt surface preparation (use of a power pressure washer), furnish and apply crack sealant, and furnish and apply seal coats as specified and required by the Contract Documents. **Payment** shall constitute full compensation to the Contractor for all work related to the application of seal coat on the surfaces of asphalt structures including but not limited to all labor, supervision, material, tools, equipment, asphalt surface preparation, crack seal and seal coats applications, incidentals or other work required by the Contract Documents. No additional compensation shall be given for seal coat application applied outside the specified limits unless otherwise ordered in writing by the County.

END OF SECTION

SECTION 17 - FIBER ROLLS

17.1 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.

17.2 SUBMITTALS

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

17.3 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 $\frac{3}{4}$ " x $\frac{3}{4}$ " 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.

17.4 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 landfill side slopes as shown on the Project Drawings.

17.5 MEASUREMENT AND PAYMENT

The measurement of the final quantity for **Bid Item No. 21 "Furnish & Install Fiber Rolls"** shall be determined by the County based on field measurements of the axial length (linear feet) of fiber rolls delivered and installed at the locations and to the dimensions shown on the Project Drawings. Axial length of joining and overlapping of fiber rolls sections shall be measured and included for in the final quantity. **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. 21** 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 18 - LANDFILL TOE OF SLOPE GRADING

18.1 GENERAL

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision for the grading along the landfill toe of slope. The work shall include but not be limited to excavation and hauling of fill material, placing fill material along toe of slope, compaction of fill material, and grading to the elevations, lines, and grades, and at the locations shown on the Project Drawings or as directed by the County.

18.2 MATERIALS

Earthen material for the grading along the landfill toe of slope shall be obtained from the South Soil Stockpile (as shown on the Project Drawings). Earthen material used for the grading along landfill toe of slope shall not contain brush, roots, sod, or other deleterious or unsuitable materials; and particle size shall not exceed three (3) inches.

18.3 EXECUTION

- A. The Contractor shall take proper precautions to protect the existing gas header line, asphalt access road, and HDPE flap for class II base located along the access bench, as shown on the Project Drawings. Any damaged caused by the Contractor shall be repaired at the Contractor's sole expense.
- B. The Contractor shall prepare the subgrade along the toe of slope by removing any debris or 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.
- C. Contractor shall provide moisture conditioning to earthen materials used for the grading along the toe of slope and shall maintain adequate moisture throughout this construction as deemed acceptable to the County.
- D. The final surface shall be tracked walked, smooth and uniform, and be graded to drain onto the existing asphalt access road.
- E. Greenwaste and fiber roll placement and compensation shall be in accordance with SECTION 4 -Greenwaste Application and SECTION 17 -Fiber Rolls, respectively.

18.4 MEASUREMENT AND PAYMENT

The measurement of the final quantity for **Bid Item No. 22 "Landfill Toe of Slope Grading"** shall be based on the pertinent details required by the Contract Documents as verified by the County through field measurements of the total final material excavated from the south soil stockpile. The excavated quantity shall be determined by comparing the pre- and post-construction ground surfaces within the specified excavation limits. The pre-construction ground surface shall be established by a combination of conventional ground survey and aerial flight survey, and the post-construction ground surface for this work shall be established by ground surveying. Payment for grading the landfill toe of

slope shall be at the contract unit price per cubic yard of material excavated, transported, and placed, as stated in the Contractor's Proposal, **Bid Item No. 22** and shall include surface preparation, excavation and hauling material, material placement along toe of slope, track-walking of final surface, and grading to the elevations, lines, and grades as specified and required by the Contract Documents. **Payment** shall constitute full compensation to the Contractor for all work related to grading the landfill toe of slope including but not limited to all labor, supervision, material, tools, equipment, surface preparation, excavation and hauling of material, placing and track-walking material, incidentals or other work required by the Contract Documents. No additional compensation shall be given for grading outside the specified limits unless otherwise ordered in writing by the County.

END OF SECTION

SECTION 19 - PRECAST CONCRETE DRAINAGE TRENCH

19.1 GENERAL

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision to furnish and install precast concrete drainage trench structures at the locations indicated on the Project Drawings or as directed by the County. The precast drainage trench structures shall be of the sizes, type, and dimensions shown on the Project Drawings, and as described in this specification. The precast drainage trench work shall include, but not be limited to: saw cut, remove, and patch existing asphalt concrete pad; saw-cut existing precast concrete drop inlet structure; excavate and prepare subgrade; furnish and install precast drainage structures with traffic rated frames and grates; concrete encasement and waterproof all joints and connections; slurry backfill trenches; and all other appurtenances as may be required to complete an operable drainage trench system.

19.2 SUBMITTALS

Prior to delivery of materials, the Contractor shall submit manufacturer product data sheets, shop drawings, and material specifications for precast drainage trench structures and grates to the County for approval.

19.3 MATERIALS

- A. Drainage trench structures shall be precast. The substitution of cast-in-place units for precast will not warrant additional compensation and shall be approved in writing by the County.
- B. Precast drainage trench structures 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 H20 loading requirements and be hot-dip galvanized steel. Precast drainage trench structures, 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.
- C. Portland cement mortar for joints shall conform to ASTM C150 Type IIA.
- D. Manufacturer information, mill certificates, concrete mix design, and shop drawings shall be submitted to the County for approval of the following items: precast drainage trench sections, rebar, concrete, frames, and grates.

19.4 EXECUTION

- A. Contractor shall saw-cut and remove the existing asphalt concrete pad to the dimensions and locations shown on the Project Drawings and as directed by the County. Contractor shall also saw cut the sidewalls of the existing 2'x2'x2' drop inlet structure to the dimensions and locations shown on the Project Drawings and as directed by the County.

- B. Precast drainage trench sections shall be set plumb, in accordance with Manufacturer's recommendations, and securely bonded together with a minimum thickness of 3/8-inch, Type IIA Portland cement mortar per ASTM C150. All joint surfaces shall be thoroughly cleaned prior to placing mortar. The inside and outside of the joints, lift holes, or any penetration of the interior surface shall be plastered with mortar and the inside brushed with a wet brush. Precautions shall be taken to ensure that the entire joint space is filled with mortar and is watertight.
- C. Contractor shall slurry backfill the trenches after the precast sections are installed. Any damaged caused by the Contractor to the adjacent asphalt pad or shotcrete drainage channel shall be repaired by the Contractor as directed by the County.

19.5 MEASUREMENT AND PAYMENT

Measurement and Payment for Precast Drainage Trench Structures shall include, but not limited to; furnishing all labor, materials, tools, equipment, and incidentals for precast drainage structures, galvanized steel frame and grates, connections, sawing cutting existing asphalt concrete, hardware, trench floor mortar, concrete encasement, waterproofing joints, slurry backfill trenches, repair to any damaged asphalt or shotcrete structures, and all other appurtenances, shall be made after County acceptance, at the unit price for each precast 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 drainage trench structures and all related works shall be based upon the contract unit price per each as stated in the Contractor's proposal **Bid Item No. 23 – "Furnish and Install Precast Drainage Trench Structures"**.

END OF SECTION

SECTION 20 - STEEL RUMBLE RACKS

20.1 GENERAL

The work covered by this section shall consist of furnishing all necessary labor, materials, equipment, tools, and supervision to furnish and install steel rumble racks at the locations indicated on the Project Drawings or as directed by the County. The steel rumble rack sections shall be of the sizes, type, and dimensions shown on the Project Drawings, and as described in this specification. The steel rumble rack work shall include, but not be limited to: preparing subgrade, furnish and install steel rumble rack sections, and all other appurtenances as may be required.

20.2 SUBMITTALS

Prior to delivery, the Contractor shall submit manufacturer's specifications, material information, and fabrication shop drawings for the steel rumble rack sections.

20.3 MATERIALS

The required 8-ft x 10-ft steel rumble rack sections shall be prefabricated steel panels, and shall be pressed or shop welded, with a slot or hooked section to facilitate coupling at the ends of the panels.

20.4 EXECUTION

- A. Steel rumble racks shall be supplied and installed at the locations and in conformance with the Project Drawings and as required by the Contract Documents or as directed by the County.
- B. Steel rumble racks installation shall be performed in accordance with the details included in the Project Drawings.
- C. Prior to installing the steel rumble rack panels, the ground surface shall be cleared of all debris to ensure uniform contact with the ground surface.

20.5 MEASUREMENT AND PAYMENT

The measurement of final quantities for **Bid Item No. 24 "Furnish & Install 8' x10' Steel Rumble Racks"** shall be determined by the County based upon the specified number of units installed at the locations and in conformance with the details shown on the Project Drawings and as required by the Contract Documents. **Payment** for Rumble Racks and all related work shall be based upon the contract unit price per each as stated in the Contractor's Proposal, **Bid Item No. 24**; and no additional compensation will be allowed. Payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in supplying and installing Rumble Racks completed in place.

SECTION 21 - AUTHORIZED TIME & MATERIALS WORK

21.1 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 written 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 to be utilized by the Contractor 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.

The signing of the contract by the Contractor will be deemed to be an agreement on his/her 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.

For the purpose of bidding this project, the County has allocated a total amount of \$75,000 for this bid item. This amount shall be used by all bidders in their bid proposals, with the understanding that the actual final pay amount to the Contractor shall be determined for the authorized work only as indicated above and based on the method described in Section 7.3. of the General Provisions in the Contract Documents. The compensation thus provided shall be considered full payment to the Contractor for the authorized time and material work. Additionally, use of the Time and Material allocation will be at the sole discretion of the County, and all or any portion of the allocation amount may be deleted from the Contract.

END OF SECTION

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

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

NOVEMBER 2016

PREPARED BY

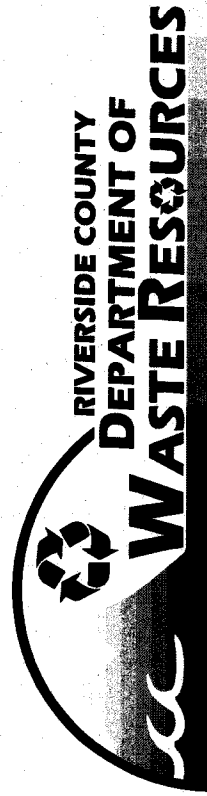
DEPARTMENT OF WASTE RESOURCES

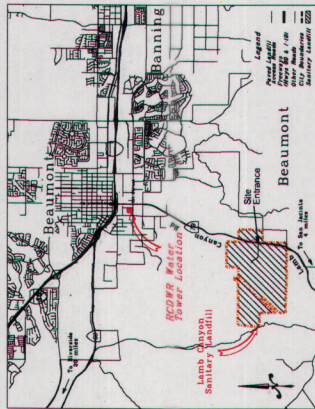
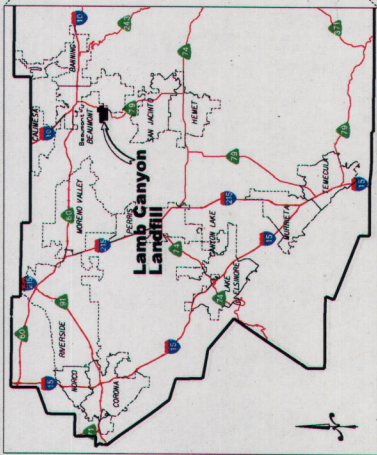
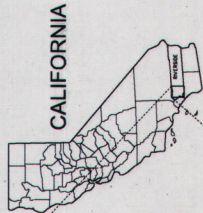
HANS KERNKAMP, GENERAL MANAGER/CHIEF ENGINEER

14310 FREDERICK STREET

MORENO VALLEY, CALIFORNIA 92553

TEL. (951) 486-3200 FAX (951) 486-3205





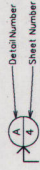
LEGEND

- Landfill footprint (lined)
- Landfill footprint (unlined)
- Topo Contours Oct 2015 (rough) & July 2016 (topo)
- Property line
- Grade break
- Gradient & Direction
- Flow Line / Flow Direction
- MLP-18 Gas probe (protect in place)
- LC-9 Ground water well (protect in place)
- GW-11 Existing landfills collection system (protect in place)
- Paved Surface
- Slope
- Existing surveying (protect in place)
- Existing access road
- Gas line (above ground)
- Gas line (buried)
- K-Fill
- Welded Wire Fabric

FILL PATTERNS

- Asphalt
- Concrete
- Competent Subgrade
- Class II Base
- Greenwaste/Hydrated
- Reuse

DETAIL CALLOUTS



CONSTRUCTION NOTE CALLOUTS

(4)

ABBREVIATIONS

- AB Aggregate Base
- AC Asphalt Concrete
- APPROX Approximate
- BC Begin Curve
- C Cut
- CL Center Line
- CMF Corrugated Metal Pipe
- CO Clean out
- DD Diameter
- E Existing
- EC End Curve
- EL Elevation
- EDP 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
- RCCF Riverside County Flood Control
- STA Station
- TOE Top of Edge
- TS Top of Slope
- TYP Typical
- Vert. Vertical
- WRP Waste Recycle Park

INDEX OF DRAWINGS

SHEET	FILE NAME	TITLE	SCALE
1	LC_Improvements_S1_Title.dgn	Title Sheet	NTS
2	LC_Improvements_S2_Index.dgn	Index, Legend, & Vicinity Map	NTS
3	LC_Improvements_S3_Map.dgn	General Site Map	1"=500'
4	LC_Improvements_S4_WRP_Layout.dgn	WRP Area Improvements	NTS
5	LC_Improvements_S5_Details.dgn	WRP 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

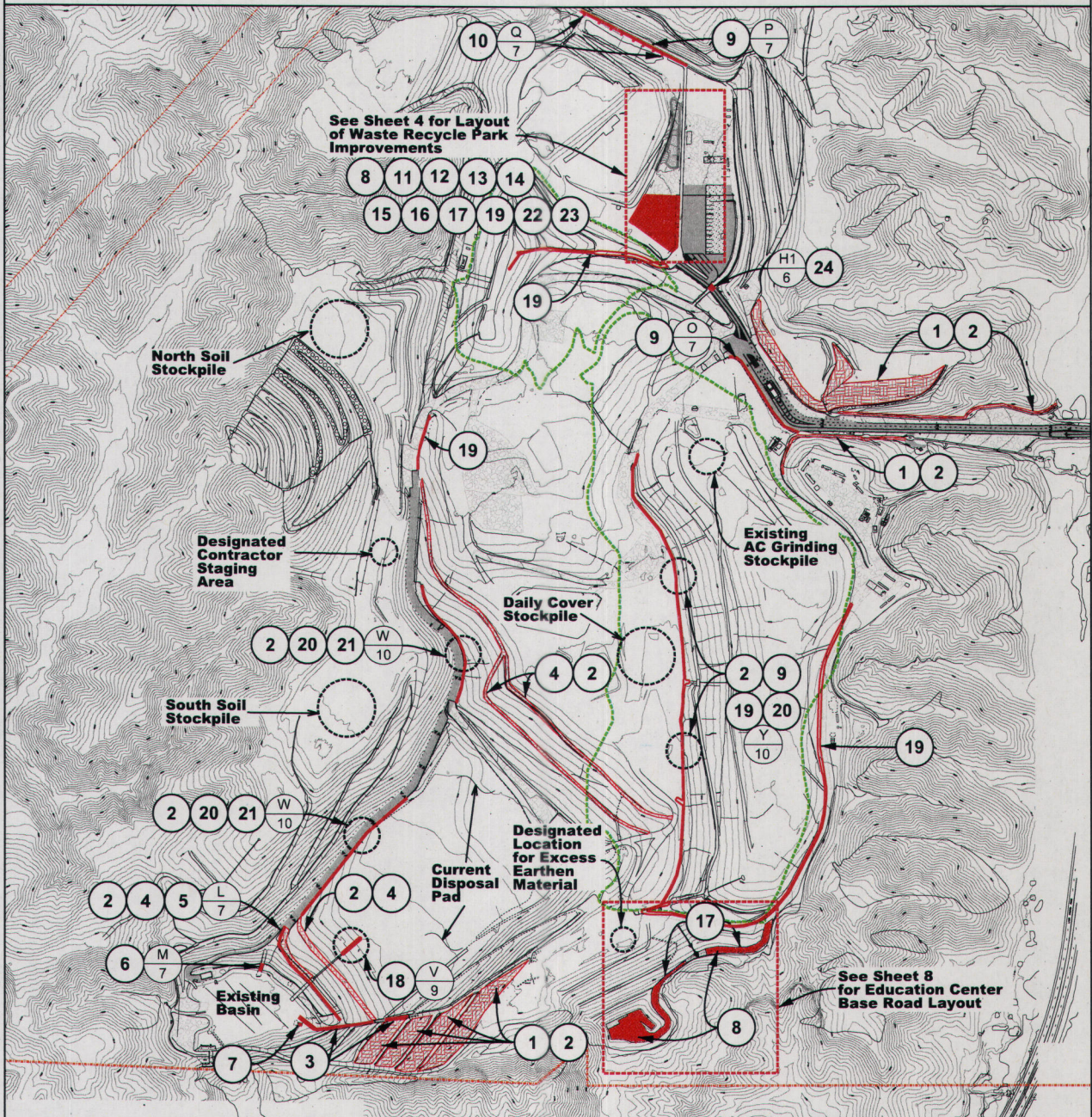
NO.	REVISIONS	BY	APPROVED	DATE

DEPARTMENT OF WASTE RESOURCES
Helen K. Strickland, General Manager/Chief Engineer

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DRAWN BY: FM
CHECKED BY: SGP
DATE: 10/20/16
SCALE: NTS
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PLOTFILE: LC_Improvements_2016_S2_index.dgn

CONSTRUCTION NOTES

- ① 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. 2)
- ② APPLY PROCESSED GREENWASTE ON SIDE SLOPES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS AND AT SPECIFIC LOCATIONS INDICATED BY COUNTY DESIGNATED REPRESENTATIVES. COUNTY SHALL SUPPLY ALL PROCESSED GREENWASTE MATERIAL NEEDED FOR THIS ITEM (BID ITEM NO. 3)
- ③ REPAIR BENCH EROSION AND APPLY NEW LAYER OF AC GRINDING IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS. AC GRINDING MATERIAL NEEDED FOR THE REPAIR OF THIS BENCH IS AVAILABLE AT THE DESIGNATED STOCKPILE LOCATION SHOWN ON THIS MAP (BID ITEM NO. 4)
- ④ REGRADE LANDFILL BENCHES TO RE-ESTABLISH CROSSFALL AND PROPER DRAINAGE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS AND AT SPECIFIC LOCATIONS INDICATED BY COUNTY DESIGNATED REPRESENTATIVES (BID ITEM NO. 5)
- ⑤ CONSTRUCT EARTHEN DIVERSION BERM IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 6)
- ⑥ REPAIR EXISTING RIPRAP DOWN DRAIN IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS. COUNTY SHALL SUPPLY ALL K-RAILS NEEDED FOR CONSTRUCTION OF THIS ITEM (BID ITEM NO. 7)
- ⑦ REMOVE SEDIMENT FROM EXISTING IMPACT BASIN STRUCTURE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS (BID ITEM NO. 8)
- ⑧ CONSTRUCT 2" THICK CLASS II BASE OVER 4" THICK ROCK (2"-4" ROCK SIZE) AND EXCAVATE EXISTING GROUND WITHIN LIMITS SHOWN AND IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 9)
- ⑨ FURNISH & INSTALL HOPE SILT FENCE OR APPROVED EQUAL WITH SANDBAG CHECKDAMS IN ACCORDANCE WITH APPLICABLE PROJECT SPECIFICATIONS & DETAILS AND AT SPECIFIC LOCATIONS INDICATED BY COUNTY DESIGNATED REPRESENTATIVES (BID ITEMS NO. 10)
- ⑩ CONSTRUCT TWO-FOOT DIAMETER & TWENTY-FOOT DEEP PERCOLATION SHAFTS AND BACKFILL WITH GRAVEL MATERIAL IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 11)
- ⑪ CONSTRUCT 6" THICK SHOTCRETE DRAINAGE STRUCTURES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 12)
- ⑫ CONSTRUCT 4" THICK ASPHALT PAD WITH 6" CLASS II BASE SUBGRADE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 13)
- ⑬ CONSTRUCT ASPHALT SPEED BUMP IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 14)
- ⑭ CONSTRUCT CONCRETE CURB AND GUTTER IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 15)
- ⑮ FURNISH & INSTALL PRECAST DROP INLET STRUCTURE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 16)
- ⑯ FURNISH & INSTALL 24-INCH DIAMETER HOPE CORRUGATED PIPE CULVERT IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 17)
- ⑰ TRANSPORT & INSTALL K-RAIL BARRIERS IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS. COUNTY SHALL SUPPLY K-RAIL BARRIERS NEEDED FOR THIS ITEM (BID ITEM NO. 18)
- ⑱ CONSTRUCT AC DRAINAGE STRUCTURES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 19)
- ⑲ FURNISH & APPLY SEAL COAT ON EXISTING DRAINAGE STRUCTURES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS AND AT SPECIFIC LOCATIONS INDICATED BY COUNTY DESIGNATED REPRESENTATIVES (BID ITEM NO. 20)
- ⑳ FURNISH & INSTALL FIBER ROLLS IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 21)
- ㉑ APPLY COVER MATERIAL ALONG TOE OF LANDFILL SIDE SLOPE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 22)
- ㉒ FURNISH & INSTALL PRECAST DRAINAGE TRENCH STRUCTURE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 23)
- ㉓ FURNISH & INSTALL 8FT X 10FT STEEL RUMBLE RACKS IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 24)
- ㉔ CONSTRUCT 6"-THICK ASPHALT ON 12"-THICK CLASS-II BASE ROAD SECTION IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (OPTIONAL BID ITEM NO. 26)



Hana Kerrkamp, General Manager / Chief Engineer

Scale: 1" = 500'

 Datum: 1s mean sea level

DESIGNED BY:	EC
DRAWN BY:	EC
CHECKED BY:	FM
DRAWING DATE:	September 2016
ISSUE DATE:	Oct 2015 / Revised 6 Jul 2016 / Issue
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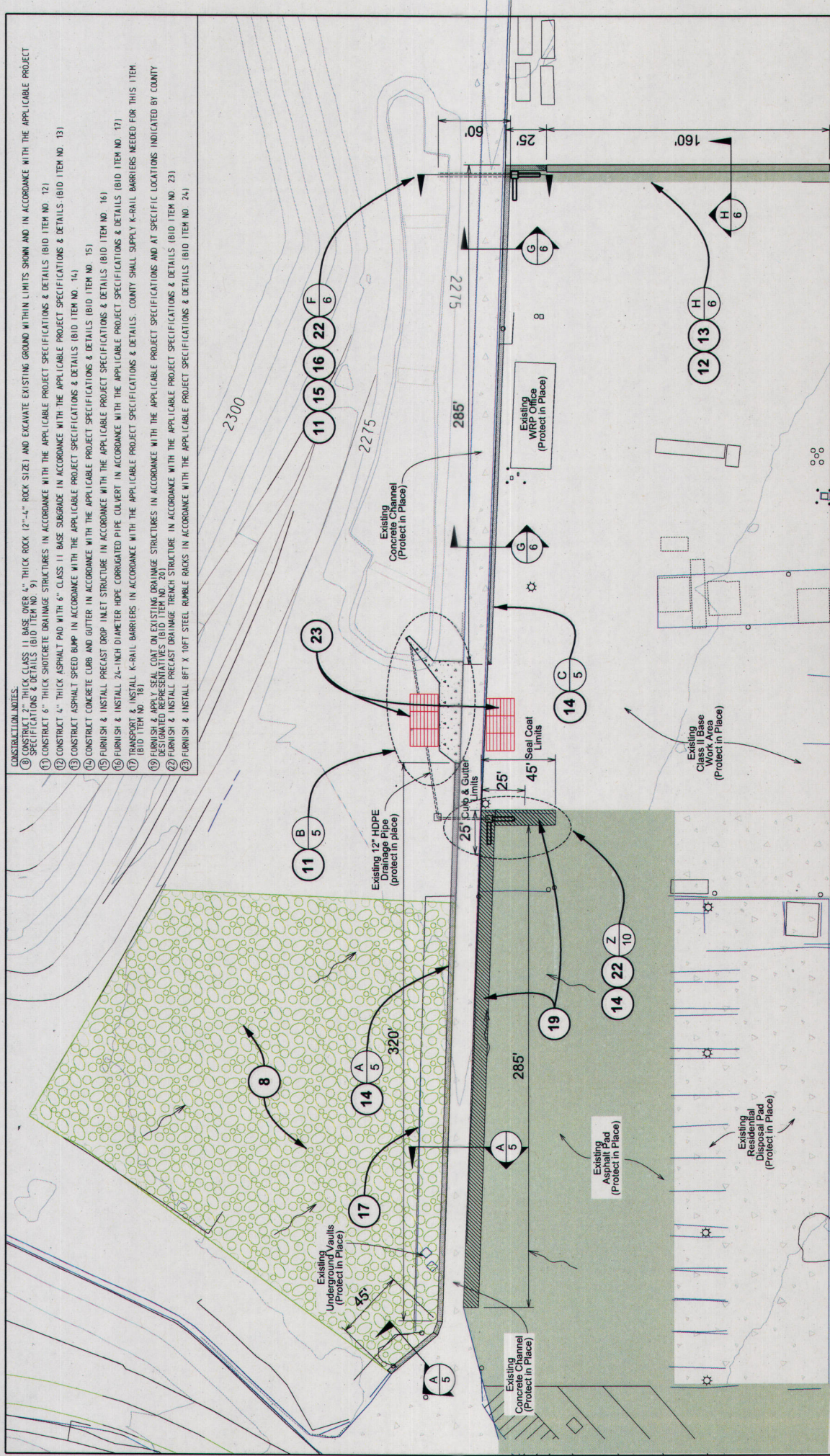
Lamb Canyon Sanitary Landfill
 Site Drainage Improvements
 November 2016

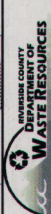
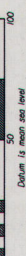
General Site Map

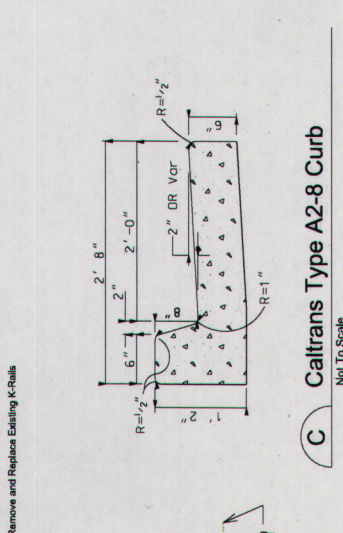
SHEET 3 OF 10

CONSTRUCTION NOTES:

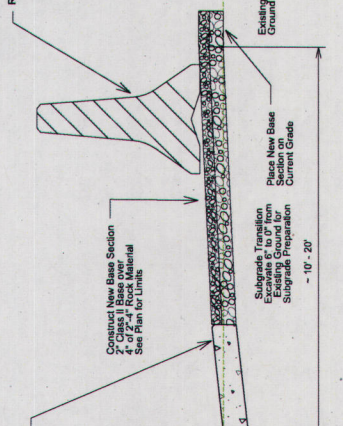
- 1) CONSTRUCT 2" THICK CLASS 11 BASE OVER 6" THICK ROCK 12"-4" ROCK SIZE AND EXCAVATE EXISTING GROUND WITHIN LIMITS SHOWN AND IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 9)
- 2) CONSTRUCT 6" THICK SHOTCRETE DRAINAGE STRUCTURES IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 12)
- 3) CONSTRUCT 4" THICK ASPHALT PAD WITH 6" CLASS 11 BASE SUBGRADE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 13)
- 4) CONSTRUCT ASPHALT SPEED BUMP IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 14)
- 5) CONSTRUCT CONCRETE CURB AND GUTTER IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 15)
- 6) FURNISH & INSTALL PRECAST DROP INLET STRUCTURE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 16)
- 7) FURNISH & INSTALL 24-INCH DIAMETER HDPE CORRUGATED PIPE CULVERT IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 17)
- 8) TRANSPORT & INSTALL PRECAST DRAINAGE TRENCH STRUCTURE IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 23)
- 9) FURNISH & INSTALL 8FT X 10FT STEEL RIBBLE RACKS IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 24)



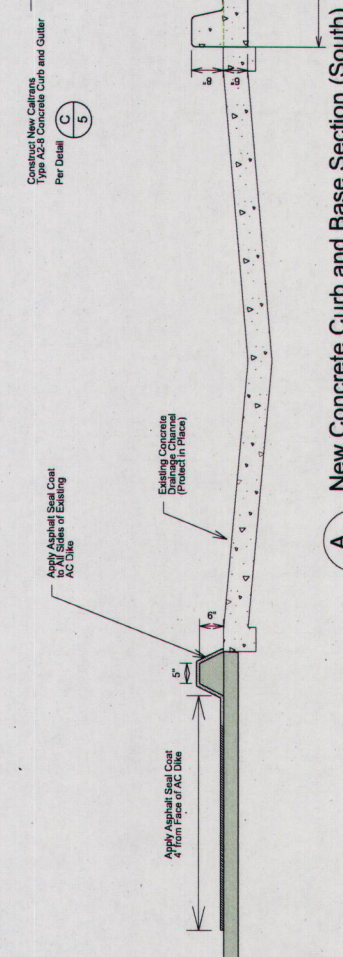
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<p>Lamb Canyon Sanitary Landfill Site Drainage Improvements November 2016</p> <p>WRP Area Improvements</p>		<p>NO. _____</p> <p>REVISIONS _____</p> <p>BY _____</p> <p>APPROVED _____</p> <p>DATE _____</p>	
<p>Scale: 1" = 50'</p>  <p>0 50 100</p> <p>Datum is mean sea level</p>		<p>SHEET 4 OF 10</p>	



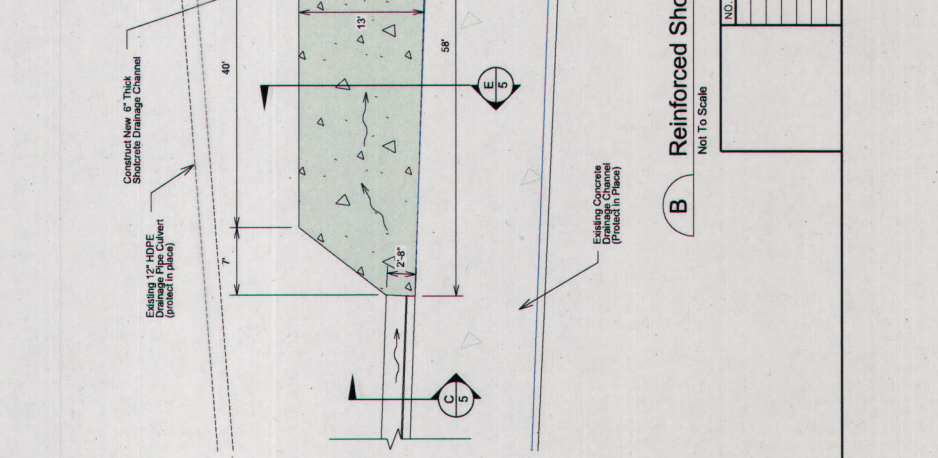
C Caltrans Type A2-8 Curb
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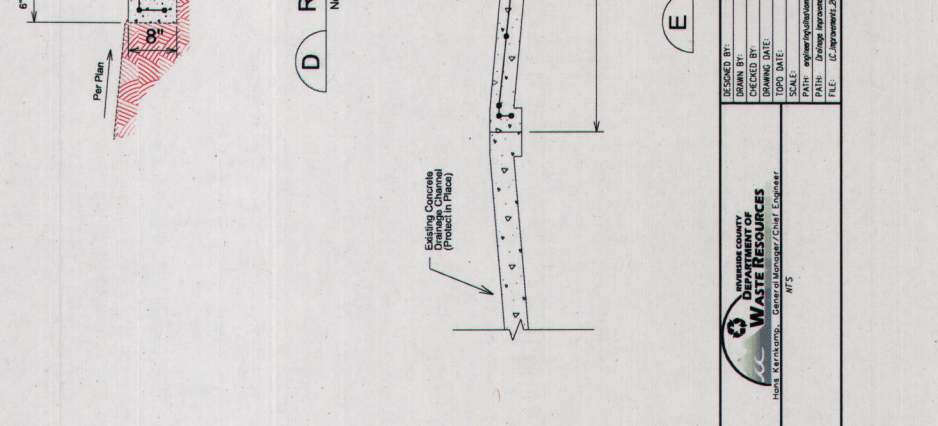
A New Concrete Curb and Base Section (South)
Not To Scale



B Reinforced Shotcrete Swale & Drain
Not To Scale



D Reinforced Shotcrete V-Ditch
Not To Scale



E Reinforced Shotcrete Swale Section
Not To Scale

NO.	REVISIONS	BY	APPROVED	DATE

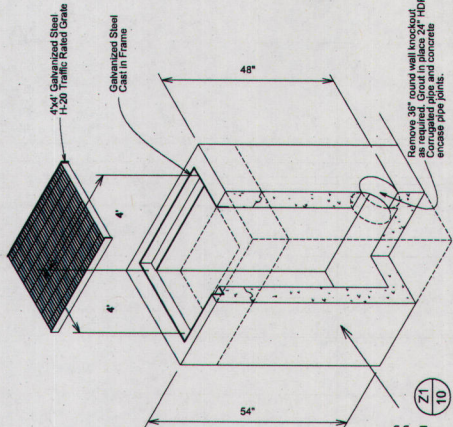
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INVERNE COUNTY
WASTE RESOURCES
 HOVE & ASSOCIATES, General Manager / Civil Engineer
 M/S

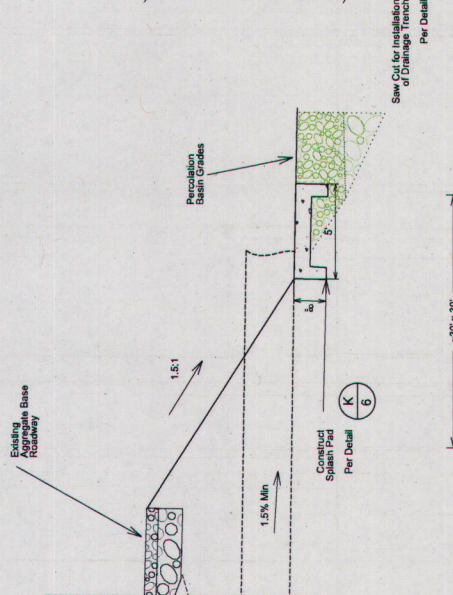
**Lamb Canyon Sanitary Landfill
 Site Drainage Improvements
 November 2016**

WRP Construction Details

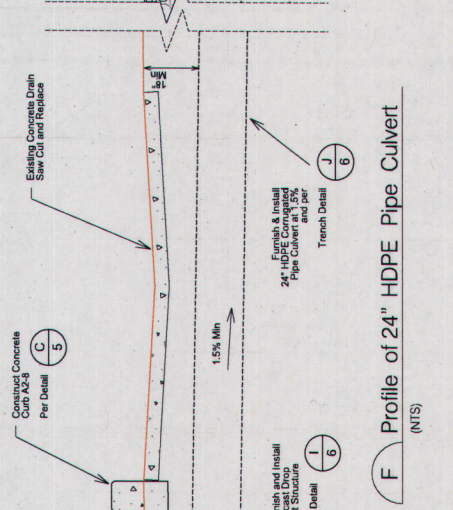
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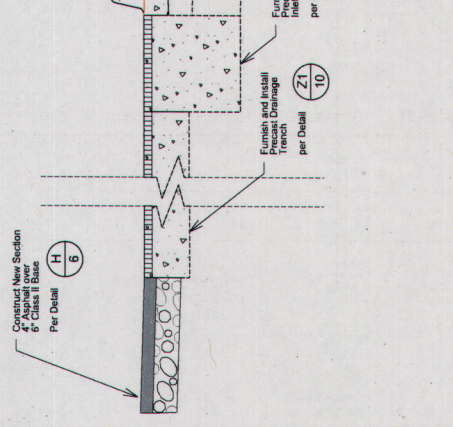
I Precast Drop Inlet Detail
 Not To Scale. Jantzen Precast Model: D184848 or Approved Equal



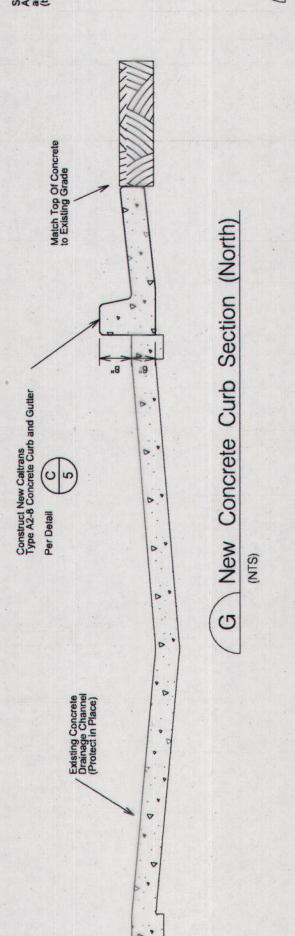
HI Asphalt Road Section
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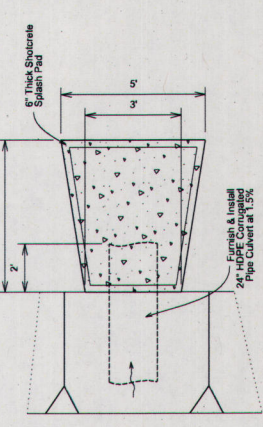
F Profile of 24" HDPE Pipe Culvert
 (NTS)



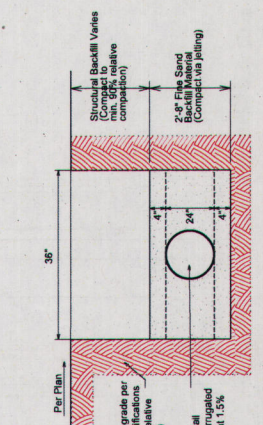
G New Concrete Curb Section (North)
 (NTS)



H Asphalt Pad Extension and Speed Bump Section
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K Shotcrete Splash Pad
 Not To Scale



J Pipe Trench Backfill Detail
 Not To Scale

NO.	REVISIONS	BY	APPROVED	DATE

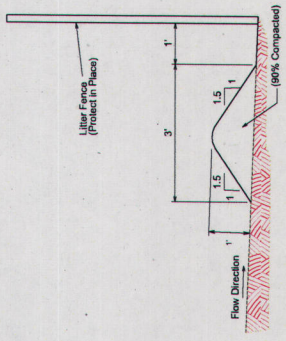
**INVERNESS COUNTY
WASTE RESOURCES**
HOURS: 8:00 AM TO 5:00 PM - SERVICE OF MANAGER/CONSULT. ENGINEER

DESIGNED BY: DJE/EC
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 CHECKED BY: FM
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 PATH: apprev@invernesscounty.gov P: 714.208.254
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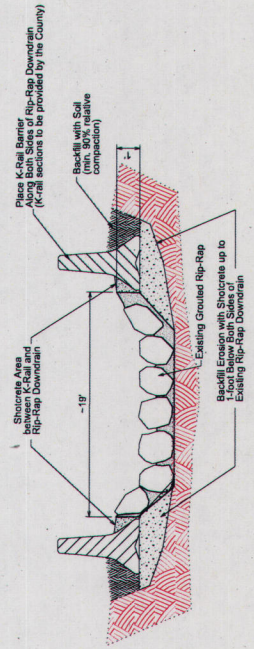
WRP Construction Details

Lamb Canyon Sanitary Landfill
 Site Drainage Improvements
 November 2016

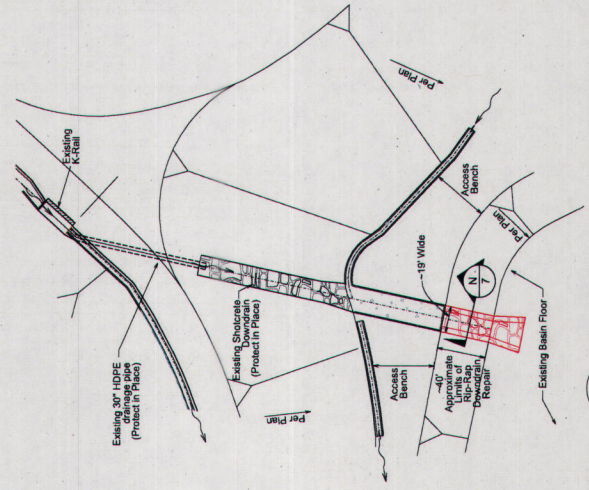
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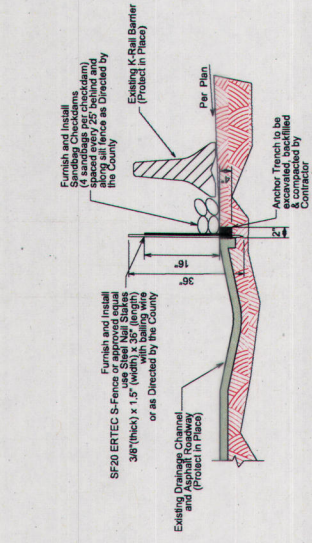
L Earthen Diversion Berm Typical Section
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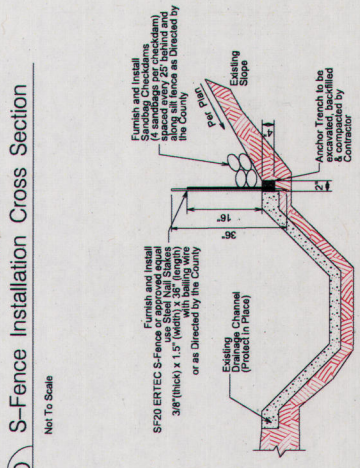
M Rip-Rap Downdrain Repair
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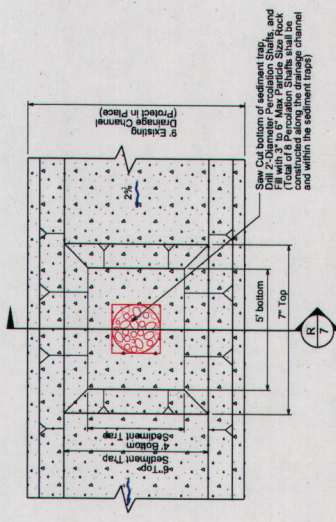
N Rip-Rap Downdrain Repair Detail
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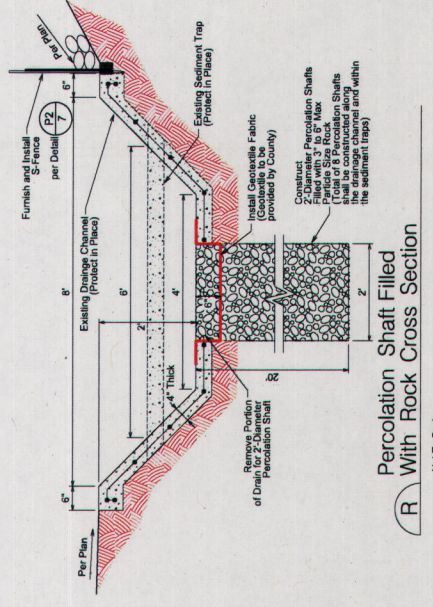
O S-Fence Installation Cross Section
Not To Scale



P S-Fence Installation Cross Section
Not To Scale



Q Percolation Shaft Plan View
Not To Scale



R Percolation Shaft Filled With Rock Cross Section
Not To Scale

NO.	REVISIONS	BY	APPROVED	DATE

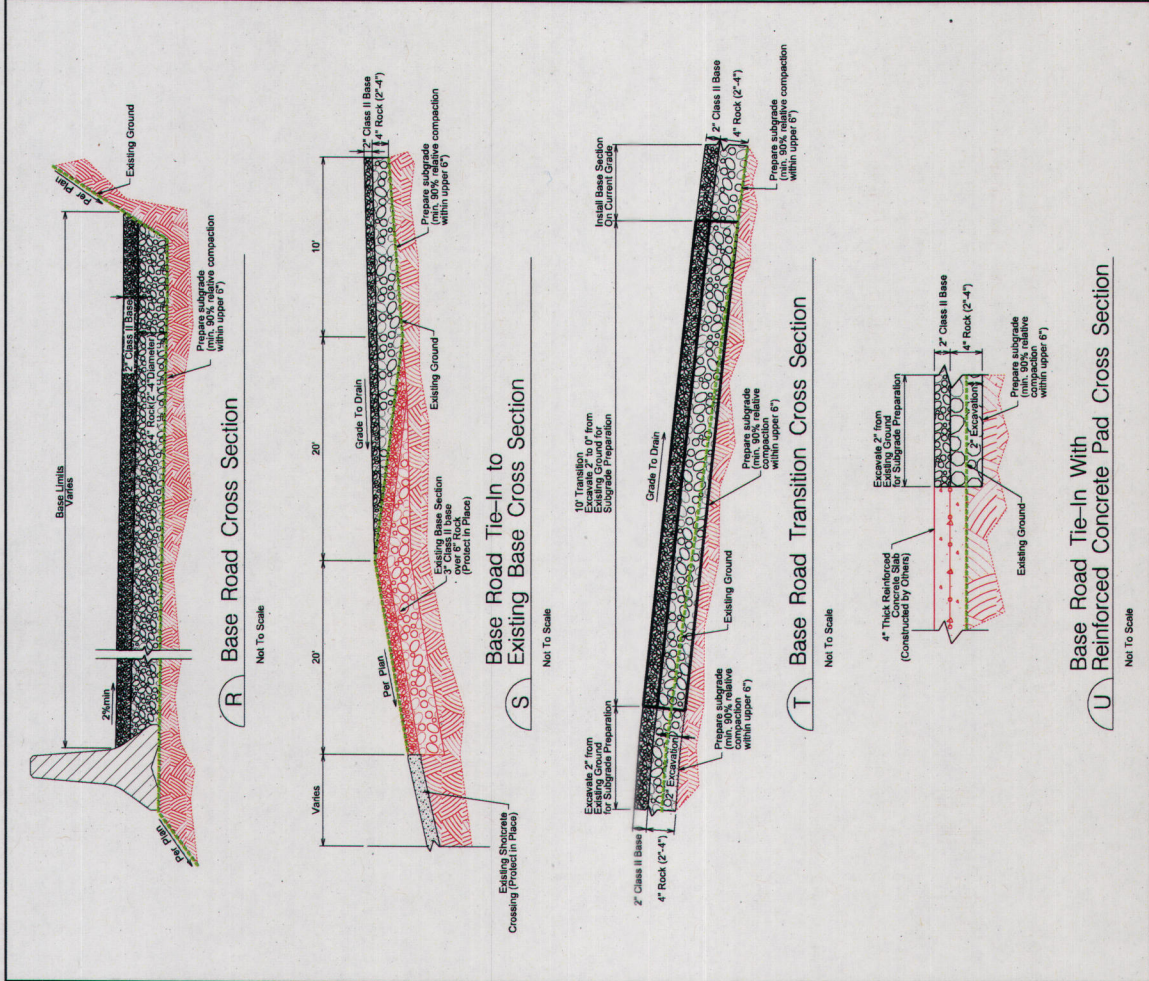
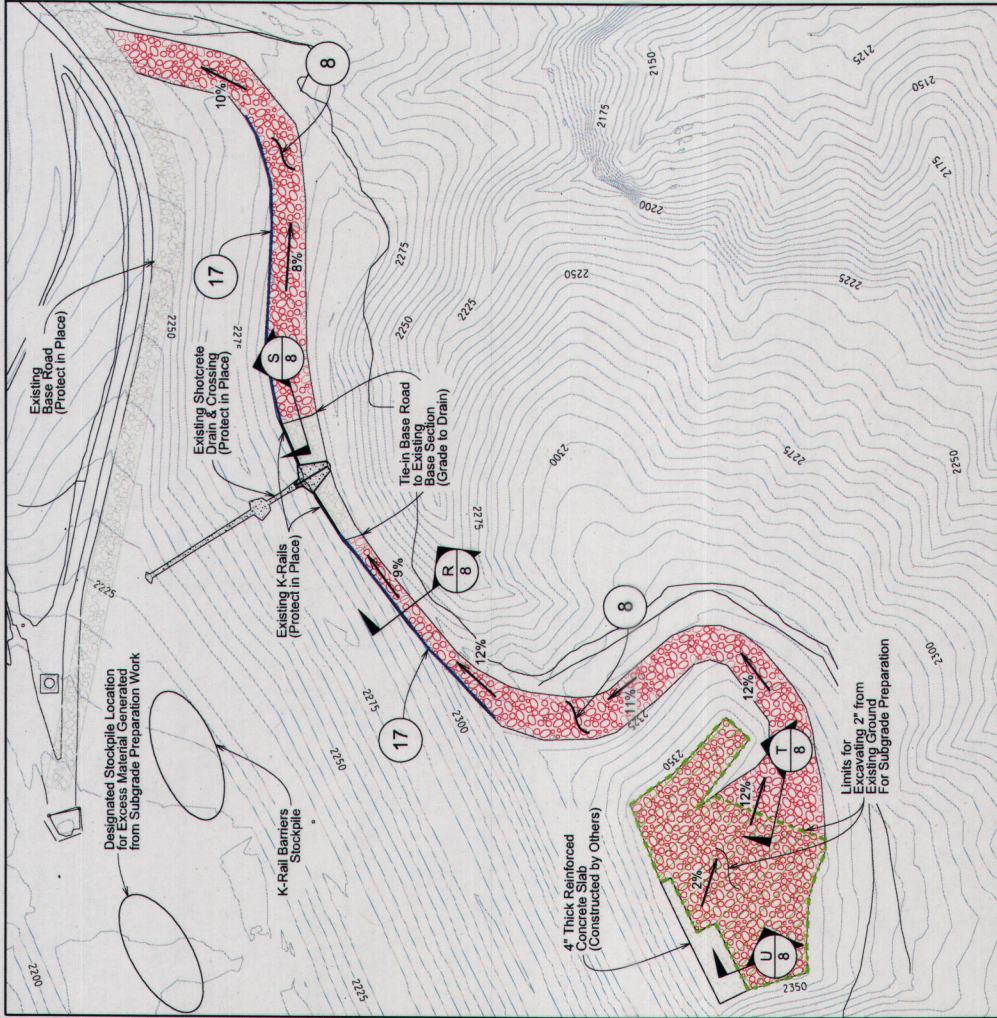
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DRAWN BY: EC
CHECKED BY: FM
ISSUED DATE: Summer 2016
SCALE: AS SHOWN
DATE: MS
PROJECT: Lamb Canyon Sanitary Landfill Site Drainage Improvements
DATE: MS
PREPARED BY: EC, MS
DATE: MS
PROJECT: Lamb Canyon Sanitary Landfill Site Drainage Improvements
DATE: MS

WASTE RESOURCES
 HOURS & SERVICES, General Manager/Chief Engineer
 #15

**Lamb Canyon Sanitary Landfill
 Site Drainage Improvements
 November 2016**

Construction Details

SHEET 7 OF 10



CONSTRUCTION NOTES

- 8 CONSTRUCT 2" THICK CLASS II BASE OVER 4" THICK ROCK (2'-4" ROCK SIZE) AND EXCAVATE EXISTING GROUND WITHIN LIMITS SHOWN AND IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS (BID ITEM NO. 9)
- 17 TRANSPORT & INSTALL K-RAIL BARRIERS IN ACCORDANCE WITH THE APPLICABLE PROJECT SPECIFICATIONS & DETAILS. COUNTY SHALL SUPPLY K-RAIL BARRIERS NEEDED FOR THIS ITEM. (BID ITEM NO. 18)

NO.	REVISIONS	BY	APPROVED	DATE

**INVERNESS COUNTY
WASTE RESOURCES**

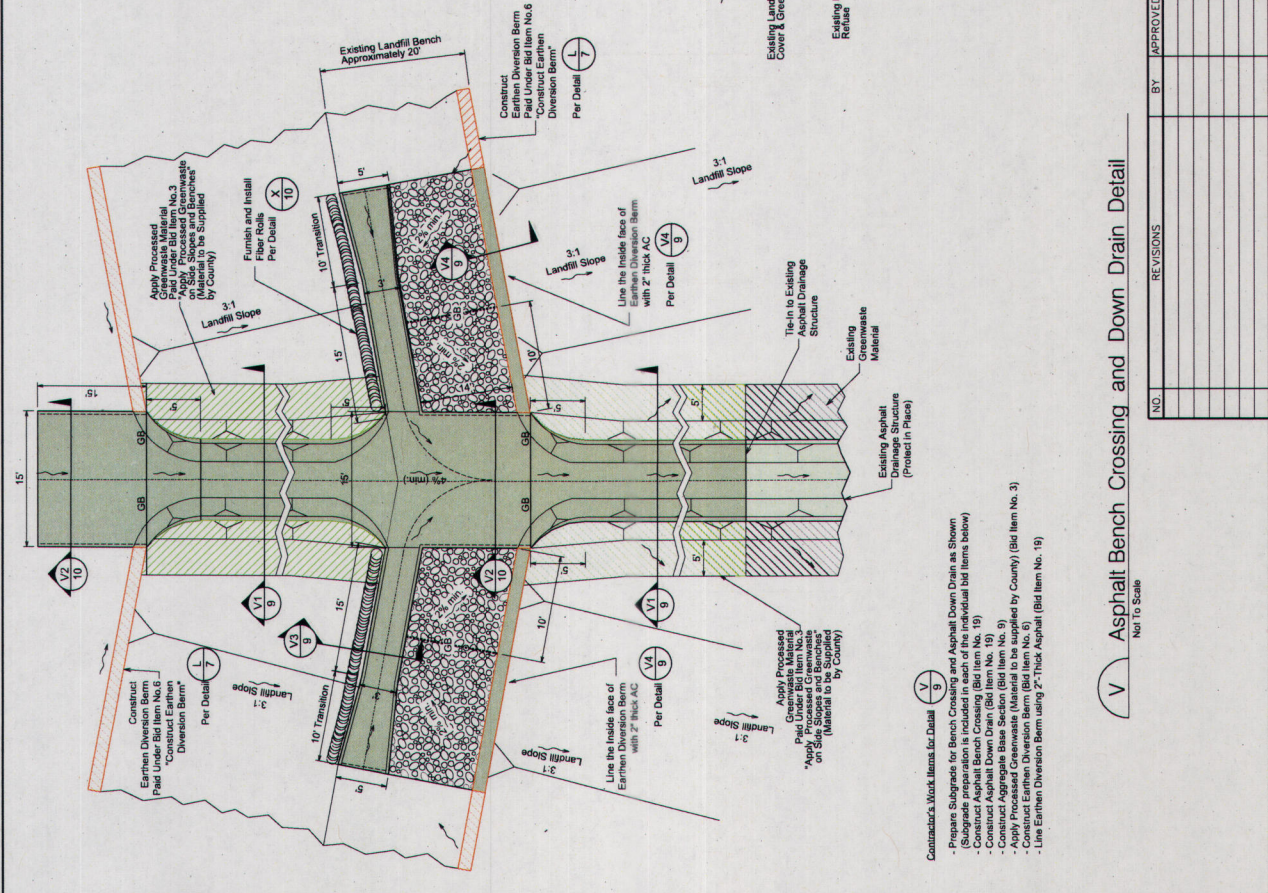
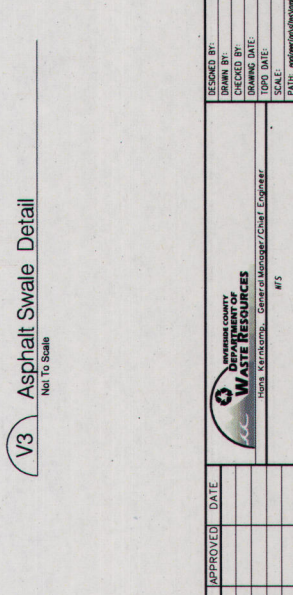
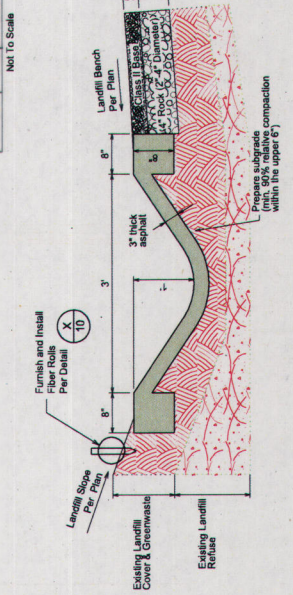
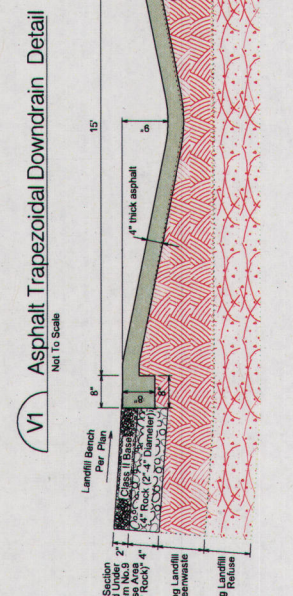
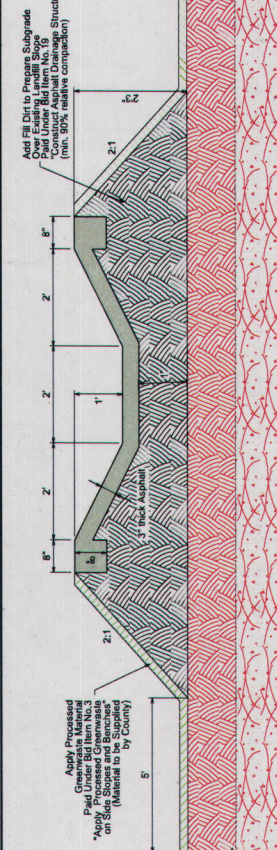
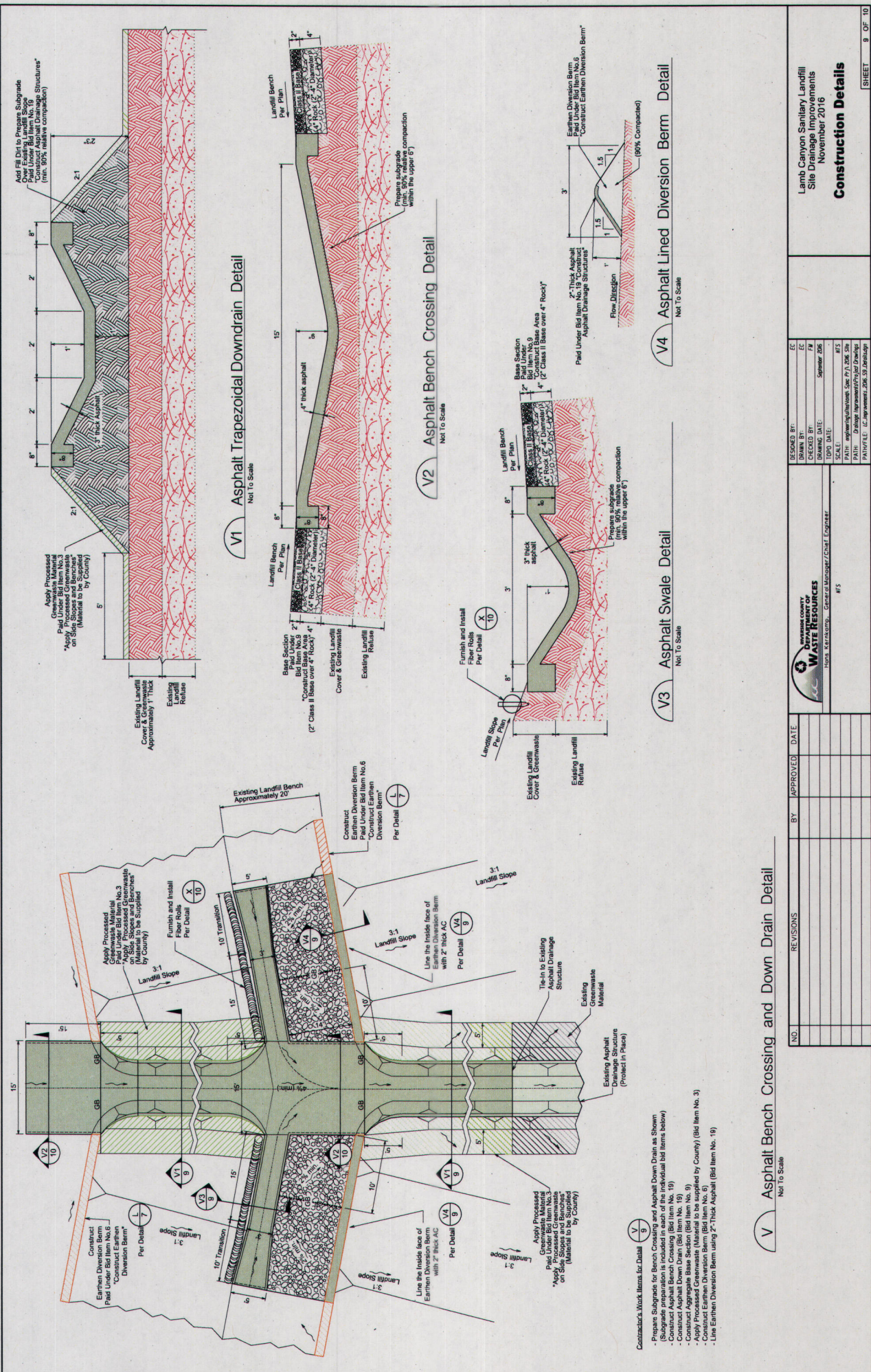
Mark A. Evans, General Manager / Civil Engineer

Scale: 1" = 40'

Datum is mean sea level

DESIGNED BY:	DE/CE
DRAWN BY:	DE/CE
CHECKED BY:	FM
ISSUED DATE:	5/6/2008
TRAINING DATE:	5/6/2007
SCALE:	1" = 40' (VERT)
PATH:	exp:\proj\Inverness\Site P\1.006_Site
FILE:	Drainage Improvement\Project Drawings

Base Road Tie-In With Reinforced Concrete Pad Cross Section



- 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. 19)
 - Construct Asphalt Down Drain (Bid Item No. 19)
 - Apply Processed Greenwaste (Material to be supplied by County) (Bid Item No. 3)
 - Construct Earthen Diversion Berm (Paid Under Bid Item No. 6)
 - Line Earthen Diversion Berm using 2"-Thick Asphalt (Bid Item No. 19)

NO.	REVISIONS	BY	APPROVED	DATE

DESIGNED BY: EC
DRAWN BY: EC
CHECKED BY: FM
DATE: September 2016
TOPIC: Site Drainage
SCALE: AS SHOWN
DATE: 09/20/16
PROJECT: Lamb Canyon Sanitary Landfill Site Drainage Improvements
DATE: 09/20/16
PROJECT: Lamb Canyon Sanitary Landfill Site Drainage Improvements

