

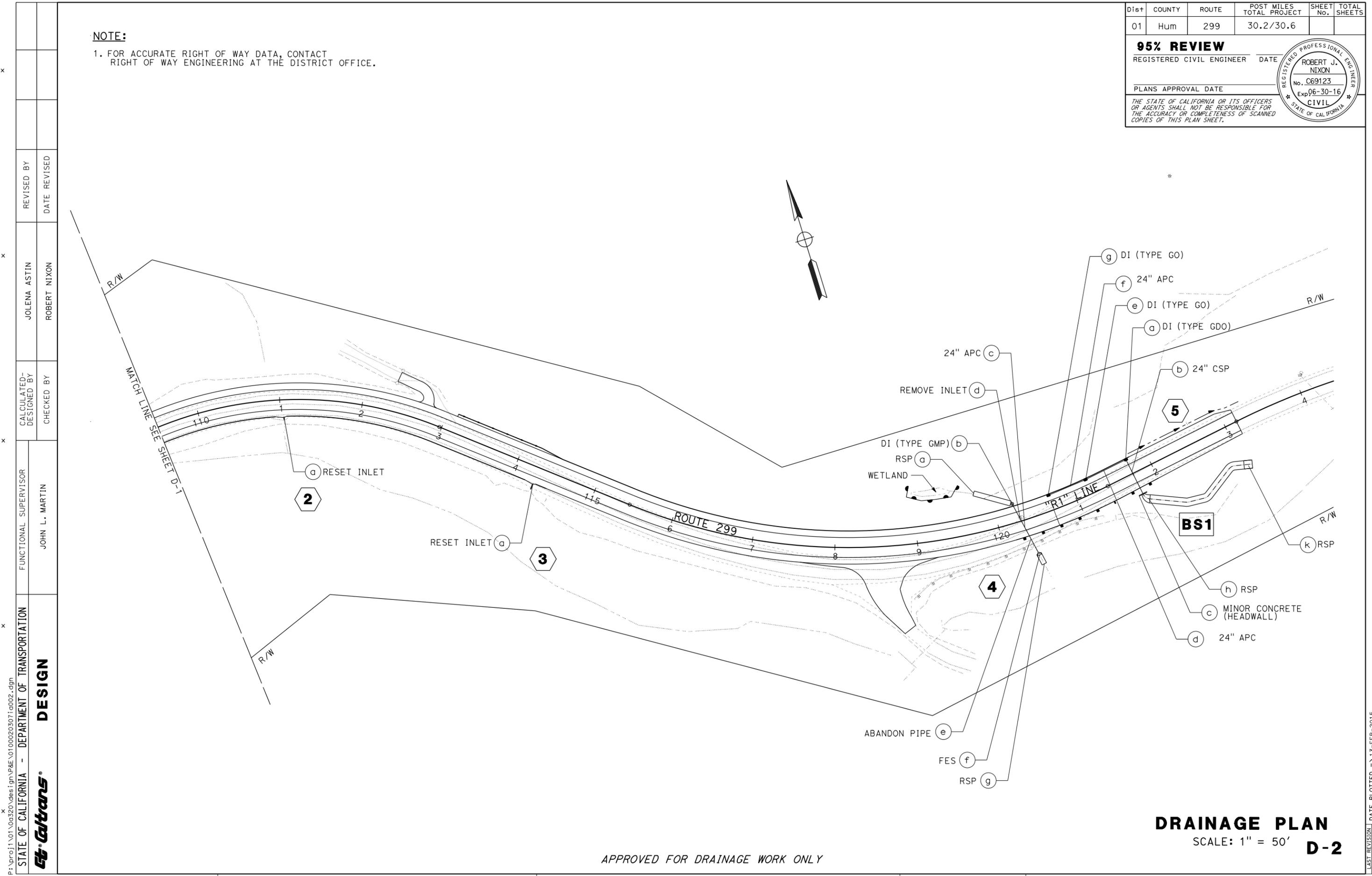
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	299	30.2/30.6		

<b>95% REVIEW</b>	
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



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CHECKED BY	ROBERT NIXON
FUNCTIONAL SUPERVISOR	JOHN L. MARTIN
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
**DESIGN**

APPROVED FOR DRAINAGE WORK ONLY

**DRAINAGE PLAN**  
 SCALE: 1" = 50'  
**D-2**

DATE PLOTTED => 13-FEB-2015  
 TIME PLOTTED => 10:53





## 10-1. \_\_ IMPORTED BIOFILTRATION SOIL

### GENERAL

#### Summary

This work includes furnishing and placing imported biofiltration soil.

#### Submittals

Compost: Before mixing compost with sand and topsoil, submit:

1. A Certificate of Compliance from the compost supplier in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.
2. A copy of the compost producer's compost technical data sheet. The compost technical data sheet must include:
  - 2.1. Laboratory analytical test results
  - 2.2. List of product ingredients
3. A copy of the compost producers Seal of Testing Assurance certification.

Imported biofiltration soil: Imported biofiltration soil must be accompanied by a Certificate of Compliance, from the soil supplier, in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

#### Quality Control and Assurance

Saturated hydraulic conductivity for imported biofiltration soil must be at least 5 inches per hour.

### MATERIAL

Imported biofiltration soil must be a uniform mixture of sand, compost, and topsoil. Volumetric proportion of the mixture must be: four-parts sand; two-parts compost; one-part topsoil.

#### Sand

Sand must be free of wood, waste, coating such as clay, stone dust, carbonate, or any other deleterious material. All aggregate passing No. 200 sieve size must be non-plastic. Sand must be graded within the following limits:

Sieve Size	Percentage Passing
3/8"	100
No. 4	90 - 100
No. 8	70 - 100
No. 16	40 - 95
No. 30	15 - 70
No. 40	5 - 55
No. 100	0 - 15
No. 200	0 - 5

Grain size analysis results of the sand component must be performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.

## **Compost**

The compost producer must be fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies, and any other State and Local Agencies that regulate solid waste facilities. If exempt from State permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

The compost producer must be a participant in the United States Composting Council's Seal of Testing Assurance program.

Compost may be derived from any single or mixture of any of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost feedstock materials in a manner that reduces presence of weed seeds, pathogens and deleterious materials as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3.

Compost must not be derived from mixed municipal solid waste and must be reasonably free of visible contaminants. Compost must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Compost must not possess objectionable odors.

Metal concentrations in compost must not exceed the maximum metal concentrations listed in Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

Compost must comply with the following:

## Physical and Chemical Requirements

Property	Test Method	Requirement										
pH	TMECC 04.11-A Elastometric pH 1:5 Slurry Method pH Units	6.5 - 8.0										
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0 - 6.0										
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70 +/- 5 deg C % Wet Weight Basis	30 - 60										
Organic Matter Content	TMECC 05.07-A Loss-On-Ignition Organic Matter Method (LOI) % Dry Weight Basis	35 - 75										
Maturity	TMECC 05.05-A Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	80 or Above 80 or Above										
Stability	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO <sub>2</sub> -C/g OM per day	8 or below										
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Inches</td> <td style="text-align: left;">% Passing</td> </tr> <tr> <td style="text-align: right;">3</td> <td style="text-align: left;">100%</td> </tr> <tr> <td style="text-align: right;">1/2</td> <td style="text-align: left;">0 - 95%</td> </tr> <tr> <td style="text-align: right;">1/4</td> <td style="text-align: left;">0 - 75%</td> </tr> <tr> <td colspan="2" style="text-align: center;">Max. Length 4 inches</td> </tr> </table>	Inches	% Passing	3	100%	1/2	0 - 95%	1/4	0 - 75%	Max. Length 4 inches	
Inches	% Passing											
3	100%											
1/2	0 - 95%											
1/4	0 - 75%											
Max. Length 4 inches												
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass										
Pathogen	TMECC 07.01-B Salmonella < 3 MPN/4 grams dry wt.	Pass										
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Plastic, Glass and Metal % > 4 mm fraction	Combined Total: < 1.0										
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles) % > 4 mm fraction	None Detected										

NOTE: TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

### Topsoil

Topsoil must be free of wood, waste or other deleterious material. The topsoil texture must be loamy. Overall dry weight percentages must be 60 to 90 percent sand, with less than 20 percent passing the No. 200 sieve, less than 5 percent clay, and no gravel.

### CONSTRUCTION

Comply with Section 20-3.02, "Preparation," of the Standard Specifications.

Place imported biofiltration soil in 8 to 12- inch lifts. Do not compact the lifts.

## **MEASUREMENT AND PAYMENT**

Quantity of imported biofiltration soil is measured by the cubic yard.

The contract unit price paid per cubic yard for imported biofiltration soil includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in imported biofiltration soil, complete in place, including testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.