0152V

~~Special Provisions~~
~~Work Sheet No. 100-1~~
~~Index-Fed. Aid Projects~~
~~Oct., 1986~~

Date

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
SPECIAL PROVISIONS
COLORADO PROJECT NO. IR 25-1 (111)
BRANTZELL ARROYO

The following Special Provisions take precedence over Standard Specifications, Supplemental Specifications and Plans, and supplement or modify the Standard Specifications for Road and Bridge Construction, dated 1986, which is used to control construction of this project.

REQUIRED PROVISIONS ON FEDERAL-AID CONTRACTS - Form PR-1273 Rev. 9/75 and Addendum.

PROJECT SPECIAL PROVISIONS

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~~Special Provisions~~
~~Work Sheet No. 100-3~~
~~Index Standard Spec. Prov.~~
~~Oct., 1986~~

Date

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS - STATE OF COLORADO
SPECIAL PROVISIONS
COLORADO PROJECT NO. IR 25-1 (111)
BRANTZELL-ARROYO
PROJECT
~~STANDARD~~ SPECIAL PROVISIONS

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COLORADO PROJECT NO. IR 25-1(111)

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Revision of Section 203-Unclassified Excavation (Complete In Place)	April 15, 1987	1
Revision of Sections 212 and 213-Seeding, Sodding and Mulching	Sept. 8, 1986	2
Revision of Section 304-Stockpile Aggregate Base Course	July 1, 1981	1
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Revision of Section 509-Steel Structure Connections	Jan. 6, 1984	2
Revision of Section 512-Bearing Device	Nov. 3, 1986	1
Revision of Section 515-Waterproofing Membrane	March 2, 1987	1
Revision of Section 601-Class 5 Finish	Sept. 9, 1985	1
Revision of Section 601-Curing Concrete Bridge Decks	Aug. 10, 1987	1
Revision of Section 602-Reinforcing Steel	Nov. 3, 1986	1
Revision of Section 602-Concrete Reinforcing Steel	March 2, 1987	1
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August 10, 1987

ITEM	DATE	NO. OF PAGES
Revision of Section 607-Right of Way Fence	July 1, 1981	1
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Revision of Section 702-Liquid Asphaltic Material (RC-800)(Rubberized)	Sept. 10, 1985	1
Revision of Section 702-Liquid Asphaltic Material (RC-3000)(Rubberized)	April 20, 1983	1
Revision of Section 702-Asphalt Cement (AC-20)(Rubberized)	July 15, 1987	1
Revision of Section 702-Emulsified Asphalt (Cationic Rubberized)	April 22, 1983	1
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Revision of Section 707-Corrugated Metal Pipe Inspection	March 2, 1987	1
Affirmative Action Requirements-Equal Employment Opportunity	Dec. 8, 1986	10
Incentive Bonus For MBE Subcontract Work	July 29, 1985	1
Minimum Wages Colorado, U.S. Dept. of Labor Decision No. CO87-1 Mod. 3, Heavy and Highway Construction, Statewide	July 29, 1987	9
Minority Business Enterprise Definitions and Requirements	July 29, 1985	9
Miscellaneous Contract Requirements	Sept. 8, 1986	1
On-The-Job Training	Dec. 8, 1986	2
Railroad Insurance	Oct. 22, 1982	1

0194V
Special Provisions
Work Sheet No. 102-1
Notice to Bidders
April, 1984

Date

NOTICE TO BIDDERS

COLORADO PROJECT NO. IR 25-1(111)

The proposal guaranty shall be a certified check, cashier's check or bid bond in the amount of 5% of the Contractor's total bid.

It is recommended that bidders on this project go over the plan details with one of the following field representatives of the Division:

Construction Engineer - V. D. Anders
Pueblo, Colorado
Office Phone: 546-5430

Resident Engineer - D.L. Snow
Pueblo Colorado
Office Phone: 546-5438
Home Phone: 564-7592

Prospective bidders shall contact one of the above engineers at least 12 hours in advance of the time they wish to go over the project in order that the engineer may efficiently schedule his work.

0195V
Special Provisions
Work Sheet No. 108-1
Commencement and Completion of Work
April, 1984
NOTE: Alter as necessary.

Date

COMMENCEMENT AND COMPLETION OF WORK
COLORADO PROJECT NO. IR 25-1 (111)

The Contractor shall commence work under his contract on or before the 20th day following the date of award unless such time for beginning the work is changed by the Chief Engineer in the "Notice to Proceed". The Contractor shall complete all work within 50 working days in accordance with the "Notice to Proceed".

Salient features to be shown on the Contractor's Progress Schedule are:

1. Complete CBC concrete
2. Construct Detour
3. Complete Roadway Embankment
4. [illegible]

~~* Section 108 of the Standard Specifications is hereby revised for this project as follows:~~

~~(In subsection 108.06, eighth paragraph, delete the first sentence and replace with the following:~~

~~* Time will not be charged during the months of [illegible] and [illegible]~~

~~$ In subsection 108.06, delete the eighth paragraph.~~

****

~~# Use those salient features submitted by the District.~~

~~* Use if months as shown in subsection 108.06 of the Standard Specifications are revised.~~

~~$ Use on projects for which contract time will be charged during all months, e.g. traffic signal projects.~~

Special Provisions
Work Sheet No. 102-3F
(non-set-aside projects, with Federal-aid)
August, 1987

_____ date

CONTRACT GOALS
COLORADO PROJECT NO. IR 25-1(111)

The Division has determined that Minority Business Enterprises (MBEs) will participate by contracting for a part of the work of this contract. Contract goals, for participation in this contract by MBEs certified by the Department, have been established as follows:

DBE & WBE 10 Percent

The percentages will be calculated from proposals received for this project according to the following formula:

$$\text{Percentage} = 100 \times \frac{\text{*Dollar amount of work to be contracted to MBEs}}{\text{Total dollar amount of the original contract amount}}$$

* Based on MBE contract unit prices rather than prime contract unit prices.

It has been determined that women are to be presumed to be socially and economically disadvantaged. A single goal is hereby established for this project and can be met by using any combination of DBE and/or WBE participation.

0406V
Special Provisions
Work Sheet No. 102-2
December, 1985

Date

REVISION OF SECTION 102
PROJECT PLANS AND OTHER DATA
COLORADO PROJECT NO. IR 25-1 (111)

Section 102 of the Standard Specifications is hereby revised for this project as follows:

Subsection 102.05 shall include the following:

The following information will be available for review in the Reproduction Branch of the Division, Room 107, 4201 East Arkansas Avenue, Denver, Colorado 80222 until the date set for opening of bids:

CROSS SECTIONS	Sheet No.	COMPUTER OUTPUT DATA
* Roadway	101 to 107	Earthwork Quantities
* Structures	201 to ____	Mass Diagram
* BORROW AREA	301 to 303	

The Reproduction Branch will provide an area where contractors can review any available cross sections and computer output data. This material may be taken out of the Reproduction Branch area by either: (1) purchase of the material at the current reproduction price or, (2) deposit of cash or check (payable to: Colorado Department of Highways) equal to the purchase price. The deposit will be refunded if the material is returned by 4:30 p.m. on the second full working day after obtaining the material. If not returned within that time, the deposit will be forfeited.

After contract award, the successful bidder may obtain from the Reproduction Branch at no cost: ten sets of plans and special provisions; and if available for the project, one set of full size cross sections and one set of computer output data. If the contractor has not picked up the plans and other available data within six weeks after bid opening, they will be sent to the Resident Engineer in charge of the project. Additional sets of plans and other available data may be purchased on a cash sale basis from the Reproduction Branch at current reproduction prices.

Subcontractors and suppliers may obtain plans and other data from the successful bidder or they may purchase copies on a cash sale basis from the Reproduction Branch at current reproduction prices.

Footnotes

Delete if there are no cross sections and computer output data on the project.

* Add or delete items as necessary.

REVISION OF SECTION 104
CONSTRUCTION TRAFFIC CONTROL
[redacted] COLORADO PROJECT NO. IR 25-1(111)

Section 104 of the Standard Specifications is hereby revised for this project as follows:

Subsection 104.04 shall include the following:

The Contractor shall maintain the Flashing Arrow Panels in continuous operation 24-hours a day while the detour is in use.

All costs incidental to the foregoing requirement~~s~~ shall be included in the original contract prices for the project.

In the event that the Contractor does not complete construction within the allowable number of working days, flagging and traffic control supervision required thereafter will not be measured and paid for but shall be provided by the Contractor at his expense.

REVISION OF SECTIONS 105 and 401
PLANT MIX PAVEMENTS - GENERAL
COLORADO PROJECT NO. IR 25-1 (111)

Sections 105 and 401 of the Standard Specifications are hereby revised for this project as follows:

In subsection 105.03 in the Table of Price Reduction Factors delete the reference to asphalt content and replace with the following:

Asphalt content (all asphalt-aggregate mixtures) ... 20

In subsection 401.02 Table 401-1, the bitumen content range of tolerance shall be revised to ± 0.3%.

In subsection 401.02 delete the eighth paragraph and replace with the following:

The job-produced hot bituminous plant mix will be tested for conformance with the stability criteria shown in Table 403-1, as revised for the project. If two consecutive production samples fail to meet the stability criteria and show no correlation to the Mix Design Stability Curve, the Contractor at his expense, shall take corrective action before being permitted to continue production. If proper corrective measures cannot be readily determined, the Engineer will suspend the use of such material until Laboratory tests indicate that the corrective measures taken by the Contractor yield material that is in compliance with the stability criteria in Table 403-1. Corrective measures shall be documented on DOH Form 43. Measures taken to correct non-specification stability of Hot Bituminous Pavement shall be submitted to the Engineer in writing prior to continuing production.

[redacted], 1996

REVISION OF SECTION 106
CONTROL OF MATERIAL
COLORADO PROJECT NO. [redacted] IR 25-1(111)

Section 106 of the Standard Specifications is hereby revised for this project as follows:

Delete subsections 106.02, (a) and (b) and replace with the following:

(a) Available Sources.

On some projects the plans will show locations that may be used by the Contractor as sources of sand, gravel, and/or borrow for that project. These locations will be known as available sources. The Division will have an agreement with the property owner which allows removal of material under certain conditions and for a stated price. Pertinent conditions of this agreement which would concern its use on the project will be listed in the project plans.

For some available sources the Division will obtain the necessary County or City Zoning Clearance and the required permit from Colorado Mined Land Reclamation needed to explore or remove material from the areas designated on the plans. Reclamation and pit construction requirements will be listed in the plans for sources the Department has permitted.

If the Division did not obtain the City or County Zoning Clearance nor the Mined Land Reclamation Permit, the Contractor will be required to obtain those clearances and permits. Any delays to the project or additional expenses that are incurred while these are being obtained will be the responsibility of the Contractor. The Contractor will exercise caution to assure there are no conflicts between his permits and the conditions of the agreement between the owner and the Division.

Any other permits required for removing and processing sand, gravel, or borrow must be obtained by the Contractor at his expense.

Available sources will be investigated by the Division and samples will be obtained from various locations in the area. However, it shall be understood that it is not feasible to ascertain from samples the limits and composition of an entire deposit, and that variations shall be considered as usual and are to be expected.

-continued-

[redacted], 2006

REVISION OF SECTION 106
CONTROL OF MATERIAL
COLORADO PROJECT NO. ~~ST 0612(04)~~ IR 25-1(111)
~~ORPC-0025-(000)~~

When the Division investigates the material in a deposit, the various layers in the test holes are either combined as a composite sample of the full depth of represented material, or it is reported as being similar to the material in some other test hole. Material is then taken from the samples for testing. These samples are sometimes combined with various materials such as mineral fillers, additives, etc., for further testing; especially when testing aggregate sources to obtain a satisfactory design mix. The project plans will show the location of the test holes and where samples were obtained, test results, and amounts and kinds of any additives utilized in the testing to obtain a satisfactory product. The project specifications are developed based on these test results. Using this test information and a visual evaluation of the area, the Contractor shall determine for himself the work that will be required to produce specifications material. It shall be understood that the Contractor, by his methods of extracting and processing the material, can affect the quality of the processed aggregate to the extent that it will not produce a material that will meet project specifications. Removing the material in horizontal layers instead of removing from a vertical face in the deposit, stripping too much or too little overburden, using improper amounts of mineral filler, the wrong type of mineral filler, or adding improper amounts of hydrated lime to a lime slurry are just a few examples of the construction practices that can create changes in the quality of material in an available source. For the above stated reasons the Division will not be responsible for the material as produced by the Contractor.

All costs of processing the material to produce a product that satisfies the project specifications will be borne by the Contractor unless stated otherwise in the project plans. The Contractor is responsible for producing materials which meet specifications throughout construction of the project. Use of an available source does not relieve him of this responsibility.

(b) Contractor Source.

This includes all sources of borrow, sand, and gravel other than an available source. Contractor sources shall be approved by the Engineer prior to use on the project. The Contractor must submit to the Engineer, for his approval, test results indicating that the material from the proposed source meets project specifications.

-continued-

[redacted], 1986

REVISION OF SECTION 106
CONTROL OF MATERIAL
COLORADO PROJECT NO. [redacted] IR 25-1(111)

The Contractor shall obtain all permits and agreements necessary to explore and remove material from his sources. He shall also be responsible for any costs or delays associated with obtaining these permits or agreements.

The Contractor is responsible for producing materials which meet specifications throughout the construction of the project. Prior approval of a source does not relieve him of that responsibility.

REVISION OF SECTION 202
REMOVAL OF PORTIONS OF PRESENT STRUCTURE
COLORADO PROJECT NO. IR 25-1(111)

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.01 shall include the following:

Removal of portions of present structure shall include removal of the following portions of the existing structure L-18-D:

Superstructure, portions of the Piers and any other portions not designated or permitted to remain.

Subsection 202.02 shall include the following:

All removed materials shall become the property of the Contractor and shall be hauled from the project and disposed of by him. The Contractor will be required to secure a written permit from property owners before disposing of material on their property.

The items listed above shall be removed in accordance with the lines, dimensions, and notes on the plans, or as directed by the Engineer. All methods and equipment used to accomplish this item shall be approved by the Engineer.

Subsection 202.07 shall include the following:

Pay Item	Pay Unit
Removal of portions of Present Structure	Each

~~Special Provisions~~
~~Work Sheet 403-2, Sheet 1 of 2~~
~~(Hot Bituminous Pavement)~~
~~August, 1987~~

Date

REVISION OF SECTION 403
HOT BITUMINOUS PAVEMENT
COLORADO PROJECT NO. IR 25-1 (111)

Section 403 of the Standard Specifications is hereby revised for this project as follows:

Subsection 403.02 shall include the following:

The hot bituminous mix shall conform to the following:

TABLE 403-1

PROPERTY	TEST METHOD	* VALUE FOR GRADING			
		~~S~~ E	EX	F	PATCHING
Voids, Top Layer, ~~percent~~	CPL 5105	4-8	—	—	—
Voids, Layers Below Top, percent	CPL 5105	4-8	—	—	—
Stability, minimum	CPL 5105	37	—		—
~~Resilient Modulus, minimum~~	~~CPL 5110~~			—	—
~~Index of Retained Strength, minimum~~	~~CPL 5104~~			—	—
Accelerated Moisture Susceptibility-Tensile Strength Retained (Lottman), minimum	CPL 5109	60	—		—
Design Optimum Asphalt Content, % minimum	CPL 5105	5.2	—	—	—
Grade of Asphalt Cement		AC-20 (Fortified)	—	—	—

* These values apply to acceptance of the source or design mix.

The top lift of the hot bituminous pavement shall not contain more than 20 percent reclaimed material.

The hot bituminous mix delivered to the project site shall be sampled in accordance with CP-41 by the Contractor at the direction and in the presence of the Engineer.

Date

REVISION OF SECTION 403
HOT BITUMINOUS PAVEMENT
COLORADO PROJECT NO. IR 25-1(111)

A composite sample of the aggregate shall be sampled in accordance with CP-30 by the Contractor at the direction and in the presence of the Engineer, for gradation testing.

Subsection 403.03 shall include the following:

When ordered by the Engineer, a tack coat shall be applied between pavement courses and paid for in accordance with Section 407.

The top mat of Hot bituminous pavement shall not be placed between October 1 and April 1, unless otherwise approved.

The Contractor shall use an approved anti-stripping additive.

The Contractor shall arrange his work such that all roadway pavement placed prior to the time paving operations are specified to end for the year, shall be to the full thickness required by the plans. The Contractor's Progress Schedule shall show the methods he intends to use to conform to this requirement.

In subsection 403.05, delete the last paragraph and replace with the following:

Haul, aggregate, asphalt recycling agent, additives, and all other work necessary to complete each hot bituminous pavement item will not be paid for separately but shall be included in the unit price bid. Asphalt cement will be measured and paid for in accordance with Section 411 except that asphalt cement used in Hot Bituminous Pavement (Patching) will not be measured and paid for separately, but shall be included in the unit price bid.

****

~~FOOTNOTES:~~

~~Delete from Table 403-1 those pavement gradings and properties not applicable to this project.~~

~~Fill in the dates furnished by the District. This may apply to only the top layer if so specified.~~

~~Use on all District 6 projects and in other Districts when directed.~~

~~This requirement is to be added when reflective cracking is a concern, such as asphalt overlays of concrete pavement. Use when directed by the District.~~

REVISION OF SECTION 410
PLANT MIXED SEAL COAT
COLORADO PROJECT NO. ~~[redacted]~~
IR 25-1 (111)

Section 410 of the Standard Specifications is hereby revised for this project as follows:

Delete subsection 410.03(d) and replace with the following:

(d) DUMPING AND SPREADING. The plant mixed seal coat mixture shall be dumped directly into the lay-down machine hopper. Dumping the mixture onto the pavement ahead of the lay-down machine will not be permitted.

REVISION OF SECTIONS 410 and 703
PLANT MIXED SEAL COAT (TYPE A)
COLORADO PROJECT NO. IR 25-1(111)

Sections 410 and 703 of the Standard Specifications are hereby revised for this project as follows:

Subsection 410.02 shall include the following:

The job-mix formula for Plant Mixed Seal Coat (Type A) shall be as follows:

Passing 1/2" Sieve	100%
Passing 3/8" Sieve	97-100%
Passing #4 Sieve	40%
Passing #8 Sieve	14%
Passing #200 Sieve	5%

The range of tolerance for bitumen content shall be ± 0.3%.

Asphalt cement shall be AC-20 (Rubberized) at an approximate content of 7.0%. The actual asphalt cement content specified for this project will be defined by the job-mix formula on the DOH Form 43.

The hot bituminous mix delivered to the project site shall be sampled in accordance with CP-41 by the Contractor at the direction and in the presence of the Engineer.

A composite sample of the aggregate shall be sampled in accordance with CP-30 by the Contractor at the direction and in the presence of the Engineer, for gradation testing.

Subsection 410.03(b) shall include the following:

A tack coat shall be applied prior to placement of the plant mixed seal coat.

In subsection 410.05 delete the last paragraph and replace with the following:

Haul, aggregate, additives, and all other work necessary to complete the item will not be paid for separately but shall be included in the unit price bid.

In subsection 703.10 delete the first paragraph and replace with the following:

Aggregates for plant mixed seal coat shall consist of clean, hard, durable fragments of crushed stone, crushed gravel, or crushed slag. 100% by weight of the particles retained on the No. 4 Sieve shall have at least two fractured faces when tested in accordance with Colorado Procedure 45. Aggregate passing the No. 4 Sieve shall be the dust of fracture of crushing rock larger than 1/2 inch. The aggregate shall have a percentage of wear of not more than 35 when tested in accordance with AASHTO T96, unless otherwise shown on the plans.

REVISION OF SECTION 411
BITUMINOUS MATERIALS
COLORADO PROJECT NO. IR 25-1 (111)

Section 411 of the Standard Specifications is hereby revised for this project as follows:

In subsection 411.04, first paragraph, delete the first sentence and replace with the following:

Bituminous materials will be measured as follows: Asphalt cement will be measured by the ton as a percentage of the total weight of the mix in which it was used. The pay quantity of asphalt cement will be determined by multiplying the total accepted tons of the paving mix by the average of all the asphalt content percentages obtained from the field acceptance tests for that item.

REVISION OF SECTION 614
TRAFFIC CONTROL SUPERVISOR (ATSSA)
COLORADO PROJECT NO. IR 25-1(111)

Section 614 of the Standard Specifications is hereby revised for this project as follows:

In subsection 614.21 (b), first paragraph, delete the third sentence and replace with the following:

> The Traffic Control Supervisor shall be certified as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA). A copy of the Traffic Control Supervisor's certification shall be provided to the Engineer at the project preconstruction conference.

REVISION OF SECTION 614
STEEL DRUMS AND SIGN PADDLES
COLORADO PROJECT NO. IR 25-1 (111)

Section 614 of the Standard Specifications is hereby revised for this project as follows:

Subsection 614.16 shall include the following:

Steel drum channelizing devices shall not be used for traffic control.

Subsection 614.22(a) shall include the following:

The flagger's STOP/SLOW sign paddle shall be 18 inches wide with letters six inches high.

REVISION OF SECTION 620
FIELD FACILITIES
COLORADO PROJECT NO. IR 25-1(111)

Section 620 of the Standard Specifications is hereby revised for this project as follows:

Subsection 620.03 shall include the following sections indicated herein by a marked box:

The field laboratory shall be equipped with a balance or scale capable of weighing 20,000 grams to an accuracy of one gram.

The field laboratory shall be equipped with a microwave oven which has at least five power levels and a revolving oven floor, with 650 minimum watt output and a minimum of 1.5 cu. ft. capacity.

The field laboratory shall be equipped with an oven which has a minimum temperature range of 110 to 300 degrees Fahrenheit, a mininum uniformity of 10 degrees Fahrenheit, 1500 watt minimum output, and a minimum 3.5 cu. ft. capacity.

REVISION OF SECTION 627
PAVEMENT MARKING WITH PAINT
COLORADO PROJECT NO. IR 25-1 (111)

Section 627 of the Standard Specifications is hereby revised for this project as follows:

In Subsection 627.06, delete the third paragraph and replace with the following:

Paint and beads shall be applied within the following limits:

Application Rate or Coverage
Per Gallon of Paint

MIN.	MAX.
Paint: 100 sq. ft.	110 sq. ft.
Beads: 5 lbs. 13 oz.	6 lbs. 3 oz.

REVISION OF SECTION 713
GLASS BEADS FOR TRAFFIC MARKINGS
COLORADO PROJECT NO.

Section 713 of the Standard Specifications is hereby revised for this project as follows:

In subsection 713.08, delete the first paragraph and replace with the following:

Glass beads shall conform to AASHTO M 247, Type 2, non-floatation grade.

REVISION OF SECTION 626
MOBILIZATION
COLORADO PROJECT NO. IR 25-1(111)

Section 626 of the Standard Specifications is hereby revised for this project as follows:

In subsection 626.02, delete parts (A), (B), (C), and (D) and replace with the following:

(a) When 5 percent of the original contract amount is earned, 25 percent of the amount bid for mobilization, or 2 1/2 percent of the original contract amount, whichever is lesser, will be paid.

(b) When 10 percent of the original contract amount is earned, 50 percent of the amount bid for mobilization, or 5 percent of the original contract amount, whichever is lesser, will be paid.

(c) When 25 percent of the original contract amount is earned, 60 percent of the amount bid for mobilization, or 6 percent of the original contract amount, whichever is lesser, will be paid.

(d) When 50 percent of the original contract is earned, 100 percent of the amount bid for mobilization, or 10 percent of the original contract amount, whichever is lesser, will be paid.

(e) Upon completion of all work on the project, payment of any amount bid for mobilization in excess of 10 percent of the original contract amount, will be paid.

(f) The total sum of all payments shall not exceed the original contract amount bid for the item, regardless of the fact that the Contractor may have, for any reason, shut down his work on the project or moved equipment away from the project and then back again.

SPECIAL NOTICE TO CONTRACTORS

COLORADO PROJECT NO. IR 25-1(111)

To insure the proper inspection sampling, testing and certifications of materials incorporated into Colorado Division of Highways construction projects, the following procedures are required of the contractor:

1. INFORM THE DIVISION OF HIGHWAYS OF MATERIALS SOURCES AND SUPPLIERS

   A. In accordance with subsection 106.01 of the Standard Specifications, submit a list of materials sources and suppliers to the Project Engineer at least two weeks prior to delivery. Include company name and address, item to be supplied, and contact person where material can be inspected.

   B. Mail one copy of the list to the Central Materials Laboratory Inspection Engineer at 4340 East Louisiana Avenue, Denver, CO 80222.

2. INFORM SUBCONTRACTORS AND SUPPLIERS OF THE DIVISION OF HIGHWAYS SAMPLING AND TESTING REQUIREMENTS

   When ordering materials, contractors and subcontractors should inform their suppliers of the requirements outlined below:

   A. The following items are either preinspected or pretested by the Central Laboratory of the Colorado Division of Highways. Inspection arrangements should be made by calling 303-757-9226 a minimum of 10 days prior to the beginning of fabrication. Failure to give notification may result in delays to the project and/or rejection of the materials.

STRUCTURE COMPONENTS

Structural steel
Structural steel galvanized
Bearing devices
Deck drains
Expansion devices
Bridge Rail
Reinforcing steel
Epoxy coated reinforcing steel
Precast, prestressed concrete units
Precast concrete box culverts

MISC. ITEMS

Concrete curing compounds
Preformed joint fillers
Paints
Thermo plastic pavement marking
(Preformed and hot applied)
Delineator reflectors
Traffic paint and glass beads

TIMBER PRODUCTS

Treated timber
Guard rail posts
Sound barrier fence
Sign posts

MISC. STEEL PRODUCTS

Steel Sign Posts
Cattle guards
Prestressing elements

- Continued -

SPECIAL NOTICE TO CONTRACTORS
COLORADO PROJECT NO. IR 25-1(111)

B. The following items are accepted on the basis of certified test results supplied to the Project Engineer at the time of materials delivery. Failure to comply may result in delays to the project and/or rejection of the materials.

Metal cribbing
Wire gabion baskets
Metal guard rail posts
Guard rail W-beam
Steel piling
Elastomeric bearing pads
Steel sign structures
Elastomeric expansion joint
Structural plate pipe
Corrugated metal pipe
Welded steel pipe

C. The following items are accepted on the basis of the fabricators "certificate of compliance" (COC), stating that the material was fabricated in accordance with and meets the applicable Division of Highways specifications.

Type 4 guardrail
Precast concrete items
Clay, copper, cast iron and asbestos cement pipe
Manhole rings and covers
Inlet grates and frames
Sign panels
Seed, sod, fertilizer and wood cellulose mulch
Fabrics, filter cloth, plastic lining, and geotextiles
Bridge compression joint seal
Interior insulation
Ceramic and glazed tile
Sprinkler systems and water control devices

All other items not mentioned must be fabricated in accordance with and meet the requirements of the applicable Division of Highways specifications, plans, and standards.

Special Provisions
Work Sheet No. 109-1
Force Account (Contractor)
Oct. 1981
Prepared by ____
Proofed by ____

Date

FORCE ACCOUNT ITEMS
COLORADO PROJECT NO. IR 25-1(111)

DESCRIPTION

This provision consists of the Division's estimate for force account items included in the Contract. This work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with subsection 109.04. Payment will constitute full compensation for all work necessary to complete the item.

Force account work valued at $5,000.00 or less, that must be performed by a licensed journeyman in order to comply with Federal, State or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

FORCE ACCOUNT

F/A No.	Pay Item	Quantity*	Estimated Amount
F/A01	Minor Contract Revisions	FA	#5,000

* For On-the-Job Trainees show quantity; for other items use "F.A.".

SPECIAL CONSTRUCTION REQUIREMENTS

Water Quality Permit Requirements

Colorado Project
IR 25-1(111)

The proposed work as shown in the plans has been permitted by the U.S. Army Corps of Engineers under a Nationwide 404 Permit for "Discharges of Dredged or Fill Material Into Certain Waters." The contractor is required to observe all special conditions attached to the Nationwide 404 Permit. Any questions regarding this permit should be directed to the U.S. Army Corps of Engineers, Albuquerque District, Southern Colorado Project Office, P.O. Box 294, Pueblo, CO 81002, Attention: Ms. Anita Culp, or may be contacted by calling (303) 543-9459. A copy of this permit is available through the Resident Engineer and the contractor is advised to read and comply with all the terms and conditions.

Special Provisions
Work Sheet No. 107-1
Utilities
Oct. 1981
Prepared by ____
Proofed by ____

NOTE: Alter as necessary.

_____
Date

UTILITIES
COLORADO PROJECT NO. IR 25-1 (111)

It is anticipated that utilities conflicting with construction will be moved or adjusted in coordination with the Contractor's activities.

- -

The owners of the utilities and estimated completion dates of move or adjustment of their facilities are as follows:

_____	_____
_____	_____
_____	Coordinated with Construction

The Division anticipates no delay, beyond the above dates, toward the completion of the project due to utility moves or adjustments.

- -

* The utilities involved are:

_____

_____

_____

The Division anticipates no delay toward the completion of the project due to utility moves or adjustments.

* To be used when all Utilities involved have to be coordinated with construction.

MEMORANDUM

DEPARTMENT OF HIGHWAYS
4201 East Arkansas Ave.
Denver, Colorado 80222

IR 25-1(111)
Brantzell Arroyo

DATE: September 23, 1987

TO: Bill Vidal, District 2 ← YOUR COPY

FROM: Mayer/Fleming, Staff Design RLH

SUBJECT: FINAL PLAN REVIEW

Attached are 6 sets of plans and 6 sets of specifications for the above-captioned project.

Please review these final plans at your earliest convenience. Mark up one set in red pencil and return to Staff Design. Please combine all revisions from your District into one letter. This will be your last chance for revisions before construction sets are printed.

Please return one set of marked plans to Staff Design by October 15, 1987.

Following is a list of items that will hold up clearance for advertising:

1. Right of Way
2. Utilities

Jackie ↘

Please comment by 10/9/87

TEF/cc
Attachments

cc: Brown/Miller, District 2 (w/prints)
Mayer/Fleming, Staff Design

Vidal / Brown - 1 set
Miller - 1 set
Droge / Annand - 1 set
Snow - 1 set
Anders / ~~Benbow~~ - 1 set
Benbow - 1 set

9-24-87

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO	SHEET NO
VIII	COLORADO	IR 25-1(111)	1

AS CONSTRUCTED

NO REVISIONS ☐ REVISED ☐ VOID ☐

REVISIONS		

STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS — STATE OF COLORADO

PLAN AND PROFILE OF PROPOSED

FEDERAL AID PROJECT NO. IR 25-1(111)

STATE HIGHWAY NO. 25

PUEBLO COUNTY

SCALES OF ORIGINAL DRAWINGS

ON PLAN, 1 IN. = 100 FT.

ON PROFILE { 1 IN. = 100 FT. HORIZONTAL; 1 IN. = 10 FT. VERTICAL

TABULATION OF LENGTH AND DESIGN DATA

STATION	LIN. FT. ROADWAY
STA. 737+66.61 BEGIN IR 25-1(111) = STA. 737+66.61 ON I-25-1(40)75 = M.P. 81.75 STA. 757+00.00 END IR 25-1(111) = STA. 757+00.00 ON I-25-1(40)75 = M.P. 81.38	1933.39
TOTAL	1933.39

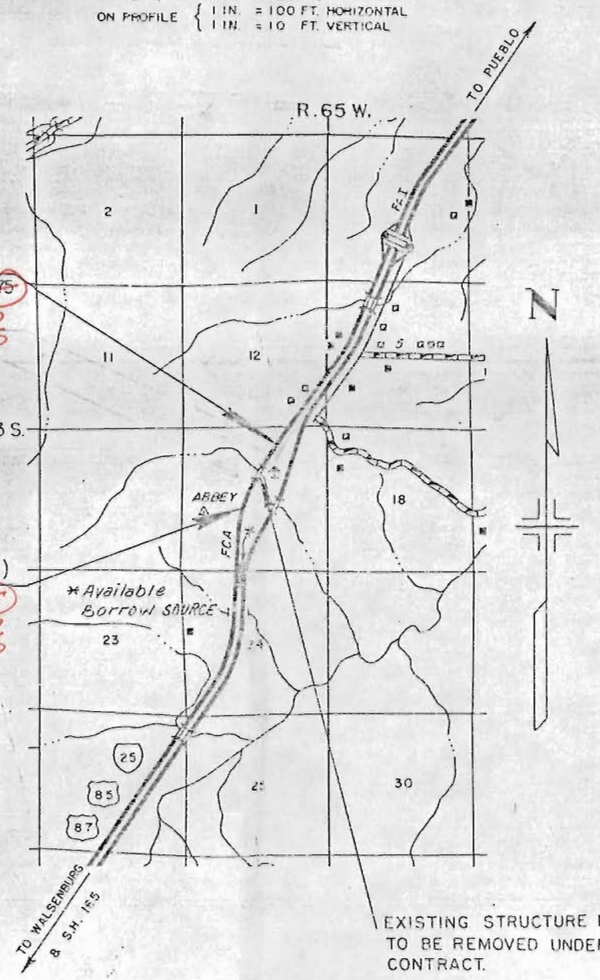
	LIN. FT.	MILES
NET AND GROSS LENGTH ROADWAY	1933.39	0.336

DESIGN DATA

MAXIMUM DEGREE OF CURVE		1° 00'
MAXIMUM GRADE		3.75%
MINIMUM S.S.D. - HORIZONTAL		>850'
MINIMUM S.S.D. - VERTICAL		>850'
MAXIMUM DESIGN SPEED		70 MPH
2007 DESIGN TRAFFIC VOLUME	ADT	14000
	DHV	2380
1987 TRAFFIC VOLUME	ADT = 8300 DHV = 1411 TRUCKS = 14%	

STA. 737+66.61 BEGIN IR 25-1(111) = STA. 737+66.61 on I-25-1(40)75 = M.P. 81.75 ,672 0

STA. 757+00.00 END IR25-1(111) = STA. 757+00.00 on I-25-1(40)75 = M.P. 81.38 ,302 0



SCALE IN MILES

0 0.5 1 2 3

0 1 2 3 4

SCALE IN KILOMETRES

INDEX OF SHEETS

SHEET NO.	
1.	TITLE SHEET
2.	STANDARD PLANS LIST
3.	TYPICAL SECTIONS & GENERAL NOTES
4-5.	SUMMARY OF APPROXIMATE QUANTITIES
6.	STRUCTURE QUANTITIES
7.	SURFACING PLAN, SUMMARY OF EARTHWORK QUANTITIES AND WETTING TABULATION
8.	CONSTRUCTION TRAFFIC CONTROL DEVICES, DELINEATORS, FENCING, SEEDING, GUARD RAIL AND CONCRETE BARRIER (TEMPORARY) TABULATIONS
9-10.	CONCRETE BOX CULVERT (SPECIAL) DETAILS
11.	DETOUR DETAIL
12.	PLAN AND PROFILE SHEET

NEW AND REVISED STANDARDS

M-606-11 GUARD RAIL, TYPE 4 CONCRETE BARRIER (9 SHEETS) (2-18-83)

FILE COPY

DO NOT REMOVE

Row Copy

DIVISION OF HIGHWAYS

APPROVED:

CHIEF ENGINEER DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

DATE

APPROVED:

DIVISION ADMINISTRATOR

AS CONSTRUCTED INFORMATION

CONTRACTOR

ENGINEER (Project or Resident)

PROJECT STARTED

PROJECT COMPLETED

AS CONSTRUCTED PLANS APPROVED

TITLE DATE

T.E.F.

AS CONSTRUCTED						
NO. REVISIONS		REVISED		VOID		

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
VIII	COLORADO	IR 25-1 (111)	2	

Plan No.	Title	Page
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M-107-1	TEMPORARY EROSION CONTROL	2
M-203-1	APPROACH ROADS, FLARING, CUT SLOPE TREATMENT, BRIDGE & CREST WIDENING	3
M-203-2	DITCH TYPES	4
M-203-10	SUPERELEVATION OF CURVES - CROWNED HIGHWAYS	5
M-203-11	SUPERELEVATION OF CURVES - DIVIDED HIGHWAYS - SHOULDER PIVOT	6
M-203-12	SUPERELEVATION OF CURVES - STREETS	7
M-203-13	SUPERELEVATION OF CURVES - DIVIDED HIGHWAYS - CENTER PIVOT	8
M-206-1	EXCAVATION AND BACKFILL FOR STRUCTURES (2 SHEETS)	9
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M-504-1	STEEL CRIBBING	14
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THE STANDARD PLAN SHEETS INDICATED HEREON BY A MARKED BOX ARE TO BE USED TO CONSTRUCT THIS PROJECT.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

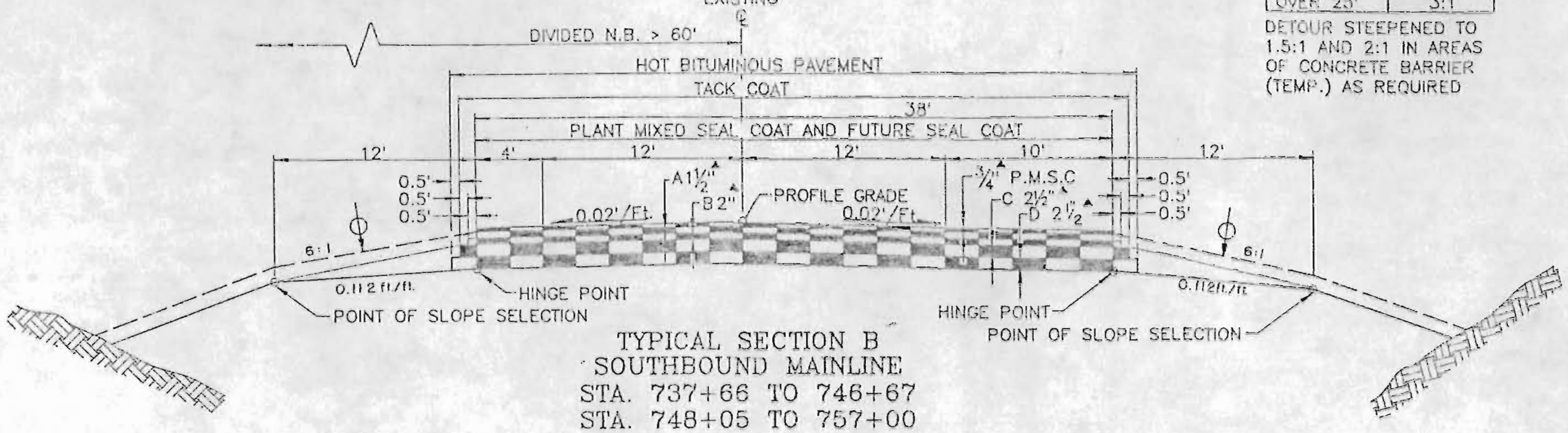
STANDARD PLANS LIST

M & S STANDARDS - JANUARY, 1982

STATE OF COLORADO
STATE DEPARTMENT OF HIGHWAYS:
DIVISION OF HIGHWAYS:
D.O.H. FORM NO. 126:
REV. NOV. 1983:

AS CONSTRUCTED			FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.
NO REVISIONS	REVISED	VOID	VIII	COLO.	IR 25-1(111)	3

TYPICAL SECTION A
SOUTHBOUND MAINLINE
STA. 746+67 TO 748+05

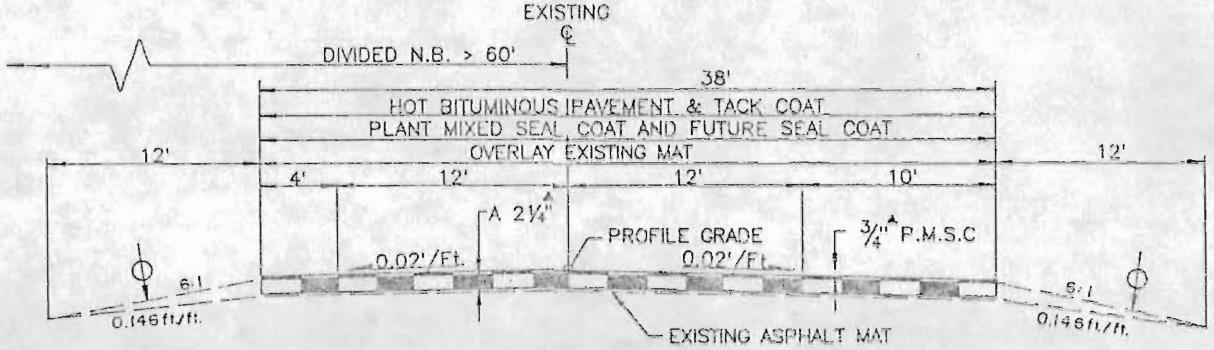


MAINLINE AND DETOUR FILL SLOPE

"H"	SLOPE
10' TO 25'	4:1
OVER 25'	3:1

DETOUR STEEPENED TO 1.5:1 AND 2:1 IN AREAS OF CONCRETE BARRIER (TEMP.) AS REQUIRED

TYPICAL SECTION B
SOUTHBOUND MAINLINE
STA. 737+66 TO 746+67
STA. 748+05 TO 757+00



THE DEPTH AND WIDTH OF THE SIDE DITCH SHALL BE VARIED WHERE NECESSARY IN ORDER TO PROVIDE PROPER DRAINAGE.

BREAKPOINTS ON SLOPES AND IN BOTTOMS OF DITCHES SHALL BE ROUNDED DURING CONSTRUCTION FOR A PLEASING APPEARANCE. SEE STANDARDS FOR DETAILS OF CUT SLOPE TREATMENT, FLARING AND WIDENING.

⌽ THE CONTRACTOR WILL BE REQUIRED TO PLACE TOPSOIL TO THIS LINE AFTER COMPLETION OF THE PAVING OPERATION.

▲ APPROXIMATE THICKNESS

MATERIAL SHALL BE PLACED IN SEPARATE COURSES AT THE FOLLOWING APPROXIMATE RATES PER 100 LIN. FT. OF ROADWAY:

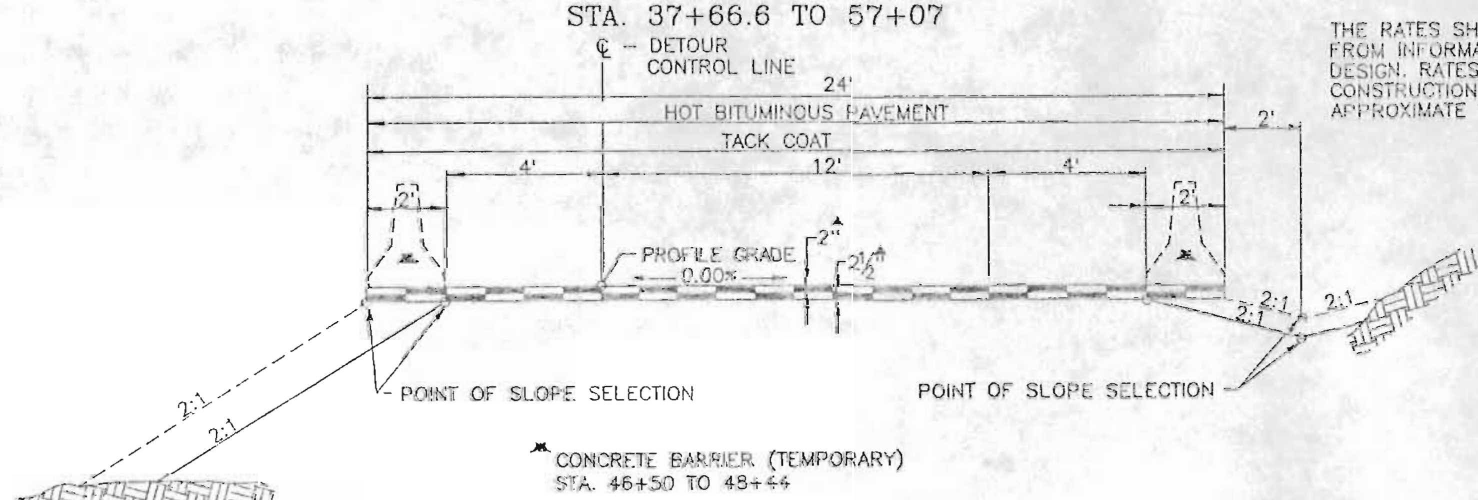
TYPICAL A
- PLANT MIXED SEAL COAT . . . . 18 TONS
- BITUMINOUS PAVEMENT LAYER A. . . . . 35 TONS
- LAYER B. . . . . 36 TONS
- LAYER C. . . . . 74 TONS
- LAYER D. . . . . 76 TONS

TYPICAL B
- PLANT MIXED SEAL COAT . . . . 18 TONS
- BITUMINOUS PAVEMENT LAYER A. . . . . 53 TONS

DETOUR TYPICAL
- BITUMINOUS PAVEMENT LAYER A. . . . . 25 TONS
- LAYER B. . . . . 31 TONS

THE RATES SHOWN HAVE BEEN DETERMINED FROM INFORMATION AVAILABLE AT THE TIME OF DESIGN. RATES SHOULD BE ADJUSTED DURING CONSTRUCTION TO OBTAIN THE REQUIRED APPROXIMATE THICKNESS.

DETOUR TYPICAL SECTION
SOUTHBOUND DETOUR
STA. 37+66.6 TO 57+07



✱ CONCRETE BARRIER (TEMPORARY)
STA. 46+50 TO 48+44

GENERAL NOTES

FOR PRELIMINARY PLAN QUANTITIES OF PAVEMENT MATERIALS, THE FOLLOWING RATES OF APPLICATION WERE USED:

- PLANT MIXED SEAL COAT. . . . . @ 110 LBS. PER SQ. YD./INCH
- TACK COAT EMUL. ASPH. (SLOW-SETTING) . . . . @ 0.05 GALS./SQ. YD.
- BITUMINOUS PAVEMENT . . . . @ 110 LBS. PER SQ. YD./INCH

RATES OF APPLICATION SHALL BE AS DETERMINED BY THE ENGINEER AT THE TIME OF APPLICATION.

THE FOLLOWING SHALL BE FU SHED WITH EACH BITUMINOUS PAVER:

1. A SKI TYPE DEVICE AT LEAST 30 FEET IN LENGTH.
2. SHORT SKI OR SHOE.

ANY LAYER OF BITUMINOUS PAVEMENT THAT IS TO HAVE A SUCCEEDING LAYER PLACED THEREON SHALL BE COMPLETED FULL WIDTH BEFORE SUCCEEDING LAYER IS PLACED.

DEPTH OF MOISTURE-DENSITY CONTROL FOR THIS PROJECT SHALL BE AS FOLLOWS:

FULL DEPTH OF ALL EMBANKMENTS
BASES OF CUTS AND FILLS 0.5 FOOT.

EXCAVATION REQUIRED FOR COMPACTION OF BASES OF CUTS AND FILLS WILL BE CONSIDERED AS SUBSIDIARY TO THAT OPERATION AND WILL NOT BE PAID FOR SEPARATELY.

TYPE OF COMPACTION FOR THIS PROJECT WILL BE AASHTO T 99.

TOP 2 FEET OF EMBANKMENT MUST HAVE AN "R" VALUE OF 18 (MINIMUM).

THE MINIMUM THICKNESS OF TOPSOIL SHALL BE 4 INCHES. IT IS ESTIMATED THAT 1,047 CU. YDS. WILL BE REQUIRED BASED ON AVERAGE THICKNESS, AND WILL BE OBTAINED FROM THE CONTRACTOR'S SOURCE.

MILEPOSTS WILL BE ADJUSTED OR RESET BY STATE FORCES AT NO COST TO THE PROJECT.

IT IS ESTIMATED THAT 30 GALS. OF PAVEMENT MARKING PAINT WILL BE REQUIRED AS FOLLOWS:

	MAINLINE		DETOUR	
WHITE	7	GALS.	7	GALS.
YELLOW	9	GALS.	7	GALS.
TOTAL	16	GALS.	14	GALS.

IT IS ESTIMATED THAT 300 SQ. FT. OF REMOVAL OF PAVEMENT MARKING WILL BE REQUIRED ON THIS PROJECT.

IT IS ESTIMATED THAT 3,000 SQ. YDS. OF REMOVAL OF ASPHALT MAT WILL BE REQUIRED ON THE DETOUR. REMOVED MAT WILL BECOME THE PROPERTY OF THE CONTRACTOR TO BE DISPOSED OF BY HIM.

IT IS ESTIMATED THAT 50 HOURS OF DOZING WITH A POWER CRAWLER TYPE TRACTOR IN THE 140 TO 200 HORSEPOWER RANGE WILL BE REQUIRED. THIS WILL BE REQUIRED FOR REMOVAL OF THE DETOUR OR AS DIRECTED.

A CUTTING WHEEL WILL BE REQUIRED TO OBTAIN A VERTICAL CUT BETWEEN THE MAINLINE SHOULDER AND THE DETOUR AT THE TIME OF DETOUR REMOVAL. THIS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.

IF THE CONTRACTOR USES THE AVAILABLE BORROW SOURCE LOCATED BETWEEN THE N.B. AND S.B. LANES AT M.P. 81, THE SEEDING REQUIREMENTS SHOWN IN THESE PLANS WILL BE USED BY THE CONTRACTOR AT HIS OWN EXPENSE.

KO number 05/26/87 22:52:49 _DUR:(DRAW,PJ.85021.RDWY.H106.TYP) TYPABCX

TATE OF COLORADO
TATE DEPARTMENT OF HIGHWAYS
IVISION OF HIGHWAYS
.O.H. FORM NO. 113
EV. NOV. 1983

SUMMARY OF APPROXIMATE QUANTITIES

AS CONSTRUCTED			FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.
NO REVISIONS	REVISED	VOID	VIII	COLO.	IR 25-1 (111)	4

INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT												PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.	DIFF. +/-	% PLAN.
			201	CLEARING AND GRUBBING	L S												1			
			202	REMOVAL OF DELINEATOR	EACH												13			
			202	REMOVAL OF ASPHALT MAT	SQ YD												3000			
			202	REMOVAL OF PAVEMENT MARKING	SQ FT												300			
			202	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	L S												1			
			202	REMOVAL OF FENCE	LIN FT												370			
			202	REMOVAL OF GUARD RAIL TYPE 3	LIN FT												600			
			202	REMOVAL OF END ANCHORAGE	EACH												4			
			203	EMBANKMENT MATERIAL (COMPLETE IN PLACE)	CU YD												22922			
			203	DOZING	HOUR												50			
			206	STRUCTURE EXCAVATION	CU YD												204			
			206	STRUCTURE BACKFILL (CLASS 2)	CU YD												506			
			207	TOPSOIL (HAUL)	CU YD												1047			
			212	SEEDING (NATIVE)	ACRE												2			
			213	MULCHING	ACRE												2			
			403	HOT BITUMINOUS PAVEMENT (GRADING E) (HAUL)	TON												2967			
			410	PLANT MIXED SEAL COAT (TYPE A) (HAUL)	TON												469			
			411	ASPHALT CEMENT (AC-20) (FORTIFIED)	TON												160			
			411	ASPHALT CEMENT (AC-20) (RUBBERIZED)	TON												33			
			411	EMULSIFIED ASPHALT (SLOW-SETTING)	GAL												1136			
			601	CONCRETE CLASS A (BOX CULVERT)	CU YD												385.1			
			602	REINFORCING STEEL	LB												34889			
			607	END POST	EACH												4			
			607	CORNER AND LINE BRACE POST	EACH												6			
			607	FENCE BARBED WIRE WITH METAL POSTS	LIN FT												370			
			612	DELINEATOR (TYPE I)	EACH												4			
			612	DELINEATOR (TYPE III)	EACH												2			
			614	FLAGGING	HOUR												800			
			614	TRAFFIC CONTROL SUPERVISOR	DAY												30			
			614	BARRICADE (TYPE 3 M-C) (TEMPORARY)	EACH												1			
			614	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EACH												1			
			614	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EACH												27			

22-SEP-1987 USER$DISK:[DRAW.PJ.85021.RDWY.H106.TAB]J113FA

TE OF COLORADO
TE DEPARTMENT OF HIGHWAYS
ISION OF HIGHWAYS
.H. FORM NO. 113
. NOV. 1983

SUMMARY OF APPROXIMATE QUANTITIES

AS CONSTRUCTED		
NO REVISIONS	REVISED	VOID

FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.
VIII	COLO.	IR 25-1 (111)	5

INDEX BOOK	INDEX PAGE	INDEX SHEET	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	PROJECT TOTALS PLAN	PROJECT TOTALS AS CONST.	DIFF. +/-	% PLAN.
			614	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE C)	EACH	2			
			614	ADVANCE WARNING FLASHING OR SEQUENCING ARROW PANEL (C TYPE)	EACH	1			
			614	DRUM CHANNELIZING DEVICE	EACH	70			
			614	DRUM CHANNELIZING DEVICE (WITH LIGHT) (FLASHING)	EACH	6			
			614	CONCRETE BARRIER (TEMPORARY)	LIN FT	734			
			614	TRAFFIC CONE	EACH	100			
			620	FIELD LABORATORY (CLASS 1)	EACH	1			
			620	SANITARY FACILITY	EACH	1			
			626	MOBILIZATION	L S	1			
			627	PAVEMENT MARKING PAINT	GAL	30			
				FORCE ACCOUNT					
			F/A01	MINOR CONTRACT REVISIONS	F A	1			
				RIGHT-OF-WAY					
				RIGHT-OF-WAY	L S	1			

22-SEP-1987 USER$DISK:[DRAW.PJ.85021.RDWY.H106.TAB]U113FB

E OF COLORADO
E DEPARTMENT OF HIGHWAYS
SION OF HIGHWAYS
. H. FORM NO. 125
NOV. 1963

STRUCTURE QUANTITES

AS CONSTRUCTED			FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET No.	TOTAL SHEETS
NO REVISIONS	REVISED	VOID	VIII	COLO.	IR 25-1(111)	6	

INDEX BOOK	INDEX PAGE	INDEX SHEET	LOCATION	UNCLASSIFIED EXCAVATION CUBIC YARD EXCAV	UNCLASSIFIED EXCAVATION CUBIC YARD EMB	STRUCTURE EXCAVATION CUBIC YARD	STRUCTURE BACKFILL CUBIC YARD CL. 2	HBP (GR E) (HAUL) TON	CONCRETE (BOX CULVERT) CUBIC YARD CL. A	REINFORCING STEEL LB.	"H" OVER CULV. FT.	MISCELLANEOUS
			731+00 To 737+66.6					*				
			737+66.61 to 757+00.00 (Detour)	546	▲ 10,543							
			746+67 to 748+04.5									1 - L.S. - Removal of Portions of Present Structure
			747+38 Barrel and Headwalls	62		204	402		350.2	32,434	23	
			Wingwalls - Rt				54		17.9	1,263		
			Wingwalls - Lt				50		17.0	1,192		
			TOTAL	▲ 608	▲ 10,543	204	506		385.1	34,889		

▲ Carried to Summary of Earthwork Quantities

* Included In Surfacing Plan

STATE OF COLORADO
STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
FORM NO. 126
REV. FEB. 1984

AS CONSTRUCTED	FED.ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	SHEET TOTALS
NO REVISIONS ☐ REVISED ☐ VOID ☐	VIII	COLO.	IR 25-1(111)	7	

SURFACING PLAN

STATION TO STATION	SOURCE	QUANTITY – TONS (HAUL) HOT BITUMINOUS PAVEMENT (GRADING E) LAYER D	LAYER C	LAYER B	LAYER A	PLANT MIXED SEAL COAT (TYPE A) (HAUL)
APPROACH TO PROJECT	CONTRACTOR'S			231	231	119
737+66 to 746+67					478	163
746+67 to 748+05		105	103	50	49	25
748+05 to 757+00					475	162
37+66.6 to 57+07 (DETOUR)				602	486	
EST. FOR IRREGULARITIES		157				
SUBTOTALS		262	103	883	1719	469
TOTAL		2967				469

Stabilization based on:

1. 18 k ESAL (20 Year) . . 4,264,600 – Roadway
   18 k ESAL . (2 Year) . . . 75,177 – Detour
2. Regional Factor 0.5
3. Serviceability Index 2.5
4. Subgrade 'R' Value 18
5. Strength Coefficient:
   Hot Bituminous Pavement . . . 0.44
   Plant Mix Seal Coat 0.25
6. W.S.N. - (Roadway) 3.85
7. W.S.N. - (Detour) 1.95
8. Structure No. (Overlay) 1.18

WETTING *

	MGAL.	
Compaction	977	
TOTAL	977	

* For Information Only

SUMMARY OF EARTHWORK QUANTITIES

INDEX BOOK	INDEX PAGE	INDEX SHEET		PROJECT TOTALS (C.U.YD.)
			EMBANKMENT MATERIAL (COMPLETE-IN-PLACE)	
			Roadway (From Cross Sections)	12,379
			Structure Quantities as Embankment	10,543
			TOTAL	22,922
			FOR INFORMATION ONLY	
			UNCLASSIFIED EXCAVATION	
			Structure Quantities as Excavation	608
			COMPACTION (AASHTO T 99)	
			Embankment (Net)	12,379
			Roadway Base Compaction	534
			Detour Embankment (Net)	10,543
			Detour Base Compaction	948
			TOTAL	24,404
			ROADWAY QUANTITIES BALANCE	
			Excavation	
			Unclassified	608
			* Borrow from Available Source	26,899
			TOTAL	27,507
			Embankment (Net)	
			Roadway (From Cross Sections)	12,379
			Detour (From Cross Sections)	10,543
			TOTAL	22,922
			Embankment x Factor (1.20)	
			Roadway	14,855
			Detour	12,652
			TOTAL	27,507

* It Is Approximately 0.6 Miles From Available Borrow Source (Milepost 81) To Project

ATE OF COLORADO
ATE DEPARTMENT OF HIGHWAYS
VISION OF HIGHWAYS
. H. FORM NO. 128
V. FEB. 1984

AS CONSTRUCTED	FED.ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	SHEET TOTALS
NO REVISIONS ☐ REVISED ☐ VOID ☐	VIII	COLO.	IR 25-1(111)	8	

CONSTRUCTION TRAFFIC CONTROL DEVICES

SIGN CODE	LEGEND	DIMENSIONS	PANEL SIZE - QUANTITY EACH A	B	C	OTHER
48W20-1	ROAD/CONST/ (DIST)	48"X48"		4		
48W20-2	DETOUR/(DIST)	48"X48"		2		
48W20-5( )	LANE/ CLOSED/(DIST)	48"X48"		2		
48W4-2(L)	LEFT LANE TRANSITION	48"X48"		4		
48W4-2(R)	RIGHT LANE TRANSITION	48"X48"		2		
48R2-1(40)	SPEED/LIMIT/ 40	48"X60"			2	
48R11-2	ROAD/CLOSED	48"X30"		1		
48W20-7a	FLAGGER SYMBOL	48"X48"		4		
60G20-2	END/ CONSTRUCTION	60"X24"		1		
48W20-50	BE/PREPARED/ TO/STOP	48" X 48"		2		
48W20--5(L)	LEFT LANE/ CLOSED/AHEAD	48" X 48"		2		
24R4-7	KEEP RIGHT SYMBOL	24" X 30"	1			
48R2--(50)	SPEED/LIMIT/50	48" X 60"		2		
48R2-1(65)	SPEED/LIMIT/65	48" X 60"		1		
TOTAL			1	27	2	

TRAFFIC CONE 28"	40
TRAFFIC CONE 36"	60
DRUM CHANNELIZING DEVICE	70
DRUM CHANNELIZING DEVICE (LIGHT)(FLASHING)	6
BARRICADE (3M-C)(TEMPORARY)	1
FLASH ARROW PANEL(C TYPE)	1

NOTE: ALL CONSTRUCTION WARNING SIGNS PROVIDED ON THIS PROJECT SHALL BE PROVIDED WITH HIGH BRIGHTNESS ENCAPSULATED TYPE REFLECTIVE SHEETING. SEE SECTION 713.10 OF THE STANDARD SPECIFICATIONS.

DELINEATORS

STATION TO STATION	SIDE	SPACING	EACH REMOVAL OF DELINEATOR		DELINEATOR TYPE I		DELINEATOR TYPE III	
ENTIRE PROJECT	BOTH		13					
737+66 to 757+00	RT.	1°00'			4			
747+38 -	BOTH	CBC					2	
TOTAL			13		4		2	

Reflectors : 4 Crystal
6 Yellow

FENCING

STATION TO STATION	SIDE	LIN. FT. REMOVAL OF FENCE		FENCE BARBED WIRE METAL POSTS	
746+00 to 749+00	RT	300			
746+00 to 747+00	RT			120	
747+40 to 749+00	RT			180	
747+50 to 748+20	LT	70			
747+50 to 747+70	LT			30	
748+00 to 748+20	LT			40	
TOTAL		370		370	

change due to new proposed ROW
V# 9/29/87

It is estimated that the following will be required:

End Posts 4 each
Corner and Line Brace Posts 6 each

GUARD RAIL

STATION TO STATION	SIDE	REMOVAL OF GUARD RAIL TYPE 3 LIN. FT.		REMOVAL OF END ANCHORAGE EACH	
744+67 to 746+67	BOTH	400		2	
748+05 to 750+05	BOTH	200		2	
TOTAL		600		4	

All removed guard rail to be the property of the State.

SEEDING PLAN

SEEDING, SOIL PREPARATION[#], FERTILIZING[#] WITH COMMERCIAL FERTILIZER AND MULCHING WILL BE REQUIRED FOR APPROXIMATELY 2 ACRES ON ALL DISTURBED AREAS NOT SURFACED.

THE FOLLOWING TYPES AND RATES SHALL BE USED:

COMMON NAME	BOTANICAL NAME	RATE LBS. PLS/ACRE
WESTERN WHEATGRASS	AGROPYRON SMITHII	7
CRESTED WHEATGRASS	AGROPYRON DESERTORUM	5
SMOOTH BROME V. LINCOLN	BROMUS INERMIS	3
SIDEOATS GRAMA	BOUTELOUA CURTIPENDULA	4
BLUE GRAMA	BOUTELOUA GRACILIS	1
GALLETA	HILARIA JAMESII	2
PUBESCENT WHEATGRASS	AGROPYRON TRICHOPHORUM	6
TOTAL POUNDS PURE LIVE SEED PER ACRE		28

SEED SHALL BE MECHANICALLY DRILLED 0.25"-0.50" INTO SOIL. SMALL AREAS MAY REQUIRE HANDBROADCAST SEED AND HAND CRIMPED MULCH.

1-1/2 TONS PER ACRE NATIVE HAY MECHANICALLY CRIMPED INTO SOIL.

COMMERCIAL FERTILIZER	ANALYSIS	LBS./ACRE AVAILABLE
NITROGEN	18%	45
PHOSPHORUS	46%	115

# FOR INFORMATION ONLY	
SOIL PREPARATION (NATIVE)	2 ACRES
SEEDING (NATIVE)	56 LBS.
MULCHING	3 TONS
FERTILIZER (AVAILABLE N)	90 LBS.
FERTILIZER (AVAILABLE P)	230 LBS.

PAY ITEM TOTALS	
SEEDING (NATIVE)	2 ACRES
MULCHING	2 ACRES

#NOT TO PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.

CONCRETE BARRIER (TEMPORARY)

STATION TO STATION (DETOUR)	SIDE	CONCRETE BARRIER (TEMPORARY) LIN. FT.	
43+00 To 48+42	LT.	542	
46+50 to 48+42	RT.	192	
TOTAL		734	

Includes 2-12' transition sections.

STATE OF COLORADO
STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
D. H. FORM NO. 117
REV. OCT. 1963

AS CONSTRUCTED				FED. ROAD REGION	DIVISION	PROJECT NUMBER	SHEET NUMBER
NO REVISIONS	REVISED	VOID		VIII	COLO.	IR 25-1(111)	9

REVISION			

HEADWALL & TOEWALL QUANTITIES

Z-bars	APPROX. QUANTS. FOR ONE HEADWALL & TOEWALL
#	LBS. PER LINEAR FT.
7	21
Concrete = 0.085 cu.yds./lin.ft.	

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications applicable to the project.

For construction details of Structure Excavation and Backfill see Standard M-206-1.

All construction joints shall be thoroughly cleaned before fresh concrete is poured and approved by the Engineer.

Splice quantities for longitudinal bars are not included in the table.

All exposed corners on concrete shall be chamfered 3/4".

All concrete shall be Class A (Box Culvert). (28 days strength 3000 psi)

DESIGN DATA: AASHTO, 1983 (LOAD FACTOR)
Unit Stresses: f_y = 60,000; f'_c = 3000; n = 10

DESIGN CRITERIA: Culvert in trench on unyielding subgrade, or culvert untrenched on yielding foundation.

LOADING DATA:
Live Load = HS 20-44 or Interstate Alternate
Dead Load = Earth Load = 84 lbs./cu.ft.
Equivalent Fluid Pressure = 36 lbs./cu.ft.
The minimum splice length for common bar sizes shall be:

Bar	#4	#5	#6	#7	#8	#9
Length	1'-0"	1'-3"	1'-8"	2'-3"	3'-0"	3'-10"

REINFORCING DETAILS

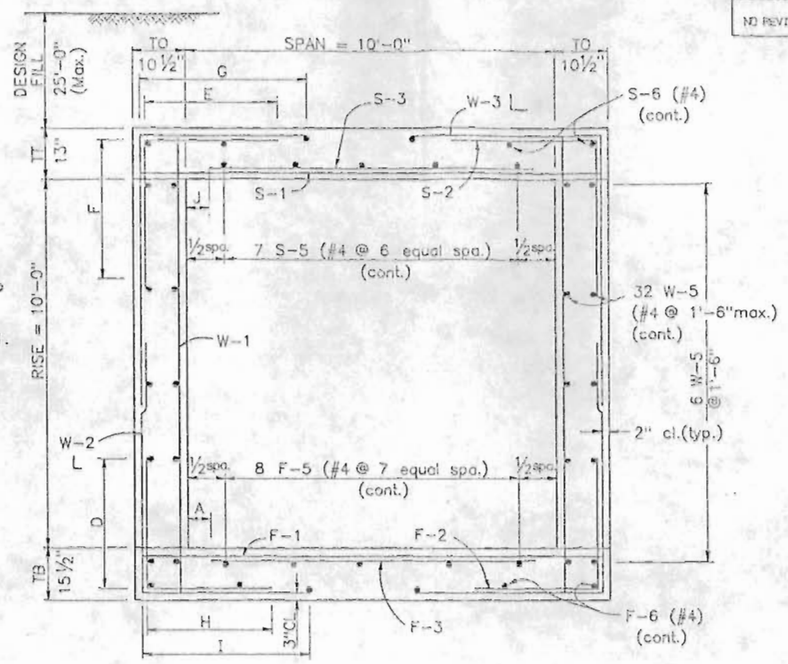
Bar	Size #	Spacing (inches)	Length
F1	6	13.0	11'- 5.5"
F2	4	15.5	4'- 5.0"
F3	7	13.0	9'- 6.0"
W1	5	18.0	11'-11.5"
W2	4	15.5	8'-10.5"
W3	4	15.5	9'- 2.0"
S1	6	13.0	11'- 5.0"
S2	4	15.5	5'- 8.0"
S3	7	13.0	9'- 0.0"

LONGITUDINAL BARS (all #4)

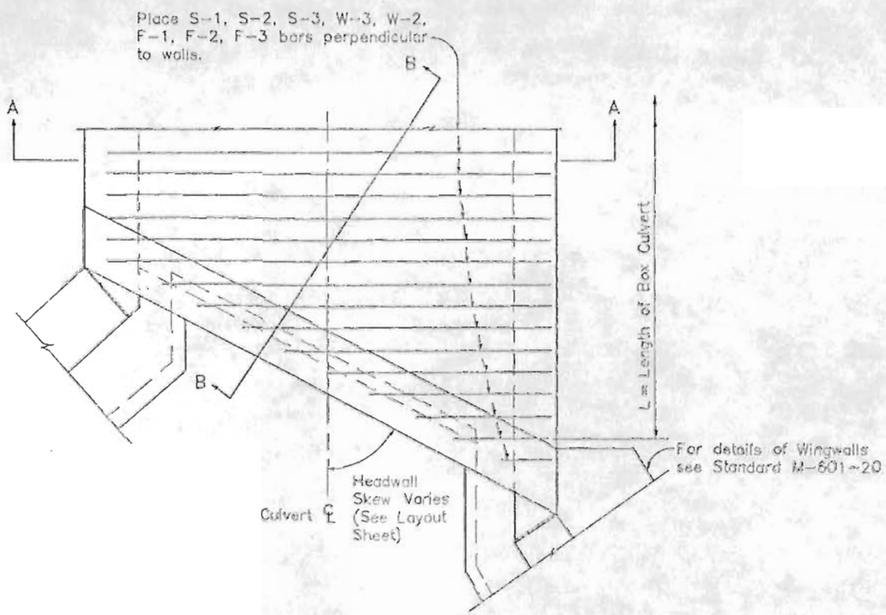
Bar	Number
F5	8
F6	6
W5	32
S5	7
S6	6

BAR DIMENSIONS

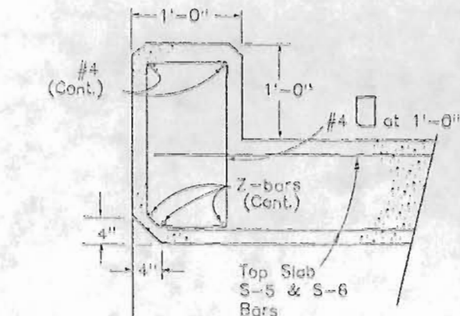
Dimension	Length	For Bar
A	0'-3"	F3
E	2'-3"	S2
J	0'-6"	S3
I	2'-4"	W2
F	3'-5"	S2
G	2'-9"	W3
D	2'-5"	F2
H	2'-0"	F2



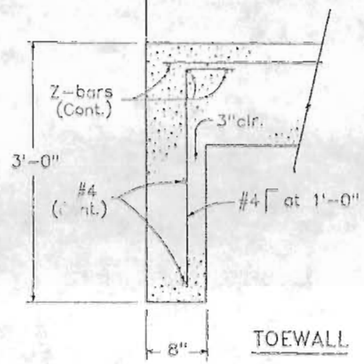
SECTION A-A



PLAN



HEADWALL



TOEWALL

SECTION B-B

QUANTITIES (Per foot of Barrel)

Concrete	1.69 cu. yds.
Reinforcement	155 lbs.

DIVISION OF HIGHWAYS

SINGLE

CONCRETE BOX CULVERT

BRANTZELL ARROYO

DESIGNER Singh		STRUCTURE NUMBERS	Minor
DETAILER Boomer			
DRAWING NUMBER B 1	OF 1	DRAWINGS	

REVISION DATES (PRELIMINARY STAGE ONLY)

85021 IR251111

KD number 01/29/97 23:31:55 JVA1:[DRAW.STDS.MSTDS] IR251111

STATE OF COLORADO
STATE DEPARTMENT OF HIGHWAYS
DIVISION OF HIGHWAYS
U. H. POST NO. 128
FEB. 1984

AS CONSTRUCTED							
NO REVISIONS		REVISED		VOID			

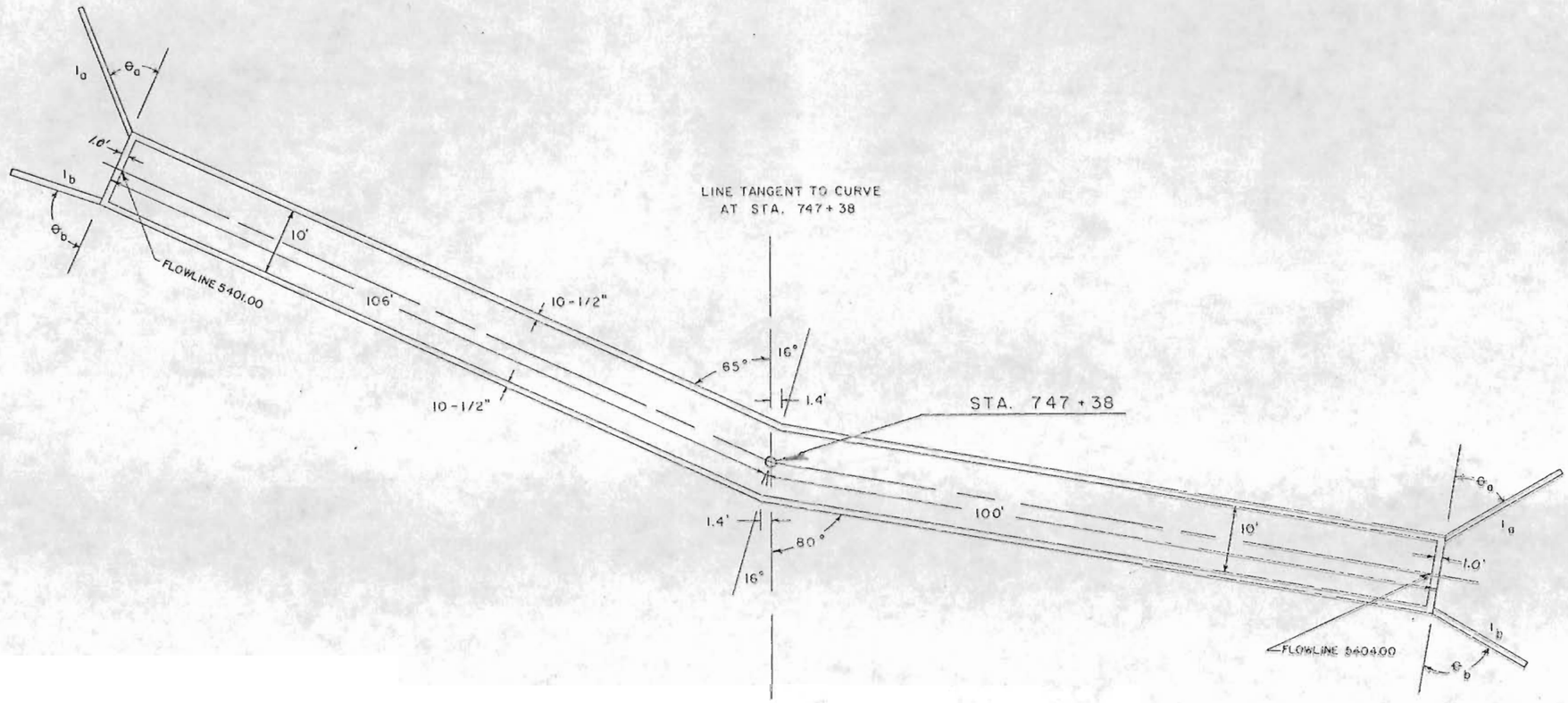
FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.	SHEET TOTALS
VIII	COLO.	IR 25-1(111)	10	

BRANTZELL ARROYO
CONCRETE BOX CULVERT DETAIL

ORIGINAL SCALE : 1" = 10'

WINGWALL DATA (OUTLET)

θ_a = 45° l_a = 20'
θ_b = 85° l_b = 14'
k = 4' m = 11.33'



WINGWALL DATA (INLET)

θ_a = 50° l_a = 20'
θ_b = 70° l_b = 16'
k = 4' m = 11.33'

STATE OF COLORADO
STATE DEPARTMENT OF HIGHWAYS:
DIVISION OF HIGHWAYS:
D.H. FORM NO. 134:
REV. NOV. 1983:

BRANTZELL ARROYO DETOUR DETAIL

AS CONSTRUCTED			FED. ROAD REGION	DIVISION	PROJ. NO.	SHEET NO.
NO REVISIONS	REVISED	VOID	VIII	COLO.	IR 25-1(111)	11

DETOUR CURVE POINTS FROM SURVEY LINE ORIG. SCALE: 1" = 100' HORIZ.

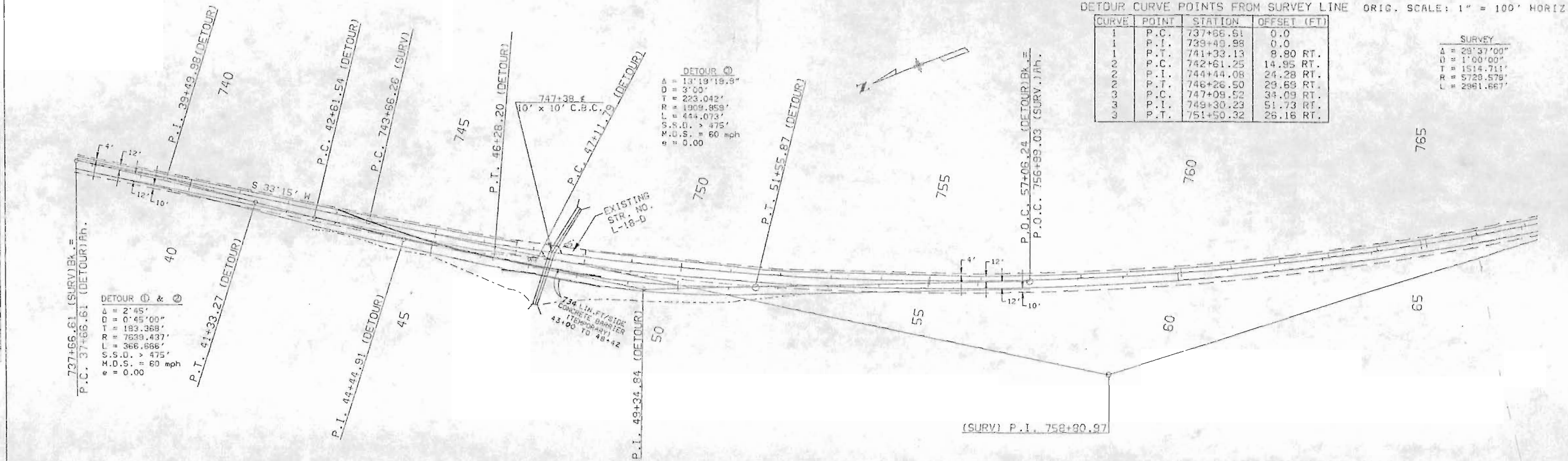
CURVE	POINT	STATION	OFFSET (FT)
1	P.C.	737+66.61	0.0
1	P.I.	739+49.98	0.0
1	P.T.	741+33.13	8.80 RT.
2	P.C.	742+61.25	14.95 RT.
2	P.I.	744+44.08	24.28 RT.
2	P.T.	746+26.50	29.69 RT.
3	P.C.	747+09.52	34.09 RT.
3	P.I.	749+30.23	51.73 RT.
3	P.T.	751+50.32	26.16 RT.

SURVEY
Δ = 29°37'00"
D = 1°00'00"
T = 1514.711'
R = 5729.578'
L = 2961.667'

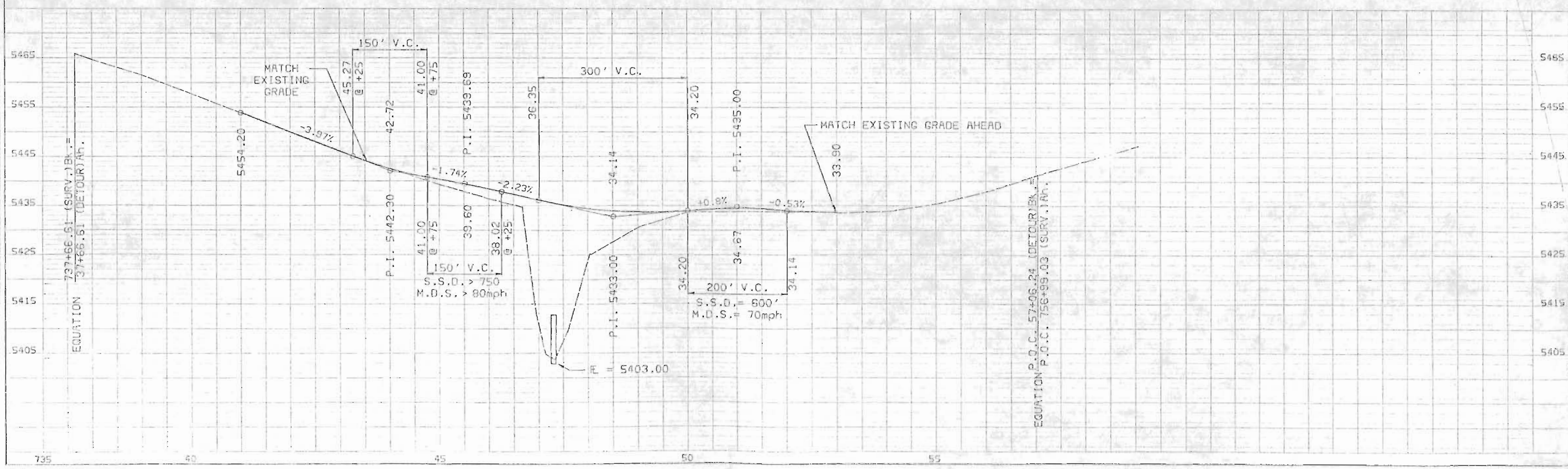
DETOUR ① & ②
Δ = 2°45'
D = 0°45'00"
T = 183.368'
R = 7639.437'
L = 366.666'
S.S.D. > 475'
M.D.S. = 60 mph
e = 0.00

DETOUR ③
Δ = 13°19'19.9"
D = 3°00'
T = 223.042'
R = 1909.859'
L = 444.073'
S.S.D. > 475'
M.D.S. = 60 mph
e = 0.00

PLAN	
NOTE BOOK	SURVEYED
	PLOTTED
	ALIGNMENT CHECKED
	RT. OF WAY CHECKED



PROFILE	
NOTE BOOK	SURVEYED
	PLOTTED
	ALIGNMENT CHECKED
	B.M.'S NOTED



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. NOV. 1983: