

January 22, 1996

Los Angeles County  
Metropolitan  
Transportation  
Authority

MEMO: MTA BOARD OF DIRECTORS

FROM: STANLEY G. PHERNAMBUCQ *Stanley G. Phernambucq*

One Gateway Plaza  
Los Angeles, CA  
90012

SUBJECT: RAIL CONSTRUCTION PROJECT DESIGN ALLOWANCE AND  
PROJECT CONTINGENCY STATUS REPORTING

213.922.6000 ISSUE

Mailing Address:

P.O. Box 194  
Los Angeles, CA 90053

In order to provide the MTA Board with greater insight over the allocation and use of project contingency funds, as requested by Director Mel Wilson, the MTA will implement the following procedures for reviewing the status of project design allowance and approving the expenditure of project contingency funds for rail construction contracts or contract modifications:

- a) Provide a project completion cost estimate report clearly identifying the amount of design allowance and the amount of project contingency included in the original budget (Attachment 1) when a rail construction project has completed preliminary engineering and is submitted to the MTA Board for adoption.
- b) Update the project completion cost estimate report (Attachment 2) for the MTA Board when final design is approximately 60% complete, to include:
  - The status of all design work packages;
  - The status of project contingency; and
  - Current budget with forecast at project completion.
- c) Include in the Board report that recommends the contract award (Attachment 3):
  - The contract award amount for the work package;
  - A contingency allocation which, combined with the contract award amount, establishes a recommended AFE amount;
  - The historical status of design allowance for the contract work package; and
  - A recommendation on any appropriate changes to the project budget.

- d) Provide a monthly status report on project contingency as a Board Box item (Attachment 4), including balance at the beginning of the month, transactions during the month, and the ending project contingency balance.

### BACKGROUND

Contingency is a project budget line item developed to cover unknown but anticipated changes in the estimated costs for rail construction, thereby avoiding continuous change to the overall project budget. Anticipated but undefined increases in project construction costs may result from:

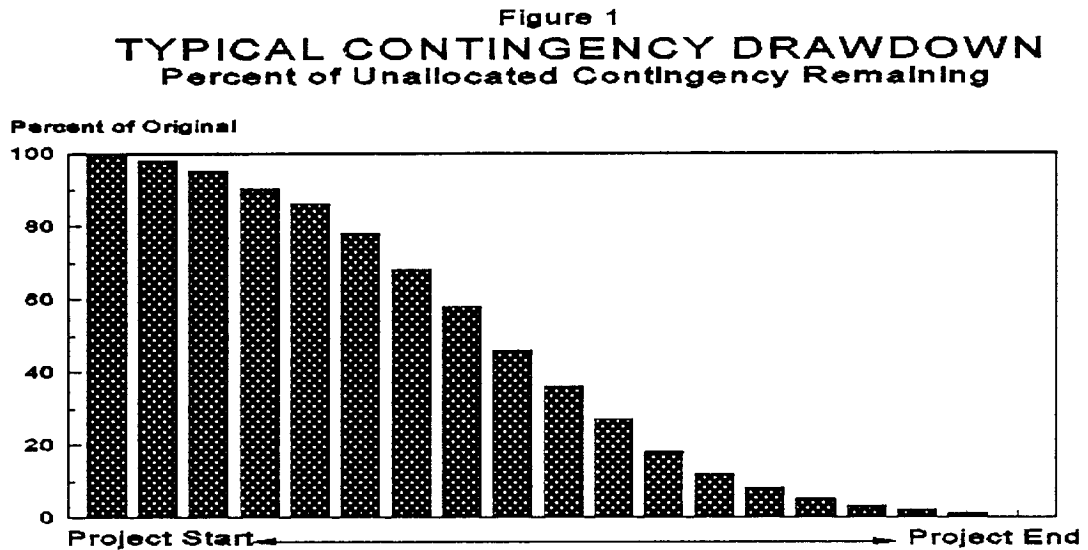
- Changes in Site Conditions
- Schedule Changes
- Changes in Design Specifications
- Field Design Changes
- Changes in Construction Technology

An estimate of contingency is determined after each line item in the budget is assessed for potential risk associated with a wide variety of factors, such as:

- The size and complexity of the project
- The completeness of the design when the original budget is adopted
- The availability of skilled and competent contractors
- The location of the work
- The regulatory requirements of project funding sources
- The availability of funds

These estimates are then consolidated into an original project budget contingency. After contract award, contingency is allocated from the overall project budget contingency to the individual work packages as they are awarded to cover anticipated cost increases. The proper assessment and management of project contingency allows project managers the flexibility to respond effectively to the changing conditions inherent with construction activities.

Figure 1 depicts the typical draw down pattern of project contingency.

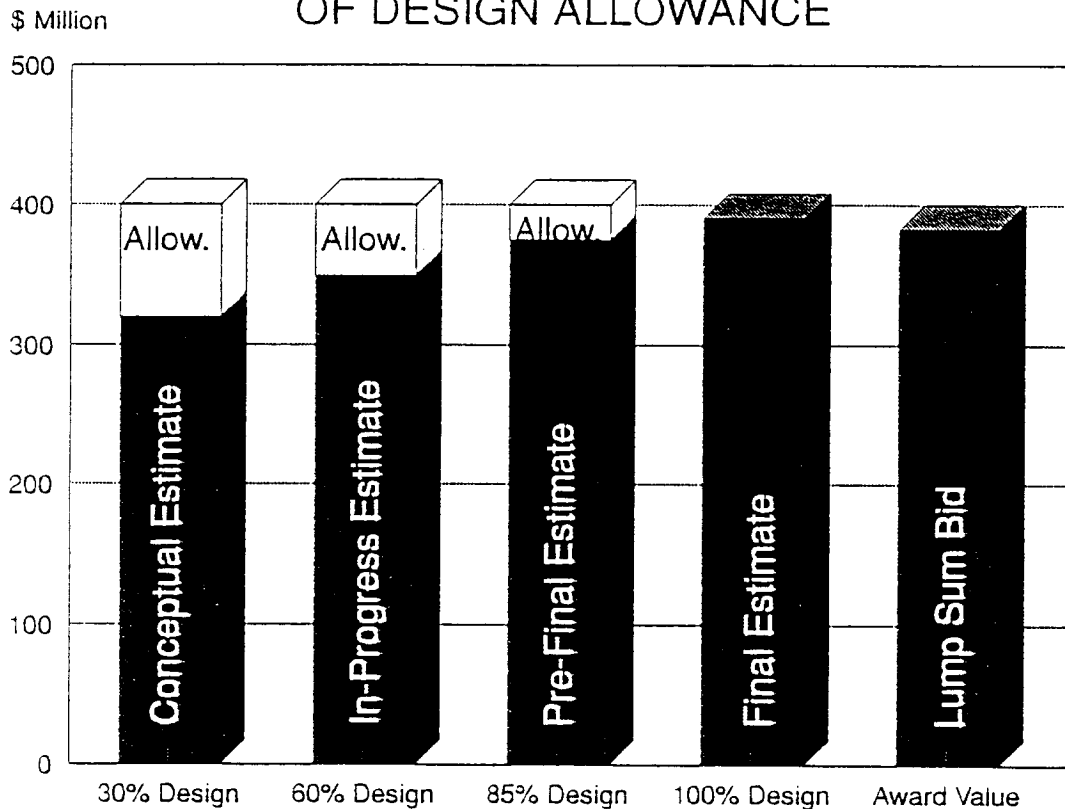


Design allowance is a percentage of the estimated construction cost that is added to a work package estimate to account for cost items which are required but not yet shown in detail on design drawings. At the preliminary design stage, roughly 70% of the total number of drawings do not exist and the information contained on the drawings that are available is incomplete.

Attachment 5 and 6 are examples of design at 30% and 100%. These examples depict the tremendous amount of information that is required but not yet defined on the preliminary sketches used for a conceptual estimate at 30% design. The added information includes: soil and groundwater conditions, structural reinforcing, connection details, revised quantities due to reconfigured system or equipment layouts, temporary structural support systems, and the quality and type of finish materials. Attachment 7 is a further example of the level of design detail provided prior to design completion. The proper assessment of design allowance improves the accuracy of the project completion costs and improves the ability of project managers to control the growth of estimated construction costs between the preliminary engineering and final design phases.

Design allowance and project contingency are not discretionary budget items and they are not intended to cover the cost of scope changes. As shown in Figure 2, the design allowance is not a separate pool of funds, but rather an integral part of preliminary estimates just as are labor and materials.

Figure 2  
HISTORICAL STATUS  
OF DESIGN ALLOWANCE



Design allowance will diminish as design development progresses from preliminary stages to final design. Upon design completion, the final estimate is prepared without any design allowance.

**ATTACHMENT 1**  
**Project Completion Cost Estimate**  
**(SAMPLE)**

Project: \_\_\_\_\_ Estimator MTA Sheet 1  
 Item: \_\_\_\_\_ Date 12/20/95 Of 2  
 Revision: 0

<u>Item Description</u>	<u>Estimated Cost (1995 Dollars)</u>	<u>Estimated Cost (Escalated Dollars)</u>
1) Guideways and Structures	\$87,928,412	\$88,216,267
2) Stations	\$34,084,150	\$34,195,733
3) Waste Handling Water Treatment	\$10,176,200	\$10,209,514
4) Main Yards and Shop	\$0	\$0
5) Systemwide Equipment	\$33,493,160	\$33,602,808
6) Vehicles	\$0	\$0
<b>7) Design Allowances</b>	<b>\$29,237,986</b>	<b>\$29,333,704</b>
Subtotal (A)	\$194,919,909	\$195,558,026
6) Pre Revenue Operation	\$4,872,998	\$4,888,951
7) Owner's Insurance	\$15,593,593	\$15,644,642
8) Master Agreements	\$4,872,998	\$4,888,951
Subtotal (B)	\$25,339,588	\$25,422,543
9) Art For Transit (C)	\$974,600	\$977,790
Subtotal (C)	\$974,600	\$977,790
10) Right Of Way (D)	\$168,000,000	\$168,000,000
Subtotal (D)	\$168,000,000	\$168,000,000
11) Professional Services (E)		
Design Services	\$34,597,565	\$34,697,079
Construction Management Services	\$27,565,768	\$27,656,012
Speciality Consultants	\$5,110,508	\$5,127,238
Agency	\$24,745,752	\$24,785,514
Subtotal (E)	\$92,019,593	\$92,265,842
12) Contingency (F)		
A) Of Subtotal - A + B	\$24,228,545	\$24,307,863
B) Of Subtotal - D	\$16,800,000	\$16,800,000
C) Of Subtotal Item - E	\$9,201,959	\$9,226,584
<b>Subtotal (F)</b>	<b>\$50,230,504</b>	<b>\$50,334,447</b>
<b>GRAND TOTAL</b>	<b>\$531,484,194</b>	<b>\$532,558,649</b>

## ATTACHMENT 2

### PROJECT COMPLETION COST ESTIMATE

(SAMPLE)

CONTRACT NO.	NAME	% COMPLETE	CONTINGENCY	CURRENT BUDGET	CURRENT FORECAST
C501	LN SCTN-UNION STA TO BRK/ SOTO & LITTLE TOKYO STATION				
C503	LITTLE TOKYO UTILITIES				
C508	LITTLE TOKYO DEMOLITION				
C521	FIRST/BOYLE STA W/X-OVER				
C523	FIRST/BOYLE STA UTILITIES				
C528	FIRST/BOYLE STA DEMOLITION				
C531	BROOKLYN/SOTO STATION				
C533	BROOKLYN/SOTO/UTILITIES				
C538	BROOKLYN/SOTO DEMOLITION				
C541	LINE SECTION-BRKLYN/SOTO TO FIRST/LORENA				
C551	FIRST/LORENA STA W/X-OVER				
C553	FIRST/LORENA STA UTILITIES				
C558	FIRST/LORENA DEMOLITION				
C561	WHITTIER/ROWAN STA W/X-OVER				
C563	WHITTIER/ROWAN STA UTILITIES				
C568	WHITTIER/ROWAN STA DEMOLITION				
C571	LN SECT WHTR/ARZ TO 1ST/LORENA & WHHTR/AZ STA				
C573	WHITTIER/ARIZONA STA UTILITIES				
<b>TOTAL:</b>		<b>60%</b>			

**ATTACHMENT 3**  
(Sample Board Item)

The Construction Committee recommends approval of award Contract No. C0321 to XYZ Construction Company, the lowest-priced, responsive and responsible bidder, covering construction of the Universal City Station on the Metro Red Line - North Hollywood Corridor, in the amount of: \$ \_\_\_\_\_

Approve an 8% contract contingency to cover the cost of changes and extra work of: \$ \_\_\_\_\_

Approve a total AFE amount of: \$ \_\_\_\_\_

**Design Estimate Chronology**

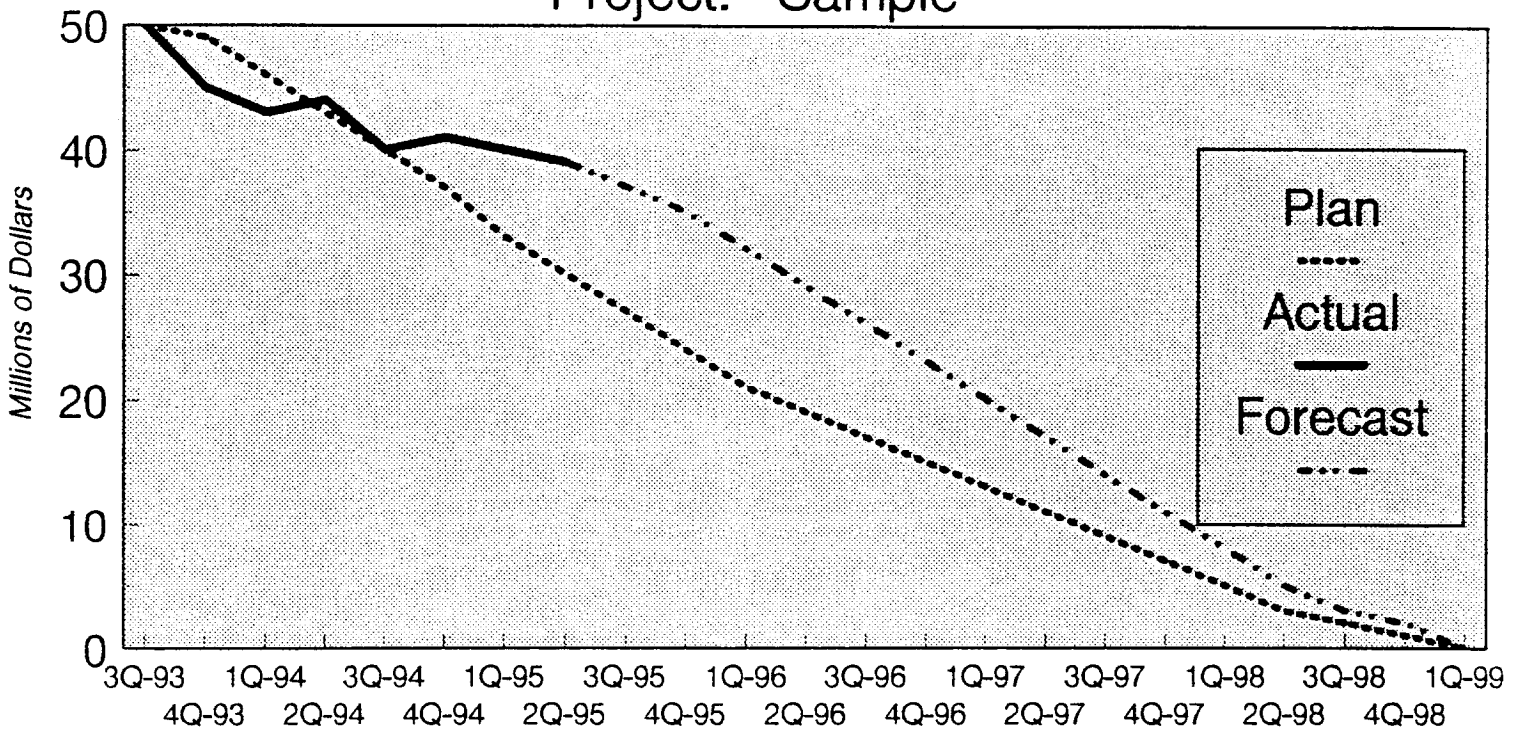
The estimated cost at 30% design completion was: \$ \_\_\_\_\_  
and included a design allowance of: \$ \_\_\_\_\_

The estimated cost at 60% design completion was: \$ \_\_\_\_\_  
and included a design allowance of: \$ \_\_\_\_\_

The 100% design estimate was: \$ \_\_\_\_\_  
(Did not Include design allowance)

Attachment 4

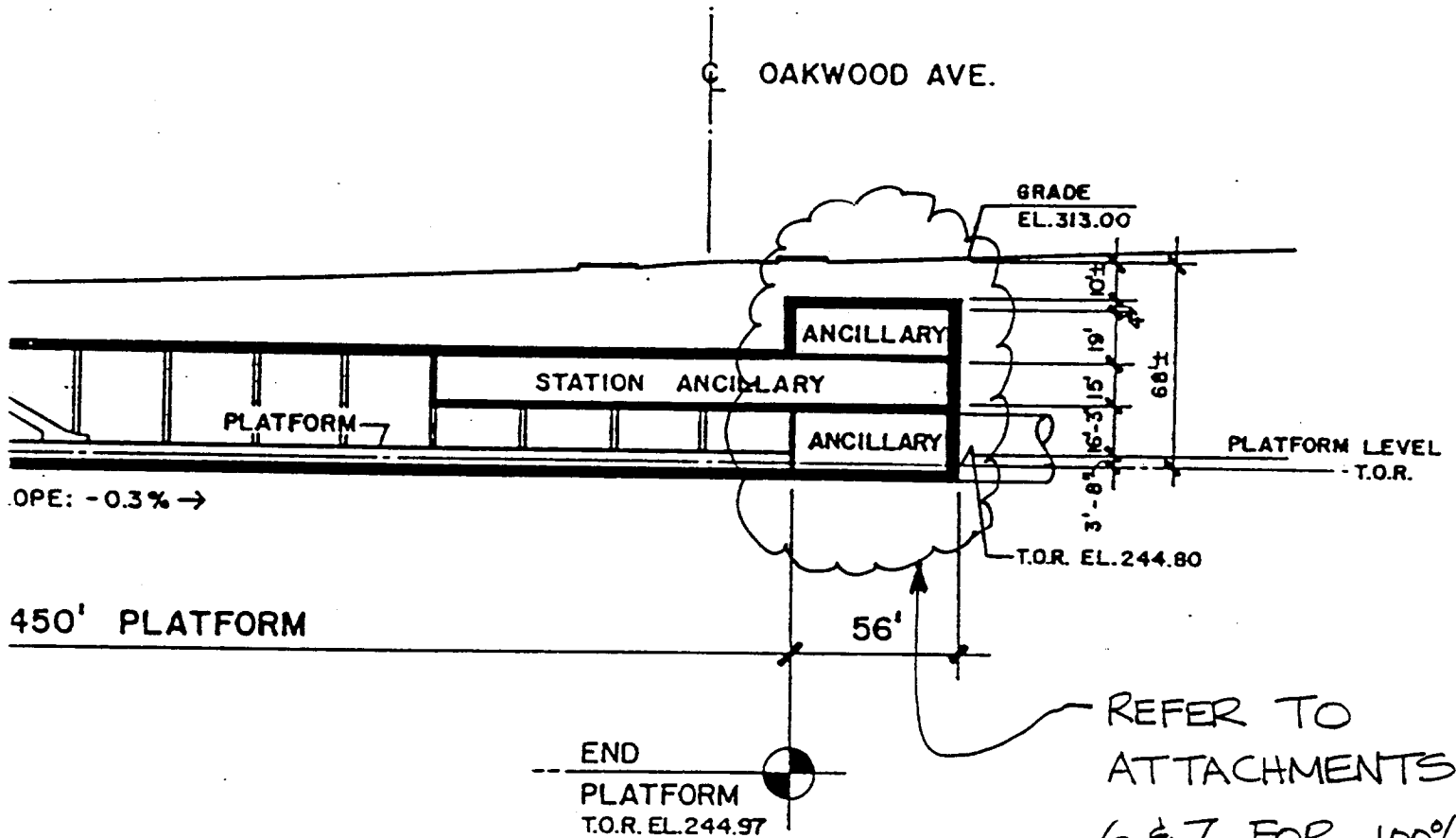
UNALLOCATED CONTINGENCY  
Project: Sample




<u>Date Approved</u>	<u>Description</u>	<u>Contingency Allocation</u>	<u>Unallocated Contingency Balance</u>
8/1/95	Beginning Balance		\$50.0
8/13/95	Increased coverage of chemical grout from 53% to 80%	\$5.9	
8/21/95	Added sewer bypass	\$1.8	
8/27/95	Added contingency for potential grout	\$2.5	
8/28/95	Increased contingency for potential time extensions	\$1.0	
		TOTAL	
		\$11.2	
8/31/95	Ending Balance		\$38.8



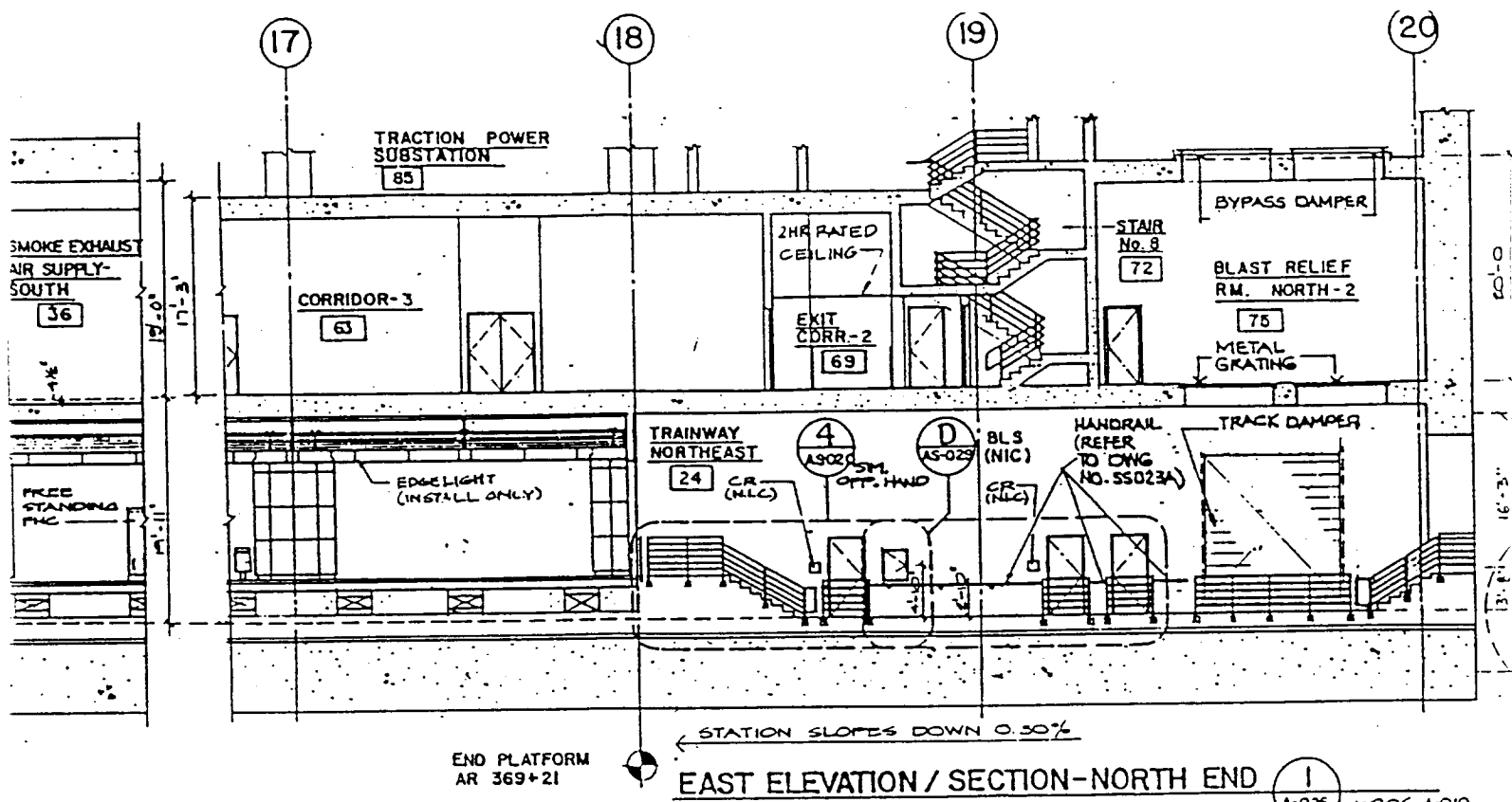
ATTACHMENT 5  
30% DESIGN SKETCH



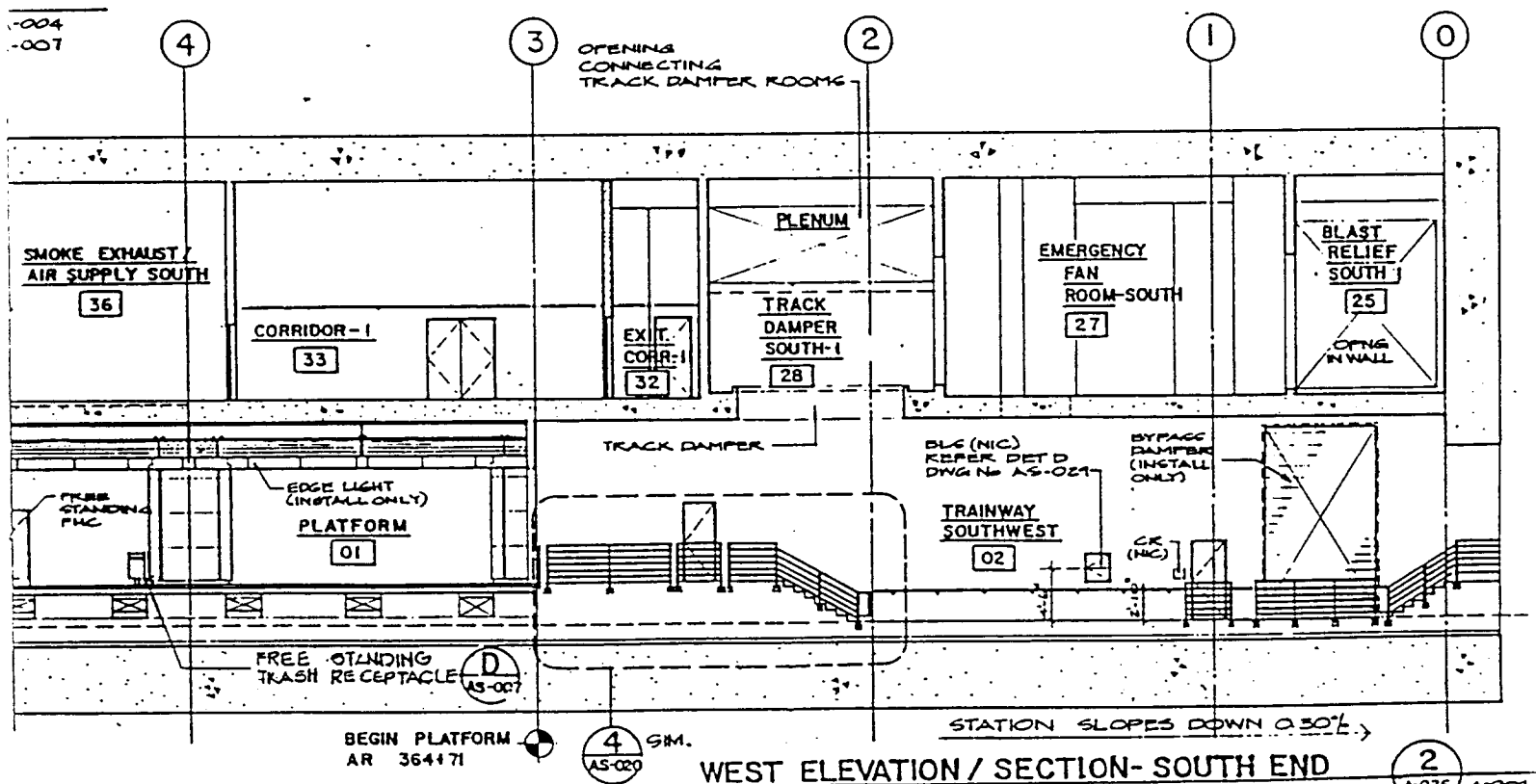
REFER TO  
ATTACHMENTS  
6 & 7 FOR 100%  
LEVEL OF DETAIL  
IN THIS AREA.  
FINAL DESIGN MUST  
INCLUDE OVER  
100 DWGS FOR  
THIS AREA.

VERMONT TRANSIT DISTRICT PROJECT	 RTD	VERMONT/BEVERLY STATION LONGITUDINAL SECTION		CONTRACT NO B-241
				DRAWING NO A-102
DMJM/PBOD/KE/HWA GENERAL CONSULTANTS		SCALE 1" = 40'-0"		SHEET NO 64
APPROVED _____				

# ATTACHMENT 6 LEVEL OF DETAIL AT 100% DESIGN



**EAST ELEVATION / SECTION-NORTH END** ①  
A-026 A-006, A-010 A-014, A-018



**WEST ELEVATION / SECTION-SOUTH END** ②  
A-026 A-006, A-010 A-014, A-018

**Rail Construction Corporation**  
**METRO RED LINE**

METRO RAIL TRANSIT CONSULTANTS

Anil Verma Associates, Inc.

SUBMITTED *[Signature]*

APPROVED *[Signature]*

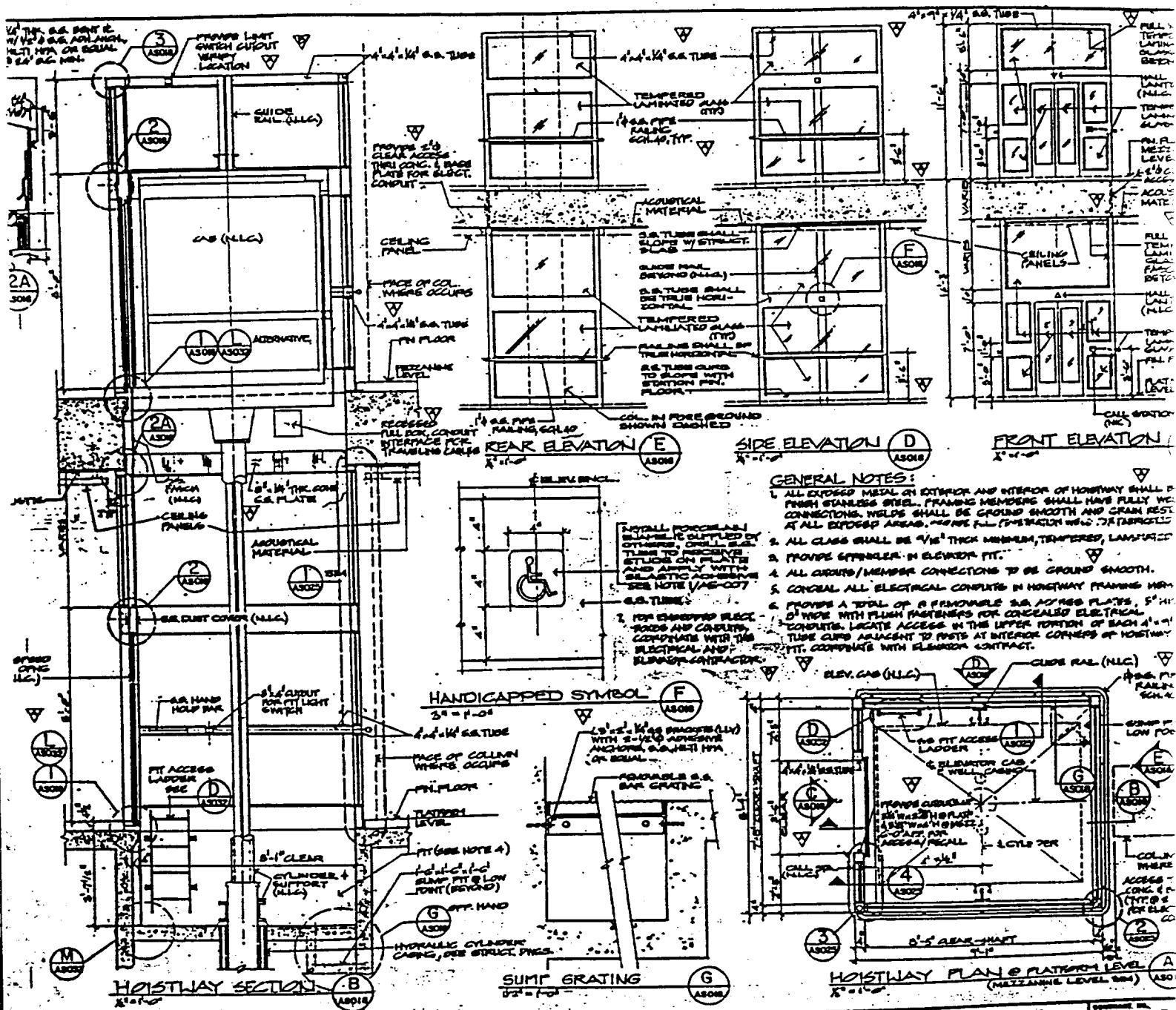
LA CBD TO NORTH HOLLYWOOD  
VERMONT/BEVERLY STATION

END ELEVATIONS/SECTION

CONTRACT NO	B-241
DRAWING NO	A-026
SCALE	1/8" = 1'-0"
SHEET NO	306

# ATTACHMENT 7

## TYPICAL LEVEL OF DETAIL AT 100% DESIGN



- GENERAL NOTES:**
- ALL EXPOSED METAL ON EXTERIOR AND INTERIOR OF HOISTWAY SHALL BE FINISH STAINLESS STEEL. FRAMING MEMBERS SHALL HAVE FULL WELD CONNECTIONS. WELDS SHALL BE GRIND SMOOTH AND GRIND REST AT ALL EXPOSED AREAS. REFER ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED.
  - ALL GLASS SHALL BE 3/8" THICK MINIMUM, TEMPERED, LAMINATED.
  - PROVIDE SPINDLER IN ELEVATOR PIT.
  - ALL CIRCUIT/MEMBER CONNECTIONS TO BE GRIND SMOOTH.
  - CONCEAL ALL ELECTRICAL CONDUITS IN HOISTWAY FRAMING MEMBERS.
  - PROVIDE A TOTAL OF 2 REMOVABLE 3/8" ADHESIVE PLATE, 5" HIGH WITH FLUSH FASTENERS FOR CONCEALED ELECTRICAL CONDUITS. LOCATE ACCESS IN THE UPPER PORTION OF EACH 4'-0" TUBE CURB ADJACENT TO POSTS AT INTERIOR CORNERS OF HOISTWAY PIT. COORDINATE WITH ELEVATOR CONTRACTOR.

ALL PORCELAIN ENAMEL SUPPLIED BY OTHERS, SHALL BE TUBES TO RECEIVE STUDS ON PLATE AND APPLY WITH ELASTIC ADHESIVE. SEE NOTE 1/AS-007.

FOR ENHANCED ELECTRICAL AND COORDINATE WITH THE ELECTRICAL AND ELEVATOR CONTRACTOR.

<p>1. ONLY APPROVED A... 2. ONLY APPROVED A... 3. ONLY APPROVED A...</p>	<p>DESIGNED BY MRTC CHECKED BY J. Whiting</p>	<p><b>Rail Construction Corporation</b> <b>METRO RED LINE</b></p>	<p><b>ARCHITECTURAL STANDARD</b> MEZZANINE TO PLATFORM ELEVATOR HOISTWAY ENCLOSURE</p>	<p>PROJECT NO. B: DRAWING NO. AS-01E SCALE AS NOTED SHEET NO. 974</p>
--	---	---	--	---