Alternative Alignment
Douglas to Yard via 33rd
Feasibility Study

May 27, 1988
WBS CB01 01 01

CONTENTS

INTRODUCTION

On April 28, 1988, TRANSCAL staff made a presentation to the staff of LACTC on preliminary baseline alignment alternatives for the El Segundo line from Douglas Station across the Rosecrans/Aviation intersection to the Hawthorne Yard. The alternatives analysis addressed two significant problems: how best to cross Rosecrans/Aviation, and how best to enter the yard. (See the attached meeting minutes for further detail.)

All viable alignment options for both of these problem areas entail certain negative characteristics and associated sacrifices. Accordingly, LACTC directed TRANSCAL to study the feasibility of another option, namely, an alternative alignment that bypasses the Rosecrans/Aviation intersection and enters the yard from the west, via Douglas St, Redondo, and 33rd Street. The study was to determine the conceptual feasibility of this alternative alignment, taking into account cost, schedule, and environmental consequences. This technical memorandum reports the results of the study.

The technology assumed is that of the baseline (LB-LA) system; the effects of the decision regarding third rail and ATC are not addressed in this report.

ALIGNMENT

Please refer to the conceptual alignment plans in the Exhibits section. The table on the following page summarizes civil characteristics of the alternative as compared to the baseline.

Starting at a point on the baseline alignment to the northwest of Douglas Street, at approximately Station 110+00, the alternative alignment curves to the south on a 100-ft radius (27.8 mph) curve leaving the AT&SF right-of-way. The guideway is the standard double-track aerial configuration; an aerial easement over the corner of a privately owned parking lot is required. The alignment enters the median of Douglas Street just south of the existing Douglas Street cul-de-sac. The columns must be configured so as not to preclude future connection of the two halves of Douglas Street across or under the AT&SF tracks, nor access to the driveways on the east side of Douglas.

Because of constraints imposed by buildings on both sides, there is no room to spread the guideway to allow for a center-platform station south of the cul-de-sac. The relocated Douglas Street Station is therefore a side-platform station. (In the baseline alignment, Douglas Street Station is located in the AT&SF right-of-way; both versions are shown on the plan drawing.) If parking is required, arrangements can be made with local businesses to

DOUGLAS STATION TO YARD TURNOUT CIVIL & OPERATIONAL SUMMARY

Characteristic	Baseline Alignment, New LRT Bridge	Baseline Alignment, Two New Bridges	Alternative Align Douglas-33rd
Curve radius	Greater than 2500'	Greater than 6200'	100', 3000', 200' & 185', 1200' & 800'
Speed	47.5 mph	55 mph	17.7 minimum
Spiral length	100'	100'	100'
SuperE (act)	1.7"	1"	3.5" mainline
Length of			
o Aerial	1475'	1475'	3775'
o Bridge	250'	250'	0'
o Ret. fill	935'	935'	0'
o At grade	1100'	1100'	0'
Total length	3750'	3750'	3775'
Trip time delta from baseline	0	0	0

rent or buy space in their lots for system passengers; otherwise, a parking lot can be built in the baseline location, east of the AT&SF right-of-way, and a pedestrian overpass provided across the tracks to the relocated station.

From the station, the double-track aerial guideway continues south in the median of Douglas Street, crossing over Rosecrans Avenue. Douglas turns into Redondo (and into private property, owned by TRW) at Rosecrans. A 3000-ft-radius reverse curve is required across Rosecrans, as Redondo is offset slightly from Rosecrans. The alignment continues south in the median of Redondo Avenue to just north of 33rd Street. There, the guideway turns sharply to the east (200-ft radius southbound, 185-ft radius northbound, skirting an SCE substation, and runs in the median of 33rd Street, still as a dual-track aerial structure and still on TRW property. A side-platform aerial station will be located on 33rd near Redondo (the station location is not indicated on the plan drawing). This station would replace Compton Station in the baseline alignment. Because of the proximity of the station to the curves, the speed restrictions (18.4 mph southbound, 17.7 mph northbound) will not affect trip time.

Proceeding east from 33rd Street Station, the guideway continues in aerial configuration in the median of 33rd Street to a point west of Aviation Boulevard. There the route makes a transition to the south via reverse curves of 1200-ft and 800-ft (35 mph and 30 mph, respectively) radius, crossing over Aviation to enter the Hawthorne Yard from the west. It appears that the aerial guideway can pass under the high-voltage SCE wires at Aviation with the appropriate clearances, making it unnecessary to raise the wires; this must be confirmed during preliminary engineering if it is decided to proceed with the alternative.

The mainline tracks drop to grade along the north edge of the yard property; the yard lead remains aerial. The future extension to Torrance would pass through the yard, cross the SCE right-of-way, and curve in a southeasterly direction to continue at grade in the AT&SF right-of-way, as shown on yard layout D in the Exhibits section.

CAPITAL COST

An order-of-magnitude cost estimate was prepared for the mainline portion of the alternative alignment in comparison to the mainline portion of the baseline alignment. The alternative alignment is almost the same length as the baseline but is entirely aerial, whereas the baseline is partially at grade. The alternative therefore includes more structure and more direct fixation track than the baseline. The baseline includes one aerial center-platform station and one at-grade station, either center-platform or side-platform. (TRANSCAL has recommended the latter, but no formal direction has yet been given.) The alternative alignment includes two aerial side-platform stations. Utility relocation costs are expected to be significantly lower for the alternative than for the baseline, as the Rosecrans/Aviation intersection is bypassed, and railroad relocation requirements will not be as great.

No cost estimates were prepared for the yard under the two alternatives being considered, as TRANSCAL believes that the cost of the yard will not influence the choice of alignment. It appears, however, that the yard layout corresponding to the alternative alignment (Layout D) is more expensive than the layout for the baseline (Layout A-1), since Layout D involves aerial structure in the yard and requires more mainline track to be built than does Layout A-1.

The mainline alternative alignment costs $1.9 million more than the baseline in May 1988 dollars. This differential excludes cost of services (engineering, construction management, and staff), excludes escalation to the midpoint of construction,

excludes project reserve, and excludes right-of-way.

It should be noted that the entire alternative alignment south of Rosecrans is on property owned by TRW. If TRW is receptive to the alignment, particularly to the location of the 33rd Street Station, the right-of-way cost for the alternative may be lower than the baseline, which may tip the balance in favor of the alternative.

ENVIRONMENTAL CONSIDERATIONS

TRANSCAL's environmental subconsultant, Myra L. Frank & Associates (MF&A) believes that the alternative alignment is likely to have less adverse impact on the environment than the baseline. In particular, adverse impact in the areas of aesthetics and noise at the Rosecrans/Aviation intersection will be totally avoided.

MF&A recommends that LACTC prepare a negative declaration for the alternative alignment. Using the negative declaration mechanism rather than a supplemental EIR makes it clear to the public that the proposed change does not seem to have any adverse effects. Preparation of the document will take approximately one month, and a 30-day public review period is required. No effect on overall schedule is anticipated under the conditions discussed in the next section.

SCHEDULE

To avoid negative impact to the engineering schedule, a decision would have to be made by June 30 to carry the alternative alignment through preliminary engineering, and a negative declaration would have to be prepared concurrent with preliminary engineering. The negative declaration comment period would then be over by the end of preliminary engineering (fall of 1988). If a decision is then made at the end of PE to proceed with final design of the alternative, the engineering schedule will not be affected.

Assuming that the alternative alignment construction package goes out for bid on the current schedule for the baseline alignment, construction schedule will not be affected. Although the alternative involves more aerial structure, the scheduling analysis suggests that the additional construction time will be compensated for by less stringent utility and railroad relocation requirements.

CONCLUSIONS AND RECOMMENDATIONS

TRANSCAL believes that the alternative alignment is feasible from a technical point of view. Although the capital cost is greater than that of the baseline, the difference may well be made up for in right-of-way costs. The alternative appears to result in fewer adverse effects to the environment; if prepared and circulated promptly, a negative declaration will satisfy environmental requirements and will not affect schedule. As long as a "go-no go" decision is made by the beginning of final design, adoption of the alternative will not delay engineering or construction.

The following courses of action are presented for LACTC's consideration:

o Initiate discussions with the major property owner in the area, TRW, to see if they are receptive to the alternative alignment. If not, TRANSCAL recommends preliminary engineering development of the baseline alignment only.

o If TRW is receptive, then a decision to proceed with preliminary engineering for either or both alignments (and, as appropriate, preparation of a negative declaration for the alternative alignment) will be required. The additional cost for base mapping, preliminary engineering, and a negative declaration will be approximately $36,000. A decision to proceed with the alternative alignment is required by the end of June to support the overall schedule.

EXHIBITS

- Meeting minutes, April 28, 1988 alignment presentation
- Plan drawings of conceptual alignment
- Hawthorne yard layout, Alternative D
- Cost study, May 19, 1988, revised, May 27, 1988
- Environmental assessment, May 25, 1988
- Schedule analysis, May 26, 1988

TRANSCAL

Transit Consultants of Southern California

CENTURY - EL SEGUNDO RAIL TRANSIT PROJECT

MEETING DATE: April 28, 1988 **TIME:** 2:00 p.m.

LOCATION: 11th floor conference room, TRANSCAL

ATTENDEES:

LACTC	TRANSCAL
M. Churanakoses, LACTC	C. Andersen
E. McSpedon	N. Cornwell
R. Minahan	D. Kravif
D. Sievers	J. Kugler, MF&A
J. Wiley	R. Neal, M&N
	R. Newland
	D. Shah
	J. Shook
	J. Taylor
	B. Wilson

DISTRIBUTION
ATTENDEES
DOCUMENT CONTROL
CONTRACTS

J. Adams, LACTC
N. Jester, LACTC
M. Marlin, TRANSCAL
R. Rypinski, TRANSCAL
R. Stanger, LACTC
T. Tanke, TRANSCAL

PURPOSE OF MEETING: CONTRACT/TASK CA010101, CB010101, CD010101
Presentation on El Segundo segment preliminary alignment alternatives, Douglas Station to yard turnout (including Rosecrans Bridge,) plus reprise of Douglas to Nash

NO.	DISCUSSION ITEMS
1.	R. Newland gave a general introduction, reminding those present how far south we had gotten at the April presentation and reviewing what this presentation would cover.
2.	D. Kravif presented the civil aspects of the three horizontal alignment options -- see attached handouts.
3.	C. Andersen presented his preferred yard access arrangement, involving the yard throat on USAF property. He displayed an alternative with the turnout north of the SCE tower, going through TRW property; this alternative cuts the yard storage capacity in half.
4.	D. Shah presented the structural alternatives (and related civil aspects -- profile and track support method) for the Rosecrans/ Aviation Bridge. See the attached handouts.

PREPARED BY: Diane Kravif DATE: May 4, 1988

NO.	DISCUSSION ITEMS
5.	R. Newland summarized TRANSCAL's evaluations, namely, 1) that the side platform alternative for Compton Station, with a double crossover to the south, is preferred; 2) that yard access south of the SCE tower is preferred; 3) that construction costs for the baseline LRT bridge alignment (i.e., existing RR bridge retained intact) could be $3.5 M less than for other options which would include replacement of the RR bridge. Additional real estate costs associated with the baseline alignment could reduce that cost differential to $2.0 M±; and 4) that the option of two new new bridges across Rosecrans/Aviation is marginally preferred operationally over the baseline option. However, the steel truss structures may well be aesthetically unacceptable. Other aesthetically pleasing structures, while not addressed specifically, will increase costs.
6.	N. Cornwell presented a further development of the Douglas-to-Nash alignment alternative 3, which is now very close to the baseline but involves a realigned connector road.
7.	The following course of action was agreed upon: o TRANSCAL to review the order-of-magnitude cost estimates for Rosecrans/Aviation Bridge to confirm cost differentials. o TRANSCAL to identify further alternatives at Rosecrans/Aviation to avoid negative aesthetic impact of a truss bridge. o TRANSCAL to try to modify preferred yard access scheme to bring required take of USAF property in line with LACTC/US agreement, namely, to take a smaller triangle and to give up equivalent area of LACTC property. o TRANSCAL to perform a brief, conceptual feasibility study of an alternative alignment that follows Douglas to 33rd and enters the yard from the west. The study is to examine schedule (particularly with respect to a supplemental EIR), cost, and pros and cons of further development in lieu of the existing Rosecrans and yard access options. o TRANSCAL to prepare a briefing for the RCC on May 16 on the El Segundo alignment. A meeting to plan for the presentation will be held on Thursday, May 5 at 10 a.m.; a separate meeting notice will follow.

PREPARED BY: Diane Kravif DK DATE: May 4, 1988

NO.	DISCUSSION ITEMS
	o TRANSCAL to continue PE on the Douglash-to-Nash segment with the additional criterion that the design shall not preclude a future station west of Douglas just north of the curve onto Nash. In particular, the two single crossovers in that location must be replaced by a double crossover to the east, and the curve near Douglas must be made sharper to allow enough tangent for a station.

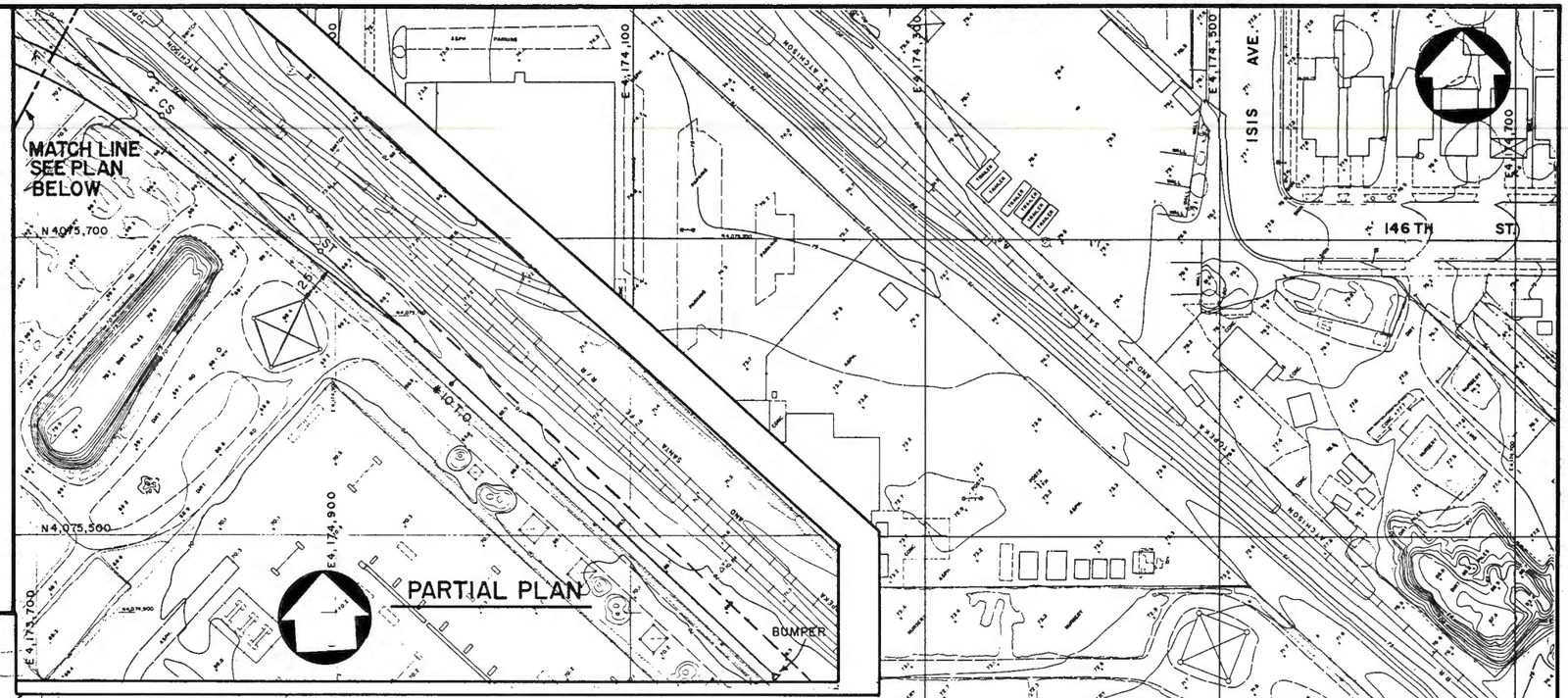
PREPARED BY: Diane Kravif DK DATE: May 4, 1988


N 47°20'18" W
SCE R/W
AT & SF R/W
DOUGLAS STATION
31'-4"
N 47°28'36" W
NMI HOSPITALS, INC.
N77500
E 72100
N 76696.84
E 71858.18
N 89°58'45"E
AVE
MATCH LINE
SCE
SUBSTATION
DOUGLAS
N 00°00'04" W
STREET
REDONDO
AVE
N 00°03'08" W
OB DOUGLAS STATION
IB DOUGLAS STATION
CS
ST
TS
SC
R=3000'
Ls=100'
Ls=100'
V=21.8 mph
E=3"
R=500'
N 00°00'04" W
FAN COMPANY
PARK PLACE
ROSECRANS
45" WATER WEST COACH
BASIN BARRIER 2.5' W ℄
27" WATER 7' E ℄
20' PIPELINE EASEMENT TO
CITY OF EL SEGUNDO
10' EASMENT TO LACFCD
FUTURE IMPROVEMENTS
N 75586.334
E 71824.480
EL SEGUNDO LIGHT RAIL
ALTERNATE ALIGNMENT.
REDONDO AV/33RD ST
SCALE 1"=50'


REDONDO
AVENUE
SCE GALAXY SUBSTATION
MATCH LINE
THIRTY - THIRD
STREET
R=1200'
Lc=117.8'
Ea=4"
V=35 mph
SCE EASEMENT
N86°47'48"W
HIGH TENSION POWER LINES
AVIATION
BLVD
CROSECRANS AV
N 75509.43
E 73198.67
R=800'
Lc=974'
Ea=4"
V=30mph
SCE EASEMENT
HIGH TENSION POWER LINE
N 75500
E 74700
AT&SF R/W
SP R/W
N 75300
E 71900
10' EASEMENT TO LACFCD
EL SEGUNDO LIGHT RAIL
ALTERNATE ALIGNMENT
REDONDO AV / 33RD ST
SCALE 1"=50' SHT 2/2

NOTES:

1. RAILROAD CURVES ARE 100' RADIUS EXCEPT AS NOTED.
2. TURN-OUTS ARE 190' LATERAL TURN-OUTS EXCEPT AS NOTED.



Work Element	Physical Entity	Contract Designator	Line Item	Cost Element	Project Number

REV.	DATE	DESCRIPTION	BY	APP.

DESIGNED BY: CHRIS ANDERSEN
DRAWN BY: ROBERT GHOTANIAN
CHECKED BY:
APPROVED BY:
DATE: 16 MAY 1988

LACTC
LOS ANGELES COUNTY TRANSPORTATION COMMISSION
Norwalk - El Segundo Rail Transit Project

SUBMITTED: _____

TRANSFAL Transit Consultants of Southern California
A Joint Venture of: Parsons Brinckerhoff Quade & Douglas, Inc. – Daniel, Mann, Johnson & Mendenhall – Kaiser Engineers (California) Corp. – North Pacific Construction Management

APPROVED: _____

Norwalk - El Segundo Rail Transit Project
HAWTHORNE-YARD AND SHOPS
LAYOUT - "D"

CONTRACT NO.
DRAWING NO.
REV. | SHEET NO.
SCALE 1" = 50'-0"

TRANSTAL

Transit Consultants of Southern California

memorandum

TO [redacted] Kravif

DATE 05/19/88

FROM Gabor I. Farkasfalvy

FILE NO.

SUBJECT Norwalk-El Segundo Rail Transit Project
Cost Study for Alternate Alignment from Douglas Station on Douglas to 33rd Street to Aviation Boulevard

Per your request of May 2, 1988 we have prepared the following Order-of-Magnitude estimate based on 3600 LF of double track elevated guideway alternate vs 2600 LF of double rack guideway including LRT bridge at Rosecrans Avenue. Estimate is based on verbal information received from you and field trip observation.

1. New location of Douglas Street Station in alternate alignment will have additional length of pedestrian overpass to station from parking lot.

2. Elevated guideway 3600 LF will run in middle of Douglas Street to avoid major utility relocations.

3. Minor demolition and repair of street needed at the guideway support.

4. Trackwork to be direct fixation.

5. Existing street and sidewalk repair will be replaced only at new guideway foundation.

Cost estimate is in current, May 1988, dollars and excludes services, right-of-way acquisition costs, escalation and project reserve.

If you have any questions or comments, please advise.

Gabor I. Farkasfalvy,
Chief Estimator

GIF:lrp

CC: F. Doucedame
M. Marlin
G. Suranyi
B. Valley
Central Records Center/2
Project Control Files

COST STUDY FOR ALTERNATE ALIGNMENT DOUGLAS STATION/33RD ST/ AVIAT.

ALIGEMENT	DESCRIPTION	DEMO TRAF. CON.	UTIL. RELOC.	RETAINED SECTION	ELEVATED SECTION	AT GRADE SECTION	BRIDGE WORK	TRACK/ SPEC. TRACK	ATSF RAIL RELOCATIO	STATION IMPACT	SUBTOTAL	TOTAL W/ O.H.P.	TOTAL/ W CONT.	DELTA
	TOAL LENGTH 3760 L.F.													
BASE LINE		$260,000	$1,702,000	$490,000	$2,364,000	$24,000	$2,150,000	$1,386,000	$520,000	$0	$8,896,000	$11,120,000	$13,344,000	$0
	ELEVATED 1475 L.F.													
	AT GRADE 1100 L.F													
	BRIDGE 250 L.F.													
	RETAINED SECTION 935 L.F.													
	DEMO : LITTLE													
	UTI. RELOC: MINOR ON NORTH													
	MAJOR ON SOUTH													
	NEW LRT BRIDGE													
	EXIST RR BRIDGE TO REMAIN													
	TRCKWORK: DIRECT FIX/BALLESTED													
	EXIST RR RELOCATION													
	STSTION: COMPTON AT GRADE													
	DOUGLAS ELEVATED													
ALTERNATE	TOTAL LENGTH 3775 L.F.	$388,500	$244,000	$0	$6,476,000	$0	$0	$1,800,000	$0	$1,250,000	$10,158,500	$12,698,125	$15,237,750	$1,893,750
	ELEVATED 3775 L.F.													
DOUGLAS/	AT GRADE 00 L.F													
TO 33RD/	DEMO : MEDIAN CONC. ISLAND													
AVIATION	STREET LTG. FIXT. TREES. CABLES													
	UTI. RELOC :MINOR AT FTGS.													
	EXIST RR BRIDGE TO REMAIN													
	TRCKWORK: DIRECT FIXATION													
	EXIST RR REMAINS													
	STATION: 33rd ELEVATED/													
	SIDE PLATFORM													
	DOUGLAS STAT. ELEVATED/													
	SIDE PLATFORM													

Notes:- Exclude Right Of Way, escalation, engineering fees

Revised 27-May-88

Myra L. Frank & Associates

MEMORANDUM

To: Diane Kravif, Transcal *Date:* May 25, 1988

From: Joan A. Kugler

Subject: Environmental Documentation for Route Refinement

This memo is to formalize the comments regarding the Douglas Street Alternative Alignment made by Myra Frank at the Wednesday May 18 meeting. Based on our field survey of the area and the facts of the proposed design as presented at the meeting, we would recommend that a Negative Declaration for this change be prepared and circulated.

The change in the alignment to Douglas seems to result in fewer adverse environmental effects than the original route proposed and analysed in the EIR. This is particularly true in the area of the Rosecrans/Aviation Bridge where, with the changes in bridge design being contemplated, there would be additional significant adverse effects in the areas of aesthetics and noise. We recommend preparing a Negative Declaration for this change. The document will have a 30-day public review period which will serve notice to all concerned that this change may be made by the Commission. Using a Negative Declaration rather than a subsequent or supplemental EIR will also make it clear to the public that there do not seem to be any adverse effects with this proposed change.

cc: Barbara Wilson, Transcal
Myra L. Frank. MFA
Lee J. Lisecki, MFA

403 West 8th Street, Suite 801, Los Angeles, California 90014 Phone: (213) 627 5376

To: D. Kravif

26 May 1988

From: J. Vine

Subject: Norwalk - El Segundo Rail Transit Project
Rosecrans Aerial Decision
Schedule Impact Analysis

Per your request, I have examined the Rosecrans Aerial Decision Alternative alignments for potential schedule impact.

Based on your statement that there will be no slip in the design deliverables, (Camera Ready milestone date), it is my judgement that the ROD for the project will not be impacted.

Additional time and analysis shall be required to determine the changes in construction staging for the construction of the Rosecrans segment.

Concurrence:

J. Taylor