

CMB Meeting Minutes #159

DATE: February 26, 2014

MEETING DATE: February 19, 2014

LOCATION: 821 Howard St, Main Conference Room

TIME: 3:00 PM

ATTENDEES: J Funghi (JF), R. Redmond, (RR), R. Nguyen (RN), B. Kelleher (BK), M. Benson (MB)
E. Stassevitch (ES), M. Latch (ML), T. DePooter (TDP), S. Pong (SP), M. Acosta (MA), B. Ward (BW), B. Lebovitz (BL)

COPIES TO: Attendees: S. Farhangi (SF), M. Henry (MH), K. Shah (KS), J. Park (JP), A. Hoe (AH)
J. Xia (JX), M. Vilcheck, (MV), J. Wang (JW), V. Chow (VC), L. Zurinaga (LZ), S. Jefferis (SJ),
S. Tisell (ST), S. Espinal (SE), R. Hansen (RH), D. Kuehn (DK)
File No. M544.1.5.0890

REFERENCE Project No. M544.1, Contract No. 149 Task 1-8.02

SUBJECT: Configuration Management Board Meeting # 159– Rev. No. 0

RECORD OF MEETING *(Italicized text indicates status update of open items)*

ITEM #	DISCUSSION	ACTION BY DUE DATE
3-02/12/14	T. DePooter - Contract 1300 Chinatown Station Provided an update to the tracking document (spreadsheet) for additional work related to Utility relocations. Items highlighted in yellow indicate a status update to the line item; items highlighted in green have been addressed. The CMB reiterated the need to properly document with letters, Force account tracking, and confirmation from utility owners for additional work. Status: <i>02/19 An update on two items in the CTS Utilities DSC tracking document was provided: line item #31 - PG&E Changes at Emergency Escape stairway on Stockton St. - PG&E has requested that quotes be obtained for new PG&E vault 732 and associated conduits that will be installed to vaults 731 & 730. Item #3 - PG&E Gas Main Parallel to AWSS. PG&E has requested quote be obtained from the Contractor to proceed with the work. The CMB agreed that a PCC for both items should be forwarded to the Contractor for pricing. The CMB recommended PG&E be notified that the quotes for work could be greater than published unit rate. (see attach).</i>	
5-02/12/14	R. Redmond presented for information TPC Ltr. 055 - UMS Notice of Delay - Tangent Secant Piles Concrete Mix Submittal. The Contractor suggests SFMTA's request of additional testing of the Secant Pile Wall Permeability requirement is causing a delay. Stating that per spec 31 62 13 15 the Secant or Tangent Piles Wall is not defined as a Diaphragm Wall but an individual cased Pile Wall. The Contractor has requested confirmation that permeability test are not required for the cased secant or tangent pile walls. The CMB stated the Contractor notification of delay is not in compliance with	

ITEM #	DISCUSSION	ACTION BY DUE DATE
	the contractual requirements. Stating the Contractor is required to demonstrate in writing their findings which show a delay. Status: 02/19 The Contractor's RFI UMS 0071 requested relief on the concrete mixed requirement of 28 days permeability test to mitigate a potential delay. Requesting acceptance be given for 42, 56 or 90 Days, dependent on the permeability results to yield the required 1,500-coulom limit in the specs. The CMB was in agreement with the Designer's response of acceptance to the performance criteria for permeability (see attached).	
1-	M. Benson presented an analysis of alleged time impacts for CN 1252 - COR's 32, 34, 42, & 43; demonstrating the Contractor's claim of 7-day time impact is not valid. To address the issue with the obstruction encountered during slurry wall work on the west side of 4th Street an alternate traffic plan was developed and approved to allow work to continue on the West side and most importantly start on the east side to minimize or eliminate any impact to the critical path. The CMB directed the CM to proceed with processing the direct cost as agreed to by both parties. A letter will be sent to the Contractor denying their claim for time outlining the reasons for the denial.	
2-	COR's 62, 65 & 67 - Time savings analysis related to the closure on 4th Street - To demonstrate the time it would have taken the Contractor to complete the work if they only had performed the work closing one side of 4th St at a time in accordance with their original baseline schedule for the work. Time impacts requested for CORs 62, 65, & 67 are offset by time savings produced by full closure of 4 th street thus the Contractor's request for an extension of time (6 days) is denied. The CMB directed the CM to proceed with processing the direct cost as agreed to by both parties. A letter will be sent to the Contractor denying their claim for time outlining the reasons for the denial. Some additional work is required to clarify reasons for denial.	
3-	M. Acosta and S. Pong presented for information HNTB Task 16 cost tracking report expended to date of design support under contract 1300 for STS work. Revision will be made to the report to reflect the current authorized budget and expand the description of task A-16.35 to detail the additional design services included under the line item.	
4-	The Program Trend/Change Control Log dated 02/19 was reviewed. Contract 1252 Construction Manager reported two items listed on trend log under the potential cost exposure column had been updated for - PCC No. 12 - Modifications to Tunnel Alignment at Market Street - and PCC No. 15 Deleted AWSS Work at Union St and Columbus Ave. was revised based on results of scoping meeting held with Contractor. (see attached).	



ACTION ITEMS

ITEM #	MTG DATE	MTG ACTION DATE	DESCRIPTION	BIC	DUE DATE	STATUS
8	07/24/13	07/24/13	1252 – Breakdown of Bid Item GE-3	MB	02/26/14	Open
2	08/14/13	08/14/13	1252 – CMod #8 (PSI strength) – Statement of occurrence post meeting record of approval which overrode CMB direction	SW	02/26/14	Open
1	08/28/13	08/28/13	1252 – Outstanding COR's – status update	SW/MB	02/26/14	Open

2 & 3	08/28/13	08/28/13	1252 – COR 97 & 98 – gravel encountered action plan from Engineering of Record (DP1)	SW/MB	02/26/14	Open
5	08/28/13	08/28/13	1252 – Action plan of execution for the Slip Lining Work (Stockton/Columbus)	SW	02/26/14	Open
4	09/25/13	10/02/13	1252 – COR #104 - Additional Sewer Slip Lining – SFPUC Response	SW	02/26/14	Open
5	09/25/13	10/02/13	1300 – PCC CTS 0001 - Contractor Cost Proposal	TDP	02/26/14	Open
2	10/09/13	10/09/13	1252 – Design Clause - confirmation of existing contract language in CN 1252 and CN 1300 regarding existing conditions related to utilities	JW/AH	02/26/14	Open
1	10/16/13	10/16/13	1252 – COR 102 - Determine if the Contractor received 1251 as built information before they began operations	SW	02/26/14	Open
1	10/16/13	10/16/13	1252 – COR 102 - Graphic showing the location of the headwalls control line	SW	02/26/14	Open
3	10/23/13	10/23/13	1252 – PCC 014 - Contractor Cost Proposal	JW/SW	02/26/14	Open
4	10/23/13	10/23/13	1252 – COR 05 - Revisit IRL process with Contractor	RR	02/26/14	Open
2	11/06/13	11/06/13	1252 - COR 017 – Notify utility of cost as Form B bill update under CN1250 or CN1251	SW	02/26/14	Open
3	11/06/13	11/06/13	1252 – Slurry Wall Panels – TIA to be sent to BIH – SFMTA's time savings and premium cost saving	SW/AA	02/26/14	Open
2	11/13/13	11/13/13	1300 – Setup a meeting with DT to confirm the use to control traffic	BK	02/26/14	Open
NA	11/13/13	11/13/13	1252 – Confirm who is being billed for the use of PCO's at 5 th St.	MB	02/26/14	Open
2	11/20/13	11/20/13	1300 – PCC 00X - PGE Traffic Control - Utility verification letter	TDP	02/26/14	Open
7	12/11/13	12/11/13	1252- BART Load Cell - Conference Call	JW	02/26/14	Open
9	12/11/13	12/11/13	1252 - Trend Log Segment Measuring Frequency line item credit (1.3M)	MB	02/26/14	Open
10	12/11/13	12/11/13	1252 - Precast Tunnel Liner Test - Contractor's Rpt.	ML	02/26/14	Open
2	01/08/14	01/08/14	1300 - PCC - Contractor Cost Proposal - Geoprobes	RR/ST	02/26/14	Open
4	01/08/14	01/08/14	1300 - PCC - Contractor Cost Proposal - Joint Trench Conduits	TDP	02/26/14	Open
4	01/15/14	01/15/14	1300 - CTS confirmation from PG&E of cost for concrete encasement of lines	TDP	02/26/14	Open
3	02/05/14	02/05/14	1277 - Revise COR 003 Evaluation of Merit sheet	MB/MLe	02/26/14	Open
10	02/05/14	02/12/14	1300 - STS Letter to SFPUC notification of collapse	MA	02/26/12	Open

Meeting adjourned at 4:15pm

These meeting minutes have been prepared by B. Ward and reviewed by E. Stassevitch, and are the preparer's interpretation of discussions that took place. If the reader's interpretation differs, please contact the author in writing within four (4) days of receipt of these minutes.

Signed:   [initials of preparer & reviewer] Date: 2/26/14 [Date review completed]

Meeting Agenda

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Configuration Management Board (CMB) Meeting No. 159
February 19, 2014
3:00pm – 5:00pm
Central Subway Project Office
821 Howard St. 2nd Floor
Main Conference Room

Attendees:

Mark Benson	Brian Kelleher	Richard Redmond
John Funghi	Mark Latch	Eric Stassevitch
Albert Hoe	Brad Lebovitz	Beverly Ward
Scott Jefferis	Roger Nguyen	Luis Zurinaga


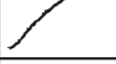


- 1. 1252** - IRL Item for CORs 32, 34, 42, 43, 62, 65 & 67 - *Review*
- 2. 1300** - HNTB Task 16 - Cost Tracking - *Review*
 - RFI - UMS - 0071 Tangent/Secant Pile Concrete Permeability - *Information*
 - CTS - Gas Main Parallel to AWSS Line on Stockton RFI 291 - *Information*
 - CTS - New Vault 732 and associated conduits; change in scope request - *Information*
- 3. Trend Log**
- 4. Other Business –**

Meeting Attendance Sheet

Project No. M544.1, Contract No. 149
Program/Construction Management
Configuration Management Board S Meeting No. 159
February 19, 2014
3:00 p.m. – 5:00 p.m.
 Central Subway Project Office
 821 Howard, 2nd Floor
 Main Conference Room

Deliver Meeting Attendance Sheet with original signatures/initials to Document Control.

NAME	AFFILIATION	PHONE	E-MAIL (for minutes)	INITIALS
Please enter initials if your name is listed below. Please enter name, affiliation, phone number and email address if your name is not listed below.				
Benson, Mark	CSP	(415) 238-0996	Mark.Benson@sfmta.com	<i>MB</i>
Chow, Vivian	SFMTA	(415) 701-5264	Vivian.chow@sfmta.com	
*DePooter, Ted	CSP	415 701-5295	Ted.DePooter@sfmta.com	
Farhangi, Shahn timer	SFMTA	(415) 554-0721	Shahn timer.Farhangi@sfmta.com	
Funghi, John	SFMTA	(415) 701-4299	John.Funghi@sfmta.com	<i>JS</i>
Haley, John	SFMTA		John.Haley@sfmta.com	
Henry, Melvyn	SFMTA	(415) 701.5719	Melvyn.Henry@sfmta.com	
Hoe, Albert	SFMTA	(415) 701-4289	Albert.Hoe@sfmta.com	
Jefferis, Scott	SFMTA	(415) 238-4679	Richard.Jefferis@sfmta.com	
Kelleher, Brian	SFMTA	(415) 701-5289	Brian.Kelleher@sfmta.com	<i>BK</i>
Kelly, Jim	SFMTA		Jim.Kelly@sfmta.com	
Kuehn, David	STV/PMOC	(510) 464-8053	David.kuehn@stvinc.com	
Latch, Mark	CSP	(415) 701-5294	Mark.Latch@sfmta.com	<i>ML</i>
Lebovitz, Brad	STV/PMOC	(510) 464-8052	Bradley.lebovitz@stvinc.com	<i>BL</i>
Nguyen, Roger	SFMTA	(415) 701-4312	Roger.Nguyen@sfmta.com	<i>RN</i>

NAME	AFFILIATION	PHONE	E-MAIL (for minutes)	INITIALS
Park, Joon	SFMTA	(415) 701-4742	Joon.Park@sfmta.com	
Redmond, Richard	CSP	(415) 701-4288	Richard.Redmond@sfmta.com	RR
Shah, Kartik	SFMTA	(415) 701.5678	Kartik.Shah@sfmta.com	
Stassevitch, Eric	CSP	(415) 701-4426	Eric.Stassevitch@sfmta.com	
Tisell, Steve	CSP	(415) 701.5280	steve.tisell@sfmta.com	
Vilcheck Mark	CSP	(415) 701-4293	Mark.Vilcheck@sfmta.com	
Wang, Jane	SFMTA	(415) 701-4287	Jane.Wang@sfmta.com	
Ward, Beverly	CSP	(415) 701-5291	Beverly.Ward@sfmta.com	
Wilson, Sarah	CSP	(415) 243-0950	Sarah.Wilson@sfmta.com	
Zurinaga, Luis	SFCTA	(415) 716-6956	Luis.zurinaga@sfcta.org	
M. Acosta, S. Pong & T. DePooter were in attendance, but did not sign in.				
				

West Side TIA

In September the critical path changed with approval of the S curve plan. With this new plan BIH was able to buy time to start the east side of the street while finishing unrestricted panels on the west side of the street. At this point it was portrayed in the schedule update that after the slurry panels encompassed in the S curve were complete (ending with W40) then Temporary Restoration (West) (TUN-03-3030) and Setup Traffic Control for Launch Box (East) (TUN-03-2030) could take place for the east side panels to begin. This was also later reflected in the As-built TIA Rev001 and the draft of TIA Rev002 sent to the SFMTA to review. However, now on TIA Rev002 there are two new activities associated with a significant amount of time on the critical path of the schedule shown below:

Act ID	Activity Name	Duration	Start	Finish
CB - West	Steel Cap Beam Prep (West)	7	15-Sep-12	24-Sep-12
TCS - West	Backfill, Remove Sidewalks, Setup S-Curve (West)	5	24-Sep-12	29-Sep-12

Activities that do not show on the schedule update are assumed to be incidental work and not critical. BIH is responsible for make sure there schedule updates are accurate. It is unacceptable for BIH to be claiming time associated with activities that have never been seen on a schedule update.

W40 was the last panel completed within the S curve boundaries. The TIA Rev002 analysis leaves no time for new critical activities of "Steel Cap Beam Prep (West)" and "Backfill, Remove Sidewalks, Setup S-Curve (West)" to happen for W40. Backfill was complete next to W40 by September 26, therefore a FF relationship with the Backfill, Remove Sidewalks, Setup S-Curve (West) with a finish date of September 29 is not accurate. With fixed logic the delay would have been 5 calendar days instead of 7.

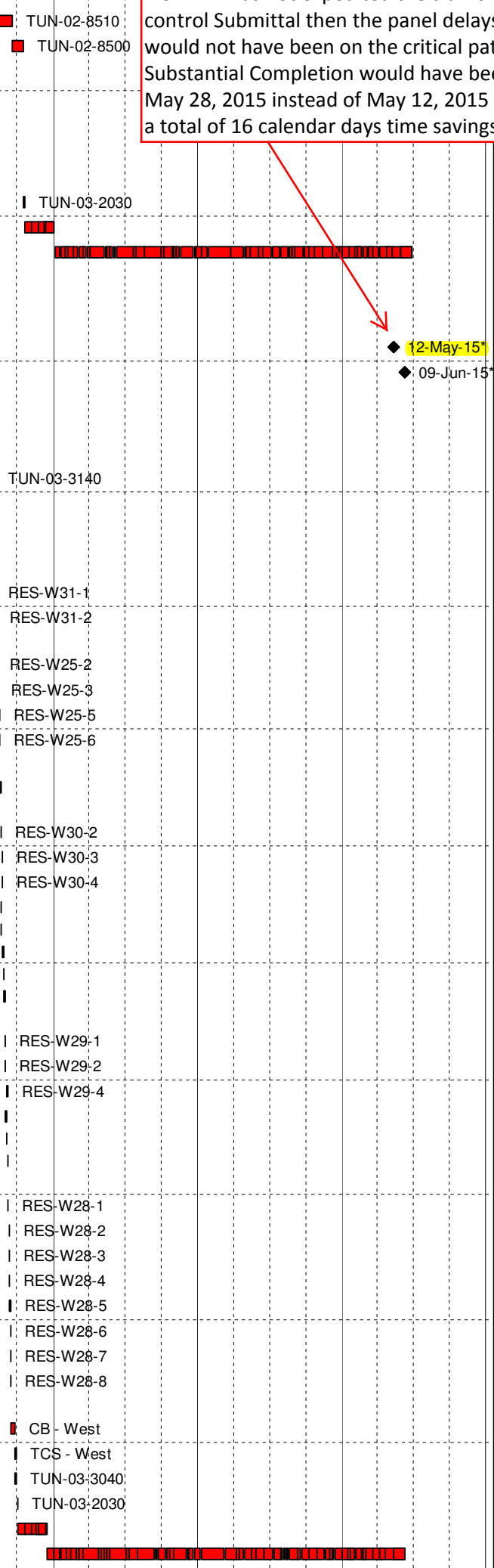
***TIA Rev002 argues that the implication of the S curve created a different critical path that was not accurately represented the schedule update or previous version of this TIA and that is proves a 7 calendar days compensable time extension. The implication of the S curve plan was dependent a new traffic control plan submittal number 01 55 26-016 that was submitted on September 19, 2012. According to Specification Section 01 33 00 1.05D the SFMTA has 20 working days to review a submittal which would have required a response by October 17, 2012. Due to the urgency of this submittal the SFMTA expedited a response by September 26, 2012. According to Specification Section 01 32 13- 1.03.C.6.C:

It is acknowledged and agreed by the Contractor that SFMTA caused delays on the project may be offset by SFMTA caused time savings (including, but not limited to: critical path submittals returned in less time than allowed for in the Contract, approval of substitution requests which result in a savings of time along the critical path for the Contractor, etc.). In such an event, the Contractor will not be entitled to receive an extension of time or delay damages until SFMTA caused time saving is exceeded and Contract completion date is also exceeded.

The S curve was implemented by October 1, 2012, as previously stated the SFMTA contractually had till October 17, 2012 to return the submittal. Therefore the SFMTA time savings on the expedited review of the submittal far exceed any delay the SFMTA might have cause on the panels. The SFMTA see no further reason to continue negotiations with their concerns on this TIAs and considers CORS 32, 34, 42, and 43 closed with no merit of a time extension.

Activity ID	Activity Name	Org Dur	Start	Finish	Total Float	2013												2014												2015															
						J				A				J				J				J				J				J				J				J							
TIA004 West side 4th St Submittal not Expedited						919.75	31-Jul-12	25-Jun-15	-60.00																																				
CP-1252 Contract Milestones						28.00	28-May-15	25-Jun-15	-66.00																																				
TUN-01-1060	Substantial Completion (req'd March 22, 2015) - 1150 days	0.00		28-May-15*	-67.00																																								
TUN-01-1070	Final Completion (req'd April 21, 2015) - 1180 days	0.00		25-Jun-15*	-66.00																																								
General Conditions						56.00	31-Jul-12	17-Oct-12	-49.00																																				
Submittals and Permits						56.00	31-Jul-12	17-Oct-12	-49.00																																				
Submittals						56.00	31-Jul-12	17-Oct-12	-49.00																																				
TUN-02-8510	BIH Submit Traffic Control Plans (S Curve Launch Box)	36.00	31-Jul-12	19-Sep-12	-49.00																																								
TUN-02-8500	Approve Traffic Control Plans (S Curve Launch Box)	20.00	20-Sep-12	17-Oct-12	-49.00																																								
4th & Bryant Street TBM Launch Box Construction						64.75	18-Oct-12	03-Jan-13	-61.25																																				
Launch Box Ground Support and Improvements						64.75	18-Oct-12	03-Jan-13	-61.25																																				
West						1.00	18-Oct-12	18-Oct-12	-49.00																																				
Slurry Wall As-built Fragnet						1.00	18-Oct-12	18-Oct-12	-49.00																																				
Cap Beam Prep and Restoration						1.00	18-Oct-12	18-Oct-12	-49.00																																				
TUN-03-2030	Launch Box - Setup Traffic Control for Launch Box (East)	1.00	18-Oct-12	18-Oct-12	-49.00																																								
East						62.00	19-Oct-12	03-Jan-13	-59.00																																				
Remaining Critical Work						784.75	04-Jan-13	25-Jun-15	-60.00																																				
TIA004 West side 4th St 32, 34, 43, 44 After						904.75	18-Jul-12 A	09-Jun-15	-45.00																																				
CP-1252 Contract Milestones						28.00	12-May-15	09-Jun-15	-50.00																																				
TUN-01-1060	Substantial Completion (req'd March 22, 2015) - 1150 days	0.00		12-May-15*	-51.00																																								
TUN-01-1070	Final Completion (req'd April 21, 2015) - 1180 days	0.00		09-Jun-15*	-50.00																																								
4th & Bryant Street TBM Launch Box Construction						119.75	18-Jul-12 A	14-Dec-12	-46.25																																				
Launch Box Ground Support and Improvements						119.75	18-Jul-12 A	14-Dec-12	-46.25																																				
West						54.75	18-Jul-12 A	01-Oct-12	-45.00																																				
TUN-03-3140	Launch Box - Construct Slurry Walls West (Section 2 - 13 Ea Panels)	10.00	18-Jul-12 A	02-Aug-12	-44.50																																								
Slurry Wall As-built Fragnet						51.00	03-Aug-12	01-Oct-12	-45.00																																				
Restricted Rig - West						37.50	03-Aug-12	15-Sep-12	-44.50																																				
W37 - Restricted						0.50	03-Aug-12	03-Aug-12	-44.50																																				
W31 - Restricted						4.00	03-Aug-12	07-Aug-12	-44.50																																				
RES-W31-1	CONTRACT - Excavate	0.50	03-Aug-12*	03-Aug-12	-44.50																																								
RES-W31-2	ADDITIONAL - Excavate Wood Pile	3.00	04-Aug-12	07-Aug-12	-44.50																																								
W25 - Restricted						8.50	08-Aug-12	17-Aug-12	-44.50																																				
RES-W25-2	CONTRACT - Excavate	1.00	08-Aug-12	08-Aug-12	-44.50																																								
RES-W25-3	ADDITIONAL - Excavate Wood Pile	1.00	09-Aug-12	09-Aug-12	-44.50																																								
RES-W25-5	ADDITIONAL - Excavate, Lean Mix	3.00	13-Aug-12	16-Aug-12	-44.50																																								
RES-W25-6	CONTRACT - Finish Excavate	1.00	16-Aug-12	17-Aug-12	-44.50																																								
W18 - Restricted						2.50	10-Aug-12	13-Aug-12	-44.50																																				
W36 - Restricted						3.50	17-Aug-12	21-Aug-12	-44.50																																				
W30 - Restricted						3.50	22-Aug-12	25-Aug-12	-44.50																																				
RES-W30-2	CONTRACT - Excavate	0.50	22-Aug-12	22-Aug-12	-44.50																																								
RES-W30-3	ADDITIONAL - Excavate	2.00	23-Aug-12	24-Aug-12	-44.50																																								
RES-W30-4	CONTRACT - Finish Excavate	0.50	25-Aug-12	25-Aug-12	-44.50																																								
W17 - Restricted						0.25	22-Aug-12	22-Aug-12	-44.50																																				
W24 - Restricted						0.25	22-Aug-12	22-Aug-12	-44.50																																				
W35 - Restricted						2.00	25-Aug-12	28-Aug-12	-44.50																																				
W23 - Restricted						1.00	28-Aug-12	29-Aug-12	-44.50																																				
W16 - Restricted						1.00	29-Aug-12	30-Aug-12	-44.50																																				
W29 - Restricted						6.25	30-Aug-12	06-Sep-12	-44.50																																				
RES-W29-1	CONTRACT - Excavate	0.13	30-Aug-12	30-Aug-12	-44.50																																								
RES-W29-2	ADDITIONAL - Wooden Pile	1.00	30-Aug-12	31-Aug-12	-44.50																																								
RES-W29-4	ADDITIONAL - Excavate, Lean Mix	1.00	05-Sep-12	06-Sep-12	-44.50																																								
W34 - Restricted						2.13	31-Aug-12	03-Sep-12	-44.50																																				
W22 - Restricted						2.00	03-Sep-12	05-Sep-12	-44.50																																				
W15 - Restricted						1.25	06-Sep-12	07-Sep-12	-44.50																																				
W28 - Restricted						6.50	08-Sep-12	15-Sep-12	-44.50																																				
RES-W28-1	CONTRACT - Excavate	1.00	08-Sep-12	08-Sep-12	-44.50																																								
RES-W28-2	ADDITIONAL - Excavate Wooden Pile	1.50	10-Sep-12	11-Sep-12	-44.50																																								
RES-W28-3	ADDITIONAL - Pour Lean Mix	1.00	11-Sep-12	12-Sep-12	-44.50																																								
RES-W28-4	ADDITIONAL - Excavate Lean Mix	0.50	12-Sep-12	12-Sep-12	-44.50																																								
RES-W28-5	CONTRACT - Finish Excavate	1.00	13-Sep-12	13-Sep-12	-44.50																																								
RES-W28-6	ADDITIONAL - Desand	0.50	14-Sep-12	14-Sep-12	-44.50																																								
RES-W28-7	CONTRACT - Desand	0.25	14-Sep-12	14-Sep-12	-44.50																																								
RES-W28-8	CONTRACT - Pour	0.75	14-Sep-12	15-Sep-12	-44.50																																								
Cap Beam Prep and Restoration						13.63	15-Sep-12	01-Oct-12	-45.00																																				
CB - West	Steel Cap Beam Prep (West)	7.00	15-Sep-12	24-Sep-12	-44.50																																								
TCS - West	Backfill, Remove Sidewalks, Setup S-Curve (West)	5.00	24-Sep-12	29-Sep-12	-44.50																																								
TUN-03-3040	Launch Box - Temporary Restoration (West)	3.00	26-Sep-12	29-Sep-12	-44.50																																								
TUN-03-2030	Launch Box - Setup Traffic Control for Launch Box (East)	1.00	01-Oct-12	01-Oct-12	-36.00																																								
East						62.00	02-Oct-12	14-Dec-12	-44.00																																				
Remaining Critical Work						784.75	17-Dec-12	09-Jun-15	-45.00																																				

If SFMTA has not expedited the traffic control Submittal then the panel delays would not have been on the critical path. Substantial Completion would have been May 28, 2015 instead of May 12, 2015 for a total of 16 calendar days time savings.



Activity ID	Activity Name	Org Dur	Start	Finish	Total Float	2013												2014												2015																													
						J				A				S				O				N				D				J				F				M				A				M				J				J				A	
TIA004 West side 4th St 32, 34, 43, 44 Before						900.50	31-Jul-12	04-Jun-15	-40.75																																																		
CP-1252 Contract Milestones						28.00	07-May-15	04-Jun-15	-44.50																																																		
TUN-01-1060	Substantial Completion (req'd March 22, 2015) - 1150 days	0.00		07-May-15*	-45.50																																																						
TUN-01-1070	Final Completion (req'd April 21, 2015) - 1180 days	0.00		04-Jun-15*	-44.50																																																						
4th & Bryant Street TBM Launch Box Construction						115.50	31-Jul-12	11-Dec-12	-42.00																																																		
Launch Box Ground Support and Improvements						115.50	31-Jul-12	11-Dec-12	-42.00																																																		
West						51.75	31-Jul-12	27-Sep-12	-42.00																																																		
Slurry Wall As-built Fragnet						51.75	31-Jul-12	27-Sep-12	-42.00																																																		
Unrestricted Rig - West						45.50	31-Jul-12	21-Sep-12	-41.63																																																		
W13- Unrestricted						3.50	31-Jul-12	03-Aug-12	-41.63																																																		
W8- Unrestricted						4.00	03-Aug-12	08-Aug-12	-41.63																																																		
W4- Unrestricted						2.00	08-Aug-12	10-Aug-12	-41.63																																																		
W12- Unrestricted						4.00	10-Aug-12	15-Aug-12	-41.63																																																		
W7- Unrestricted						3.50	15-Aug-12	18-Aug-12	-41.63																																																		
W3- Unrestricted						5.00	20-Aug-12	24-Aug-12	-41.63																																																		
W11- Unrestricted						3.50	25-Aug-12	29-Aug-12	-41.63																																																		
W40- Unrestricted						20.00	29-Aug-12	21-Sep-12	-41.63																																																		
UN-W40-1	Move equipment to W40	4.00	29-Aug-12	03-Sep-12	-41.63	UN-W40-1																																																					
UN-W40-2	CONTRACT - Excavate	6.00	03-Sep-12	10-Sep-12	-41.63	UN-W40-2																																																					
UN-W40-3	CONTRACT - Removal of Concrete	9.00	10-Sep-12	20-Sep-12	-41.63	UN-W40-3																																																					
UN-W40-4	CONTRACT - Desand	0.50	20-Sep-12	20-Sep-12	-41.63	UN-W40-4																																																					
UN-W40-5	CONTRACT - Pour	0.50	21-Sep-12	21-Sep-12	-41.63	UN-W40-5																																																					
Cap Beam Prep and Restoration						6.13	20-Sep-12	27-Sep-12	-42.00																																																		
TCS - West	Backfill, Remove Sidewalks, Setup S-Curve (West)	5.00	20-Sep-12	26-Sep-12	-41.63	TCS - West																																																					
TUN-03-3040	Launch Box - Temporary Restoration (West)	3.00	21-Sep-12	26-Sep-12	-33.50	TUN-03-3040																																																					
TUN-03-2030	Launch Box - Setup Traffic Control for Launch Box (East)	1.00	26-Sep-12	27-Sep-12	-33.50	TUN-03-2030																																																					
East						62.00	27-Sep-12	11-Dec-12	-40.50																																																		
TUN-03-3170	Launch Box - Construct Slurry Walls East (Section 1 - 12 Ea Panels)	15.00	27-Sep-12	15-Oct-12	-40.50	TUN-03-3170																																																					
TUN-03-3180	Launch Box - Construct Slurry Walls East (Section 2 - 12 Ea Panels)	15.00	15-Oct-12	01-Nov-12	-40.50	TUN-03-3180																																																					
TUN-03-3190	Launch Box - Construct Slurry Walls East (Section 3 - 12 Ea Panels)	15.00	01-Nov-12	19-Nov-12	-40.50	TUN-03-3190																																																					
TUN-03-3080	Launch Box - Construct Cap Beam (East)	21.00	14-Nov-12	11-Dec-12	-40.50	TUN-03-3080																																																					
TUN-03-3200	Launch Box - Construct Slurry Walls East (Section 4 - 13 Ea Panels)	15.00	19-Nov-12	08-Dec-12	-40.50	TUN-03-3200																																																					
Remaining Critical Work						785.00	11-Dec-12	04-Jun-15	-40.75																																																		
TIA004 West side 4th St 32, 34, 43, 44 After						904.75	18-Jul-12 A	09-Jun-15	-45.00																																																		
CP-1252 Contract Milestones						28.00	12-May-15	09-Jun-15	-50.00																																																		
TUN-01-1060	Substantial Completion (req'd March 22, 2015) - 1150 days	0.00		12-May-15*	-51.00																																																						
TUN-01-1070	Final Completion (req'd April 21, 2015) - 1180 days	0.00		09-Jun-15*	-50.00																																																						
4th & Bryant Street TBM Launch Box Construction						119.75	18-Jul-12 A	14-Dec-12	-46.25																																																		
Launch Box Ground Support and Improvements						119.75	18-Jul-12 A	14-Dec-12	-46.25																																																		
West						54.75	18-Jul-12 A	01-Oct-12	-45.00																																																		
TUN-03-3140	Launch Box - Construct Slurry Walls West (Section 2 - 13 Ea Panels)	10.00	18-Jul-12 A	02-Aug-12	-44.50	TUN-03-3140																																																					
Slurry Wall As-built Fragnet						51.00	03-Aug-12	01-Oct-12	-45.00																																																		
Restricted Rig - West						37.50	03-Aug-12	15-Sep-12	-44.50																																																		
W37 - Restricted						0.50	03-Aug-12	03-Aug-12	-44.50																																																		
W31 - Restricted						4.00	03-Aug-12	07-Aug-12	-44.50																																																		
W25 - Restricted						8.50	08-Aug-12	17-Aug-12	-44.50																																																		
W18 - Restricted						2.50	10-Aug-12	13-Aug-12	-44.50																																																		
W36 - Restricted						3.50	17-Aug-12	21-Aug-12	-44.50																																																		
W30 - Restricted						3.50	22-Aug-12	25-Aug-12	-44.50																																																		
RES-W30-2	CONTRACT - Excavate	0.50	22-Aug-12	22-Aug-12	-44.50	RES-W30-2																																																					
RES-W30-3	ADDITIONAL - Excavate	2.00	23-Aug-12	24-Aug-12	-44.50	RES-W30-3																																																					
RES-W30-4	CONTRACT - Finish Excavate	0.50	25-Aug-12	25-Aug-12	-44.50	RES-W30-4																																																					
W17 - Restricted						0.25	22-Aug-12	22-Aug-12	-44.50																																																		
W24 - Restricted						0.25	22-Aug-12	22-Aug-12	-44.50																																																		
W35 - Restricted						2.00	25-Aug-12	28-Aug-12	-44.50																																																		
W23 - Restricted						1.00	28-Aug-12	29-Aug-12	-44.50																																																		
W16 - Restricted						1.00	29-Aug-12	30-Aug-12	-44.50																																																		
W29 - Restricted						6.25	30-Aug-12	06-Sep-12	-44.50																																																		
RES-W29-1	CONTRACT - Excavate	0.13	30-Aug-12	30-Aug-12	-44.50	RES-W29-1																																																					
RES-W29-2	ADDITIONAL - Wooden Pile	1.00	30-Aug-12	31-Aug-12	-44.50	RES-W29-2																																																					
RES-W29-4	ADDITIONAL - Excavate, Lean Mix	1.00	05-Sep-12	06-Sep-12	-44.50	RES-W29-4																																																					
W34 - Restricted						2.13	31-Aug-12	03-Sep-12	-44.50																																																		
W22 - Restricted						2.00	03-Sep-12	05-Sep-12	-44.50																																																		
W15 - Restricted						1.25	06-Sep-12	07-Sep-12	-44.50																																																		
W28 - Restricted						6.50	08-Sep-12	15-Sep-12	-44.50																																																		
RES-W28-1	CONTRACT - Excavate	1.00	08-Sep-12	08-Sep-12	-44.50	RES-W28-1																																																					
RES-W28-2	ADDITIONAL - Excavate Wooden Pile	1.50	10-Sep-12	11-Sep-12	-44.50	RES-W28-2																																																					
RES-W28-3	ADDITIONAL - Pour Lean Mix	1.00	11-Sep-12	12-Sep-12	-44.50	RES-W28-3																																																					
RES-W28-4	ADDITIONAL - Excavate Lean Mix	0.50	12-Sep-12	12-Sep-12	-44.50	RES-W28-4																																																					
RES-W28-5	CONTRACT - Finish Excavate	1.00	13-Sep-12	13-Sep-12	-44.50	RES-W28-5																																																					
RES-W28-6	ADDITIONAL - Desand	0.50	14-Sep-12	14-Sep-12	-44.50	RES-W28-6																																																					
RES-W28-7	CONTRACT - Desand	0.25	14-Sep-12	14-Sep-12	-44.50	RES-W28-7																																																					
RES-W28-8	CONTRACT - Pour	0.75	14-Sep-12	15-Sep-12	-44.50	RES-W28-8																																																					
Cap Beam Prep and Restoration						13.63	15-Sep-12	01-Oct-12	-45.00																																																		
CB - West	Steel Cap Beam Prep (West)	7.00	15-Sep-12	24-Sep-12	-44.50	CB - West																																																					
TCS - West	Backfill, Remove Sidewalks, Setup S-Curve (West)	5.00	24-Sep-12	29-Sep-12	-44.50	TCS - West																																																					
TUN-03-3040	Launch Box - Temporary Restoration (West)	3.00	26-Sep-12	29-Sep-12	-44.50	TUN-03-3040																																																					
TUN-03-2030	Launch Box - Setup Traffic Control for Launch Box (East)	1.00	01-Oct-12	01-Oct-12	-36.00	TUN-03-2030																																																					
East						62.00	02-Oct-12	14-Dec-12	-44.00																																																		
TUN-03-3170	Launch Box - Construct Slurry Walls East (Section 1 - 12 Ea Panels)	15.00	02-Oct-12	18-Oct-12	-44.00	TUN-03-3170																																																					
TUN-03-3180	Launch Box - Construct Slurry Walls East (Section 2 - 12 Ea Panels)	15.00	19-Oct-12	05-Nov-12	-44.00	TUN-03-3180																																																					
TUN-03-3190	Launch Box - Construct Slurry Walls East (Section 3 - 12 Ea Panels)	15.00	06-Nov-12	24-Nov-12	-44.00	TUN-03-3190																																																					
TUN-03-3080	Launch Box - Construct Cap Beam (East)	21.00	19-Nov-12	14-Dec-12	-44.00	TUN-03-3080																																																					
TUN-03-3200	Launch Box - Construct Slurry Walls East (Section 4 - 13 Ea Panels)	15.00	26-Nov-12	12-Dec-12	-44.00	TUN-03-3200																																																					
Remaining Critical Work						784.75	17-Dec-12	09-Jun-15	-45.00																																																		

With fixed logic Substantial Completion went from May 7, 2015 to May 12, 2015 for a total of 5 calendar days not 7.

Backfill was complete next to W40 on September 26. Logic was revised to show these as-built conditions (UN-W40-5-> FF4 -> TCS-West)

◆ 07-May-15*

◆ 04-Jun-15*

◆ 12-May-15*

◆ 09-Jun-15*

4th Street Time Saving Assumptions-

- BIH will need to create and install a temporary decking system on each side of the road. This is need so that they can set the deck beams at night and on weekends while opening up half of 4th St during the day. It is also used so that they can work on slurry panels W1, W2, and W14 at night and weekends while they are working on the east side of 4th Street slurry panels and cap beam.
- The temporary decking system duration is based off the duration it took to build the temporary road/work area for the south west S-curve on 4th Street (BIH West side As-built TIA schedule).

Act ID	Activity Name	Dur	
CB - West	Steel Cap Beam Prep (West)	7	
TCS - West	Backfill, Remove Sidewalks, Setup S-Curve (West)	5	
TUN-03-3040	Launch Box - Temporary Restoration (West)	3	(concurrent with TCS - West & TUN-03-2030)
TUN-03-2030	Launch Box - Setup Traffic Control for Launch Box (East)	1	

- Started to prep the north west corner of 4th St at Harrison on Oct 25 so switched this to start ACT ID TUN-03-8000" Launch Box -Prep for Temporary Decking System (North West)". The duration is based off the time it took to build the temporary road/work area for the south west S-curve on 4th Street (BIH West side As-built TIA schedule, see above).
- Assumes all of the East Slurry Panels south of P14 will be finished in the S-curve formation by the time traffic is moved over to West side of 4th St.
- Once traffic is moved to West side of 4th Street BIH will need to work on excavating, remaining guide walls, and constructing a working pad 3 days before they can restart the east slurry panels.
- The panels north of P14 (16 total) will need to be finished on the East Side of 4th St once the full East side is open. The duration for the slurry walls uses the actuals for the CPM schedule for the remaining slurry walls. Launch Box - Construct Slurry Walls East (Section 4 - 12 Ea Panels) (ACT ID TUN-03-3200) took 13 days and overlapped with Launch Box - Construct Slurry Walls East (Section 3) by 2 days.
- ACT ID TUN-03-3080 Launch Box - Construct Cap Beam (East) will complete 7 days after the last slurry panel is complete, based off of actuals.
- Jet grouting will be performed on nights and weekends. Cap beam North West can be completed while setting the south deck beams during the day or night since the West side of the street will be closed.
- ACT ID TUN-03-3090 Launch Box - Prep for Temporary Decking System (East) will overlap with ACT ID TUN-03-3080 Launch Box - Construct Cap Beam (East) by 3 days for a total of 7 days/ it will finish 4 days after the cap beam is complete.
- ACT ID TUN-03-6200 Launch Box – Install Corner Strut and Deck Beams (DB43 - DB39) will start 3 days before the traffic is switched to the west side of the street. Can overlap because the temporary decking system will already be in place on the south for both sides of the street. Did not overlap more because did not anticipate that it would take so long to install corner struts deck beams (DB43 - DB39).

- Assumes all Deck Beams activities will be performed on a 7 day/ holiday work calendar since critical path and can only work night and weekends because the full street will need to be closed in order to set a beam.
- ACT ID TUN-03-6200 Launch Box – Install Corner Strut and Deck Beams (DB43 - DB39) duration is based off of actuals (BIH East side As-built TIA schedule).
- ACT ID TUN-03-4000 Launch Box - Exc and Set Deck Beams and Panels East (DB38 - DB20)- 15 days- 19 panels @ 9 beams a week (1 panel a night/ 5 on weekends).
- TUN-03-6180 Launch Box - Exc and Set Deck Beams, Panels East, and Corner Struts (DB19 - DB1)- 17 days - 19 panels @ 9 beams a week (1 panel a night/ 5 on weekends). Plus 1 day each corner struts (2). Will finish setting panels on east the following day before switching traffic to eastside so they can install panels on the west.
- ACT ID TUN-03-8040 Launch Box - Set Deck Panels and Brace (West)- 3 days will be a double shift. Can be done day and night.
- Street was reopened after deck beam were set so continued forward with normal CPM schedule logic. BIH overlapped excavation with setting deck beams but still took the full 10 day duration to complete after last deck beam was set so we show no overlap since this did not save anytime. Also only showing 3 days for setting deck beams west so would not have much time for overlap.

Status update from last discussion
Items which have been addressed (handled)

	Utilities:	Date Added	ISSUE	Status	Update as of 02/06/14	Tracking Documentation
1	Comcast		Unidentified Conduits DSC - Is Form B letter signed? Need 2 -3" & 1 -2" Conduits	Clarification from Comcast were conduits end, PCC to relocate to JT	Temporary relocation now, FACO 4 prepared, Form B letter signed	FACO4
2	AT&T		AT&T - Need 2 - 4" Conduits extended to vault	Email to TPC proceeding with pricing for conduits	Temporary relocation now, FACO 4 prepared	FACO4
3			1-1/2" Steel Conduit - Unidentified Conduits DSC- confirmed Fire Alarm - needs to be in joint trench	PCC relocate , need to confirm location	Part of Fire Alarm, Temporary relocation now, FACO 4 prepared	FACO4
4			3 - 4" Steel Conduit - Unidentified Conduits DSC Still unknown, may be PG&E	Instruct Contractor to carefully drill small holes	Abandoned PG&E, Issue Closed, FACO 5 for holes to determine use/ownership prepared	FACO5
5			6" conduit/Pipe - May be abandoned water or may be PG&E	Cut a chunk into it; empty	Abandoned water, Done	
6	AT&T		AT&T - Service to building	Identify conduit were telephone service begins to the bldg.		
7	PG&E		PG&E Pole removal	PG&E now able to disconnect 1/2 of transformer	New Vault installed, Tracked time and material.	
8	PG&E		PG&E Traffic Control - Locations where not shown & PG&E no show	PCC will be issued	Tracking, resolve when PG&E work finishes	
9	PG&E		PG&E Muni Inspectors - PG&E no show		Tracking, Not PCC, Form B	Form B
10	PG&E		PG&E Crosswalk is in wrong location for guy wire	Contractor will be directed to proceed with temp walkway	Sent Email to TPC proceed, forwarded to PG&E (will extend to 8' wide per Desmond) Being resolved in field	
11	AWSS		AWSS - Fire Hydrant - get w/Alex on access to do work	Bring back to CMB next wk. w/graphic will superimpose it	Met Thursday 2014-01-24, will relocate to Jade Galore basement, use detail FP 5142.1 shown in plans.	
12	AWSS		AWSS - May be in PG&E Vaults	Setting up mtg to go over items	Meet 01-10-2014, FACO # 6	FACO6
13	AWSS		AWSS- 8' Vault on Washington - may need to move water line 6" line is abandoned	May not need to put in or put in a smaller vault	SFWD OK'd 10" valve, install when roof deck is done, reducers (6 month lead time) RFI returned	
14	PUC		Sewer - Installed 5' Manhole instead of 2-4' manholes	PCC will be issued		
15	PG&E		PG&E - Conduit duct bank entering "new vault"	Need to figure out how to connect to the 3-1/2 PVC	Sent out FACO #2 01-10-2014 Work done	FACO2
16	PG&E		PG&E - Concrete encasement - no appendix "C" in online green book - not in specs	Michael Lightstone looking for a version of appendix "C" (062288) at the time of bid, which states concrete encasement. PG&E cost	No definition of Severe exposure to "digs-ins" FACO Drafted	FACOXX
17	SFWD		SFWD - Delete installation of waterline on Washington Street East of site	PCC will be issued		
18	SFWD		SFWD - Delete installation of 8' Bypass Line through site	PCC will be issued		
19	SFWD		SFWD - Add pothole on NW side	PCC will be issued		
20	SFWD		SFWD - Needed to enlarge excavation for SFWD		FACO 3 Prepared	FACO03
21	PUC	1/10/2014	Locate Manhole that appears to conflict with Slurry Wall	TPC is going to locate it, believed to be clear of guide walls	Manhole located RFI 217.1 resolves	
22	PUC/dpw	1/10/2014	Sewer/AWSS conflicts in Stockton RFI 232	AWSS line passes through sewer, need Traffic control to investigate	RFI 232, Install as shown, Sewer Mortar lined in 2007	
23		1/10/2014	Traffic signals need to be relocated at Washington and Stockton Inters	Waiting for Cynthia Hui to respond to RFI 7.1	Response To RFI with TPC	
24	DPH	1/17/2014	Unknown Tank - DSC	Need to relocate Fire Hydrant out of way see item 26	Stop work email 01-16-2014, Now DPH	
25	RE	1/17/2014	Downspouts RFI 219 now DSC	Install Temporary pipe, rout permanent when Roof slab done	Temporary relocation now, FACO 4 Sent, work complete	
26	SFWD	1/17/2014	AWSS - Move Fire Hydrant, change to expensive gaskets.	Location moved to	RFI to relocate due to tank, contamination FACO #7 Have new RFI asking if we need expensive gaskets in new location	FACO07

Status update from last discussion
 Items which have been addressed (handled)

Utilities:	Date Added	ISSUE	Status	Update as of 02/06/14	Tracking Documentation
27/DPW	1/17/2014	Manhole in guide wall does not have Drain Pipe in it RFI 217.1	Install new manhole where shown, connect in culverts from drain	OK to leave drain if in good shape, connect into new manhole	
28/SFWD	1/17/2014	Utilities are in the way of the proposed tie in RFI 234 at the emergency exit stair hatch on Stockton			
29/SFWD	1/17/2014	Gas line is resting on AWSS line	Call Owner PG&E when Excavation is open to move		
30/SFWD	1/20/2014	Found a second tank while excavating for revised AWSS Fire Hydrant		Moved West, FACO #7, RFI 288 Conduit and drain pipe? RFI 300 on gaskets, New FACO to move tie-in location and install hydrant.	FACO07
31/PG&E	1/20/2014	PG&E Changes at Emergency Escape stairway on Stockton	PG&E Needs 8 week notice before starting excavation for relocation		
32/SFWD	1/27/2014	RFI 234 Utility conflict at WD Tie-in	Multiple utilities at location shown for tie in	W/ PB/Telemon, probably move location	
32/PG&E	1/27/2014	RFI 291 CTS Gas Main Parallel to AWSS	May require hand digging, Michael Smith OK if PG&E cover the costs.	Letter #24 sent to Michael Lightstone	
33/AT&T	1/31/2014	Notice of Potential Delay - Utility Delays to Lane Christensen	Letter saying we are delaying Lane installing slurry guide walls and compensation grouting.	AT&T had not completed their cut over 2014-01-31 afternoon, sent email with pdf of delay notice and mentioned \$40,000 delay charge.	
34/TPC	1/31/2014	Potential Damage to 857 Clay street	Leaking water along service pipe.	Call 311, With SFWD, appears water pipe is leaking, but probably not job related	
35/Valverde	1/31/2014	Notice of Potential Delay AWSS Assignment to Plumbers	Need union agreement	Mike Acosta is setting up meeting	
36/Viking	2/6/2014	Request to shut off OCS on Stockton for dewatering well drilling opera	Need MUNI buy in	Meeting 02-07-2014 with MUNI to brainstorm ideas	

Ward, Beverly

From: DePooter, Ted R
Sent: Tuesday, February 18, 2014 5:37 PM
To: Redmond, Richard; Stassevitch, Eric; Ward, Beverly
Subject: FW: CN1300: ML24 (CTS) Gas Main Parallel to AWSS Line on Stockton RFI 291

All,

This is item 32 with the issues at CTS list, looks like it is headed to a PCC as well.

Ted

-----Original Message-----

From: Lightstone, Michael [<mailto:MxLd@pge.com>]
Sent: Friday, February 14, 2014 3:43 PM
To: DePooter, Ted R
Cc: Lee, Wyman W; Redmond, Richard
Subject: RE: CN1300: ML24 (CTS) Gas Main Parallel to AWSS Line on Stockton RFI 291

Ted:

Since we are discussing a long parallel, I would expect you to provide us a price to do the work as opposed to charging the agreed to cost of a crossing.

Thanks.

Michael

-----Original Message-----

From: DePooter, Ted R [<mailto:Ted.DePooter@sfmta.com>]
Sent: Wednesday, February 12, 2014 9:30 AM
To: Lightstone, Michael
Cc: Lee, Wyman W; Redmond, Richard
Subject: FW: CN1300: ML24 (CTS) Gas Main Parallel to AWSS Line on Stockton RFI 291

Michael,

Wyman and I met with Jim Nies and Marcus Gomez about the Utility Crossing Specification and using the rates in it for the parallel AWSS and gas pipe situation in Stockton.

In discussing it, we had several thoughts as to how this could be treated, one of which is to treat it as a continuous "crossing" (Approximately 600 feet long), with one fixed cost.

A second scenario is assuming the gas line actually goes around the PG&E electrical vaults, it could be broken down into several smaller "crossing", and a separate fixed cost could be applied to each section. This probably will break it into four pieces, one Washington Street to vault 726, one from 726 to 718, one 718 to 716, and one from 716 to the termination (+/- 108+42). This assumes the gas line moves away from the AWSS line at the vaults where the AWSS line is shown passing through the vault on our drawings.

Both of these assume "crossing" is also defined as excavating in close proximity to a parallel utility that needs to be supported and worked around.

Is our interpretation of the long parallel run being treated as a crossing correct?

If the gas line is encased in an old 6" water line, is it OK to use the water line diameter as the "Duct Structure" size for determining fixed cost?

Can you confirm that it is acceptable to compensate the contractor at the fixed cost and cost per foot whichever way we/they jointly choose?

It looks like Group III is the table we would be using, since these lengths are greater than 12'

Please let me know if you have any questions.

Regards,

Ted DePooter
Resident Engineer
SFMTA/Central Subway
NOTE THE NEW ADDRESS
530 Bush Street, 4th floor
San Francisco, CA. 94108

Cell : 678-993-9375

E-mail: ted.depooter@sfmta.com

-----Original Message-----

From: Lightstone, Michael [<mailto:MxLd@pge.com>]

Sent: Tuesday, February 11, 2014 2:51 PM

To: Seng, Wuthea

Cc: Tom Reimer; DePooter, Ted R; Lee, Wyman W; Hoe, Albert; Kelleher, Brian; Stassevitch, Eric; Zhao, Jin; Funghi, John; Redmond, Richard; Wang, Jane; Kwong, Stephen

Subject: FW: CN1300: ML24 (CTS) Gas Main Parallel to AWSS Line on Stockton RFI 291

Wuthea:

Provided the cost to protect the gas main in place are within the CCSF Appendix A "Utility Crossings" guidelines, PG&E concurs with the approach indicated on the attached letter; we would like our facilities protected in place while the new AWSS line is replaced in place.

If the costs are not in alignment with the document referenced above, PG&E will need to review further.

What are the costs for Tudor to propose to charge for this protect in place approach?

Thanks.

Michael

-----Original Message-----

From: Wuthea.Seng@sfmta.com [<mailto:Wuthea.Seng@sfmta.com>]

Sent: Thursday, February 06, 2014 11:55 AM

To: Lightstone, Michael; Tom Reimer; Ted R Depooter; Wyman Lee; Albert Hoe; Brian Kelleher; Central Subway; Eric Stassevitch; Jane Wang; Jin Zhao; John Funghi; Richard Redmond; Wuthea Seng

Cc: CN1300@sfmta.com

Subject: CN1300: ML24 (CTS) Gas Main Parallel to AWSS Line on Stockton RFI 291

Michael,

Please see attached.

You can view this document in Contract Management by clicking the following link (you will need a Contract Management User Name and Password):

<https://urldefense.proofpoint.com/v1/url?u=http://10.31.139.42:7001/exponline/documentrequestforward.do?redirect.rd%3Dtrue%26masterkey%3D8c711d875cb24a01b2d12dd4f6%26basesystemtype%3DSNT%26projectname%3D1300CSP4%26groupname%3DCMCSP1&k=4%2BViHuL0UtSJBpVrYi3EdQ%3D%3D%0A&r=PxnFv8WAYlggk99OBNC6yQ%3D%3D%0A&m=%2B7Gkmss0OaWjo8LW78kQdQ5%2F0d9cPm4xto8m%2BjNjIw%3D%0A&s=b89fc3038c663958b5deb8a3ac2fcee7c9e59fe8fe681d9e65e2d90b6b0e7ad>

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Ward, Beverly

From: DePooter, Ted R
Sent: Tuesday, February 18, 2014 5:35 PM
To: Redmond, Richard; Stassevitch, Eric; Ward, Beverly
Subject: FW: PG&E New Vault 732 and associated conduits; change in scope request
Attachments: MH732change.pdf; vault standard.pdf

All,

This is more information on Item 31 on the list Issues at CTS I have been sharing, We need to discuss where we go from here, probably a PCC to TPC.

Ted

From: Lightstone, Michael [<mailto:MxLd@pge.com>]
Sent: Tuesday, February 18, 2014 3:23 PM
To: DePooter, Ted R
Cc: Tom Reimer; Chew, William
Subject: PG&E New Vault 732 and associated conduits; change in scope request

Ted:

The purpose of this e-mail is to request a change to the new PG&E vault 732 and associated conduits that will be installed to vaults 731 & 730.

See attached drawing and vault spec for details.

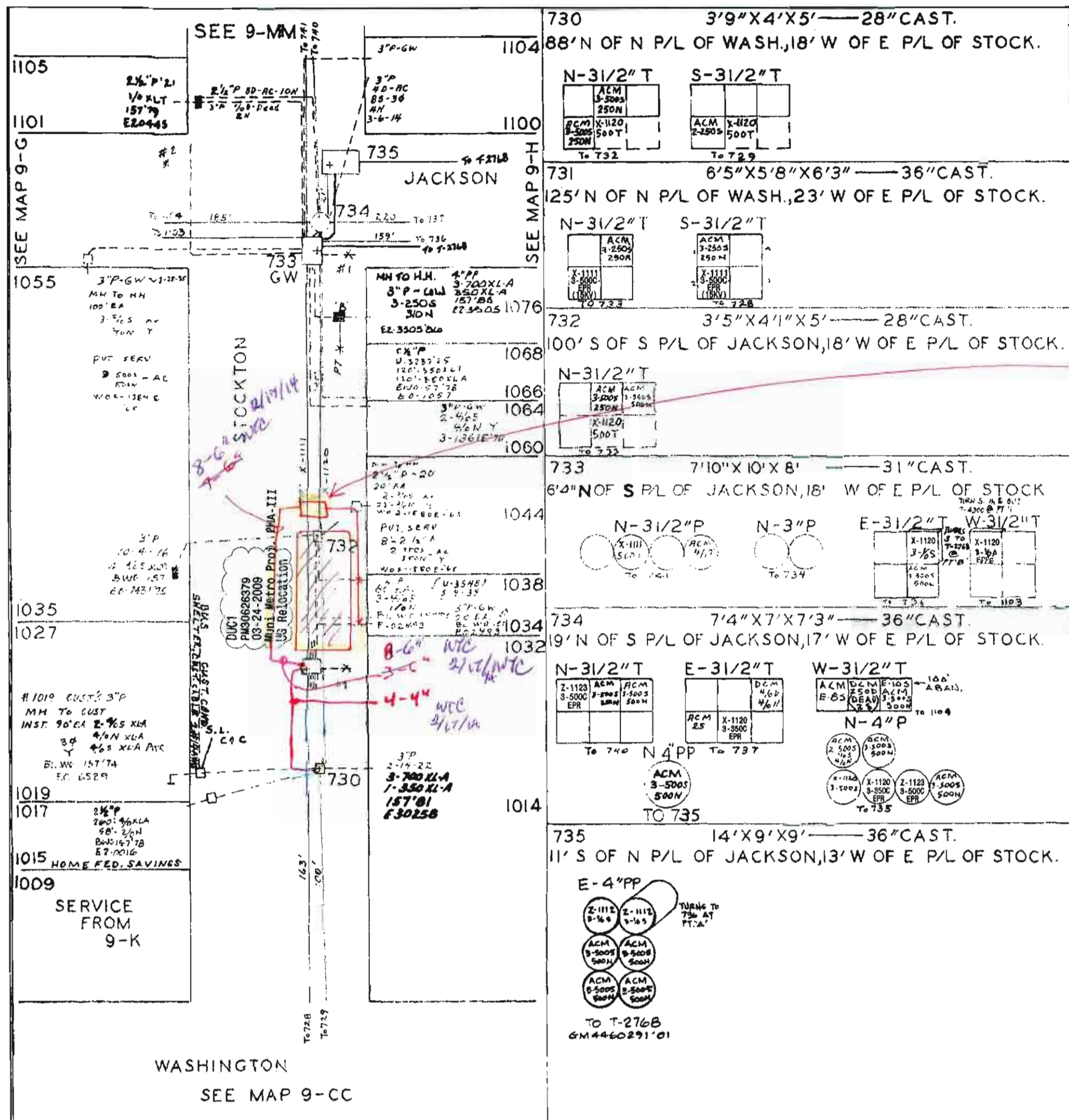
Please provide me with a cost for this work.

Let me know if you have questions.

Thanks.

Michael

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To learn more, please visit <http://www.pge.com/about/company/privacy/customer/>



732
NOTE:
NEW VAULT MUST BE POURED
IN PLACE TO CAPTURE BOTH EXISTING
CONDUIT BANKS USING PG&E
STANDARD # 041672

NOTE:
• ALL CONDUITS CONCRETE
ENCASED
• ALL BENDS 60" R OR GREATER

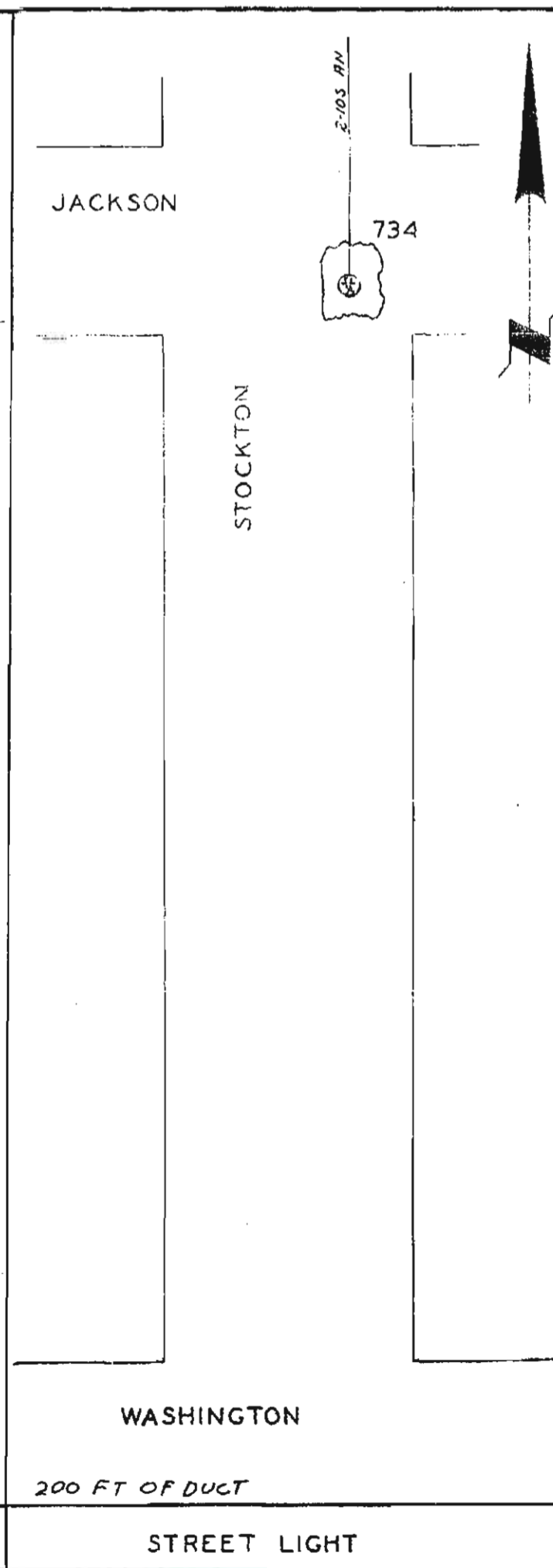
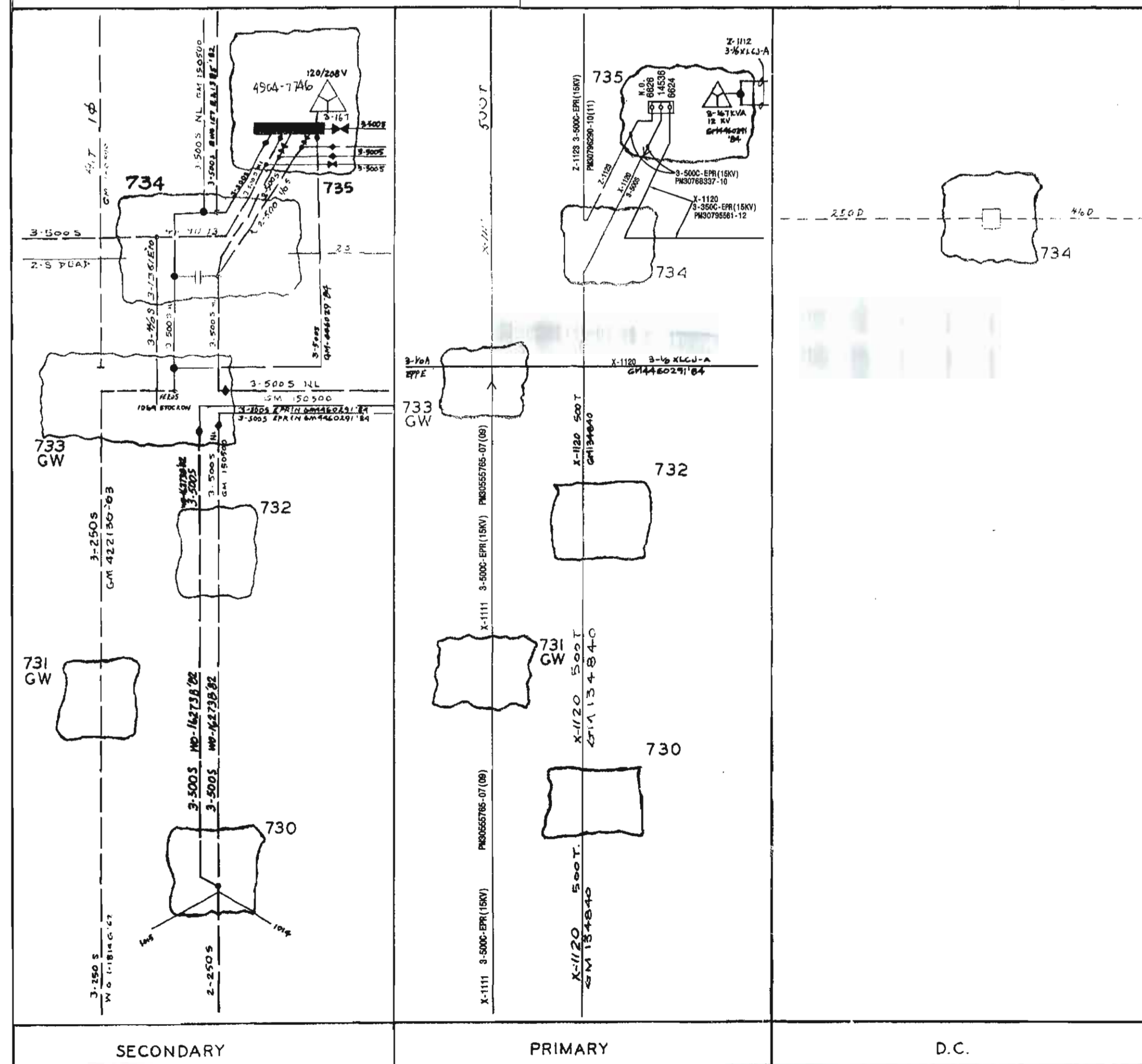
WARNING

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900 FT OF DUCT

MAP 9-B



WARNING

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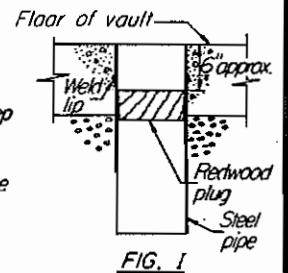
7-29-71
JEM

009-BB

INDEX OF DRAWINGS		CONTENTS	
SH. NO.	CONTENTS	SH. NO.	CONTENTS
1	Index and General Notes	14	Type No. 2 Roof - General Information
2	Typical Vault Arrangement	15	" - Width = 4 - 6 Ft., Length = 8 - 14 Ft.
3	Typical Examples	16	" - Width = 7 - 9 Ft., Length = 8 - 9 Ft.
4	Floor - Length = 8 - 13 Ft., Width = 4 - 12 Ft.	17	" - Width = 7 - 9 Ft., Length = 10 - (18+X) Ft.
5	" - Length = 14 - (18+X) Ft., Width = 5 - 14 Ft.	18	" - Width = 10 - 14 Ft., Length = 10 - (18+X) Ft.
6	Side Wall - Length = 8 - 13 Ft., Depth = 6.5 - 10 Ft.	19	Type No. 3 Roof - Width = 6 - 7 Ft., Length = 8 - 16 Ft.
7	" - Length = 14 - (18+X) Ft., Depth = " "	20	" - Width = 8 - 12 Ft., Length = 8 - 16 Ft.
8	End Wall - Width = 4 - 9 Ft., Depth = 6.5 - 10 Ft.	21	" - Width = 8 - 12 Ft., Length = 18 - (18+X) Ft.
9	" - Width = 10 - 14 Ft., Depth = " "	22	" - Width = 14 Ft., Length = 14 - (18+X) Ft.
10	Duct Window	23	Air Shaft
11	Type No. 1 Roof - Typical Arrangement and General Information		
12	" - Width = 4 - 10 Ft., Length = 8 - 13 Ft.		
13	" - Width = 5 - 10 Ft., Length = 14 - 18 Ft.		

GENERAL NOTES:

- This drawing is intended to be used as a guide to assist in design and construction of electric underground vaults. It covers rectangular vaults of sizes 4 ft. to 14 ft. wide, 6.5 ft. to 10 ft. deep, and 8 ft. to 18 ft. long. It also provides for lengths of vaults in excess of 18 ft. by use of term X, where X equals desired length minus 18 ft. (X = L - 18).
All vault design drawings must contain the signature of a Registered Civil Engineer, State of California.
Vaults of sizes or shapes which are not covered by this drawing and existing vaults which are to be enlarged, or structurally modified, shall require a design drawing(s) and such a drawing(s) shall contain the signature of a Registered Civil Engineer, State of California. Requests for such detail drawings shall be made to the Electric Transmission and Distribution Department - Electric Operations.
Drawings for vaults which will be owned by P.G. & E. Co. and which are designed by Civil Engineers not employed by P.G. & E. Co. are to be reviewed by P.G. & E. Co. Civil Engineers. Such drawings should be sent to Electric Transmission and Distribution - Electric Operations.
If the details in this drawing are compiled into another drawing the signature of a registered Civil Engineer will not be required. However the new drawing must contain a note stating that structural details were obtained from P.G. & E. Co. Drawing No. 041672.
A typical vault, with associated fillings, is illustrated on Sheet 2. Two examples of vault requirements are shown on Sheet 3.
- Vaults shall be constructed in accordance with P.G. & E. Co. Engineering Standard No. 2, "Underground Electric Concrete Vaults."
- Definitions: The symbol ϕ is used in this drawing to denote a round steel reinforcing bar.
Mk is an abbreviation for mark. This term, used in conjunction with the number and letters shown, refers to a reinforcing bar of a size, length and shape as shown on details in this drawing. (e.g. Sh. 4 refers to a Mk 10F which is a 5/8 inch diameter bar, 8 ft. - 10 inches long with a 90° bend and 1 ft. - 6 inch extension on each end.)
The letter B is used for beams. An B118.4 beam is an I-beam 8 inches deep, weighing 18.4 lbs./ft., and length as shown on details.
- Consideration should be given to providing adequate room for future requirements since the enlarging of a vault or manhole at a later time is much more costly.
- Refer to Dwg. 041673, "Three Phase Transformer Installations, Vaults, 2.4 to 12KV," for transformer vault requirements. Refer to Dwg. 027185, "Cable Training in Manholes," for cable manhole requirements.
- The following should be considered when locating vault entrances.
(a) The entrances should be accessible to trucks for lowering equipment in vault, removing cable, etc. Locations where autos may park on cover should be avoided.
(b) Vault openings should not block driveways, building entrances, or more than one auto traffic lane. They should not be located in cross walks.
(c) In vaults which will contain transformers, the vent shaft and vault entrance should be located to provide maximum ventilation (at opposite ends.) If these openings are in the sidewalk area, they should be located near the curb and "in line."
(d) Vault openings shall be located to minimize surface water drainage.
- Types 2B.3 roofs, Sheets 14-22, contain provisions for removing a rectangular section of the roof for installing equipment which will not fit thru the standard 39 inch round opening. The location of the removable section is shown on the roof details. It is necessary to break out the concrete to remove the section. The location of the removable section should be marked on the ceiling of the vault.
A 4'-4" x 7'-6" sidewalk grating is shown on Dwg. 211164 and may be incorporated in the roof design.
- Pulling eyes should be located in walls opposite all duct entrances and countersunk in floor directly below the vault opening. These locations will facilitate rigging for cable installation or removal.
- If vault is located in street, locate ladder bolts so that workman standing on ladder will face oncoming traffic.
- Place the sump below the vault opening and preferably under ladder. This location will allow workman to place suction hose in sump while standing on ladder.
(a) In areas where excessive ground water exists, a steel sump (8" dia. steel pipe) may be used. During construction it is used to keep pit dry. After construction is completed, this sump is left in the floor and sealed by means of a redwood plug driven into the pipe approximately 6" below the floor level. The plug then swells and seals the sump preventing the entrance of ground water into the vault. (See Fig. 1.) A lip should be welded on the pipe as shown to prevent pipe from breaking away from the vault concrete floor when the wood plug is driven in.
- All reinforcing steel shown in the following sheets is 5/8" or 3/4", so it can be bent and cut in the field if required.



REFERENCES:

- 3 ϕ Transformer Instal. Vaults.....Dwg. 041673
- Duct Lines, Concrete Encased.....Dwg. 031792
- 4'-4" x 7'-6" Grating Sidewalk Door for Transf. Vault.....Dwg. 211164
- Cable Training in Manholes.....Dwg. 027185
- Underground Electric Concrete Vaults.....Eng. Std. No. 2

Design Loading:

- H-20 load
- .5 foot maximum surcharge
- Equivalent fluid pressure = 40 lbs. per cu. ft.

INDEX AND GENERAL NOTES

APPROVED	CHG.	DATE	DESCRIPTION	BY	CH.	APPRO.
[Signature]						
[Signature]						
[Signature]						



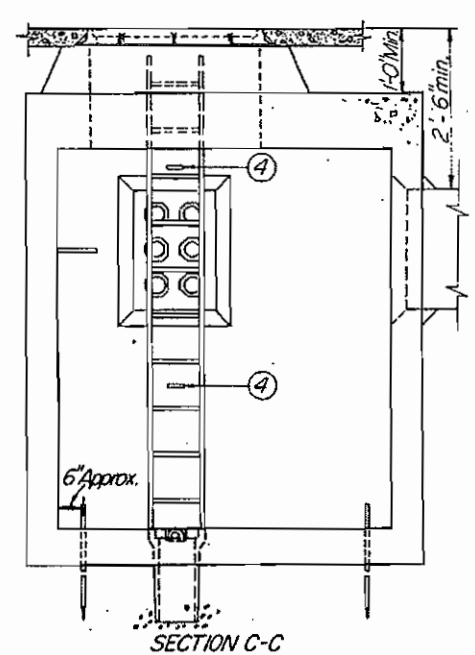
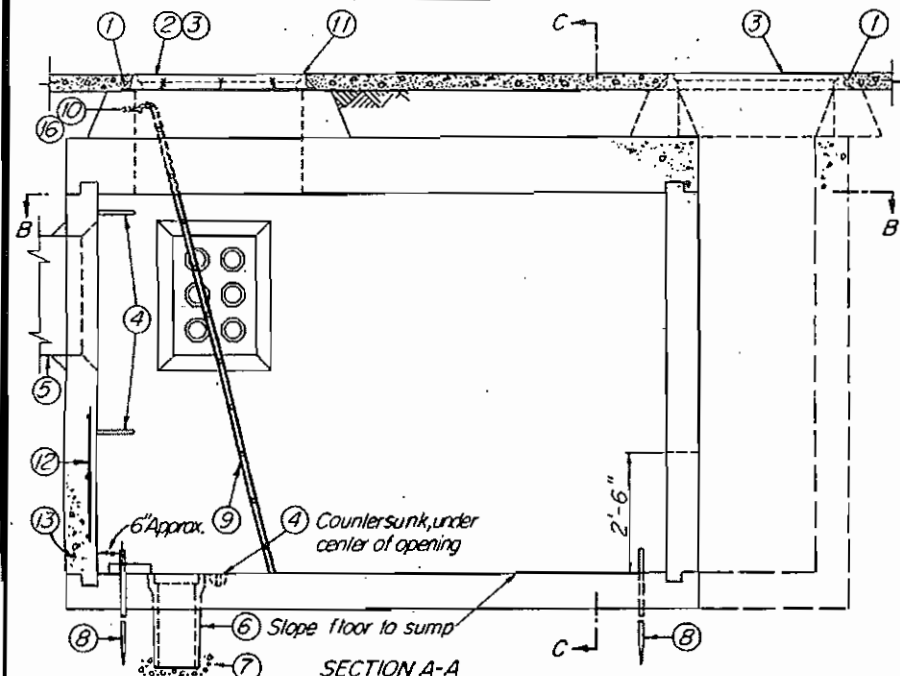
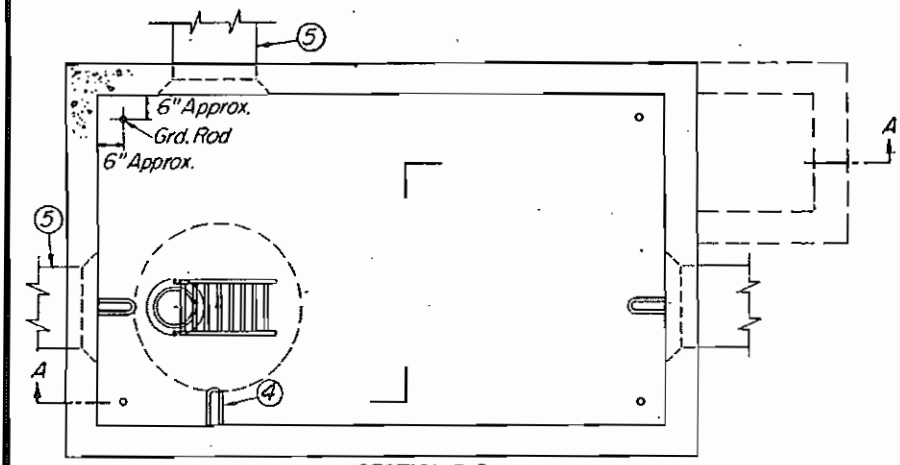
SUPERV. BY	F.F.Y.
DESN.	G.C.L.
DR.	M.U.S.
CH.	G.C.L.
O.K.	[Signature]
DATE	SCALE
1-10-63	

ENGINEERING STANDARD
DETAILS OF
UNDERGROUND ELECTRIC VAULTS
 DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

SUPERSEDES 16200-16209, 16529	
SUPERSEDED BY	
SHEET NO. 1	23 SHEETS
DRAWING NUMBER	CHANGE
041672	-

ENCLOSURES

NOTES:
 (a) Location of duct entrance, cable draw bolts, ladder bolts, sump and ground rods are to be determined in field by Inspector (See Note 6, Sht. 1)
 (b) Tie draw bolts into reinforcing steel.



ITEM	DESCRIPTION	DWG.	CODE	ITEM	DESCRIPTION	DWG.	CODE
1	Manhole Frame, 39" Street	034458	36-1050	5	Duct Line, Concrete Encosed	031792	
	Manhole Frame, 39" Sidewalk			6	Sump, Concrete Gas Valve Box, Frame and Cover	282201	
	Manhole Frame, 31" Street	034457	36-1049	7	Course Gravel, as required		
	Manhole Frame, 31" Sidewalk			8	Ground Rod, 5/8" X 8'-0" (2 or more)	013109	18-7013
2	Manhole Cover (Solid), 39"	013299	36-1014	9	Steel Ladder, Galv., Length as required	09217	
	Manhole Cover (Solid), 31"	013302	36-1011	10	Eyebolt, 5/8" X 1"		19-1191
3	Manhole Grating, 39" Street	013300	36-1033	11	Welded M.H. Number (on rim of frame)	033578	
	Manhole Grating, 39" Sidewalk	020844	36-1038	12	Reinforcing Steel, as required		
	Manhole Grating, 31" Street	013303	36-1031	13	Concrete, Eng. Std. No. 2		
	Manhole Grating, 31" Sidewalk	021091	36-1041	15	Forming Lumber, Tie Wire, Nails, etc. as required		
4	Draw Bolt, Galv.	09219	36-2029	16	Fastener, Flush 5/8", Phillips Red Head, Self-Drilling		19-0045

See Note 10 (a), Sheet 1.

TYPICAL VAULT ARRANGEMENT



APPROVED							
DESIGNED BY	MIR						
CHECKED BY	AVP	2	3-2073	Removed Item 14, Note (c) and reference to alternate exit.	MIR	AVP	CDM
DATE	6-12-67	1	6-12-67	Revised Item 10. Added Item 16.			
CHG.							
DATE							

SUPV. BY	F.F.Y.
DSGN.	G.C.L.
DR.	M.U.S.
CH.	G.C.L.
O.K.	<i>[Signature]</i>
DATE	1-10-63
SCALE	

ENGINEERING STANDARD
DETAILS OF UNDERGROUND ELECTRIC VAULTS
 DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

SUPERSEDES	
SUPERSEDED BY	
SHEET NO. 2	SHEETS
DRAWING NUMBER	041672
CHANGE	2

EXAMPLE I

Required: Sidewalk Vault, Width=8'-0", Length=16'-0", Depth=9'-0", with 39" Manhole Entrance and Air Shaft; 1-Sidewall Duct Window, 2-End Wall Duct Windows, Type No.3 Roof. Vault as illustrated in Sheet 2.

MATERIALS

ITEM	QUAN.	DESCRIPTION	DWG.	CODE
1	2	Manhole Frame, 39" Sidewalk	034458	36-1050
3	2	Manhole Grating, 39" Sidewalk		
4	6	Drawbolt, Galv.	09219	36-2029
6	1	Sump, Concrete Gas Valve Box, Frame and Cover	282201	
7	As Req'd	Coarse Gravel		
8	4	Ground Rod, 5/8" x 8'-0"	013109	18-7013
9	1	Steel Ladder, Galv. Length as req'd.	09217	
10	2	Ladder Bolt, Galv.	09218	36-2014
12	Q	Reinforcing Steel		
13	Δ	Concrete, Enq. Std. No.2		
15	As Req'd	Forming Lumber, Tie Wire, Nails, etc.		

EXAMPLE II:

Required: Same vault as in Example I except length = 24'-0".
Note: When entering tables "X" is the difference, in feet, between the actual vault length and 18 feet. In this example X = 24'-18' = 6'.

MATERIALS:

For Items 1 to 15 same as Example I.

EXAMPLE I

EXAMPLE II

REINFORCING STEEL					CONCRETE
Location	Size	Mark	Quantity	Weight (Lbs.)	(Cu. Yds.)
Floor 8'W x 16'L Sh. 4, 5	5/8" φ	5F 17F 22F	39 12 8	744 (From Table 1)	4.50 (From Table 2)
Sidewalls (2) 9'H x 16'L Sh. 6, 7	5/8" φ	6W 16W	2x35=70 2x8=16	2x649=1298 (From Table 3)	2x3.85=7.70 (From Table 4)
End Walls (2) 8'W x 9'H Sh. 8, 9	5/8" φ	6E 13E	2x18=36 2x8=16	2x347=694 (From Table 5)	2x1.78=3.56 (From Table 6)
Duct Window (1) (Sidewall) Sh. 10	5/8" φ	6D 18D 27D	2 2 8	87 (From Table 7)	—
Duct Windows (2) (End Walls) Sh. 10	5/8" φ	6D 13D 27D	2x2=4 2x2=4 2x8=16	2x69=138 (From Table 7)	—
Air Shaft Sh. 23	5/8" φ	6A 9A 10A 11A	9 3 3 10	275 (From Table 14)	2.60 (From Table 15)
Type No. 3 Roof 8'W x 16'L Sh. 19-22	5/8" φ	3S 3SH 10S 15S 17S 25S 30S 32S	15 4 4 8 8 11 10 5	584 (From Table 13)	6.70 (From Table 12)
	3/4" φ	16S 33S	4 8		
	8/18.4	B6	2	2x18.4x9=331	

REINFORCING STEEL					CONCRETE
Location	Size	Mark	Quantity	Weight (Lbs.)	(Cu. Yds.)
Floor 8'W x 24'L Sh. 4, 5	5/8" φ	5F (18X)F 22F	3(18+6)=72 8 8	863+145(6)=1133 (From Table 1)	.26(19.33+6)=6.59 (From Table 2)
Sidewalls (2) 9'H x 24'L Sh. 6, 7	5/8" φ	6W (18+X)W	2x2(18+6)=105 2x8=16	2(725+38.7x6)= 1914 (From Table 3)	2x.222(19.33+6)= 11.25 (From Table 4)
End Walls (2) 8'W x 9'H Sh. 8, 9	5/8" φ	6E 13E	2x18=36 2x8=16	2x347=694 (From Table 5)	2x1.78=3.56 (From Table 6)
Duct Window (1) (Sidewall) Sh. 10	5/8" φ	6D (19+X)D 27D	2 2 8	90+2.09(6)=103 (From Table 7)	—
Duct Windows (2) (End Walls) Sh. 10	5/8" φ	6D 13D 27D	2x2=4 2x2=4 2x8=16	2x69=138 (From Table 7)	—
Air Shaft Sh. 23	5/8" φ	6A 9A 10A 11A	9 3 3 10	275 (From Table 14)	2.60 (From Table 15)
Type No. 3 Roof 8'W x 24'L Sh. 19-22	5/8" φ	3S 3SH 10S 15S 17S (26+X)S 30S 32S	1.5(16)+18=27 4 4 8 8 11 10 5	635+26(6)=791 (From Table 13)	.40(18.6+6)=9.84 (From Table 12)
	3/4" φ	16S 33S	4 8		
	8/18.4	B6	2	2x18.4x9=331	

Total Weight of Steel = 4151 Lbs.
Total Volume of Concrete = 25.06 Cu. Yds.

Total Weight of Steel = 5379 Lbs.
Total Volume of Concrete = 33.84 Cu. Yds.

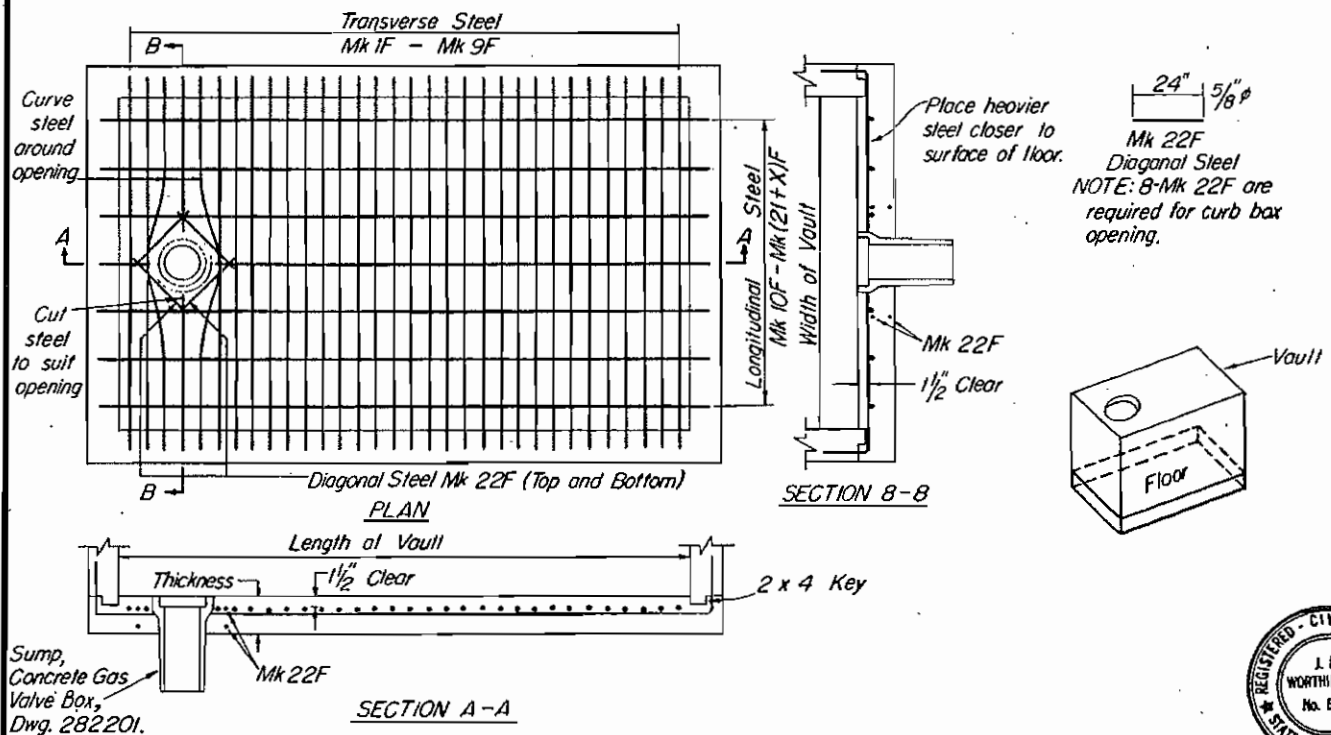
TYPICAL EXAMPLES

APPROVED							
CHG.	DATE	DESCRIPTION	BY	CH.	APPR.		
	1-30-73	Removed Item 14	MIB	AVP	CO		
SUPERV. BY	F.F.Y.	ENGINEERING STANDARD				SUPERSEDES	
DSGN.	G.C.L.	DETAILS OF				SUPERSEDED BY	
DR.	G.P.Y.	UNDERGROUND ELECTRIC VAULTS				SHEET NO. 3 SHEETS	
CH.	G.C.L.	DEPARTMENT OF ENGINEERING				DRAWING NUMBER	
O.K.	<i>flu</i>	PACIFIC GAS AND ELECTRIC COMPANY				CHANGE	
DATE	SCALE	SAN FRANCISCO, CALIFORNIA				041672 1	
1-10-63							



ENCLOSURES

Length of Vault	8'-0"			9'-0"			10'-0"			11'-0"			12'-0"			13'-0"		
Longitudinal Steel	8'-10"			9'-10"			10'-10"			11'-10"			12'-10"			13'-10"		
Thickness of Floor	Mk 10F 5/8"			Mk 11F 5/8"			Mk 12F 5/8"			Mk 13F 5/8"			Mk 14F 5/8"			Mk 15F 5/8"		
Width of Vault	8"			8"			8"			8"			8"			8"		
Transverse Steel	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.
4'-0"	Mk 1F 9"	11	11	Mk 1F 9"	12	12	—	—	—	—	—	—	—	—	—	—	—	—
	10F 12"	4	4	11F 12"	4	4	—	—	—	—	—	—	—	—	—	—	—	—
	22F —	8	8	22F —	8	8	—	—	—	—	—	—	—	—	—	—	—	—
5'-0"	Mk 2F 6"	16	16	Mk 2F 6"	18	18	Mk 2F 6"	20	20	Mk 2F 6"	22	22	Mk 2F 6"	24	24	Mk 2F 6"	26	26
	10F 12"	5	5	11F 12"	5	5	12F 12"	5	5	13F 12"	5	5	14F 12"	5	5	15F 12"	5	5
	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8
6'-0"	Mk 3F 5"	20	20	Mk 3F 5"	22	22	Mk 3F 5"	24	24	Mk 3F 5"	27	27	Mk 3F 5"	29	29	Mk 3F 5"	32	32
	10F 12"	6	6	11F 12"	6	6	12F 12"	6	6	13F 12"	6	6	14F 12"	6	6	15F 12"	6	6
	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8
7'-0"	Mk 4F 4 1/2"	22	22	Mk 4F 4 1/2"	24	24	Mk 4F 4 1/2"	27	27	Mk 4F 4 1/2"	30	30	Mk 4F 4 1/2"	32	32	Mk 4F 4 1/2"	35	35
	10F 12"	7	7	11F 12"	7	7	12F 12"	7	7	13F 12"	7	7	14F 12"	7	7	15F 12"	7	7
	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8
8'-0"	Mk 5F 8"	12	12	Mk 5F 8"	14	14	Mk 5F 7"	18	18	Mk 5F 6"	22	22	Mk 5F 6"	24	24	Mk 5F 6"	26	26
	10F 8"	12	12	11F 9"	11	11	12F 9"	11	11	13F 9"	11	11	14F 9"	11	11	15F 10"	10	10
	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8
9'-0"	—	—	—	Mk 6F 7"	16	16	Mk 6F 6"	20	20	Mk 6F 6"	22	22	Mk 6F 5 1/2"	27	27	Mk 6F 5 1/2"	29	29
	—	—	—	11F 7"	16	16	12F 7"	16	16	13F 8"	14	14	14F 8"	14	14	15F 8"	14	14
	—	—	—	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8
10'-0"	—	—	—	—	—	—	Mk 7F 6"	20	20	Mk 7F 5 1/2"	24	24	Mk 7F 5 1/2"	27	27	Mk 7F 5"	32	32
	—	—	—	—	—	—	12F 6"	20	20	13F 6"	20	20	14F 6"	20	20	15F 7"	18	18
	—	—	—	—	—	—	22F —	8	8	22F —	8	8	22F —	8	8	22F —	8	8
12'-0"	—	—	—	—	—	—	—	—	—	—	—	—	Mk 8F 5 1/2"	27	27	Mk 8F 5"	32	32
	—	—	—	—	—	—	—	—	—	—	—	—	14F 5 1/2"	27	27	15F 5 1/2"	27	27
	—	—	—	—	—	—	—	—	—	—	—	—	22F —	8	8	22F —	8	8



FLOOR - LENGTH 8-13FT. WIDTH 4-12FT.

CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.

APPROVED: *J.D. Worthington* 12-31-63

By F.F.Y.	ENGINEERING STANDARD DETAILS OF UNDERGROUND ELECTRIC VAULTS DEPARTMENT OF ENGINEERING PACIFIC GAS AND ELECTRIC COMPANY SAN FRANCISCO, CAL.	SUPERSEDES 16200	
DR. D.L.H. TR.		SUPERSEDED BY	
CH. G.C.L.		SHEET NO. 4	SHEETS
O.K. <i>Flu</i>		DRAWING NUMBER	CHANGE
DATE 1-10-63	SCALE	041672	



Length of Vault	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ
Longitudinal Steel	Mk 19F 3/4φ Mk 16F 5/8φ	Mk 20F 3/4φ Mk 17F 5/8φ	Mk 21F 3/4φ Mk 18F 5/8φ	Mk (18+X)F 3/4φ Mk (21+X)F 5/8φ
Thickness of Floor				
Width of Vault				Splice it necessary
Transverse Steel	Mark Spacing No.	Mark Spacing No.	Mark Spacing No.	Mark Spacing No.
5'-0"	Mk 2F 5/8φ 5'-10"	2F 6" 28 16F 12" 5 22F — 8	2F 6" 30 17F 12" 5 22F — 8	— — — — — — — — —
6'-0"	Mk 3F 5/8φ 6'-10"	3F 5" 34 16F 12" 6 22F — 8	3F 5" 37 17F 12" 5 22F — 8	3F 5" 39 18F 12" 5 22F — 8
7'-0"	Mk 4F 5/8φ 7'-10"	4F 4 1/2" 38 16F 12" 7 22F — 8	4F 4 1/2" 43 17F 12" 7 22F — 8	4F 4 1/2" 48 18F 12" 5 22F — 8
8'-0"	Mk 5F 5/8φ 8'-10"	5F 5" 34 16F 8" 12 22F — 8	5F 5" 39 17F 8" 12 22F — 8	5F 5" 44 18F 9" 11 22F — 8
9'-0"	Mk 6F 5/8φ 9'-10"	6F 4 1/2" 38 16F 7" 16 22F — 8	6F 4 1/2" 43 17F 7" 16 22F — 8	6F 4 1/2" 48 18F 7" 16 22F — 8
10'-0"	Mk 7F 5/8φ 10'-10"	7F 4" 42 16F 6" 20 22F — 8	7F 4" 48 17F 6" 20 22F — 8	7F 4" 54 18F 6" 20 22F — 8
12'-0"	Mk 8F 5/8φ 12'-10"	8F 4" 42 16F 5" 29 22F — 8	8F 3 1/2" 55 17F 5" 29 22F — 8	8F 3 1/2" 62 18F 5" 29 22F — 8
14'-0"	Mk 9F 3/4φ 14'-10"	9F 6" 28 19F 6" 28 22F — 8	9F 6" 32 20F 7" 24 22F — 8	9F 5 1/2" 40 21F 7" 24 22F — 8

TABLE 1

TABLE 2

WEIGHT OF STEEL FOR ONE SLAB (LBS.)										
LENGTH WIDTH	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ
4'-0"	156	169	—	—	—	—	—	—	—	—
5'-0"	226	250	274	297	320	344	368	397	—	—
6'-0"	296	322	350	387	414	450	478	500	531	—
7'-0"	353	382	422	464	494	535	576	647	673	—
8'-0"	314	338	398	458	495	514	660	744	811	863 + 45X
9'-0"	—	447	516	529	611	651	823	924	1023	1021 + 52X
10'-0"	—	—	595	672	738	795	995	1125	1253	1203 + 62X
12'-0"	—	—	—	910	1020	1250	1522	1697	1647	185X
14'-0"	—	—	—	—	—	1527	1594	1879	2095	108X

VOLUME OF CONCRETE FOR ONE SLAB (CU. YDS.)										
LENGTH WIDTH	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ
4'-0"	1.23	1.36	—	—	—	—	—	—	—	—
5'-0"	1.46	1.62	1.77	1.93	2.09	2.25	2.40	2.71	—	—
6'-0"	1.69	1.87	2.05	2.24	2.42	2.60	2.78	3.15	3.51	—
7'-0"	2.16	2.39	2.62	2.86	3.08	3.32	3.55	4.01	4.47	—
8'-0"	2.42	2.68	2.94	3.20	3.46	3.72	3.98	4.50	5.01	26 (19.33+X)
9'-0"	—	2.97	3.26	3.55	3.84	4.12	4.41	4.99	5.55	29 (19.33+X)
10'-0"	—	—	3.57	3.89	4.20	4.52	4.83	5.46	6.10	31 (19.33+X)
12'-0"	—	—	—	—	5.50	5.91	6.32	7.14	7.96	41 (19.33+X)
14'-0"	—	—	—	—	—	—	8.71	9.85	11.00	57 (19.33+X)

● Does not include splice
 Δ X in Ft. (X=L-18')

ENCLOSURES



FLOOR - LENGTH 14 - (18+X) FT. - WIDTH 5 - 14 FT.

CHG.	DATE	DESCRIPTION	APPR.	CHG.	DATE	DESCRIPTION	APPR.
------	------	-------------	-------	------	------	-------------	-------

APPROVED *[Signature]* 972 BIP JWS MJK PL 5/2

By F.F.Y. ENGINEERING STANDARD

DR. D.L.H. TR.

CH. G.C.L.

O. K. *[Signature]*

DATE 1-10-63 SCALE

DETAILS OF UNDERGROUND ELECTRIC VAULTS

DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CAL.

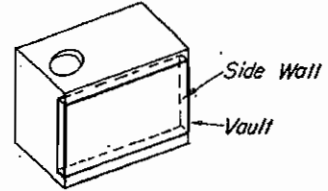
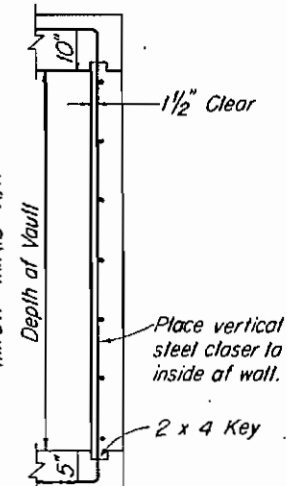
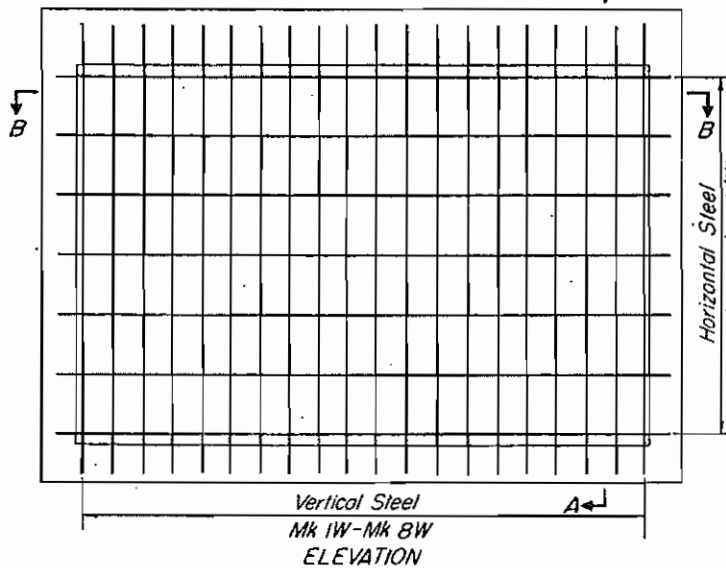
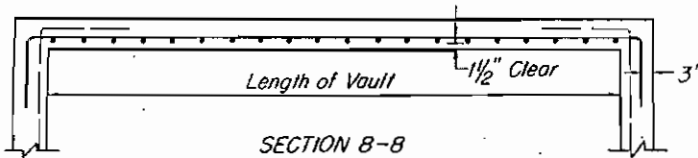
SUPERSEDES 16200

SUPERSEDED BY

SHEET NO. 5 SHEETS

DRAWING NUMBER 041672 CHANGE

Length of Vault	8'-0"			9'-0"			10'-0"			11'-0"			12'-0"			13'-0"		
Horizontal Steel	8'-10"			9'-10"			10'-10"			11'-10"			12'-10"			13'-10"		
Thickness of Wall	Mk 9W 5/8"			Mk 10W 5/8"			Mk 11W 5/8"			Mk 12W 5/8"			Mk 13W 5/8"			Mk 14W 5/8"		
Depth of Vault	8"			8"			8"			8"			8"			8"		
Vertical Steel	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.
6'-6"	1W 9W	11 1/2" 15"	9 6	1W 10W	11 1/2" 15"	10 6	1W 11W	11 1/2" 15"	11 6	1W 12W	11 1/2" 15"	12 6	1W 13W	11 1/2" 15"	13 6	1W 14W	11 1/2" 15"	14 6
7'-0"	2W 9W	9 1/2" 15"	10 6	2W 10W	9 1/2" 15"	12 6	2W 11W	9 1/2" 15"	13 6	2W 12W	9 1/2" 15"	14 6	2W 13W	9 1/2" 15"	15 6	2W 14W	9 1/2" 15"	17 6
7'-6"	3W 9W	8 1/2" 15"	12 6	3W 10W	8 1/2" 15"	13 6	3W 11W	8 1/2" 15"	14 6	3W 12W	8 1/2" 15"	16 6	3W 13W	8 1/2" 15"	17 6	3W 14W	8 1/2" 15"	19 6
8'-0"	4W 9W	7 1/2" 15"	13 7	4W 10W	7 1/2" 15"	15 7	4W 11W	7 1/2" 15"	16 7	4W 12W	7 1/2" 15"	18 7	4W 13W	7 1/2" 15"	20 7	4W 14W	7 1/2" 15"	21 7
8'-6"	5W 9W	6 1/2" 15"	15 7	5W 10W	6 1/2" 15"	17 7	5W 11W	6 1/2" 15"	19 7	5W 12W	6 1/2" 15"	21 7	5W 13W	6 1/2" 15"	22 7	5W 14W	6 1/2" 15"	24 7
9'-0"	6W 9W	5 1/2" 15"	18 8	6W 10W	5 1/2" 15"	20 8	6W 11W	5 1/2" 15"	22 8	6W 12W	5 1/2" 15"	24 8	6W 13W	5 1/2" 15"	26 8	6W 14W	5 1/2" 15"	29 8
9'-6"	7W 9W	5" 15"	20 8	7W 10W	5" 15"	22 8	7W 11W	5" 15"	24 8	7W 12W	5" 15"	27 8	7W 13W	5" 15"	29 8	7W 14W	5" 15"	31 8
10'-0"	8W 9W	4 1/2" 15"	22 8	8W 10W	4 1/2" 15"	24 8	8W 11W	4 1/2" 15"	27 8	8W 12W	4 1/2" 15"	30 8	8W 13W	4 1/2" 15"	32 8	8W 14W	4 1/2" 15"	35 8



SIDE WALL - LENGTH 8 - 13FT. DEPTH 6.5 - 10FT.

APPROVED																			
CHG.	DATE																		



SUPERV. BY	FFY.
DSGN.	G.C.L.
DR.	D.L.H.
CH.	G.C.L.
O.K.	flw
DATE	1-10-63
SCALE	

ENGINEERING STANDARD
DETAILS OF UNDERGROUND ELECTRIC VAULTS
 DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

SUPERSEDES	16201
SUPERSEDED BY	
SHEET NO.	6
SHEETS	
DRAWING NUMBER	041672
CHANGE	

Length of Vault	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ								
Horizontal Steel	14'-10"	16'-10"	18'-10"	Splice if necessary 18'-10" + X Ft.								
Thickness of Wall				30x Dia								
Depth of Vault												
Vertical Steel	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.
6'-6"	Mk 1W 5/8 ϕ	1W 11 1/2"	15	1W 11 1/2"	17	1W 11 1/2"	19	1W 11 1/2"	19	(18+X)W 11 1/2"	15"	104(18+X) 6
7'-0"	Mk 2W 5/8 ϕ	2W 9 1/2"	18	2W 9 1/2"	20	2W 9 1/2"	23	2W 9 1/2"	23	(18+X)W 9 1/2"	15"	126(18+X) 6
7'-6"	Mk 3W 5/8 ϕ	3W 8 1/2"	20	3W 8 1/2"	23	3W 8 1/2"	26	3W 8 1/2"	26	(18+X)W 8 1/2"	15"	141(18+X) 6
8'-0"	Mk 4W 5/8 ϕ	4W 7 1/2"	23	4W 7 1/2"	26	4W 7 1/2"	29	4W 7 1/2"	29	(18+X)W 7 1/2"	15"	160(18+X) 7
8'-6"	Mk 5W 5/8 ϕ	5W 6 1/2"	26	5W 6 1/2"	30	5W 6 1/2"	34	5W 6 1/2"	34	(18+X)W 6 1/2"	15"	185(18+X) 7
9'-0"	Mk 6W 5/8 ϕ	6W 5 1/2"	31	6W 5 1/2"	35	6W 5 1/2"	40	6W 5 1/2"	40	(18+X)W 5 1/2"	15"	218(18+X) 8
9'-6"	Mk 7W 5/8 ϕ	7W 5"	34	7W 5"	39	7W 5"	44	7W 5"	44	(18+X)W 5"	15"	240(18+X) 8
10'-0"	Mk 8W 5/8 ϕ	8W 4 1/2"	38	8W 4 1/2"	43	8W 4 1/2"	48	8W 4 1/2"	48	(18+X)W 4 1/2"	15"	267(18+X) 8

TABLE 3

TABLE 4

SLAB DEPTH	WEIGHT OF STEEL FOR ONE SLAB (LBS)									
	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ
6'-6"	175	192	210	227	245	263	280	315	349	346+17.9X
7'-0"	191	221	239	257	275	305	322	358	406	403+21.2X
7'-6"	221	240	258	289	308	338	356	406	455	448+23.7X
8'-0"	253	285	306	338	371	391	424	477	529	527+27.9X
8'-6"	286	320	353	388	408	442	476	543	612	602+32.1X
9'-0"	347	383	419	456	492	541	577	649	734	725+38.7X
9'-6"	386	423	460	511	548	585	637	725	813	802+43.0X
10'-0"	426	464	517	569	608	661	714	804	896	896+48.2X

SLAB DEPTH	VOLUME OF CONCRETE FOR ONE SLAB (CU. YDS.)									
	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ
6'-6"	1.50	1.66	1.82	1.96	2.14	2.30	2.46	2.78	3.10	1.61(19.33+X)
7'-0"	1.61	1.78	1.96	2.13	2.30	2.47	2.65	2.99	3.34	1.73(19.33+X)
7'-6"	1.73	1.92	2.10	2.29	2.47	2.65	2.84	3.21	3.58	1.85(19.33+X)
8'-0"	1.84	2.03	2.23	2.42	2.62	2.82	3.01	3.41	3.80	1.97(19.33+X)
8'-6"	1.96	2.15	2.38	2.59	2.80	3.01	3.22	3.64	4.06	2.10(19.33+X)
9'-0"	2.08	2.30	2.52	2.76	2.97	3.19	3.41	3.85	4.30	2.22(19.33+X)
9'-6"	2.19	2.42	2.65	2.89	3.12	3.36	3.59	4.06	4.53	2.34(19.33+X)
10'-0"	2.31	2.55	2.80	3.05	3.29	3.54	3.79	4.28	4.77	2.47(19.33+X)

⊙ Does not include splice
 Δ X in Ft. (X=L-18')

SIDE WALL - LENGTH 14 - (18+X) FT. DEPTH 65 - 10 FT.

APPROVED																			
CHG.	DATE																		
SUPERV. BY F.F.Y.		ENGINEERING STANDARD																	
DSGN. G.C.L.		DETAILS OF UNDERGROUND ELECTRIC VAULTS																	
DR. D.L.H.		DEPARTMENT OF ENGINEERING																	
CH. G.C.L.		PACIFIC GAS AND ELECTRIC COMPANY																	
O.K. <i>[Signature]</i>		SAN FRANCISCO, CALIFORNIA																	
DATE	SCALE																		
1-10-63																			



SUPERSEDES 16201	
SUPERSEDED BY	
SHEET NO. 7	SHEETS
DRAWING NUMBER	CHANGE
041672	-

ENCLOSURES

Width of Vault	Horizontal Steel	Thickness of End Wall	Depth of Vault	10'-0"			12'-0"			14'-0"		
				10'-10"			12'-10"			14'-10"		
				Mk 15E 5/8 Ø			Mk 16E 5/8 Ø			Mk 17E 5/8 Ø		
				Mk	Sp	No	Mk	Sp	No	Mk	Sp	No
6'-6"	8"	8"	7'-9"	1E	11 1/2	11	1E	11 1/2	13	1E	11 1/2	15
				15E	15	6	16E	15	6	17E	15	6
7'-0"	8"	8"	8'-3"	2E	9 1/2	13	2E	9 1/2	15	2E	9 1/2	18
				15E	15	6	16E	15	6	17E	15	6
7'-6"	8"	8"	8'-9"	3E	8 1/2	14	3E	8 1/2	17	3E	8 1/2	20
				15E	15	6	16E	15	6	17E	15	6
8'-0"	8"	8"	9'-3"	4E	7 1/2	16	4E	7 1/2	20	4E	7 1/2	23
				15E	15	7	16E	15	7	17E	15	7
8'-6"	8"	8"	9'-9"	5E	6 1/2	19	5E	6 1/2	22	5E	6 1/2	26
				15E	15	7	16E	15	7	17E	15	7
9'-0"	8"	8"	10'-3"	6E	5 1/2	22	6E	5 1/2	26	6E	5 1/2	31
				15E	15	8	16E	15	8	17E	15	8
9'-6"	8"	8"	10'-9"	7E	5	24	7E	5	29	7E	5	34
				15E	15	8	16E	15	8	17E	15	8
10'-0"	8"	8"	11'-3"	8E	4 1/2	27	8E	4 1/2	32	8E	4 1/2	38
				15E	15	8	16E	15	8	17E	15	8

TABLE 5. WEIGHT OF STEEL FOR ONE SLAB (LBS)

Width Depth	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	12'-0"	14'-0"
6'-6"	83	100	141	157	175	193	210	246	280
7'-0"	84	102	128	173	191	220	240	274	324
7'-6"	86	113	141	190	222	240	259	308	357
8'-0"	95	115	153	210	252	285	305	370	423
8'-6"	97	126	166	224	285	318	353	410	475
9'-0"	106	138	180	249	347	383	418	490	576
9'-6"	108	140	190	263	385	421	459	547	635
10'-0"	110	151	203	289	425	463	515	607	713

TABLE 6. VOLUME OF CONCRETE FOR ONE SLAB (CU. YDS.)

Width Depth	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	12'-0"	14'-0"
6'-6"	.65	.81	.97	1.13	1.29	1.45	1.61	1.93	2.25
7'-0"	.69	.87	1.04	1.21	1.39	1.56	1.73	2.08	2.42
7'-6"	.74	.92	1.11	1.29	1.48	1.67	1.85	2.22	2.59
8'-0"	.79	.99	1.19	1.39	1.58	1.78	1.98	2.38	2.77
8'-6"	.84	1.05	1.26	1.47	1.68	1.89	2.10	2.52	2.94
9'-0"	.89	1.10	1.33	1.53	1.78	2.00	2.22	2.66	3.10
9'-6"	.94	1.18	1.41	1.65	1.88	2.12	2.35	2.82	3.29
10'-0"	.99	1.23	1.48	1.73	1.98	2.22	2.47	2.96	3.45

END WALL - WIDTH 10-14FT. DEPTH 6.5-10FT.

APPROVED	CHG.	DATE	DESCRIPTION	BY	CH.	APPRO.
<i>[Signature]</i>						
<i>[Signature]</i>						
<i>[Signature]</i>						



SUPERV. BY	F.F.Y.
DESN.	G.C.L.
DR.	G.P.Y.
CH.	G.C.L.
O.K.	<i>[Signature]</i>
DATE	SCALE
1-10-63	

ENGINEERING STANDARD
DETAILS OF UNDERGROUND ELECTRIC VAULTS
 DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

SUPERSEDES	16202
SUPERSEDED BY	
SHEET NO.	9 SHEETS
DRAWING NUMBER	CHANGE
041672	—

ENCLOSURES

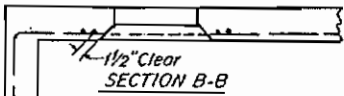
ADDITIONAL STEEL FOR DUCT WINDOW OPENING

Width or Length of Vault	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	(18xX) Ft.
Horizontal Steel	4'-10"	5'-10"	6'-10"	7'-10"	8'-10"	9'-10"	10'-10"	12'-10"	14'-10"	16'-10"	18'-10"	(18-10) X Ft.
Thickness of Side Wall	Mk 9D	Mk 10D	Mk 11D	Mk 12D	Mk 13D	Mk 14D	Mk 15D	Mk 16D	Mk 17D	Mk 18D	Mk 19D	Mk (19x)D
Depth of Vault	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"	5/8" 1'-6"
Vertical Steel	Mk No	Mk No	Mk No	Mk No	Mk No	Mk No	Mk No	Mk No	Mk No	Mk No	Mk No	Mk No
6'-6"	Mk 1D 5/8" 10 4 9D 2 10D 4 27D 8	Mk 2D 5/8" 2D 4 9D 2 10D 4 27D 8	Mk 3D 5/8" 3D 4 9D 2 10D 4 27D 8	Mk 4D 5/8" 4D 4 9D 2 10D 4 27D 8	Mk 5D 5/8" 5D 4 9D 2 10D 4 27D 8	Mk 6D 5/8" 6D 4 9D 2 10D 4 27D 8	Mk 7D 5/8" 7D 4 9D 2 10D 4 27D 8	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8
7'-0"	Mk 2D 5/8" 2D 4 9D 2 10D 4 27D 8	Mk 3D 5/8" 3D 4 9D 2 10D 4 27D 8	Mk 4D 5/8" 4D 4 9D 2 10D 4 27D 8	Mk 5D 5/8" 5D 4 9D 2 10D 4 27D 8	Mk 6D 5/8" 6D 4 9D 2 10D 4 27D 8	Mk 7D 5/8" 7D 4 9D 2 10D 4 27D 8	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8	Mk 13D 5/8" 13D 4 9D 2 10D 4 27D 8
7'-6"	Mk 3D 5/8" 3D 4 9D 2 10D 4 27D 8	Mk 4D 5/8" 4D 4 9D 2 10D 4 27D 8	Mk 5D 5/8" 5D 4 9D 2 10D 4 27D 8	Mk 6D 5/8" 6D 4 9D 2 10D 4 27D 8	Mk 7D 5/8" 7D 4 9D 2 10D 4 27D 8	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8	Mk 13D 5/8" 13D 4 9D 2 10D 4 27D 8	Mk 14D 5/8" 14D 4 9D 2 10D 4 27D 8
8'-0"	Mk 4D 5/8" 4D 4 9D 2 10D 4 27D 8	Mk 5D 5/8" 5D 4 9D 2 10D 4 27D 8	Mk 6D 5/8" 6D 4 9D 2 10D 4 27D 8	Mk 7D 5/8" 7D 4 9D 2 10D 4 27D 8	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8	Mk 13D 5/8" 13D 4 9D 2 10D 4 27D 8	Mk 14D 5/8" 14D 4 9D 2 10D 4 27D 8	Mk 15D 5/8" 15D 4 9D 2 10D 4 27D 8
8'-6"	Mk 5D 5/8" 5D 4 9D 2 10D 4 27D 8	Mk 6D 5/8" 6D 4 9D 2 10D 4 27D 8	Mk 7D 5/8" 7D 4 9D 2 10D 4 27D 8	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8	Mk 13D 5/8" 13D 4 9D 2 10D 4 27D 8	Mk 14D 5/8" 14D 4 9D 2 10D 4 27D 8	Mk 15D 5/8" 15D 4 9D 2 10D 4 27D 8	Mk 16D 5/8" 16D 4 9D 2 10D 4 27D 8
9'-0"	Mk 6D 5/8" 6D 4 9D 2 10D 4 27D 8	Mk 7D 5/8" 7D 4 9D 2 10D 4 27D 8	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8	Mk 13D 5/8" 13D 4 9D 2 10D 4 27D 8	Mk 14D 5/8" 14D 4 9D 2 10D 4 27D 8	Mk 15D 5/8" 15D 4 9D 2 10D 4 27D 8	Mk 16D 5/8" 16D 4 9D 2 10D 4 27D 8	Mk 17D 5/8" 17D 4 9D 2 10D 4 27D 8
9'-6"	Mk 7D 5/8" 7D 4 9D 2 10D 4 27D 8	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8	Mk 13D 5/8" 13D 4 9D 2 10D 4 27D 8	Mk 14D 5/8" 14D 4 9D 2 10D 4 27D 8	Mk 15D 5/8" 15D 4 9D 2 10D 4 27D 8	Mk 16D 5/8" 16D 4 9D 2 10D 4 27D 8	Mk 17D 5/8" 17D 4 9D 2 10D 4 27D 8	Mk 18D 5/8" 18D 4 9D 2 10D 4 27D 8
10'-0"	Mk 8D 5/8" 8D 4 9D 2 10D 4 27D 8	Mk 9D 5/8" 9D 4 9D 2 10D 4 27D 8	Mk 10D 5/8" 10D 4 9D 2 10D 4 27D 8	Mk 11D 5/8" 11D 4 9D 2 10D 4 27D 8	Mk 12D 5/8" 12D 4 9D 2 10D 4 27D 8	Mk 13D 5/8" 13D 4 9D 2 10D 4 27D 8	Mk 14D 5/8" 14D 4 9D 2 10D 4 27D 8	Mk 15D 5/8" 15D 4 9D 2 10D 4 27D 8	Mk 16D 5/8" 16D 4 9D 2 10D 4 27D 8	Mk 17D 5/8" 17D 4 9D 2 10D 4 27D 8	Mk 18D 5/8" 18D 4 9D 2 10D 4 27D 8	Mk 19D 5/8" 19D 4 9D 2 10D 4 27D 8

▲ 30x Dia. Splice if necessary.

NOTE:

(A) Position and size of duct window opening will be determined in field to suit conditions. Opening may be located in any wall. For length, depth, and thickness of duct see Dwg. 031792. Remaining details are the same.



Cut vertical and horizontal steels to suit duct window. For spacings, see Sh. 6 & 7.

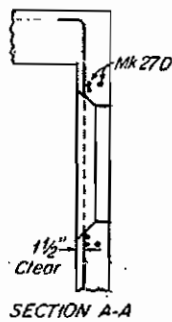
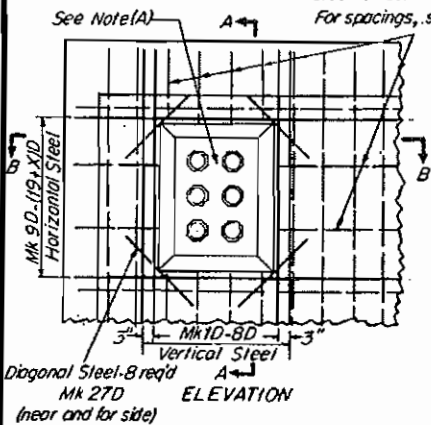
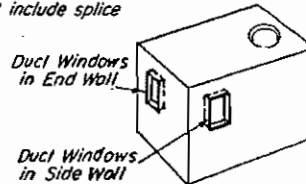


TABLE 7. WEIGHT OF ADDITIONAL STEEL FOR DUCT WINDOWS (LBS.)

Width Depth	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	(18xX) Ft. ▲
6'-6"	79	81	60	62	64	66	68	73	77	81	86	85+2.09X
7'-0"	81	83	106	63	65	67	70	74	78	82	87	86+2.09X
7'-6"	83	85	109	64	66	68	72	75	79	83	88	87+2.09X
8'-0"	85	87	112	114	67	70	73	76	80	84	89	88+2.09X
8'-6"	87	89	115	117	68	71	74	77	81	86	90	89+2.09X
9'-0"	89	91	118	120	69	72	75	78	82	87	91	90+2.09X
9'-6"	91	93	121	123	70	73	76	79	83	88	92	91+2.09X
10'-0"	93	95	124	126	71	74	77	80	84	89	93	92+2.09X

▲ X in Ft. ● Does not include splice (X=L-18')



DUCT WINDOWS

APPROVED	
CHG. DATE	
SUPERV. BY	F.F.Y.
DEGN.	G.C.L.
DR.	G.P.Y.
CH.	G.C.L.
O.K.	Fey
DATE	SCALE
1-10-63	

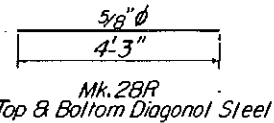
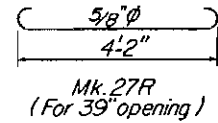
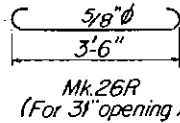
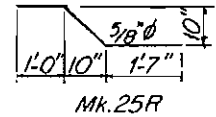
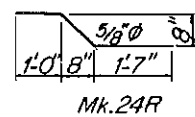
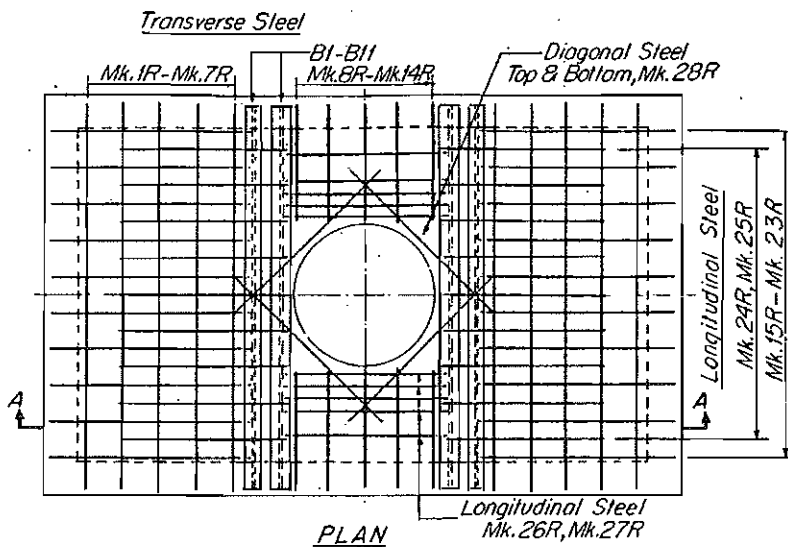
ENGINEERING STANDARD

DETAILS OF UNDERGROUND ELECTRIC VAULTS

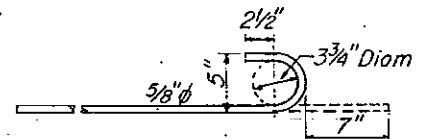
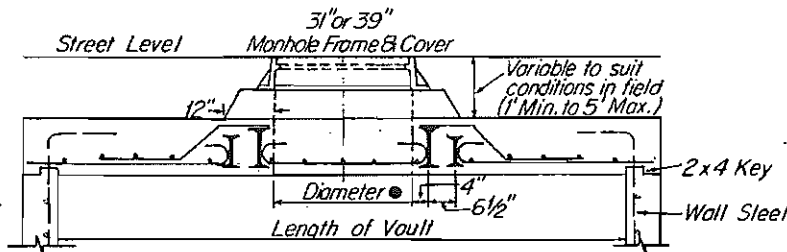
DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

SUPERSEDES	16203
SUPERSEDED BY	
SHEET NO.	10
SHEETS	
DRAWING NUMBER	041672
CHANGE	





NOTE:
Tables on Sheets 12 and 13 indicate steel for 31" opening. If 39" opening is used substitute Mk. 27R for Mk. 26R. Other steel may be cut as necessary.



SECTION A-A

• Diam. = 2'-11 1/4" for 31 inch Manhole Frame
3'-7" for 39 inch Manhole Frame

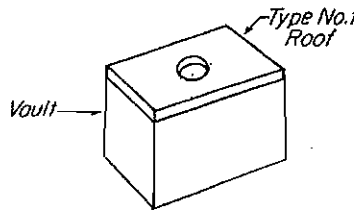


TABLE 8. WEIGHT OF STEEL FOR ONE SLAB (LBS.)

Length Width	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"
4'-0"	144	160	—	—	—	—	—	—	—
5'-0"	187	204	209	237	245	264	290	312	—
6'-0"	239	262	270	292	301	324	348	392	437
7'-0"	270	298	326	336	362	391	401	475	538
8'-0"	304	332	363	376	406	426	448	523	627
9'-0"	323	355	387	399	431	464	476	562	655
10'-0"	—	—	457	473	509	547	561	658	763

■ Does not include I-Beams.

TABLE 9. VOLUME OF CONCRETE FOR ONE SLAB (CU. YDS.)

Length Width	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"
4'-0"	1.59	1.79	—	—	—	—	—	—	—
5'-0"	1.94	2.17	2.41	2.64	2.87	3.10	3.33	3.80	4.27
6'-0"	2.29	2.56	2.83	3.10	3.37	3.64	3.91	4.46	5.00
7'-0"	3.07	3.43	3.79	4.15	4.51	4.87	5.23	5.95	6.67
8'-0"	3.47	3.88	4.28	4.68	5.08	5.49	5.89	6.70	7.51
9'-0"	—	4.32	4.77	5.21	5.66	6.11	6.56	7.45	8.34
10'-0"	—	—	5.26	5.75	6.23	6.71	7.22	8.19	9.17

ENCLOSURES

TYPE NO. 1 ROOF - TYPICAL ARRANGEMENT AND GENERAL INFORMATION



CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.

APPROVED *[Signature]* J.D. Worthington 9/22/63 11/7/63 1/21/63 J.D. Worthington

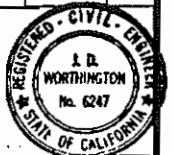
By F.F.Y.
DR. G.P.Y. TR.
Ch. G.C.L.
O. K. *[Signature]*
DATE 1-10-63 SCALE

ENGINEERING STANDARD
DETAILS OF UNDERGROUND ELECTRIC VAULTS
DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CAL.

SUPERSEDES 16204, 16205
SUPERSEDED BY
SHEET NO. 11 SHEETS
DRAWING NUMBER **041672** CHANGE —

Length of Vault	8'-0"			9'-0"			10'-0"			11'-0"			12'-0"			13'-0"			
Longitudinal Steel	MK 15R			MK 16R			MK 17R			MK 18R			MK 19R			MK 20R			
Thickness of Roof	5/8"			5/8"			5/8"			5/8"			5/8"			5/8"			
Width of Vault	2'-2"			2'-8"			3'-2"			3'-8"			4'-2"			4'-8"			
Transverse Steel	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.	
4'-0"	Mk 1R 5/8"	1R	10"	4	1R	10"	6												
		8R	10"	10	8R	10"	10												
	Mk 8R 5/8"	15R	10"	10	16R	10"	10												
		24R	10"	8	24R	10"	8												
	I	26R	3"	4	26R	3"	4												
5'-0"	Mk 2R 5/8"	2R	10"	4	2R	10"	6	2R	10"	6	2R	10"	8	2R	10"	8	2R	10"	10
		9R	10"	10	9R	10"	10	9R	10"	10	9R	10"	10	9R	10"	10	9R	10"	10
	Mk 9R 5/8"	15R	10"	12	16R	10"	12	17R	10"	12	18R	10"	12	19R	10"	12	20R	9"	14
		24R	10"	10	24R	10"	10	24R	10"	10	24R	10"	10	24R	10"	12	24R	9"	12
	I	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8
6'-0"	Mk 3R 5/8"	3R	10"	4	3R	10"	6	3R	10"	6	3R	10"	8	3R	10"	8	3R	10"	10
		10R	10"	10	10R	10"	10	10R	10"	10	10R	10"	10	10R	10"	10	10R	10"	10
	Mk 10R 5/8"	15R	9"	16	16R	9"	16	17R	9"	16	18R	9"	15	19R	9"	16	20R	9"	16
		24R	9"	14	24R	9"	14	24R	9"	14	24R	9"	14	24R	9"	14	24R	9"	14
	I	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8
7'-0"	Mk 4R 5/8"	4R	9"	4	4R	9"	6	4R	9"	8	4R	9"	8	4R	9"	10	4R	9"	12
		11R	9"	10	11R	9"	10	11R	9"	10	11R	9"	10	11R	9"	10	11R	9"	10
	Mk 11R 5/8"	15R	9"	20	16R	9"	20	17R	9"	20	18R	9"	20	19R	9"	20	20R	9"	20
		25R	9"	18	25R	9"	18	25R	9"	18	25R	9"	18	25R	9"	18	25R	9"	18
	I	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8
8'-0"	Mk 5R 5/8"	5R	9"	4	5R	9"	6	5R	9"	8	5R	9"	8	5R	9"	10	5R	9"	12
		12R	9"	10	12R	9"	10	12R	9"	10	12R	9"	10	12R	9"	10	12R	9"	10
	Mk 12R 5/8"	15R	9"	22	16R	9"	22	17R	9"	22	18R	9"	22	19R	9"	22	20R	9"	22
		25R	9"	20	25R	9"	20	25R	9"	20	25R	9"	20	25R	9"	20	25R	9"	20
	I	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8
9'-0"	Mk 6R 5/8"				6R	9"	6	6R	9"	8	6R	9"	8	6R	9"	10	6R	9"	12
					13R	9"	10	13R	9"	10	13R	9"	10	13R	9"	10	13R	9"	10
	Mk 13R 5/8"				16R	9"	22	17R	9"	22	18R	9"	22	19R	9"	22	20R	9"	22
					25R	9"	20	25R	9"	20	25R	9"	20	25R	9"	20	25R	9"	20
	I				26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8
10'-0"	Mk 7R 5/8"							7R	9"	8	7R	9"	8	7R	9"	10	7R	9"	12
								14R	9"	10	14R	9"	10	14R	9"	10	14R	9"	10
	Mk 14R 5/8"							17R	9"	28	18R	9"	28	19R	9"	28	20R	9"	28
								25R	9"	26	25R	9"	26	25R	9"	26	25R	9"	26
	I							26R	3"	8	26R	3"	8	26R	3"	8	26R	3"	8

TYPE NO. 1 ROOF - WIDTH 4 - 10FT. LENGTH 8 - 13FT.



CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.
APPROVED: <i>J.D. Worthington</i> 12/2/57							
BY F.F.Y. ENGINEERING STANDARD				SUPERSEDES 16204, 16205			
DR. G.P.Y. TR.				SUPERSEDED BY			
CH. G.C.L.				SHEET NO. 12 SHEETS			
O.K. <i>For</i>				DRAWING NUMBER CHANGE			
DATE 1-10-63 SCALE				041672 -			
DETAILS OF UNDERGROUND ELECTRIC VAULTS DEPARTMENT OF ENGINEERING PACIFIC GAS AND ELECTRIC COMPANY SAN FRANCISCO, CAL.							

Length of Vault →		14'-0"			16'-0"			18'-0"		
Longitudinal Steel →		Mk 21R 5/8" φ 5'-2"			Mk 22R 5/8" φ 6'-2"			Mk 23R 5/8" φ 7'-2"		
Thickness of Roof										
Width of Vault										
Transverse Steel		Mark	Spacing	No.	Mark	Spacing	No.	Mark	Spacing	No.
5'-0"	Mk 2R 5/8" φ 6'-1"	2R	10"	12	2R	8 1/2"	16			
		9R	10"	10	9R	10"	10			
	Mk 9R 5/8" φ 1'-6"	21R	9"	14	22R	10"	12			
		24R	9"	12	24R	10"	10			
	B2 (81 18.4)	26R	3"	8	26R	3"	8			
	I 6'-0"	28R	—	8	28R	—	8			
		B2	6 1/2"	4	B2	6 1/2"	4			
6'-0"	Mk 3R 5/8" φ 7'-1"	3R	10"	12	3R	10"	14	3R	8"	20
		10R	10"	10	10R	10"	10	10R	10"	10
	Mk 10R 5/8" φ 2'-0"	21R	9"	16	22R	8"	18	23R	9"	16
		24R	9"	16	24R	8"	16	24R	9"	14
	B3 (81 18.4)	26R	3"	8	26R	3"	8	26R	3"	8
	I 7'-0"	26R	—	2	26R	—	2	26R	—	2
		28R	—	8	28R	—	8	28R	—	8
	B3	6 1/2"	4	B3	6 1/2"	4	B3	6 1/2"	4	
7'-0"	Mk 4R 5/8" φ 8'-1"	4R	9"	12	4R	9"	16	4R	9"	18
		11R	9"	10	11R	9"	10	11R	9"	10
	Mk 11R 5/8" φ 2'-6"	21R	9"	20	22R	8"	22	23R	7"	24
		25R	9"	18	25R	8"	20	25R	7"	22
	B4 (81 18.4)	26R	3"	8	26R	3"	8	26R	3"	8
	I 8'-0"	26R	—	2	26R	—	2	26R	—	2
		28R	—	8	28R	—	8	28R	—	8
	B4	6 1/2"	2	B4	6 1/2"	2	B4	6 1/2"	2	
	B5	6 1/2"	2	B5	6 1/2"	2	B5	6 1/2"	2	
8'-0"	Mk 5R 5/8" φ 9'-1"	5R	9"	12	5R	9"	16	5R	9"	18
		12R	9"	10	12R	9"	10	12R	9"	10
	Mk 12R 5/8" φ 3'-0"	21R	9"	22	22R	8"	24	23R	7"	28
		25R	9"	20	25R	8"	22	25R	7"	26
	B6 (81 18.4)	26R	3"	8	26R	3"	8	26R	3"	8
	I 9'-0"	26R	9"	4	26R	9"	4	26R	9"	4
		28R	—	8	28R	—	8	28R	—	8
	B6	6 1/2"	2	B6	6 1/2"	2	B6	6 1/2"	2	
	B7	6 1/2"	2	B7	6 1/2"	2	B7	6 1/2"	2	
9'-0"	Mk 6R 5/8" φ 10'-1"	6R	9"	12	6R	9"	16	6R	9"	18
		13R	9"	10	13R	9"	10	13R	9"	10
	Mk 13R 5/8" φ 3'-6"	21R	9"	22	22R	8"	24	23R	7"	28
		25R	9"	20	25R	8"	22	25R	7"	26
	B9 (101 35)	26R	3"	8	26R	3"	8	26R	3"	8
	I 10'-0"	26R	9"	6	26R	9"	6	26R	9"	6
		28R	—	8	28R	—	8	28R	—	8
	B9	6 1/2"	4	B9	6 1/2"	4	B9	6 1/2"	4	
10'-0"	Mk 7R 5/8" φ 11'-1"	7R	9"	12	7R	9"	16	7R	9"	18
		14R	9"	10	14R	9"	10	14R	9"	10
	Mk 14R 5/8" φ 4'-0"	21R	9"	28	22R	8"	30	23R	7"	34
		25R	9"	26	25R	8"	28	25R	7"	32
	B11 (101 35)	26R	3"	8	26R	3"	8	26R	3"	8
	I 11'-0"	26R	9"	8	26R	9"	8	26R	9"	8
		28R	—	8	28R	—	8	28R	—	8
	B11	6 1/2"	4	B11	6 1/2"	4	B11	6 1/2"	4	

TYPE NO. 1 ROOF - WIDTH 5 - 10FT. LENGTH 14 - 18FT.



CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.
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APPROVED: *J.D. Worthington* 9/22/63

BY F.F.Y.
 DR. G.P.Y. TR.
 CH. G.C.L.
 O. K. *J.W.*
 DATE 1-10-63

ENGINEERING STANDARD
DETAILS OF UNDERGROUND ELECTRIC VAULTS
 DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CAL.

SUPERSEDES 16204, 16205
 SUPERSEDED BY
SHEET NO. 13 SHEETS
 DRAWING NUMBER **041672** CHANGE —

ENCLOSURES

TABLE 10. VOLUME OF CONCRETE FOR ONE SLAB (CU. YDS.)

Length Width	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18-X) Ft. Δ
4'-0"	1.60	1.79	—	—	—	—	—	—	—	—
5'-0"	2.26	2.54	2.81	—	—	—	—	—	—	—
6'-0"	2.67	2.99	3.30	3.62	3.94	4.25	4.57	—	—	—
7'-0"	3.07	3.43	3.79	4.15	4.51	4.87	5.23	5.95	—	—
8'-0"	3.48	3.88	4.28	4.68	5.08	5.49	5.89	6.70	7.51	.4 (18.6-X)
9'-0"	—	4.32	4.77	5.21	5.66	6.11	6.56	7.45	8.34	.44 (18.8-X)
10'-0"	—	—	5.26	5.75	6.23	6.72	7.21	8.19	9.17	.46 (18.9-X)
12'-0"	—	—	—	—	—	9.11	9.77	11.08	12.40	.65 (18.9-X)
14'-0"	—	—	—	—	—	—	11.29	12.79	14.31	.76 (18.9-X)

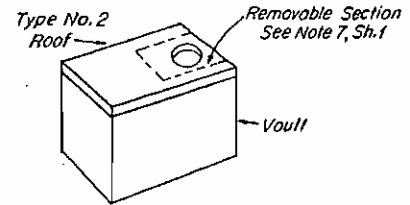
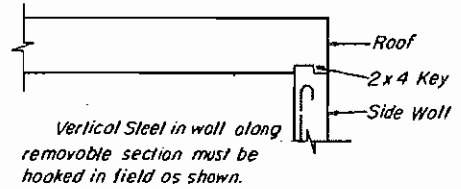
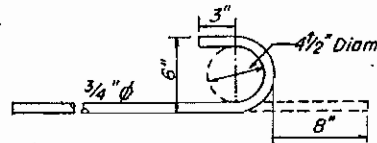
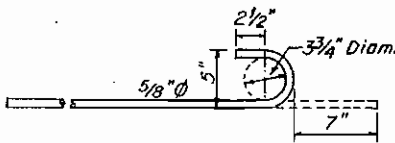
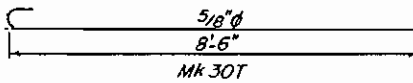
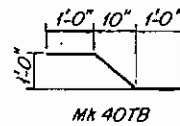
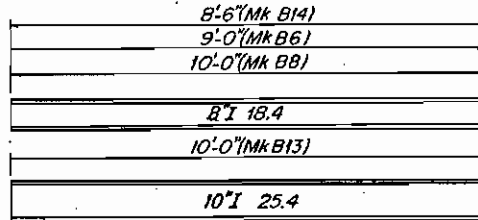
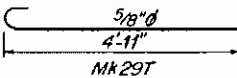
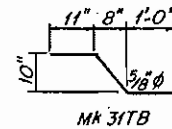
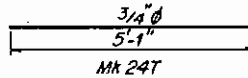
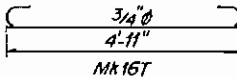
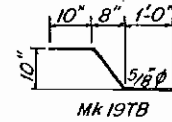
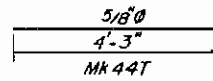
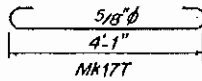


TABLE 11. WEIGHT OF STEEL FOR ONE SLAB (LBS.)

Length Width	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18-X) Ft. Δ
4'-0"	166	182	—	—	—	—	—	—	—	—
5'-0"	211	231	271	—	—	—	—	—	—	—
6'-0"	242	259	303	320	344	360	375	—	—	—
7'-0"	240	265	318	337	364	383	410	460	—	—
8'-0"	313	344	391	414	443	464	494	544	586	596 + 26X
9'-0"	—	379	432	453	487	523	545	611	679	675 + 30X
10'-0"	—	—	474	500	538	563	600	664	789	770 + 39X
12'-0"	—	—	—	—	—	692	722	804	883	1174 + 58X
14'-0"	—	—	—	—	—	—	835	924	1015	1361 + 67X



■ Does not include I-Beams
 Δ X in feet. (X=L-18')



DETAIL OF BENDING

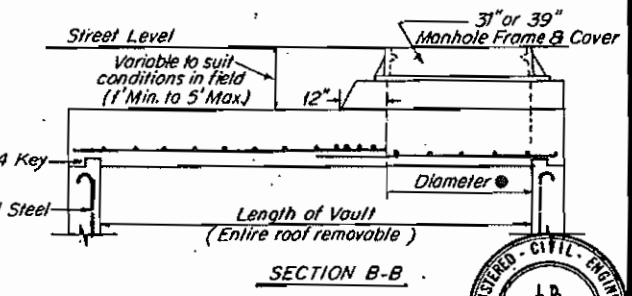
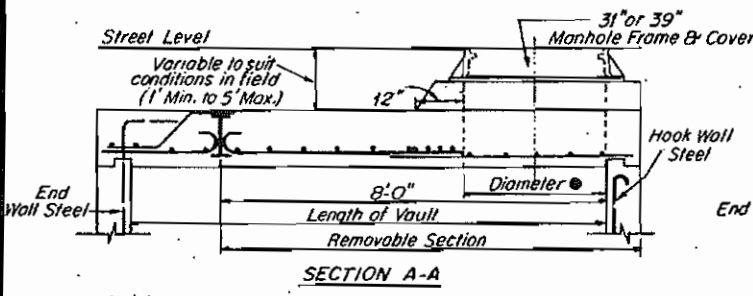
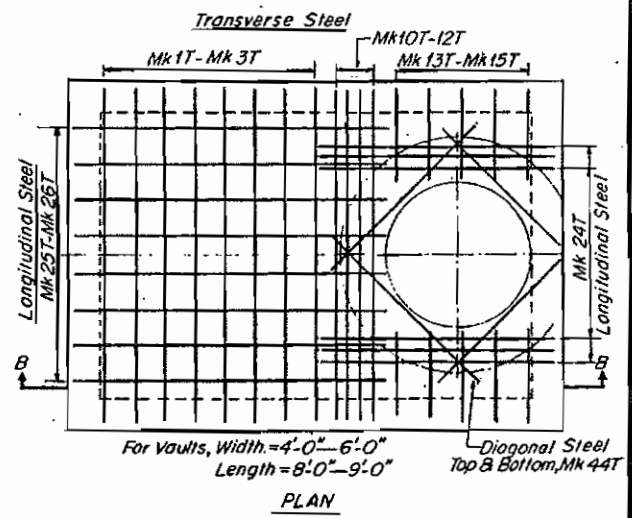
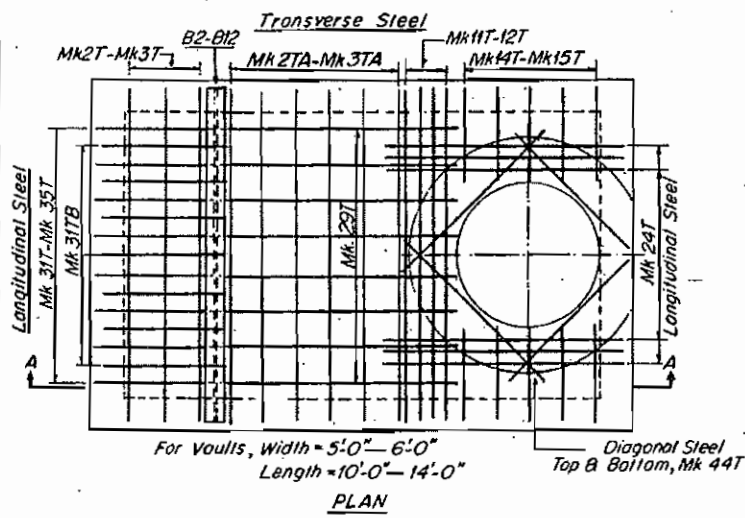


TYPE NO. 2 ROOF - GENERAL INFORMATION

CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.

APPROVED <i>J.D. Worthington</i>		ENGINEERING STANDARD		SUPERSEDES 16206, 16207	
BY F.F.Y.		DETAILS OF		SUPERSEDED BY	
DR. G.P.Y. TR.		UNDERGROUND ELECTRIC VAULTS		SHEET NO. 14 SHEETS	
CH. G.C.L.		DEPARTMENT OF ENGINEERING		DRAWING NUMBER	
O. K. <i>Jew</i>		PACIFIC GAS AND ELECTRIC COMPANY		CHANGE	
DATE 1-10-63		SAN FRANCISCO, CAL.		041672	
SCALE				—	

Length of Vault	8'-0"			9'-0"			10'-0"			11'-0"			12'-0"			13'-0"			14'-0"					
Longitudinal Steel	Mk 25T 5/8" φ 5'-6"			Mk 26T 5/8" φ 6'-6"			Mk 31T 5/8" φ 2'-6"			Mk 32T 5/8" φ 3'-6"			Mk 33T 5/8" φ 4'-6"			Mk 34T 5/8" φ 5'-6"			Mk 35T 5/8" φ 6'-6"					
Thickness of Roof	4'-0"			5'-0"			6'-0"			6'-0"			6'-0"			6'-0"			6'-0"					
Width of Vault	12"			14"			14"			14"			14"			14"			14"					
Transverse Steel	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No
4'-0"	Mk 1T 5/8" φ	1T	8	6	1T	8	8																	
	5'-1"	10T	3	4	10T	3	4																	
	Mk 10T 3/4" φ	13T	10	10	13T	10	10																	
	5'-1"	24T	3	4	24T	3	4																	
5'-0"	Mk 13T 5/8" φ	25T	10	5	26T	10	5																	
	0-11/2"	44T	-	8	44T	-	8																	
	Mk 2T-2TA	2T	8	6	2T	8	8	2T	9	3														
	6'-1"	11T	3	4	11T	3	4	11T	3	4														
6'-0"	Mk 11T 3/4" φ	14T	9	10	14T	9	10	14T	9	10														
	6'-1"	24T	3	6	24T	3	6	24T	3	6														
	Mk 14T	25T	9	7	26T	9	7	29T	9	7														
	1-5/2"	31T	9	7	31T	9	7	31TB	9	6														
6'-0"	B2 (8T 18.4)	44T	-	8	44T	-	8	44T	-	8														
	6'-0"	3T	7 1/2	7	3T	7 1/2	8	3T	9	3	3T	9	4	3T	9	6	3T	9	7	3T	9	8		
	Mk 3T-3TA 5/8" φ	12T	3	4	12T	3	4	12T	3	4	12T	3	4	12T	3	4	12T	3	4	12T	3	4		
	7'-1"	15T	9	10	15T	9	10	15T	9	10	15T	9	10	15T	9	10	15T	9	10	15T	9	10		
6'-0"	Mk 12T 3/4" φ	24T	3	6	24T	3	6	24T	3	6	24T	3	6	24T	3	6	24T	3	6	24T	3	6		
	7'-1"	25T	9	8	26T	9	8	29T	9	8	29T	9	8	29T	9	8	29T	9	8	29T	9	8		
	Mk 15T	31T	9	8	31T	9	8	32T	9	8	33T	9	8	34T	9	8	35T	9	8					
	1-11/2"	31TB	9	7	31TB	9	7	31TB	9	7	31TB	9	7	31TB	9	7	31TB	9	7					
6'-0"	B12 (10T 25.4)	44T	-	8	44T	-	8	44T	-	8	44T	-	8	44T	-	8	44T	-	8	44T	-	8		
	7'-0"																							



• Diam. = 2'-1 1/4" for 31 inch Manhole Frame
3'-7" for 39 inch Manhole Frame

TYPE NO. 2 ROOF - WIDTH 4 - 6 FT. LENGTH 8 - 14 FT.



CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.
APPROVED		J.D. Worthington					

BY F.F.Y.
DR. G.P.Y. TR.
CH. G.C.L.
O.K. <i>J.W.</i>
DATE 1-10-63
SCALE

ENGINEERING STANDARD

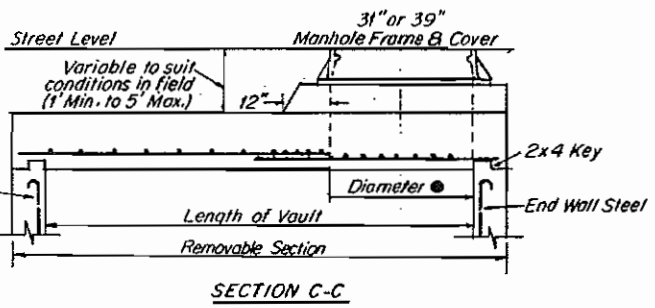
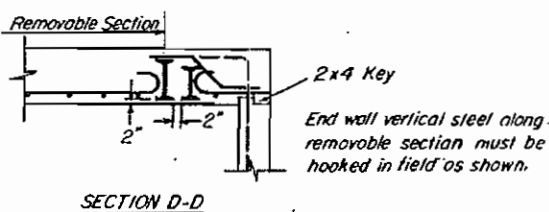
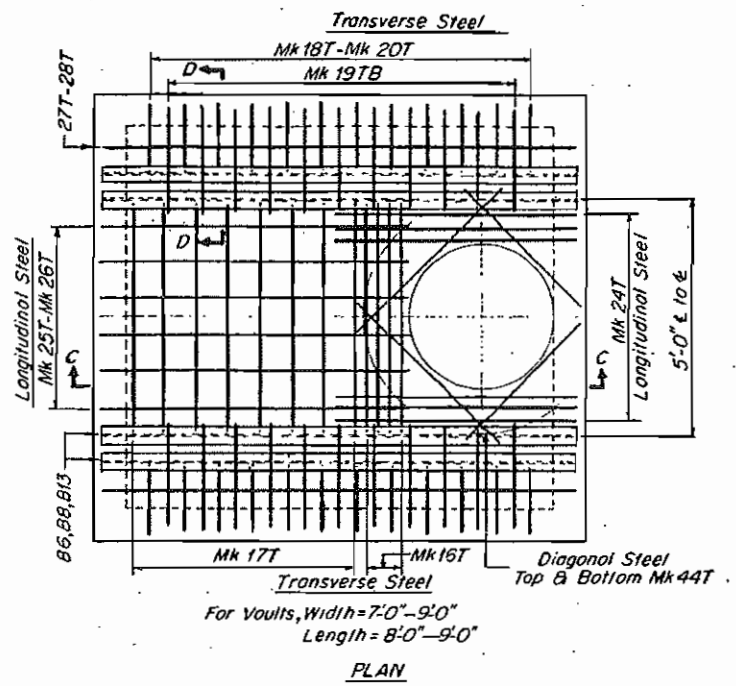
DETAILS OF UNDERGROUND ELECTRIC VAULTS

DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CAL.

SUPERSEDES 16206, 16207
SUPERSEDED BY
SHEET NO. 15 SHEETS
DRAWING NUMBER 041672
CHANGE

ENCLOSURES

Length of Vault	8'-0"	9'-0"	
Longitudinal Steel	Mk 25T 5/8" φ 5'-6"	Mk 26T 5/8" φ 6'-6"	
Thickness of Roof	Mk 27T 5/8" φ	Mk 28T 5/8" φ	
Width of Vault	9'-1"	10'-1"	
Transverse Steel	Mk Sp No	Mk Sp No	
7'-0"	Mk 4T 5/8" φ 8'-1"	16T 3 4 17T 8 6 18T 9 22 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 18T 9 24 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 4
	Mk 18T 5/8" φ 1'-0"	16T 3 4 17T 8 6 19T 9 22 19TB 9 20 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 19T 9 24 19TB 9 22 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 2 B13 - 2
	Mk 5T 5/8" φ 9'-1"	16T 3 4 17T 8 6 19T 9 22 19TB 9 20 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 19T 9 24 19TB 9 22 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 2 B13 - 2
	Mk 19T 5/8" φ 1'-6"	16T 3 4 17T 8 6 19T 9 22 19TB 9 20 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 19T 9 24 19TB 9 22 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 2 B13 - 2
	Mk 6T 5/8" φ 10'-1"	16T 3 4 17T 8 6 19T 9 22 19TB 9 20 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 19T 9 24 19TB 9 22 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 2 B13 - 2
	Mk 20T 5/8" φ 2'-0"	16T 3 4 17T 8 6 19T 9 22 19TB 9 20 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 19T 9 24 19TB 9 22 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 2 B13 - 2
		16T 3 4 17T 8 6 19T 9 22 19TB 9 20 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 19T 9 24 19TB 9 22 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 2 B13 - 2
		16T 3 4 17T 8 6 19T 9 22 19TB 9 20 24T 3 6 25T 9 6 27T - 2 44T - 8 86 - 4	16T 3 4 17T 8 8 19T 9 24 19TB 9 22 24T 3 6 26T 9 6 28T - 2 44T - 8 88 - 2 B13 - 2



• Diam. = 2'-11 1/4" for 31 inch Manhole Frame
3'-7" for 39 inch Manhole Frame

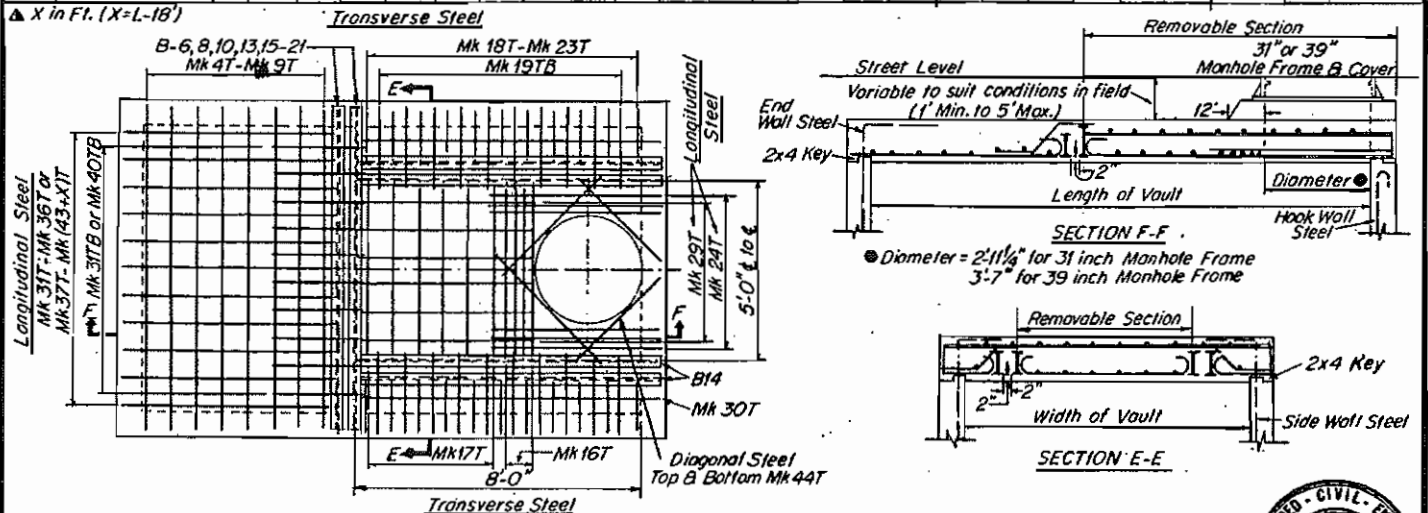
TYPE NO. 2 ROOF - WIDTH 7 - 9 FT. LENGTH 8 - 9 FT.



CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.
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APPROVED <i>J.D. Worthington</i>	ENGINEERING STANDARD	SUPERSEDES 16206, 16207
BY F.F.Y.	DETAILS OF UNDERGROUND ELECTRIC VAULTS	SUPERSEDED BY
DR. G.P.Y. TR.	DEPARTMENT OF ENGINEERING	SHEET NO. 16 SHEETS
CH. G.C.L.	PACIFIC GAS AND ELECTRIC COMPANY	DRAWING NUMBER
O. K. <i>Flux</i>	SAN FRANCISCO, CAL.	041672
DATE 1-10-63	SCALE	CHANGE

Length of Vault	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ
Longitudinal Steel	Mk. 31T 5/8" φ 2'-6"	Mk 32T 5/8" φ 3'-6"	Mk 33T 5/8" φ 4'-6"	Mk 34T 5/8" φ 5'-6"	Mk 35T 5/8" φ 6'-6"	Mk 36T 5/8" φ 8'-6"		
Thickness of Roof	Mk 37T 5/8" φ 1'-11 1/2"	Mk 38T 5/8" φ 2'-11 1/2"	Mk 39T 5/8" φ 3'-11 1/2"	Mk 40T 5/8" φ 4'-11 1/2"	Mk 41T 5/8" φ 5'-11 1/2"	Mk 42T 5/8" φ 7'-11 1/2"	Mk 43T 5/8" φ 9'-11 1/2"	Mk (43+X)T 5/8" φ 9'-11 1/2" + X Ft.
Width of Vault								
Transverse Steel	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No
7'-0"	Mk 4T 5/8" φ 8'-1"	Mk 18T 5/8" φ 8'-0"	B15 (10I 25.4) 8'-0"					
8'-0"	Mk 5T 5/8" φ 9'-1"	Mk 19T 5/8" φ 9'-0"	B6 (18I 18.4) B16 (10I 25.4) 9'-0"					
9'-0"	Mk 6T 5/8" φ 10'-1"	Mk 20T 5/8" φ 10'-0"	B8 (18I 18.4) B13 (10I 25.4) 10'-0"					



For Vaults, Width = 7'-0" - 14'-0", Length = 10'-0" - (18+X) Ft.
 (Except for vaults, Width 12'-0" - 14'-0", Length (18+X), See Sh. 18)

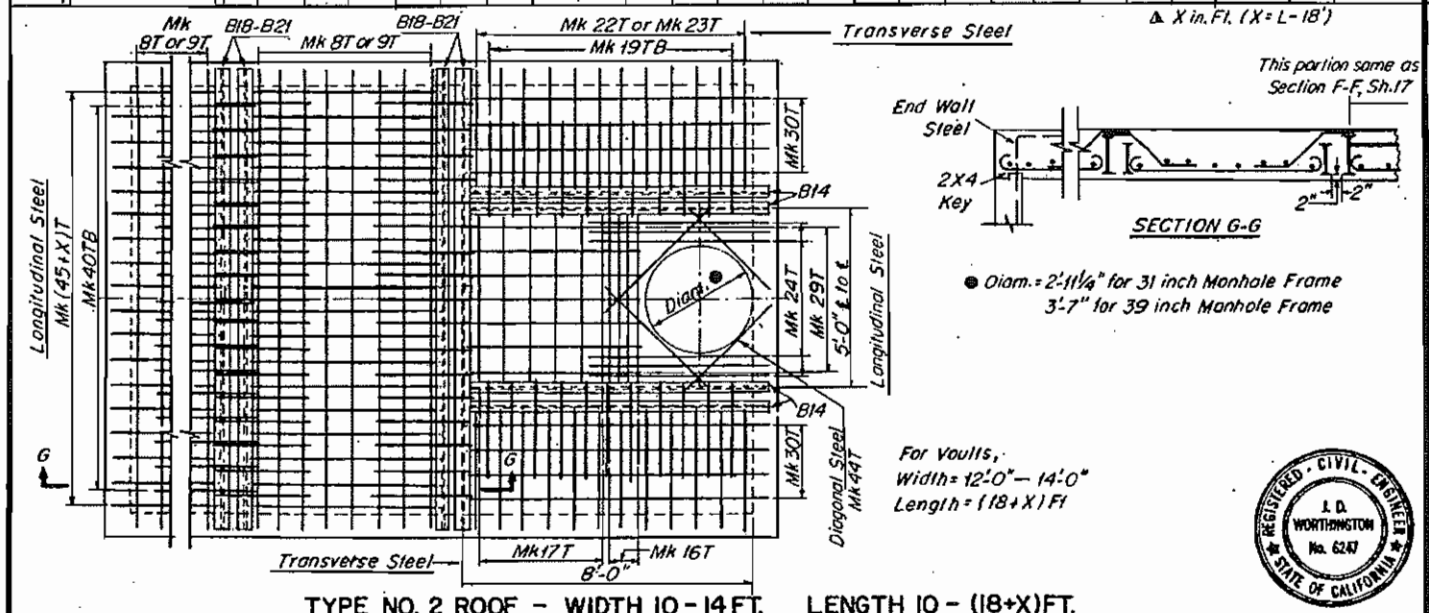
TYPE NO. 2 ROOF - WIDTH 7 - 9 FT. LENGTH 10 - (18+X) FT.

CHG.	DATE	DESCRIPTION	APPRD.	CHG.	DATE	DESCRIPTION	APPRD.				
APPROVED <i>J. D. Worthington</i> J.D. Worthington, J.E.P. 7/23/13 MK 20T											
By F.F.Y. Dr. G.P.Y. TR. Ch. G.C.L. O. K. <i>Jean</i> DATE 1-10-63 SCALE				ENGINEERING STANDARD DETAILS OF UNDERGROUND ELECTRIC VAULTS DEPARTMENT OF ENGINEERING PACIFIC GAS AND ELECTRIC COMPANY SAN FRANCISCO, CAL.				SUPERSEDES 16206, 16207 SUPERSEDED BY SHEET NO. 17 SHEETS DRAWING NUMBER 041672 CHANGE			

ENCLOSURES



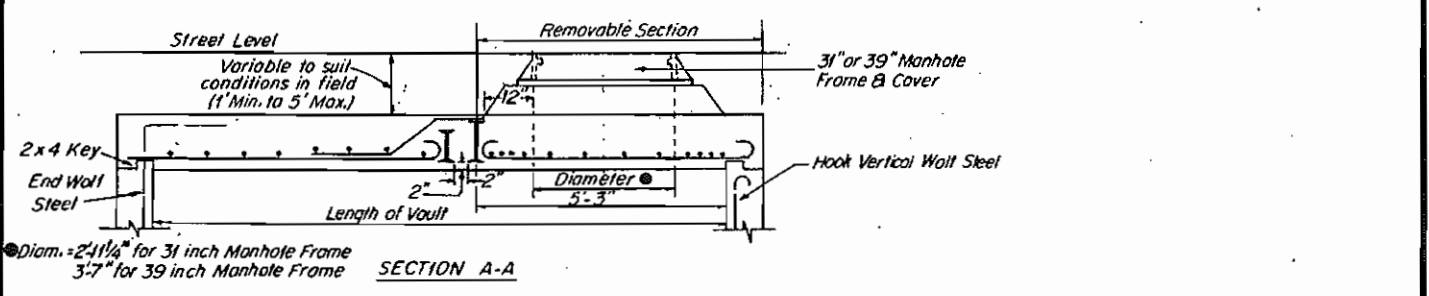
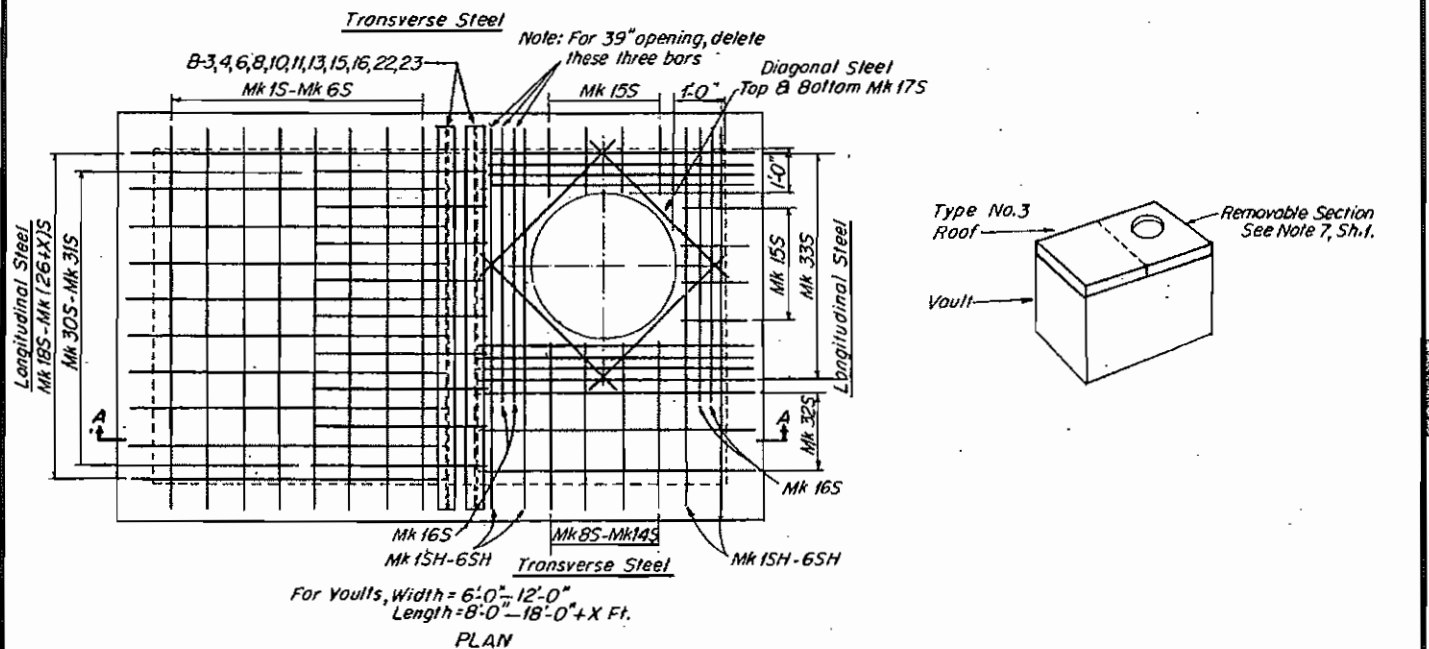
Length of Vault	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ																																																				
Longitudinal Steel								Mk (45+X)T $\frac{5}{8}\phi$ 4'-7 1/2" X 1/2 Ft.																																																				
Thickness of Roof	Mk 37T $\frac{5}{8}\phi$ 1'-11 1/2"	Mk 38T $\frac{5}{8}\phi$ 2'-11 1/2"	Mk 39T $\frac{5}{8}\phi$ 3'-11 1/2"	Mk 40T $\frac{5}{8}\phi$ 4'-11 1/2"	Mk 41T $\frac{5}{8}\phi$ 5'-11 1/2"	Mk 42T $\frac{5}{8}\phi$ 7'-11 1/2"	Mk 43T $\frac{5}{8}\phi$ 9'-11 1/2"	Mk (43+X)T $\frac{5}{8}\phi$ 9'-11 1/2" + X Ft.																																																				
Width of Vault																																																												
Transverse Steel	Mk 7T 16T 17T 21T 19TB 24T 29T 30T 37T 31TB 44T 810 817 814	Sp 3 6 9 6 6 9 9 14 13 8 1 1 4	No 4 6 9 20 6 6 9 20 9 8 1 1 4	Mk 7T 16T 17T 21T 19TB 24T 29T 30T 37T 31TB 44T 810 817 814	Sp 3 6 9 6 6 9 9 14 13 8 1 1 4	No 4 6 9 20 6 6 9 20 9 8 1 1 4	Mk 7T 16T 17T 21T 19TB 24T 29T 30T 37T 31TB 44T 810 817 814	Sp 3 6 9 6 6 9 9 14 13 8 1 1 4	No 4 6 9 20 6 6 9 20 9 8 1 1 4	Mk 8T 16T 17T 21T 19TB 24T 29T 30T 40T 40TB 44T 818 819 814	Sp 3 6 9 6 6 9 8 8 8 8 1 1 4	No 4 6 9 24 22 6 7 8 18 17 8 1 1 4	Mk 8T 16T 17T 21T 19TB 24T 29T 30T 40T 40TB 44T 818 819 814	Sp 3 6 9 6 6 9 8 8 8 8 1 1 4	No 4 6 9 24 22 6 7 8 18 17 8 1 1 4	Mk 8T 16T 17T 21T 19TB 24T 29T 30T 40T 40TB 44T 818 819 814	Sp 3 6 9 6 6 9 8 8 8 8 1 1 4	No 4 6 9 24 22 6 7 8 18 17 8 1 1 4	Mk 9T 16T 17T 21T 19TB 24T 29T 30T 41T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 9T 16T 17T 21T 19TB 24T 29T 30T 41T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 10T 16T 17T 21T 19TB 24T 29T 30T 42T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 10T 16T 17T 21T 19TB 24T 29T 30T 42T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 11T 16T 17T 21T 19TB 24T 29T 30T 43T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 11T 16T 17T 21T 19TB 24T 29T 30T 43T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 12T 16T 17T 21T 19TB 24T 29T 30T 44T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 12T 16T 17T 21T 19TB 24T 29T 30T 44T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 13T 16T 17T 21T 19TB 24T 29T 30T 45T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 13T 16T 17T 21T 19TB 24T 29T 30T 45T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 14T 16T 17T 21T 19TB 24T 29T 30T 46T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 14T 16T 17T 21T 19TB 24T 29T 30T 46T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 15T 16T 17T 21T 19TB 24T 29T 30T 47T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4	Mk 15T 16T 17T 21T 19TB 24T 29T 30T 47T 40TB 44T 820 821 814	Sp 3 6 9 6 6 9 12 21 20 8 2 2 4	No 4 6 9 24 22 6 7 8 20 20 8 2 2 4



CHG.	DATE	DESCRIPTION	APPR.	CHG.	DATE	DESCRIPTION	APPR.		
APPROVED		J.D. Worthington	J.D. Worthington						
By F.F.Y. DR. G.P.Y. TR. CH. G.C.L. O.K. <i>[Signature]</i>				ENGINEERING STANDARD DETAILS OF UNDERGROUND ELECTRIC VAULTS DEPARTMENT OF ENGINEERING PACIFIC GAS AND ELECTRIC COMPANY SAN FRANCISCO, CAL.				SUPERSEDES 16206, 16207 SUPERSEDED BY SHEET NO. 18 SHEETS DRAWING NUMBER 041672	
DATE	SCALE							CHANGE	
1-10-63									



Length of Vault	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	16'-0"	
Longitudinal Steel	Mk 18S	Mk 19S	Mk 20S	Mk 21S	Mk 22S	Mk 23S	Mk 24S	Mk 25S	
Thickness of Roof	5/8" φ	5/8" φ	5/8" φ	5/8" φ	5/8" φ	5/8" φ	5/8" φ	5/8" φ	
Width of Vault	2'-8"	3'-8"	4'-8"	5'-8"	6'-8"	7'-8"	8'-8"	10'-8"	
Transverse Steel	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No	Mk Sp No
6'-0" 14" 5/8" φ Mk 1S 3/8" φ 7'-1" Mk 1SH 7'-1" Mk 8S 2'-6" B3 (81 18.4) 7'-0"	1S 9 3	1S 9 4	1S 9 6	1S 9 7	1S 9 8	1S 9 9	1S 9 11		
	1SH 9 4	1SH 9 4	1SH 9 4	1SH 9 4	1SH 9 4	1SH 9 4	1SH 9 4		
	8S 9 4	8S 9 4	8S 9 4	8S 9 4	8S 9 4	8S 9 4	8S 9 4		
	15S 9 8	15S 9 8	15S 9 8	15S 9 8	15S 9 8	15S 9 8	15S 9 8		
	16S 3 4	16S 3 4	16S 3 4	16S 3 4	16S 3 4	16S 3 4	16S 3 4		
	17S — 8	17S — 8	17S — 8	17S — 8	17S — 8	17S — 8	17S — 8		
	18S 9 8	19S 9 8	20S 9 8	21S 9 8	22S 9 8	23S 9 8	24S 9 8		
	30S 9 7	30S 9 7	30S 9 7	30S 9 7	30S 9 7	30S 9 7	30S 9 7		
	32S 9 2	32S 9 2	32S 9 2	32S 9 2	32S 9 2	32S 9 2	32S 9 2		
	33S 3 8	33S 3 8	33S 3 8	33S 3 8	33S 3 8	33S 3 8	33S 3 8		
83 7 2	83 7 2	83 7 2	83 7 2	83 7 2	83 7 2	83 7 2			
7'-0" 14" 5/8" φ Mk 2S 3/8" φ 8'-1" Mk 2SH 8'-1" Mk 9S 3'-6" B4 (81 18.4) B15 (101 25.4) 8'-0"	2S 9 3	2S 9 4	2S 9 6	2S 9 7	2S 9 8	2S 9 9	2S 9 11	2S 9 14	
	2SH 9 4	2SH 9 4	2SH 9 4	2SH 9 4	2SH 9 4	2SH 9 4	2SH 9 4	2SH 9 4	
	9S 9 4	9S 9 4	9S 9 4	9S 9 4	9S 9 4	9S 9 4	9S 9 4	9S 9 4	
	15S 9 8	15S 9 8	15S 9 8	15S 9 8	15S 9 8	15S 9 8	15S 9 8	15S 9 8	
	16S 3 4	16S 3 4	16S 3 4	16S 3 4	16S 3 4	16S 3 4	16S 3 4	16S 3 4	
	17S — 8	17S — 8	17S — 8	17S — 8	17S — 8	17S — 8	17S — 8	17S — 8	
	18S 9 10	19S 9 10	20S 9 10	21S 9 10	22S 9 10	23S 9 10	24S 9 10	25S 9 10	
	30S 9 9	30S 9 9	30S 9 9	30S 9 9	30S 9 9	30S 9 9	30S 9 9	30S 9 9	
	32S 9 3	32S 9 3	32S 9 3	32S 9 3	32S 9 3	32S 9 3	32S 9 3	32S 9 3	
	33S 3 8	33S 3 8	33S 3 8	33S 3 8	33S 3 8	33S 3 8	33S 3 8	33S 3 8	
B4 — 1	B4 — 1	B4 — 1	B4 — 1	B4 — 1	B4 — 1	B4 — 1	B4 — 1		
B15 — 1	B15 — 1	B15 — 1	B15 — 1	B15 — 1	B15 — 1	B15 — 1	B15 — 1		



TYPE NO. 3 ROOF - WIDTH 6 - 7 FT. LENGTH 8 - 16 FT.

APPROVED									
CHG.	DATE	DESCRIPTION	BY	CH.	APPRD.				
SUPERV. BY	F. F. Y.	ENGINEERING STANDARD				SUPERSEDES	16208, 16209		
DSGN.	G. C. L.	DETAILS OF				SUPERSEDED BY			
DR.	G. P. Y.	UNDERGROUND ELECTRIC VAULTS				SHEET NO. 19	SHEETS		
CH.	G. C. L.	DEPARTMENT OF ENGINEERING				DRAWING NUMBER	CHANGE		
O.K.	<i>[Signature]</i>	PACIFIC GAS AND ELECTRIC COMPANY				041672			
DATE	SCALE	SAN FRANCISCO, CALIFORNIA							
1-10-63									



ENCLOSURES

Length of Vault	8'-0"			9'-0"			10'-0"			11'-0"			12'-0"			13'-0"			14'-0"			16'-0"							
Longitudinal Steel	Mk 185			Mk 195			Mk 205			Mk 215			Mk 225			Mk 235			Mk 245			Mk 255							
Thickness of Roof	5/8" φ			5/8" φ			5/8" φ			5/8" φ			5/8" φ			5/8" φ			5/8" φ			5/8" φ							
Width of Vault	2'-8"			3'-8"			4'-8"			5'-8"			6'-8"			7'-8"			8'-8"			10'-8"							
Transverse Steel	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No		
8'-0" 5/8" φ 4'-6" 14" Mk 3S 5/8" φ 9'-1" Mk 3SH 5/8" φ 9'-1" Mk 10S 5/8" φ 4'-6" B16(10I 25.4) B6(8I 18.4) I 9'-0"	3S	9	3	3S	9	4	3S	9	6	3S	9	7	3S	9	8	3S	9	9	3S	9	12	3S	9	15	3S	9	15		
	3SH	9	4	3SH	9	4	3SH	9	4	3SH	9	4	3SH	9	4	3SH	9	4	3SH	9	4	3SH	9	4	3SH	9	4		
	10S	9	4	10S	9	4	10S	9	4	10S	9	4	10S	9	4	10S	9	4	10S	9	4	10S	9	4	10S	9	4		
	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8		
	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4		
	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-		
	18S	9	11	19S	9	11	20S	9	11	21S	9	11	22S	9	11	23S	9	11	24S	9	11	25S	9	11	25S	9	11		
	30S	9	10	30S	9	10	30S	9	10	30S	9	10	30S	9	10	30S	9	10	30S	9	10	30S	9	10	30S	9	10		
	32S	9	5	32S	9	5	32S	9	5	32S	9	5	32S	9	5	32S	9	5	32S	9	5	32S	9	5	32S	9	5		
	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8		
B16	-	-	B16	-	-	B16	-	-	B16	-	-	B16	-	-	B16	-	-	B16	-	-	B16	-	-	B16	-	-	B16	-	-
86	-	-	86	-	-	86	-	-	86	-	-	86	-	-	86	-	-	86	-	-	86	-	-	86	-	-	86	-	-
9'-0" 5/8" φ 5'-6" 14" Mk 4S 5/8" φ 10'-1" Mk 4SH 5/8" φ 10'-1" Mk 11S 5/8" φ 5'-6" B13(10I 25.4) B8(8I 18.4) I 10'-0"	4S	9	4	4S	9	4	4S	9	6	4S	9	7	4S	9	8	4S	9	9	4S	9	11	4S	9	17	4S	9	17		
	4SH	9	4	4SH	9	4	4SH	9	4	4SH	9	4	4SH	9	4	4SH	9	4	4SH	9	4	4SH	9	4	4SH	9	4		
	11S	9	4	11S	9	4	11S	9	4	11S	9	4	11S	9	4	11S	9	4	11S	9	4	11S	9	4	11S	9	4		
	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8		
	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4		
	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-		
	19S	9	12	20S	9	12	21S	9	12	22S	9	12	23S	9	12	24S	9	12	25S	9	12	25S	9	12					
	30S	9	11	30S	9	11	30S	9	11	30S	9	11	30S	9	11	30S	9	11	30S	9	11	30S	9	11	30S	9	11		
	32S	9	6	32S	9	6	32S	9	6	32S	9	6	32S	9	6	32S	9	6	32S	9	6	32S	9	6	32S	9	6		
	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8		
B13	-	-	B13	-	-	B13	-	-	B13	-	-	B13	-	-	B13	-	-	B13	-	-	B13	-	-	B13	-	-			
88	-	-	88	-	-	88	-	-	88	-	-	88	-	-	88	-	-	88	-	-	88	-	-	88	-	-	88	-	-
10'-0" 5/8" φ 6'-6" 14" Mk 5S 5/8" φ 11'-1" Mk 5SH 5/8" φ 11'-1" Mk 12S 5/8" φ 6'-6" B11(10I 35.0) B10(8I 18.4) I 11'-0"	5S	9	6	5S	9	6	5S	9	7	5S	9	8	5S	9	9	5S	9	11	5S	9	17	5S	9	20					
	5SH	9	4	5SH	9	4	5SH	9	4	5SH	9	4	5SH	9	4	5SH	9	4	5SH	9	4	5SH	9	4	5SH	9	4		
	12S	9	4	12S	9	4	12S	9	4	12S	9	4	12S	9	4	12S	9	4	12S	9	4	12S	9	4	12S	9	4		
	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8	15S	9	8		
	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4		
	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-		
	20S	9	14	21S	9	14	22S	9	14	23S	9	14	24S	9	14	25S	9	14	25S	9	14								
	30S	9	13	30S	9	13	30S	9	13	30S	9	13	30S	9	13	30S	9	13	30S	9	13	30S	9	13					
	32S	9	7	32S	9	7	32S	9	7	32S	9	7	32S	9	7	32S	9	7	32S	9	7	32S	9	7					
	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8					
B11	7	2	B11	7	2	B11	7	2	B11	7	2	B11	7	2	B11	7	2	B11	7	2	B11	7	2	B11	7	2			
BH	-	-	BH	-	-	BH	-	-	BH	-	-	BH	-	-	BH	-	-	BH	-	-	BH	-	-	BH	-	-			
810	-	-	810	-	-	810	-	-	810	-	-	810	-	-	810	-	-	810	-	-	810	-	-	810	-	-	810	-	-
12'-0" 5/8" φ 8'-6" 16" Mk 6S 5/8" φ 13'-1" Mk 6SH 5/8" φ 13'-1" Mk 13S 5/8" φ 8'-6" B22(12I 40.8) B23(8I 18.4) I 13'-0"	6S	8	9	6S	8	11	6S	8	12	6S	8	15	6S	8	15	6S	8	15	6S	8	15	6S	8	15					
	6SH	9	4	6SH	9	4	6SH	9	4	6SH	9	4	6SH	9	4	6SH	9	4	6SH	9	4	6SH	9	4					
	13S	8	5	13S	8	5	13S	8	5	13S	8	5	13S	8	5	13S	8	5	13S	8	5	13S	8	5					
	15S	8	10	15S	8	10	15S	8	10	15S	8	10	15S	8	10	15S	8	10	15S	8	10	15S	8	10					
	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4	16S	3	4					
	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-	17S	-	-					
	22S	8	18	23S	8	18	24S	8	18	25S	8	18	25S	8	18	25S	8	18	25S	8	18								
	31S	8	17	31S	8	17	31S	8	17	31S	8	17	31S	8	17	31S	8	17	31S	8	17	31S	8	17					
	32S	8	11	32S	8	11	32S	8	11	32S	8	11	32S	8	11	32S	8	11	32S	8	11	32S	8	11					
	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8	33S	3	8					
B22	-	-	B22	-	-	B22	-	-	B22	-	-	B22	-	-	B22	-	-	B22	-	-	B22	-	-						
B23	-	-	B23	-	-	B23	-	-	B23	-	-	B23	-	-	B23	-	-	B23	-	-	B23	-	-						

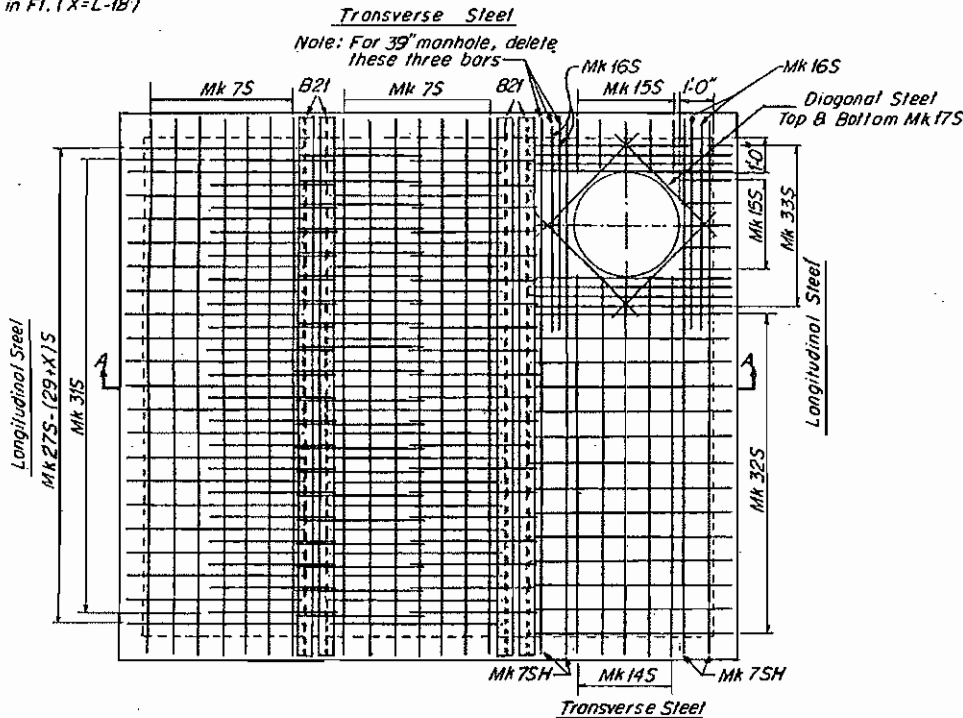
TYPE NO. 3 ROOF - WIDTH 8 - 12FT. LENGTH 8 - 16FT.



APPROVED									
CHKD.									
DATE									
DESCRIPTION	ENGINEERING STANDARD								
SUPV. BY	F.F.Y.								
DSGN.	G.C.L.								
DR.	G.P.Y.								
CH.	G.C.L.								
O.K.	F.F.Y.								
DATE	1-10-63								
SCALE									
DETAILS OF UNDERGROUND ELECTRIC VAULTS								SUPERSEDES 16208, 16209	
DEPARTMENT OF ENGINEERING								SUPERSEDED BY	
PACIFIC GAS AND ELECTRIC COMPANY								SHEET NO. 20 SHEETS	
SAN FRANCISCO, CALIFORNIA								DRAWING NUMBER	
								041672	
								CHANGE	
								-	

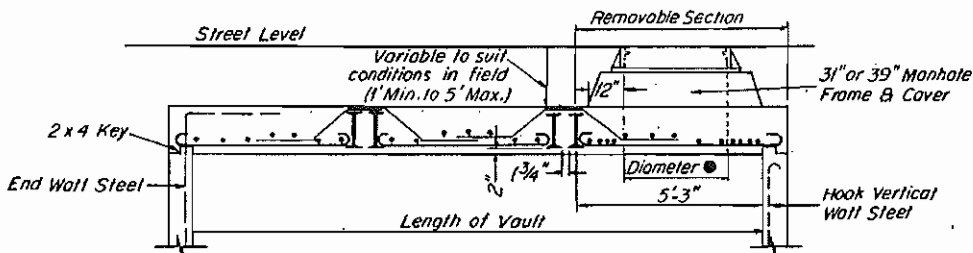
Length of Vault	14'-0"	16'-0"	18'-0"	(18+X) Ft. Δ								
Longitudinal Steel	Mk 27S	Mk 28S	Mk 29S	Mk (29+X)S								
Thickness of Roof	$\frac{5}{8}\phi$	$\frac{5}{8}\phi$	$\frac{5}{8}\phi$	$\frac{5}{8}\phi$								
Width of Vault	4'-0"	5'-0"	6'-0"	6'-0" $\frac{1}{2}$ Ft.								
Transverse Steel	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No	Mk	Sp	No
Mk 7S $\frac{5}{8}\phi$	7S	8	11	7S	8	14	7S	8	17	7S	8	15X+17
15'-1"	7SH	9	4	7SH	9	4	7SH	9	4	7SH	9	4
Mk 7SH $\frac{5}{8}\phi$	14S	8	5	14S	8	5	14S	8	5	14S	8	5
15'-1"	15S	8	10	15S	8	10	15S	8	10	15S	8	10
Mk 14S $\frac{5}{8}\phi$	16S	3	4	16S	3	4	16S	3	4	16S	3	4
10'-6"	17S	—	8	17S	—	8	17S	—	8	17S	—	8
B21 (121 40.8)	27S	8	42	28S	8	42	29S	8	42	(29+X)S	8	42
15'-0"	31S	8	60	31S	8	60	31S	8	60	31S	8	60
	32S	8	14	32S	8	14	32S	8	14	32S	8	14
	33S	3	8	33S	3	8	33S	3	8	33S	3	8
	B21	7	4	B21	7	4	B21	7	4	B21	7	4

Δ X in Ft. (X=L-18')



For Vaults, Width=14'-0", Length=14'-0" - (18+X) Ft.

PLAN



• Diam. = 2'-11 1/4" for 31 inch Manhole Frame
3'-7" for 39 inch Manhole Frame

SECTION A-A'

TYPE NO. 3 ROOF - WIDTH 14 FEET. LENGTH 14 - (18+X) FT.



APPROVED												
CHG.	DATE											

SUPRV. BY	F.F.Y.
DSGN.	G.C.L.
DR.	GP.Y.
CH.	G.C.L.
O.K.	<i>fw</i>
DATE	SCALE
1-10-63	

ENGINEERING STANDARD
DETAILS OF UNDERGROUND ELECTRIC VAULTS
 DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

SUPERSEDING	16208, 16209
SUPERSEDED BY	
SHEET NO. 22	SHEETS
DRAWING NUMBER	CHANGE
041672	-

Horizontal Steel	Thickness of Wall	Depth of Vault	Vertical Steel			Shaft Floor
			Mark	Spacing	No.	
1'-6"	3'-0"	6'-6"	Mk 1A 11A	5/8" φ 12	8 9	Note: Same for all depths Mk 9A - 3 ea @ 12" Mk 10A - 3 ea @ 12"
1'-6"	3'-0"	7'-0"	Mk 2A 11A	5/8" φ 12	8 9	
1'-6"	3'-0"	7'-6"	Mk 3A 11A	5/8" φ 12	8 9	
1'-6"	3'-0"	8'-0"	Mk 4A 11A	5/8" φ 12	8 9	
1'-6"	3'-0"	8'-6"	Mk 5A 11A	5/8" φ 12	8 10	
1'-6"	3'-0"	9'-0"	Mk 6A 11A	5/8" φ 12	8 10	
1'-6"	3'-0"	9'-6"	Mk 7A 11A	5/8" φ 12	8 11	
1'-6"	3'-0"	10'-0"	Mk 8A 11A	5/8" φ 12	8 11	

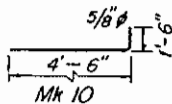
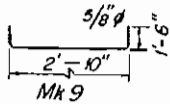


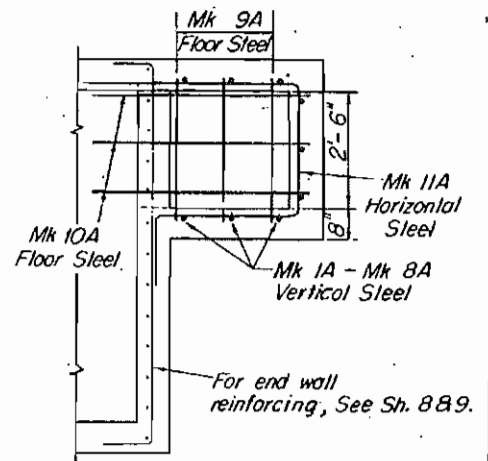
TABLE 14

WEIGHT OF STEEL FOR ONE AIR SHAFT	
Depth of Shaft	Lbs.
6'-6"	227
7'-0"	232
7'-6"	248
8'-0"	253
8'-6"	270
9'-0"	275
9'-6"	292
10'-0"	297

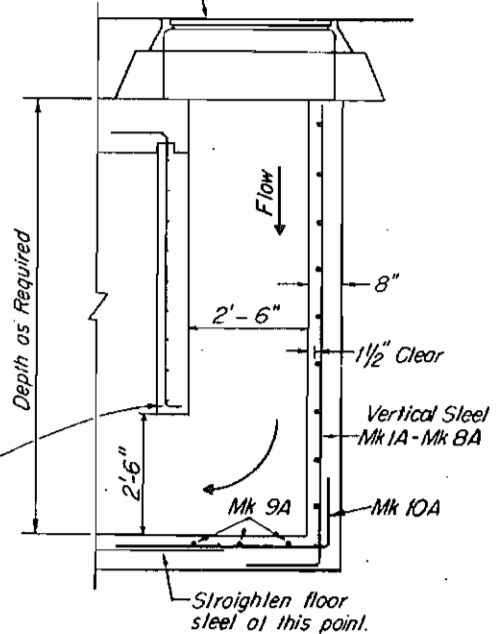
TABLE 15

VOLUME OF CONCRETE FOR ONE AIR SHAFT	
Depth of Shaft	Cu. Yds.
6'-6"	2.0
7'-0"	2.1
7'-6"	2.2
8'-0"	2.3
8'-6"	2.4
9'-0"	2.6
9'-6"	2.7
10'-0"	2.8

Volume of concrete based on 12" floor slab and 16" roof slab.



39" Manhole frame, Dwg. 034458



AIR SHAFT

APPROVED	CHG.	DATE	DESCRIPTION	BY	CHK.	APPRD.
MIR						
AVP						
AVP						

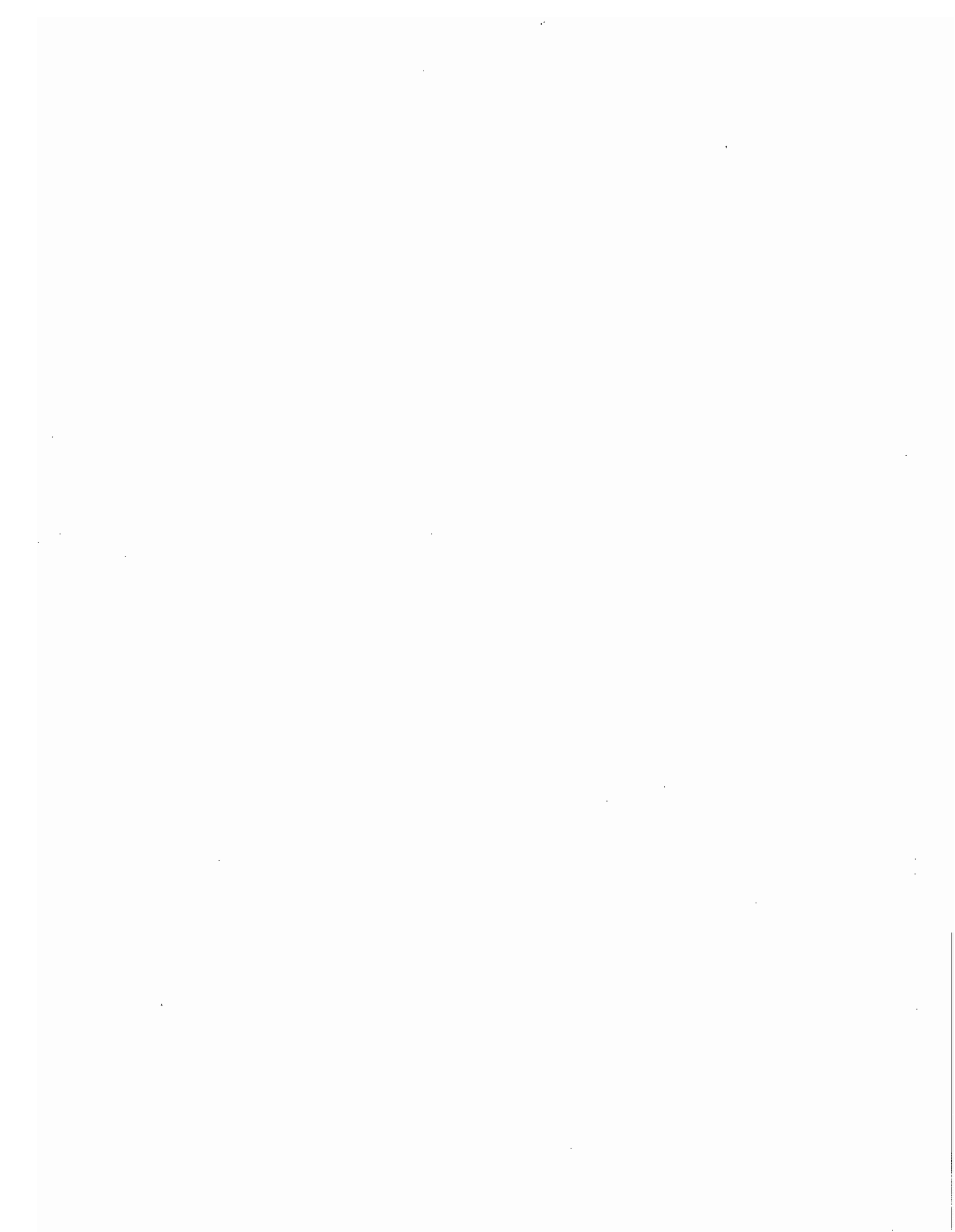


SUPRV. BY	FF.Y.
DSGN.	GCL.
DR.	DLH.
CH.	GCL.
O.K.	Jew
DATE	SCALE
1-10-63	

ENGINEERING STANDARD
DETAILS OF UNDERGROUND ELECTRIC VAULTS
 DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

SUPERSEDES	18529
SUPERSEDED BY	
SHEET NO.	23
23 SHEETS	
DRAWING NUMBER	041672
CHANGE	1

ENCLOSURES



Tutor Perini Corporation
530 Bush St, Suite 302
San Francisco, CA 94108
Tel: 415/638-6052

Tutor Perini
Over a century of excellence

SFMTA - 56

Thursday, February 13, 2014

SF Municipal Transportation Agency
821 Howard Street
2nd Floor
San Francisco, CA 94103
Attn: Richard Redmond

Reference: Third Street Light Rail Program Phase 2 – Central Subway Stations, Surface, Track and Systems, Contract No. 1300, TPC 10176000

Subject: Notice of Delay – Tangent / Secant Piles Concrete Mix Submittal

Dear Mr. Redmond,

Attached is our tangent / secant piles subcontractor's, Becho, Inc.'s, letter numbered 13-001-21 providing a notice of delay to their work at the Union Square / Market Street Station.

If you have any questions, please contact the undersigned at 415-638-6052.

Respectfully,
Tutor Perini Corporation



Patrick Jennings
Project Manager

cc: Kyle Park
File, 10-2.056

15901 Olden Street, Sylmar, CA 91342
Telephone: 818-362-8391
Facsimile: 818-367-4630



A Tutor Perini Company

February 11, 2014

TutorPerini Corporation

Attn: Mr. Pat Jennings / Mr. Brett Chabert

Re: Contract # 1253 – Union Square / Market Street Station

BI No.: 13-001-021

Excavation and Ground Support - Tangent / Secant / Drill Piles for the UMS

Response to SFMTA Answer to Becho Inc. RFI 08 (RFI UMS-0060)

Gentlemen,

We are in receipt of RFI, UMS-0060, dated January 16, 2014 (*submittal date to SFMTA*) and with a response date of February 7, 2014 (*it was issued to Becho Inc. (BI) on February 9, 2014*), in which the SFMTA has "constituted" that the Secant and Tangent Pile Wall at UMS are also Diaphragm Walls.

Despite the response provided by SFMTA, our position on this issue remains unchanged in that the Secant and Tangent Pile Wall is not a Diaphragm Wall, and as such, permeability tests for the concrete are still not applicable. Please review or note the following items, which we feel solidifies our position (*some of these points are reiterated within BI Correspondence No.: 13-001-017, dated February 4, 2014*);

- i) Per Section 31 66 16.46, titled "SLURRY DIAPHRAGM FOUNDATION WALLS", Part 1.01, Summary, it clearly states ". . . diaphragm wall construction as shown the Contract Drawings for Chinatown Station (CTS-1245R) and Yerba Buena/Mascone Station (YBM-1255)." It does not state or explicitly include Union Square/Market Street Station (UMS-1253).
- ii) Per Section 31 62 13.15, titled "CASED SECANT OR TANGENT PILE WALLS", Part 1.02, Related Work, specification 31 66 16.46 is not included within the list of specifications that are all inclusive to specification 31 62 13.15. Furthermore, throughout the entire 31 62 13.15 specification, nowhere is the word "diaphragm" wall referenced.
- iii) Per specification 31 62 13.15, specification 03 31 26, titled "SELF-COMPACTING CONCRETE", is referenced. Upon reviewing specification 03 31 26, ASTM C1202 is not listed as one of the tests required for SCC. As you are aware, ASTM C1202 is the standard for completing permeability testing on concrete mixes. Furthermore, throughout the entire 03 31 26 specification nowhere is the word "permeability test" or ASTM C1202 referenced.
- iv) Per Section 31 62 13.15 and 03 31 26, specification 03 05 15, titled "PORTLAND CEMENT CONCRETE", is listed but not provided within the Conformed Specifications. We have concluded that although it states 03 05 15, these specifications are trying to imply or reference section 03 05 15.53, "PORTLAND CEMENT CONCRETE (UMS)". And after interpreting specifications 31 62 13.15 and 03 31 26, nowhere within Specification 03 05 15.53, does it make reference to specification 03 31 26. In other words, it is our position that specification 03 31 26 is acting as a stand-alone for Self-Compacting Concrete.
- v) It is only within Specification 03 05 15.53, where permeability tests are required and it is clearly not defined to include the Secant and Tangent Pile Wall.
- vi) Within Contract UMS-1252, no Permeability Tests were requested or submitted for the North or South Headwalls, which are identical in construction, purpose and through visual observation, design of UMS-1253.
- vii) Please review the attached correspondence issued by CEMEX, which further substantiates or reaffirms our position in this matter.

Even though we continue to hold this position, we understand the potential project delays. As such, we are providing two of four (2 of 4) permeability test results for the trial batches completed on December 23, 2013. These two (2) permeability test results apply to BI Mix 3 (CEMEX Mix 1547464) and BI Mix 2 (CEMEX Mix 1554671). Please note that results, which are below the 1,500 Coulomb Limit, are obtained within 42 Days and not the 28 Days as referenced within specification 03 05 15.53. Please refer to BI RFI 012, dated February 5, 2014, in which we are requesting that the 28 day Maximum Permeability be revised to 42 (*for the two mixes mentioned above*) and 56 or 90, whichever duration is required to obtain the 1500 Coulomb limit for BI Mix 1 (CEMEX Mix 1535941) and BI Mix 4 (CEMEX Mix 1553720).

Finally, as stated within this correspondence and BI RFI 012, these Permeability Tests are obtained and provided as a "good faith" effort to limit potential schedule delays. If the results provided within the noted time frame are still not acceptable, BI, through CEMEX (*BI's concrete supplier*), will resubmit/propose alternative mix designs, to attempt to obtain the requested 1500 Coulomb limit within 28 Days. This correspondence is providing written notice of a potential project delay, due to the request of additional testing by SFMTA, which BI still considers to be a change within the project specifications. As such, BI will request for an extension of time, for the requested additional testing and any additional trial batches to meet this modification, as well as compensation for any additional costs incurred.

If you have any questions or comments regarding this matter, or you would like to discuss nay items, please do not hesitate to contact me.

Sincerely,



Edward Mendoza
Project Manager

Attachments:

- i) CEMEX Correspondence, titled "*Secant and Tangent Pile Mixes*", dated January 31, 2014
- ii) Forty-two (42) Day Permeability Test Results



TECHNICAL SERVICES LABORATORY
1544 Stanley Boulevard
Pleasanton, CA 94566
Telephone: (925) 866-2780 Fax: (925) 866-2983

January 31, 2014

Becho, Inc.
Attn: Ed Mendoza

Subject: Secant and Tangent Pile mixes

Ed,

For clarification here is a summary of the mixes that CEMEX is proposing for use at the Union Market Station

- Mix 1554671 – Self-Compacting Concrete mix that was used successfully for construction of secondary secant piles and tangent piles during previous phase of construction at Union Market Station.
- Mix 1553720 – Alternate mix that was used successfully for construction of primary secant piles during previous phase of construction at Union Market Station.
- Mix 1547464 – Self-Compacting Mix for tangent piles and secondary secant piles where placement underwater is required. This mix is proportioned the same as mix 1554671, but includes higher dose of Vmar to improve the anti washout characteristics of the mix if underwater placement becomes necessary.
- Mix 1535941 Complies with Caltrans requirements for CIDH piles placed under slurry (wet-hole method of construction). This mix is also submitted as an alternate for primary secant piles.

There are 2 concerns regarding the secant and tangent pile mixes at the UMS.

1. Requirements for Rapid Chloride Permeability testing.
2. Requirement for using Self-Compacting Concrete to construct primary secant piles.

1. Rapid Chloride Permeability Requirements

It is not clear in the project specifications that diaphragm wall requirements apply to secant and tangent piles. Specifications for Chinatown Station and Yerba Buena/Moscone Station include specification section 31 66 16.46 that clearly identifies diaphragm walls are to be constructed by using slurry wall methods. Specifications for UMS do not include specification section 31 66 16.46 for slurry diaphragm walls.

As you are aware we are experiencing some difficulty achieving required permeability at 28 days. The Self-Compacting Concrete mixes for tangent and secondary secant piles are very near to the required permeability. It is very likely the test specimens will be below the required 1500 coulombs value at 42 days age. Permeability testing for samples that are currently being tested has been scheduled for additional testing at later ages to evaluate the effect of additional curing.

ASTM C 1202 identifies that RCP can be affected by many variables including curing duration and the use of polymeric admixtures. These types of admixtures are used extensively in SCC and pile mixes in the form of Adva and VMar3. ASTM C 1202 also identifies that concrete will become progressively and significantly less permeable with time. This is especially true where mixes with high volumes of Supplementary Cementitious Material are being considered. Similar mixes that CEMEX has tested in the past have exhibited 50% to 200% reduction in rapid chloride permeability from 28 to 90 days. If rapid chloride permeability is determined to be required for secant and tangent piles CEMEX requests that the age limit of 28 days be extended.

2. Primary Secant Piles

Specification 31 62 13.15 requires secant and tangent piles to be constructed using Self-Compacting Concrete (SCC). There are potential constructability issues for primary secant piles using SCC; these mixes include very high powder requirements and very low w/c ratio to maintain the proper flow characteristics. This type of concrete mixture will exhibit very high strength at early ages. The high early strength inherent to SCC mixes will lead to drilling and alignment problems when used to construct primary secant piles.

Control of early concrete strength is critical to proper construction of the secant piles; mixes for this application must be slow to gain strength. Strength is best controlled by using high a volume of flyash to replace Portland cement, and by selecting water cement ratio to achieve the required strength. CEMEX is submitting alternate mixes for constructing primary secant piles. Proposed mixes for primary secant piles are proportioned to maintain lower early strengths. Alternate mix 1553720 was developed specifically for constructing primary secant piles for prior contract at Union Market Station.

If you have any questions please call me at the Technical Services Laboratory.

Respectfully,



Bob Foley
QC Manager
Bay Area Ready Mix Division

cc: Hernan Perez, Jeff King



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete
ASTM C1202

ID # 4688 ATTENTION: Bob Foley
Submittal # : 13106AD DATE SAMPLED: 12/23/2013
Plant # Pleasanton Lab DATE TESTED: 2/3/2014
Mix # 1554671 TESTED BY: CTC
Project: San Francisco Central Subway
Use:
Description: SCC 800 F25% HR HS VM $w/(c+f) = 0.33$

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	1244	Low	ASTM C1202

COMMENTS:



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete
ASTM C1202

ID # 4686 ATTENTION: Bob Foley
Submittal # : 13106AC DATE SAMPLED: 12/23/2013
Plant # Pleasanton Lab DATE TESTED: 2/3/2014
Mix # 1547464 TESTED BY: CTC
Project: San Francisco Central Subway
Use:
Description: TREMIE SCC HR HS VM $w/(c+f) = 0.33$

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	1451	Low	ASTM C1202

COMMENTS:

RFI Transmittal

Request for Information #: UMS-0071
SFMTA 3rd St Light Rail Prog

Response Required By: 2/14/2014

Initiated Date: 2/7/2014

Project # 01011.101760

530 Bush Street
Suite 302
San Francisco, CA 94108
Tel: 415-638-6052 Fax:

Printed on: 2/7/2014

Drawing Interpretation / Clarification

Discipline: Structural

Submitted To:	Submitted By:
SF Municipal Transportation Agency Richard Redmond 821 Howard Street 2nd Floor San Francisco, CA 94103	BECHO INC. Ed Mendoza 15901 Oldens St. Sylmar, CA 91342
Subject	
Tangent/Secant Pile Concrete Permeability	
Copies To:	
Drawing Reference	
Information Requested	
Can we be provided, forthwith if not sooner, with a response to Becho Inc.'s attached RFI No 12? Please advise.	
Suggestion	
Response	

Answered By: _____

Date Answered: _____

CENTRAL SUBWAY
Union Square / Market Street Station

Request For Information

RFI # BI-RFI-012

Contractor: BECHO, Inc. (BI)

Contractor RFI #.: BI-RFI-012

Bid Package: Submittal

Date: 2/4/2014

Phone #:

Locations: UMS - Stockton Street Secant & Tangent Piles

Specification Section: 03 05 15.53

Drawing(s) Reference:

Detail Reference:

We request the following information:

Please refer to BI RFI 08, dated 1/14/14, as well as BI No.: 13-001-017, dated February 4, 2014, for reference.

This RFI is being generated not as conceding that Permeability Tests are required (see BI No.: 13-001-017, 2/4/14) but rather as a "good faith" effort to limit potential schedule delays.

Per spec section 03 05 15.53, Section 2.03, B, "Normal Weight Concrete Mix Requirements" Schedule, or sheet 11 of 15 within the specification, said schedule requires that permeability for Diaphragm Walls be limited to 1,500 Coulombs at 28 Days.

In lieu of 28 Days, could this requirement be revised to 42, 56 or 90 Days? The actual days will be dependent on the permeability results for the mix designs provided, either at 42, 56 or 90 days, whichever yields the required 1,500 Coulom Limit (or favorable results).

Suggested Solution:

Date Reply Required: _____

Submitted By: Edward Mendoza

signature

CENTRAL SUBWAY
Union Square / Market Street Station

Request For Information

RFI # BI-RFI-008 (Page 1 of 1)

Contractor: **BECHO, Inc. (BI)**

Contractor RFI #: **BI-RFI-008**

Bid Package: **Submittal**

Date: **1/14/2014**

Phone #:

Locations: UMS - Stockton Street Secant & Tangent Piles

Specification Section: 03 05 15.53

Drawing(s) Reference: _____

Detail Reference: _____

We request the following information:

Per spec section 03 05 15.53, Article 1.06B(15), provide permeability trial batch test sample data, when required herein. In accordance with ASTM 1202C diaphragm walls shall have a 1500 coulomb limit as stated in the table presented on page 11 of Section 03 05 15.

Please confirm that permeability tests are not required for Becho's submitted concrete mixes for Cased Secant and Tangent Pile Walls as they are not diaphragm walls. Per spec section 31 66 16.46 1.04B Slurry walls are reinforced concrete diaphragm wall panel constructed by the slurry panel method.

Furthermore, permeability tests were not required for Cased Secant and Tangent Pile Walls under the 1252 Contract utilizing a similar specification and mix design.

Suggested Solution:

Date Reply Required: _____

Submitted By: Dan Alford

signature

15901 Olden Street, Sylmar, CA 91342
Telephone: 818-362-8391
Facsimile: 818-367-4630



A Tutor Perini Company

Tutor Perini
CORPORATION

CENTRAL SUBWAY PROJECT

February 5, 2014

RECEIVED

February 4, 2014

TutorPerini Corporation

Attn: Mr. Pat Jennings / Mr. Brett Chabert
Re: Contract # 1253 – Union Square / Market Street Station
Excavation and Ground Support - Tangent / Secant / Drill Piles for the UMS
Response to SFMTA comments to Becho Inc. Concrete Submittal, dated 12/6/2013,
“Submittal Review Comments”

BI No.: 13-001-017

Gentlemen,

This correspondence is generated in response to the SFMTA’s “Submittal Review Comments”, dated December 6, 2013 and issued to Becho Inc. December 11, 2013, specifically, comment Items 2 for each of the submitted concrete mixes (*BI Mix No.: 01, 02 and 03, or CEMEX’s Mix No.: 1535941, 1554671 and 1547464, respectively*).

Subsequent to the issued comments from SFMTA, which state “*Per Section 03 05 15, Article 1.06B(15), provide permeability trial batch test sample data. In accordance with ASTM 1202C diaphragm walls shall have a 1500 coulomb limit as stated in the table presented on page 11 of Section 03 05 15*”, Becho Inc. (BI) submitted BI-RFI-008, on January 14, 2014 (*TPC submitted this as RFI UMS-0060 on January 16, 2014*). This RFI requests confirmation that Permeability Tests are not required for the Cased Secant or Tangent Pile Walls.

As of today, we have yet to receive a response to this RFI. Per Specification Section 01 31 13.20, Item 1.06, sub-item C, sub-sub-item 8, the SFMTA must respond within ten (10) Working Days, unless it is deemed by SFMTA that additional time is required, at which time it will notify the Contractor within five (5) days of receipt that additional time is required. In either case, BI has not received any response or notification.

Be advised, as initially noted within the aforementioned RFI, and as this correspondence further resounds, it is our position that the requested Permeability Tests are non-applicable to the Cased Secant or Tangent Pile Walls, for the following reasons;


- i) Per Section 03 05 15.53, table “*Normal Weight Concrete Mix Requirements*”, it states that Concrete Class F – **Diaphragm Walls**, requires a 28 day Maximum Allowed Permeability of 1500 Coulombs.
BI Position – The Cased Secant or Tangent Pile Walls are not a Diaphragm Wall. We make this distinction because of Specification Section 31 62 16.46, where **diaphragm wall** is noted and defined, are only located at Chinatown Station and Yerba Buena/Mascone Station.
- ii) Per Section 31 62 13.15, the Secant or Tangent Piles Walls are not defined as a Diaphragm Wall but an individual cased Pile Wall.
- iii) Please review the attached correspondence issued by CEMEX, which further substantiates or reaffirms our position on this matter.

This correspondence is providing written notice of a potential project delay, due to the request of additional testing by SFMTA, which BI considers to be a change within the project specifications. As such, BI will request for an extension of time, for the requested additional testing and any additional trial batches to meet this modification, as well as compensation for any additional costs incurred.

Finally, for your records, we are including the permeability test results for the trial batches completed on December 23, 2013. You will note that although we are following all requirements stipulated within the project specifications of 03 31 26 and 03 05 15.53, related to mixing proportions, water-cement-ratios, etc., the 28 Day Permeability Test results are not near to what the SFMTA required/noted within the “Submittal Review Comments.” As such, we will be requesting (*through an RFI*), that the 28 day Maximum Permeability be revised to 42, 56 and 90, whichever duration is required to obtain the 1500 Coulomb limit. Furthermore, if the results within this time frame are still not achieved, BI, through CEMEX (*BI’s concrete supplier*), will resubmit/propose alternative mix designs, to attempt to obtain the requested 1500 Coulomb limit.

If you have any questions or comments regarding this matter, or you would like to discuss nay items, please do not hesitate to contact me.

Sincerely,



Edward Mendoza
Project Manager

Attachments:

- i) CEMEX Correspondence, titled “*Secant and Tangent Pile Mixes*”, dated January 31, 2014
- ii) Twenty-eight (28) Day Permeability Test Results



TECHNICAL SERVICES LABORATORY

1544 Stanley Boulevard
Pleasanton, CA 94566

Telephone: (925) 866-2780 Fax: (925) 866-2983

January 31, 2014

Becho, Inc.
Attn: Ed Mendoza

Subject: Secant and Tangent Pile mixes

Ed,

For clarification here is a summary of the mixes that CEMEX is proposing for use at the Union Market Station

- Mix 1554671 – Self-Compacting Concrete mix that was used successfully for construction of secondary secant piles and tangent piles during previous phase of construction at Union Market Station.
- Mix 1553720 – Alternate mix that was used successfully for construction of primary secant piles during previous phase of construction at Union Market Station.
- Mix 1547464 – Self-Compacting Mix for tangent piles and secondary secant piles where placement underwater is required. This mix is proportioned the same as mix 1554671, but includes higher dose of Vmar to improve the anti washout characteristics of the mix if underwater placement becomes necessary.
- Mix 1535941 Complies with Caltrans requirements for CIDH piles placed under slurry (wet-hole method of construction). This mix is also submitted as an alternate for primary secant piles.

There are 2 concerns regarding the secant and tangent pile mixes at the UMS.

1. Requirements for Rapid Chloride Permeability testing.
2. Requirement for using Self-Compacting Concrete to construct primary secant piles.

1. Rapid Chloride Permeability Requirements

It is not clear in the project specifications that diaphragm wall requirements apply to secant and tangent piles. Specifications for Chinatown Station and Yerba Buena/Moscone Station include specification section 31 66 16.46 that clearly identifies diaphragm walls are to be constructed by using slurry wall methods. Specifications for UMS do not include specification section 31 66 16.46 for slurry diaphragm walls.

As you are aware we are experiencing some difficulty achieving required permeability at 28 days. The Self-Compacting Concrete mixes for tangent and secondary secant piles are very near to the required permeability. It is very likely the test specimens will be below the required 1500 coulombs value at 42 days age. Permeability testing for samples that are currently being tested has been scheduled for additional testing at later ages to evaluate the effect of additional curing.

ASTM C 1202 identifies that RCP can be affected by many variables including curing duration and the use of polymeric admixtures. These types of admixtures are used extensively in SCC and pile mixes in the form of Adva and VMar3. ASTM C 1202 also identifies that concrete will become progressively and significantly less permeable with time. This is especially true where mixes with high volumes of Supplementary Cementitious Material are being considered. Similar mixes that CEMEX has tested in the past have exhibited 50% to 200% reduction in rapid chloride permeability from 28 to 90 days. If rapid chloride permeability is determined to be required for secant and tangent piles CEMEX requests that the age limit of 28 days be extended.

2. Primary Secant Piles

Specification 31 62 13.15 requires secant and tangent piles to be constructed using Self-Compacting Concrete (SCC). There are potential constructability issues for primary secant piles using SCC; these mixes include very high powder requirements and very low w/c ratio to maintain the proper flow characteristics. This type of concrete mixture will exhibit very high strength at early ages. The high early strength inherent to SCC mixes will lead to drilling and alignment problems when used to construct primary secant piles.

Control of early concrete strength is critical to proper construction of the secant piles; mixes for this application must be slow to gain strength. Strength is best controlled by using high a volume of flyash to replace Portland cement, and by selecting water cement ratio to achieve the required strength. CEMEX is submitting alternate mixes for constructing primary secant piles. Proposed mixes for primary secant piles are proportioned to maintain lower early strengths. Alternate mix 1553720 was developed specifically for constructing primary secant piles for prior contract at Union Market Station.

If you have any questions please call me at the Technical Services Laboratory.

Respectfully,



Bob Foley
QC Manager
Bay Area Ready Mix Division

cc: Hernan Perez, Jeff King



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID #	4685	ATTENTION:	Bob Forley
Submittal # :	13106AA	DATE SAMPLED:	12/23/2013
Plant #	Pleasanton Lab	DATE TESTED:	1/20/2014
Mix #	1535941	TESTED BY:	CTC
Project:	San Francisco Central Subway		
Use:			
Description:	3CRC 675 C+ F25% HR RT	w/(c+f) = 0.45	

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	3126	Moderate	ASTM C1202

COMMENTS:



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID #	4688	ATTENTION:	Bob Forley
LP # :	13106AD	DATE SAMPLED:	12/23/2013
Plant #	Pleasanton Lab	DATE TESTED:	1/20/2014
Mix #	1554671	TESTED BY:	CTC
Project:	San Francisco Central Subway		
Use:			
Description:	SCC 800 F25% HR HS VM	w/(c+f) = 0.33	

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	1582	Low	ASTM C1202

COMMENTS:



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID #	4686	ATTENTION:	Bob Forley
Submittal # :	13106AC	DATE SAMPLED:	12/23/2013
Plant #	Pleasanton Lab	DATE TESTED:	1/20/2014
Mix #	1547464	TESTED BY:	CTC
Project:	San Francisco Central Subway		
Use:			
Description:	TREMIE SCC HR HS VM	w/(c+f) = 0.33	

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	1765	Low	ASTM C1202

COMMENTS:



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID #	4693	ATTENTION:	Bob Forley
LP # :	13106AB2	DATE SAMPLED:	12/30/2013
Plant #	Pleasanton Lab	DATE TESTED:	1/27/2014
Mix #	1553720	TESTED BY:	CTC
Project:	San Francisco Central Subway		
Use:			
Description:	3CRC C+ F 50% HR HS VM	w/(c+f) = 0.43	

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	2735	Moderate	ASTM C1202

COMMENTS:

RFI Transmittal

Request for Information #: UMS-0071
SFMTA 3rd St Light Rail Prog

Response Required By: 2/14/2014

Initiated Date: 2/7/2014

Project # 01011.101760

530 Bush Street
Suite 302
San Francisco, CA 94108
Tel: 415-638-6052 Fax:

Printed on: 2/7/2014

Drawing Interpretation / Clarification

Discipline: Structural

Submitted To:	Submitted By:
SF Municipal Transportation Agency Richard Redmond 821 Howard Street 2nd Floor San Francisco, CA 94103	BECHO INC. Ed Mendoza 15901 Oldens St. Sylmar, CA 91342
Subject	
Tangent/Secant Pile Concrete Permeability	
Copies To:	
Drawing Reference	
Information Requested	
Can we be provided, forthwith if not sooner, with a response to Becho Inc.'s attached RFI No 12? Please advise.	
Suggestion	
Response	

Answered By: _____

Date Answered: _____

CENTRAL SUBWAY
Union Square / Market Street Station

Request For Information

RFI # BI-RFI-012

Contractor: BECHO, Inc. (BI)

Contractor RFI #: BI-RFI-012

Bid Package: Submittal

Date: 2/4/2014

Phone #:

Locations: UMS - Stockton Street Secant & Tangent Piles

Specification Section: 03 05 15.53

Drawing(s) Reference:

Detail Reference:

We request the following information:

Please refer to BI RFI 08, dated 1/14/14, as well as BI No.: 13-001-017, dated February 4, 2014, for reference.

This RFI is being generated not as conceding that Permeability Tests are required (see BI No.: 13-001-017, 2/4/14) but rather as a "good faith" effort to limit potential schedule delays.

Per spec section 03 05 15.53, Section 2.03, B, "Normal Weight Concrete Mix Requirements" Schedule, or sheet 11 of 15 within the specification, said schedule requires that permeability for Diaphragm Walls be limited to 1,500 Coulombs at 28 Days.

In lieu of 28 Days, could this requirement be revised to 42, 56 or 90 Days? The actual days will be dependent on the permeability results for the mix designs provided, either at 42, 56 or 90 days, whichever yields the required 1,500 Coulom Limit (or favorable results).

Suggested Solution:

Date Reply Required: _____

Submitted By: Edward Mendoza

signature

CENTRAL SUBWAY
Union Square / Market Street Station

Request For Information

RFI # BI-RFI-008 (Page 1 of 1)

Contractor: **BECHO, Inc. (BI)**

Contractor RFI #.: **BI-RFI-008**

Bid Package: **Submittal**

Date: **1/14/2014**

Phone #:

Locations: UMS - Stockton Street Secant & Tangent Piles

Specification Section: 03 05 15.53

Drawing(s) Reference: _____

Detail Reference: _____

We request the following information:

Per spec section 03 05 15.53, Article 1.06B(15), provide permeability trial batch test sample data, when required herein. In accordance with ASTM 1202C diaphragm walls shall have a 1500 coulomb limit as stated in the table presented on page 11 of Section 03 05 15.

Please confirm that permeability tests are not required for Becho's submitted concrete mixes for Cased Secant and Tangent Pile Walls as they are not diaphragm walls. Per spec section 31 66 16.46 1.04B Slurry walls are reinforced concrete diaphragm wall panel constructed by the slurry panel method.

Furthermore, permeability tests were not required for Cased Secant and Tangent Pile Walls under the 1252 Contract utilizing a similar specification and mix design.

Suggested Solution:

Date Reply Required: _____

Submitted By: Dan Alford

signature

15901 Olden Street, Sylmar, CA 91342
Telephone: 818-362-8391
Facsimile: 818-367-4630



A Tutor Perini Company

Tutor Perini
CORPORATION

CENTRAL SUBWAY PROJECT

February 5, 2014

RECEIVED

February 4, 2014

TutorPerini Corporation

Attn: Mr. Pat Jennings / Mr. Brett Chabert
Re: Contract # 1253 – Union Square / Market Street Station
Excavation and Ground Support - Tangent / Secant / Drill Piles for the UMS
Response to SFMTA comments to Becho Inc. Concrete Submittal, dated 12/6/2013,
“Submittal Review Comments”

BI No.: 13-001-017

Gentlemen,

This correspondence is generated in response to the SFMTA’s “Submittal Review Comments”, dated December 6, 2013 and issued to Becho Inc. December 11, 2013, specifically, comment Items 2 for each of the submitted concrete mixes (*BI Mix No.: 01, 02 and 03, or CEMEX’s Mix No.: 1535941, 1554671 and 1547464, respectively*).

Subsequent to the issued comments from SFMTA, which state “*Per Section 03 05 15, Article 1.06B(15), provide permeability trial batch test sample data. In accordance with ASTM 1202C diaphragm walls shall have a 1500 coulomb limit as stated in the table presented on page 11 of Section 03 05 15*”, Becho Inc. (BI) submitted BI-RFI-008, on January 14, 2014 (*TPC submitted this as RFI UMS-0060 on January 16, 2014*). This RFI requests confirmation that Permeability Tests are not required for the Cased Secant or Tangent Pile Walls.

As of today, we have yet to receive a response to this RFI. Per Specification Section 01 31 13.20, Item 1.06, sub-item C, sub-sub-item 8, the SFMTA must respond within ten (10) Working Days, unless it is deemed by SFMTA that additional time is required, at which time it will notify the Contractor within five (5) days of receipt that additional time is required. In either case, BI has not received any response or notification.

Be advised, as initially noted within the aforementioned RFI, and as this correspondence further resounds, it is our position that the requested Permeability Tests are non-applicable to the Cased Secant or Tangent Pile Walls, for the following reasons;


- i) Per Section 03 05 15.53, table “*Normal Weight Concrete Mix Requirements*”, it states that Concrete Class F – **Diaphragm Walls**, requires a 28 day Maximum Allowed Permeability of 1500 Coulombs.
BI Position – The Cased Secant or Tangent Pile Walls are not a Diaphragm Wall. We make this distinction because of Specification Section 31 62 16.46, where **diaphragm wall** is noted and defined, are only located at Chinatown Station and Yerba Buena/Mascone Station.
- ii) Per Section 31 62 13.15, the Secant or Tangent Piles Walls are not defined as a Diaphragm Wall but an individual cased Pile Wall.
- iii) Please review the attached correspondence issued by CEMEX, which further substantiates or reaffirms our position on this matter.

This correspondence is providing written notice of a potential project delay, due to the request of additional testing by SFMTA, which BI considers to be a change within the project specifications. As such, BI will request for an extension of time, for the requested additional testing and any additional trial batches to meet this modification, as well as compensation for any additional costs incurred.

Finally, for your records, we are including the permeability test results for the trial batches completed on December 23, 2013. You will note that although we are following all requirements stipulated within the project specifications of 03 31 26 and 03 05 15.53, related to mixing proportions, water-cement-ratios, etc., the 28 Day Permeability Test results are not near to what the SFMTA required/noted within the "Submittal Review Comments." As such, we will be requesting (*through an RFI*), that the 28 day Maximum Permeability be revised to 42, 56 and 90, whichever duration is required to obtain the 1500 Coulomb limit. Furthermore, if the results within this time frame are still not achieved, BI, through CEMEX (*BI's concrete supplier*), will resubmit/propose alternative mix designs, to attempt to obtain the requested 1500 Coulomb limit.

If you have any questions or comments regarding this matter, or you would like to discuss nay items, please do not hesitate to contact me.

Sincerely,



Edward Mendoza
Project Manager

Attachments:

- i) CEMEX Correspondence, titled "*Secant and Tangent Pile Mixes*", dated January 31, 2014
- ii) Twenty-eight (28) Day Permeability Test Results



TECHNICAL SERVICES LABORATORY

1544 Stanley Boulevard
Pleasanton, CA 94566

Telephone: (925) 866-2780 Fax: (925) 866-2983

January 31, 2014

Becho, Inc.
Attn: Ed Mendoza

Subject: Secant and Tangent Pile mixes

Ed,

For clarification here is a summary of the mixes that CEMEX is proposing for use at the Union Market Station

- Mix 1554671 – Self-Compacting Concrete mix that was used successfully for construction of secondary secant piles and tangent piles during previous phase of construction at Union Market Station.
- Mix 1553720 – Alternate mix that was used successfully for construction of primary secant piles during previous phase of construction at Union Market Station.
- Mix 1547464 – Self-Compacting Mix for tangent piles and secondary secant piles where placement underwater is required. This mix is proportioned the same as mix 1554671, but includes higher dose of Vmar to improve the anti washout characteristics of the mix if underwater placement becomes necessary.
- Mix 1535941 Complies with Caltrans requirements for CIDH piles placed under slurry (wet-hole method of construction). This mix is also submitted as an alternate for primary secant piles.

There are 2 concerns regarding the secant and tangent pile mixes at the UMS.

1. Requirements for Rapid Chloride Permeability testing.
2. Requirement for using Self-Compacting Concrete to construct primary secant piles.

1. Rapid Chloride Permeability Requirements

It is not clear in the project specifications that diaphragm wall requirements apply to secant and tangent piles. Specifications for Chinatown Station and Yerba Buena/Moscone Station include specification section 31 66 16.46 that clearly identifies diaphragm walls are to be constructed by using slurry wall methods. Specifications for UMS do not include specification section 31 66 16.46 for slurry diaphragm walls.

As you are aware we are experiencing some difficulty achieving required permeability at 28 days. The Self-Compacting Concrete mixes for tangent and secondary secant piles are very near to the required permeability. It is very likely the test specimens will be below the required 1500 coulombs value at 42 days age. Permeability testing for samples that are currently being tested has been scheduled for additional testing at later ages to evaluate the effect of additional curing.

ASTM C 1202 identifies that RCP can be affected by many variables including curing duration and the use of polymeric admixtures. These types of admixtures are used extensively in SCC and pile mixes in the form of Adva and VMar3. ASTM C 1202 also identifies that concrete will become progressively and significantly less permeable with time. This is especially true where mixes with high volumes of Supplementary Cementitious Material are being considered. Similar mixes that CEMEX has tested in the past have exhibited 50% to 200% reduction in rapid chloride permeability from 28 to 90 days. If rapid chloride permeability is determined to be required for secant and tangent piles CEMEX requests that the age limit of 28 days be extended.

2. Primary Secant Piles

Specification 31 62 13.15 requires secant and tangent piles to be constructed using Self-Compacting Concrete (SCC). There are potential constructability issues for primary secant piles using SCC; these mixes include very high powder requirements and very low w/c ratio to maintain the proper flow characteristics. This type of concrete mixture will exhibit very high strength at early ages. The high early strength inherent to SCC mixes will lead to drilling and alignment problems when used to construct primary secant piles.

Control of early concrete strength is critical to proper construction of the secant piles; mixes for this application must be slow to gain strength. Strength is best controlled by using high a volume of flyash to replace Portland cement, and by selecting water cement ratio to achieve the required strength. CEMEX is submitting alternate mixes for constructing primary secant piles. Proposed mixes for primary secant piles are proportioned to maintain lower early strengths. Alternate mix 1553720 was developed specifically for constructing primary secant piles for prior contract at Union Market Station.

If you have any questions please call me at the Technical Services Laboratory.

Respectfully,



Bob Foley
QC Manager
Bay Area Ready Mix Division

cc: Hernan Perez, Jeff King



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID #	4685	ATTENTION:	Bob Forley
Submittal # :	13106AA	DATE SAMPLED:	12/23/2013
Plant #	Pleasanton Lab	DATE TESTED:	1/20/2014
Mix #	1535941	TESTED BY:	CTC
Project:	San Francisco Central Subway		
Use:			
Description:	3CRC 675 C+ F25% HR RT	w/(c+f) = 0.45	

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	3126	Moderate	ASTM C1202

COMMENTS:



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID #	4688	ATTENTION:	Bob Forley
LP # :	13106AD	DATE SAMPLED:	12/23/2013
Plant #	Pleasanton Lab	DATE TESTED:	1/20/2014
Mix #	1554671	TESTED BY:	CTC
Project:	San Francisco Central Subway		
Use:			
Description:	SCC 800 F25% HR HS VM	w/(c+f) = 0.33	

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	1582	Low	ASTM C1202

COMMENTS:



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID # 4686 ATTENTION: Bob Forley
Submittal # : 13106AC DATE SAMPLED: 12/23/2013
Plant # Pleasanton Lab DATE TESTED: 1/20/2014
Mix # 1547464 TESTED BY: CTC
Project: San Francisco Central Subway
Use:
Description: TREMIE SCC HR HS VM $w/(c+f) = 0.33$

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	1765	Low	ASTM C1202

COMMENTS:



Cemex USA
Tampa Technical Center
6725 78th Street
Riverview, Florida 33578
Ph: (813) 671-2266 Fax: (813) 677-7597

Chloride Ion Permeability of Concrete -
ASTM C1202

ID #	4693	ATTENTION:	Bob Forley
LP # :	13106AB2	DATE SAMPLED:	12/30/2013
Plant #	Pleasanton Lab	DATE TESTED:	1/27/2014
Mix #	1553720	TESTED BY:	CTC
Project:	San Francisco Central Subway		
Use:			
Description:	3CRC C+ F 50% HR HS VM	w/(c+f) = 0.43	

Parameter	Value (Coulombs)	Chloride Permeability	Tested in accordance with
Average	2735	Moderate	ASTM C1202

COMMENTS:

Tutor Perini Corp

530 Bush Street, Suite 302

San Francisco, CA 94108

REQUEST FOR INFORMATION

No. 00325

Phone: 415-638-6052

TITLE: UMS-0071 Tang/Sec Conc Permeability
PROJECT: Stations, Surface, Track & Systems
TO: Attn: Richard Redmond
Central Subway Project

DATE: 2/7/2014
REQUIRED: 2/21/2014
RESPONDED: 2/18/2014
CLOSED: 2/18/2014

Requested By: Tutor Perini Corp

Date: _____

WORK IMPACT:	SCHEDULE IMPACT:	COST IMPACT:	WORK PACKAGE:
	No	No	UMS

REQUEST / QUESTION:

Can we be provided, forthwith if not sooner, with a response to Becho Inc.'s attached RFI No 12? Please advise.

Please refer to BI RFI 08, dated 1/14/14, as well as BI No.: 13-001-017, dated February 4, 2014, for reference. This RFI is being generated not as conceding that Permeability Tests are required (see BI No.: 13-001-017, 2/4/14) but rather as a "good faith" effort to limit potential schedule delays.

Per spec section 03 05 15.53, Section 2.03, B, "Normal Weight Concrete Mix Requirements" Schedule, or sheet 11 of 15 within the specification, said schedule requires that permeability for Diaphragm Walls be limited to 1,500 Coulombs at 28 Days.

In lieu of 28 Days, could this requirement be revised to 42, 56 or 90 Days? The actual days will be dependent on the permeability results for the mix designs provided, either at 42, 56 or 90 days, whichever yields the required 1,500 Coulom Limit (or favorable results).

PROPOSED SOLUTION:

ANSWER:

It is acceptable to revise the performance criteria for permeability to be achieved at 42, 56 or 90 days, instead of 28 days.

CENTRAL SUBWAY PROJECT
Project Trend/Change Control Log

Trend Log

Total Cost Estimate and Allocated Contingencies								
Item #	Date Initiated	Change Description	Change Type	CMB No.	Change Status		Projected Cost Impact +Exposure/(Benefit)	Comments
					Approval Action	Approval Date	Actual/Forecast	
Contract 1250 - Utilities Relocation #1 (Portal & MOS)								
1250-0001	04/15/10	081-0001	Delete Option MF-OPT1 "Fire Protection Sprinkler System"	1	N/A		(50,000)	Cleared City Attorney's Office; to Shahnam for execution. [In "Current Forecast" - Sep2010 Cost Report.] COMPLETE, NO FURTHER ACTION; CMOD #1
1250-0002	05/07/10	081-0002	Changes to Sewer on 4th between Howard and Folsom	2	CMB-0001	Agree	07/12/10	+107,174 Differing conditions as AWSS is directly over existing sewer; unable to install sewer manhole per plan. [In "Current Forecast" - Sep2010 Cost Report.] No reimbursement from SFPUC Sewer. COR #2-\$34,135; COR #5-\$73,039 COMPLETE, NO FURTHER ACTION; CMOD #2
1250-0003	05/28/10	081-0003	Quantity Adjustment for JT-6 and JT-7	4	CMB-0002	Agree	08/04/10	+192,420 In April 2010 pay app, JT-6 bid qty exceeded by 344% (230 vs. 1021) and JT-7 bid qty exceeded by 112% (500 vs. 1060) [In "Current Forecast" - Sep2010 Cost Report.] COMPLETE, NO FURTHER ACTION; CMOD #3
1250-0004	07/02/10	081-0004	Demolition of existing brick and concrete footing on 4th between Howard and Folsom	2	CMB-0003	Agree	07/12/10	Unforeseen bricks and concrete footing discovered on east side of 4th Street between Folsom and Howard. [In "Current Forecast" - Sep2010 Cost Report.] COR #3-RFI #76 COMPLETE, NO FURTHER ACTION; CMOD #4
1250-0005	04/20/10	081-0005	Modify AWSS at 4th/Bryant and 4th/Harrison	3	CMB-0004	Agree	08/04/10	+586,000 At 4th/Bryant, AWSS conflict with new 48" sewer and AT&T duct bank. At 4th/Harrison, AWSS conflict with 18" sewer. [In "Current Forecast" - Sep2010 Cost Report.] No reimbursement from SFPUC AWSS. PCC #2: RFI #s 34, 49 & 51 COMPLETE, NO FURTHER ACTION; CMOD #5
1250-0006	04/29/10	081-0006	Install four additional piles and reinforce existing foundation at 401 4th Street	2	CMB-0005	Agree	08/25/10	+130,000 Existing foundation was discovered to be part brick and part concrete, which is different from plan. Also, foundation was unstable and required additional reinforcement. Refer to RFIs #85R1, 88.1, 100, 101, 102 COMPLETE, NO FURTHER ACTION; CMOD #6
1250-0007	10/06/10	081-0007	Additional work to install 48" sewer due to various utility conflicts at 4th/Bryant	2	N/A		+32,964 48" RCP sewer in conflict with existing AT&T duct bank that needs to remain in service until new joint trench is installed to enable switchover. This conflict forced contractor into a more expensive means to install sewer. Also, 48" RCP sewer in conflict with existing 30" force main and 24" steel pipes. No reimbursement from SFPUC Sewer. COMPLETE, NO FURTHER ACTION; CMOD #9	
1250-0008	10/06/10	081-0008	Relocate TPC vault on 4th Street between Howard and Folsom	6	N/A		+19,500 Contractor uncovered existing TPC conduits on top of AT&T duct bank on 4th near Howard, a differing site condition. An AT&T intercept vault is to be installed, however, TPC conduits can not reside inside AT&T intercept vault. Joint Trench utilities participation cost TBD. Executed on 10/14/2010. Refer to RFI #62 (\$19,500) Expected Reimbursement from TPC. RE has provided documentation of notification to TPC, July-August '10. See final 1250 Form B actual costs COMPLETE, NO FURTHER ACTION; CMOD #8	
1250-0009	10/06/10	081-0009	Install additional sewer and provide temporary connections at 4th/Stillman	3	N/A		+47,000 Location of existing sewer to be intercepted differs from where it's shown in the plan, hence additional sewer to be installed. Also, due to optional sewer MH not buildable until (E) AT&T DB is removed, additional sewer is necessary to tie into (E) main as interim. New sewer is supposed to tie into optional MH. No reimbursement from SFPUC Sewer. RFI #91 COMPLETE, NO FURTHER ACTION; CMOD #7	

- 1 - Owner Directed Change in Scope
- 2 - Unforeseen Conditions
- 3 - Errors and Omissions
- 4 - Quantity Variation
- 5 - Value Engineering
- 6 - Private Utilities
- 7 - Other

CENTRAL SUBWAY PROJECT
Project Trend/Change Control Log

Item #	Date Initiated	Change Description	Change Type	CMB No.	Change Status		Projected Cost Impact +Exposure/(Benefit)	Comments
					Approval Action	Approval Date		
1250-0010	10/06/10	081-0010	Perform AT&T wye cast connection and chipping of existing duct bank at various locations	6	N/A			+48,181 AT&T was supposed to tie-in its own facility. However, AT&T's contractor, who is hired to install vaults, stated it is not in their scope of work. Refer to RFI #82.1. AT&T intercept vault at 4th/Harrison can not be installed at design location due to utility conflicts. AT&T vault to be shifted a few feet instead of vault being on top of existing duct bank. This will cause additional excavation, joint trench and modification to existing duct bank. Joint Trench utilities participation cost TBD. SFMTA and AT&T are negotiating with Contractor. (\$48,181) Expected Reimbursement from AT&T. RE has provided documentation of notification to AT&T, Sept-Oct '10. See final 1250 Form B actual costs. COMPLETE, NO FURTHER ACTION; CMOD #10
1250-0011	10/06/10	081-0011	Remove existing piles and shoring at 801 Howard	2				-0. This change order has been incorporated in CMOD #16 (Trend #30) COMPLETE, NO FURTHER ACTION; CMOD #16
1250-0012	10/06/10	081-0012	Additional work related to AT&T facilities due to unforeseen conditions.	6	CMB-0047	Agree	08/03/11	-0. This is the total of all force account work related to AT&T facility. SFMTA to seek reimbursement from AT&T through the Form B process. (\$67,798) Expected Reimbursement from AT&T. Cost captured in Trend #15 COMPLETE, NO FURTHER ACTION; CMOD #20
1250-0013	10/06/10	081-0013	Additional work related to PG&E facilities due to unforeseen conditions.	6	CMB-0047	Agree	08/03/11	-0. This is the total of all force account work related to PG&E facility. SFMTA to seek reimbursement from PG&E through the Form B process. (\$30,547) Expected Reimbursement from AT&T. Cost captured in Trend #15 COMPLETE, NO FURTHER ACTION; CMOD #20
1250-0014	10/06/10	081-0014	Remove brick wall at sewer sta 152+94 (west side) on 4th between Howard and Folsom.	2				-0. This change order has been incorporated in CMOD #16 (Trend #30) COMPLETE, NO FURTHER ACTION; CMOD #16
1250-0015	10/06/10	081-0015	Archaeological Findings - Charges for rental of steel plates, triton barriers, shoring and labor for maintenance.	2				+784,771 Midden deposits were discovered on 4th Street between Howard and Folsom. Contractor stopped work. Contractor requesting payment for rental charges of trench plates, barricades, and shoring, and cost of maintenance. Total cost exposure is projected through end of November 2010. The \$290,703.00 is expected to be the final estimate for the rental of trench plates, barriers and shoring. \$597,000 Arch, \$179, 000 DIFF, \$8,500 Traffic COMPLETE, NO FURTHER ACTION; CMOD #20
1250-0016	10/06/10	081-0016	Additional AWSS modification at 4th/Harrison	1	CMB-0016	Agree	11/10/10	+156,418 New alignment is proposed by Design team. No reimbursement from SFPUC AWSS. COR #33 Supplemental COMPLETE, NO FURTHER ACTION; CMOD #12
1250-0017	10/06/10	081-0017	Protection Work at PG&E Vault 1611	6				-0. Expected Reimbursement from PG&E or work to be deferred \$6,400. RE has notified PG&E via email dated 10/29/10 that SFMTA expects full reimbursement for this work if implemented. Follow-up pending. <u>Work was not performed and will need to be addressed in a future contract.</u>
1250-0018	10/06/10	081-0018	Demolition and Support Work at PG&E Vault 1611	6				-0. Expected Reimbursement from PG&E or work to be deferred \$25,000. RE has notified PG&E via email dated 10/29/10 that SFMTA expects full reimbursement for this work if implemented. Follow-up pending. <u>Work was not performed and will need to be addressed in a future contract.</u>
1250-0019	10/06/10	081-0019	Extended overhead delay claim due to Archaeological discoveries	2				Old Note: Potential delay claim if issue extends project duration. Amount is estimated at \$3,000.00 per day for 60 days (\$180K). New Note: By exercising all option work, additional 84 calendar days is added to the contract time. In addition, midden mitigation will start on 10/7/10. As a result, the potential for extended overhead cost is averted. This trend has been superseded by Trend #37. COMPLETE, NO FURTHER ACTION
1250-0020	10/06/10	081-0020	Sewer modification under I-80 freeway at 2 locations	3				+39,062 Inverts of existing sewer where new sewer will tie into are found to be different than shown in plan and would create a reverse slope. Additional pipe and manhole are required to fix slope. Refer to RFI Nos. 2S01 and 147. No reimbursement from SFPUC Sewer. COMPLETE, NO FURTHER ACTION; CMOD #11

- 1 - Owner Directed Change in Scope
- 2 - Unforeseen Conditions
- 3 - Errors and Omissions
- 4 - Quantity Variation
- 5 - Value Engineering
- 6 - Private Utilities
- 7 - Other

CENTRAL SUBWAY PROJECT
Project Trend/Change Control Log

Item #	Date Initiated	Change Description	Change Type	CMB No.	Change Status		Projected Cost Impact +Exposure/(Benefit)	Comments
					Approval Action	Approval Date		
1250-0021	10/06/10	081-0021	Install new AWSS lateral including hydrant at NW 4th/Harrison	2				Existing AWSS lateral at SW 4th/Harrison is in conflict with new 18" sewer. Instead of modifying the lateral to avoid the sewer, a new lateral at NW corner is a preferred solution. CM awaiting design revision from Design team. Trend No. 21 is combined with Trend No. 22.
1250-0022	10/06/10	081-0022	Install additional 30 feet of DIP and new AWSS at 4th/Harrison	2	CMB-0026	Agree	01/12/11	+160,908 AWSS Point of connection on 4th Street was found to be cast iron instead of ductile iron as shown in DPW as-built. Due to this differing condition, additional length of pipe needs to be replaced and lead joint to be installed in order to install a ductile iron tee. Also, existing AWSS hydrant lateral is in conflict with new 18" sewer. The preferred solution was to install a new ductile iron lateral at a different location rather than installing vertical offsets on an existing cast iron lateral. No reimbursement from SFPUC AWSS. COMPLETE, NO FURTHER ACTION; CMOD #15
1250-0023	10/06/10	081-0023	Steel plates and shoring standby for 2 months due to PG&E delay at Clementina	3				+24,981 Sewer at Clementina was delayed by 2 months due to PG&E vault conflict. PG&E will not pay cost of steel plates and shoring standby because PG&E drawings were sent to MTA during design phase and PG&E was not made aware of the conflict then. COMPLETE, NO FURTHER ACTION; CMOD #13
1250-0024	10/06/10	081-0024	Utility support and work around for AT&T facilities	6	CMB-0048	Agree	08/24/11	+95,311 Contract specs specified AT&T to compensate contractor directly for workaround & support. AT&T refused to pay Synergy. Synergy considers AT&T's refusal as a changed condition to CN 1250 contract. (\$95,311) Reimbursement from AT&T. See Final 1250 Form B actual costs. COMPLETE, NO FURTHER ACTION; CMOD #19
1250-0025	10/06/10	081-0025	Utility support and work around for PG&E facilities	6				Contract specs specified PG&E to compensate contractor directly for workaround & support. PG&E negotiated \$100,000 directly with Synergy and will pay synergy directly as well.
1250-0026	10/06/10	081-0026	Utility support and work around for SFWD facilities	3	CMB-0028	Agree	02/09/11	+66,510 Total cost known to date (10/5/10) of all SFWD support and workaround. See COR #12, 20, 32 and 35. Agreed amount is total of COR #12, 20 and 32. Total exposure is equal to agreed amount plus COR #35. No reimbursement from SFWD. COMPLETE, NO FURTHER ACTION; CMOD #14
1250-0027	10/06/10	081-0027	Trucking and labor support for Archaeological mitigation	2				-0. Synergy is asked to provide trucking for delivery of midden soil to Sonoma State University lab. Other support work includes traffic control, plating, loading and unloading of midden soil. The amount shown are charges up to end of November 2010 only. Additional charges are expected which will be tracked as Trend No. 28. COMPLETE, NO FURTHER ACTION
1250-0028	12/08/10	081-0028	Trucking and labor support for Archaeological mitigation, Part II	2				-0. Synergy is asked to provide trucking for delivery of midden soil to Sonoma State University lab. Other support work includes traffic control, plating, loading and unloading of midden soil. The amount shown are expected charges beyond November 2010. COMPLETE, NO FURTHER ACTION
1250-0029	12/08/10	081-0029	Cost overrun for bid item UD-10 "Additional excavation and backfill"	4	CMB-0036	Agree	05/04/11	+112,500 Bid item UD-10 is to pay for excavation of connection hole and kill hole for SFWD line. Contract only included 200 cubic yard for this work. The size of excavations is dictated by field conditions and per the direction of SFWD inspector. RE's estimate of the total volume of dirt to be excavated is 630 cy. Examples of differing conditions encountered are: location of existing water line is different than where it's shown in the plan, existing waterline where shown in the plan to be connected to is inactive, differing condition at 5th/Clementina, connection holes and kill holes need to be expanded due to other utilities in the way. COMPLETE, NO FURTHER ACTION; CMOD #17
1250-0030	12/08/10	081-0030	Supplement bid item GE-4 "Allowance for differing site conditions" related to the installation of publicly owned facilities only (sewer, water, AWSS, Joint trench)	4	CMB-0030	Agree	04/13/11	+235,595 This change order is to supplement GE-4 for cost overrun related to the installation of publicly owned infrastructure only. GE-4 cost overrun for installation of privately owned infrastructure is being tracked separately and a separate change order will be issued. COMPLETE, NO FURTHER ACTION; CMOD #16

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1250-0031	12/08/10	081-0031	Unused allowance for bid item GE-8 "Allowance for cast-in-place utility vaults"	4				-0	Bid item GE-8 is an allowance to pay contractor for designing and constructing cast-in-place manholes as required for installation of new systems. Only one CIP vault was installed. Credit amount included in Trend #43
1250-0032	12/08/10	081-0032	Unused allowance for bid item UD-5 "Handling and disposal of Class I Hazardous Waste"	4				-0	Bid item UD-5 is an allowance to pay contractor for handling and disposal of Class I Hazardous Waste. No class I hazardous waste was off hauled away from the job site. Class I soil found under the I-80 freeway was put back in the trench as backfill. This bid item is expected to remain unused. However, contractor is claiming to recover "General Conditions" cost. Credit amount included in Trend #43
1250-0033	12/08/10	081-0033	Unused allowance for bid item UD-6 "Transportation of Class I Hazardous Waste"	4				-0	Bid item UD-6 is an allowance to pay contractor for transporting of Class I Hazardous Waste. No class I hazardous waste was off hauled away from the job site. Class I soil found under the I-80 freeway was put back in the trench as backfill. This bid item is expected to remain unused. However, contractor is claiming to recover "General Conditions" cost. Credit amount included in Trend #43
1250-0034	12/08/10	081-0034	Cost overrun for bid item TR-6 "Allowance for manual traffic control"	4	CMB-0037	Agree	05/04/11	+68,820	Bid item TR-6 is an allowance to pay for off-duty police officers and parking control officers. Contract allowance amount is \$50,000.00. Contract specs calls for police officers at 4 intersections (4th/Howard, 4th/Folsom, 4th/Harrison and 4th/Bryant). The average cost of 1 police officer is about \$800.00 per day (\$100.00 per hour). The \$50,000.00 allowance is only good for 60 days for 1 police officer. Hence, additional money was needed for traffic control support. Final amount paid police officers is \$87,500.00. Additional billings for parking control officers (from Al Herce of DPT) is forthcoming; RE estimated this bill to be about \$60,000.00. COMPLETE, NO FURTHER ACTION; CMOD #18
1250-0035	12/08/10	081-0035	Premium cost for requesting contractor to accelerate work on 4th Street between Howard and Folsom	2				-0	Due to archaeological discoveries, many trenches remained open and the project would not have enough time to complete installation of underground utilities and restore the roadway before the Holiday season. Without accelerating the work, the project would have had to pay rentals for the barriers, street plates and shoring for the unfinished trenches that would have remained. By accelerating the work and DPT allowing the contractor to work through the beginning of the Holiday Moratorium, the project avoided these rental costs, which is estimated to be greater than the premium cost of accelerating the work. COR Not submitted by Contractor CLOSED COMPLETE, NO FURTHER ACTION
1250-0036	12/08/10	081-0036	Rental/Maintenance costs for support of Archeological Trenches (Part 1 of 4) \$255,840; Support Work During Archeologist Mitigation Efforts (Part 2 of 4) \$199,741; Mobilization and Equipment Standby Costs (Part 3 of 4) \$67,728; Additional Overhead/Indirect Costs During Archeological Delay Period (Part 4 of 4) \$124,186	2	CMB-0041	Agree	07/13/11 02/15/12 07/25/12 09/12/12	-0	Due to archaeological discoveries, contractor may potentially claim for compensation for his equipment that were idle for the duration of the waiting period. RE's estimate is based on Caltrans rate for equipment standby for 5 months (May to October). RE has not received any change order request related to this item. RE to verify if his equipment were indeed idle during this time period. 2/15: Rental/Maintenance Costs for Support (Part 2 of 4); Addl Work as Result of Archeological Shutdown (3 of 4). 07/25: Revised mod - compensation for 1 of 3) Rental/Maintenance, 2 of 3) Addl Work result of Archeological support, 3 of 3) Addl OH/Indirect cost. RE to add Equipment Standby time to revised mod. 09/12: RE to Prepare Modification 10/29: CMod 20 is being issued as a unilaterally change, by the SFMTA that represents the SFMTA's estimate of a fair and reasonable final compensation amount for the additional work. COMPLETE, NO FURTHER ACTION
1250-0037	12/08/10	081-0037	Compensation for loss of production, inefficiency and disruption of work due to archaeological discovery	2				-0	Due to archaeological discoveries, contractor may potentially claim for compensation for loss of production, inefficiency and disruption of work. RE has not received any change order request related to this item. Amount shown is a ROM cost by the RE. RE expects a COR from the contractor but change justification is very unlikely. Initial draft COR was \$898,453. RE has adjusted to \$661,559 removing the month of October and option work. This was then revised to 800,000. There has been no official submittal from Synergy. SFMTA has directed Synergy to submit anything related to the Architectural delays through the claims process. This will be carried in the Potential Claim Log. COMPLETE, NO FURTHER ACTION

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1250-0038	03/18/11	081-0038	Project Delay due to archaeological discovery and PG&E Issues.	2				Due to archaeological discoveries compounded with PG&E's ability to perform service switchover to Olivet University and de-energize a live duct bank in conflict with 48" sewer. The project will realize an estimated 6 weeks of non-compensable delay to the substantial completion date of 4/6/11. 47 days estimated by RE. Contractor submitted COR #1 in the amount of \$1,144,776.74 on September 1st, 2011. RE responded requesting additional backup on October 19th, 2011. Subsequently, no additional information has been provided by the contractor, therefore, SFMTA has directed Synergy to submit anything related to the Architectural delays through the claims process. This will be carried in the Potential Claim Log.
1250-0039	05/18/11	081-0039	Remove BP-4 (Waterproofing) from Contract	4			-0-	Bid item was not used. Contractor requesting compensation to recover for General Conditions cost. Bid item amount total is \$40,000. NO FURTHER ACTION; Superseded by COR #58. (See 1250-0043 below)
1250-0040	05/18/11	081-0040	Delete SW-8 (24" Sewer) from Contract	4			-0-	Bid item was not used. Contractor requesting compensation to recover for General Conditions cost. Bid item amount total is \$73,117. NO FURTHER ACTION; Superseded by COR #58. (See 1250-0043 below)
1250-0041	05/18/11	081-0041	Delete UD-5 and UD-6 (Class I Off haul and Handling) from Contract	4			-0-	Bid items were not used. Contractor requesting compensation to recover for General Conditions cost. Bid items total amount is \$150,000. NO FURTHER ACTION; Superseded by COR #58. (See 1250-0043 below)
1250-0042	05/25/11	081-0042	Delete GE-6 (Hazmat) from Contract	4			-0-	Bid item was not used. Contractor requesting compensation to recover for General Conditions cost. Bid item amount total is \$100,000. NO FURTHER ACTION; Superseded by COR #58. (See 1250-0043 below)
1250-9001	10/06/10	081-9001	Utility Companies refusal to contribute to utility support costs and work-around. (Voided. Recorded individually in TR-0059-TR-0061.)	7				
1250-0043	08/03/11	081-0043	Unit Rate Adjustment for Entire 1250 Bid Items	4			(333,904)	Pursuant to General Provision GP-11, COR is to adjust contract value to account for fix overhead costs for bid items not performed or where the bid item performed varied by 25%. COMPLETE, NO FURTHER ACTION; CMOD #20
Contract 1250 Totals							+2,694,211	Total Changes to the Contract in the amount of \$2,694,211, represents a \$740,834 OVER RUN of the original allocated contingency of \$1,953,377. Changes that will be Utility Reimbursement credits through the Form B process in the amount of \$162,992 will offset some of this OVER RUN. Final Contract Closeout Total \$11,968,150 will be reduce by \$2,275,419 Utility Reimbursement credits for a Final Program cost of \$9,692,731 for CN 1250
Contract 1251 - Utilities Relocation #2 (UMS)								
1251-0001	03/18/11	082-0001	Modify traffic control plan by establishing a single travel lane on Stockton St. in lieu of time-based multiple lane requirements as stipulated in contract plans TR-001 to 004.	7			-0-	After discussions with the Contractor and the Union Square Business Improvement District (BID), the SFMTA determined that modifying the lane requirements along Stockton St. and implementing the alternate pedestrian walkway design would be beneficial to the execution of CN 1251 in the following ways: increased public safety, increase construction production, and create a more pleasing environment to the public and merchant. COR #1 COMPLETE, NO FURTHER ACTION; CMOD #4

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1251-0002	03/18/11	082-0002	1&3	CMB-0035	Agree	04/20/11	+67,634	Pursuant to a commitment between Barney's and SFMTA, Emergency Stair #4 (to be constructed in CN 1253) must avoid existing subsidewalk basement. It was determined that moving the conflicting stairs would require the Joint Trench to be constructed in a manner that would enable it to span the excavated area. The addition of the invert slab allowed for the needed span thereby allowing for a relocation of Emergency Stair #4. COR #4; PCC #1 COMPLETE, NO FURTHER ACTION; CMOD #2
1251-0003	03/18/11	082-0003	1	CMB-0029	Agree	02/23/11	+148,919	During future station construction, the design team anticipates that excavation related settlement may cause damage to the brick sewers along Geary and O'Farrell Streets. This proposed modification will replace the vulnerable brick sewer within the influence zone with HDPE pipe that will not be as susceptible to settlement-induced damage. COR #9, PCC #2 COMPLETE, NO FURTHER ACTION; CMOD #1
1251-0004	04/06/11	082-0004	2	CMB-0031	Agree	04/13/11	+189,584	Due to various differing site conditions as described in RFIs 15, 37, 38 and 44, changes to the secondary enclosure wall are required. The existing footing were found to be inconsistent, i.e. missing footing in one area, footing sticks out beyond existing wall, overpour on existing footing, existing wall to be 6" into private property. Contract plan SR-302 shows a consistent footing. COR #8 COMPLETE, NO FURTHER ACTION; CMOD #3
1251-0005	04/06/11	082-0005	6				+66,084	Contract plans AW-501.1, 501.2, 501.4 and 501.4 show the existing AWSS to be replaced in place. However, existing PG&E conduits were found to be on top and parallel to the existing AWSS resulting in extra work in working around and/or shifting the existing electrical conduits. Contract plans JT-308 and 309 showed the existing electrical and AWSS to be separate. Estimate includes \$77,892.53 (Synergy FA Request) + \$25,000 (first digging west side) + \$10,000 (temp backfill during moratorium) + \$15,000 (plate rental west side at \$5k per month). Estimate does not include Synergy's cost to sequence his work. Updated projected cost impact from \$50,000 to \$127,893 based on compilation of force accounts received. RE negotiating COMPLETE, NO FURTHER ACTION
1251-0006	04/20/11	082-0006	1	CMB-0039	Agree	06/08/11	+398,624	Due to changes to the limits of the UMS Station on Stockton Street between Post and Geary, the original utility design has changed. COR #24, PCC #4 COMPLETE, NO FURTHER ACTION; CMOD #5
1251-0007	04/20/11	082-0007	1	CMB-0049	Agree	08/24/11	(434,957)	Due to changes to the limits of the UMS Station on Ellis street, the original utility design has changed. PCC #5 COMPLETE, NO FURTHER ACTION; CMOD #5
1251-0008	04/20/11	082-0008	1					Based on field verification, it was determined that underpinning is no longer needed. Contract bid item SR-9 is for a total amount of \$116,000 measured by LF. However, CM team does not anticipate to recover the full amount because contractor may be entitled to retain general conditions cost and some excavation cost that was already performed but encumbered in Bid Item SR-9. Agreed credit of (\$58,000) to be included in Trend #60. CLOSED, NO FURTHER ACTION
1251-0009	04/20/11	082-0009	4	CMB-0038	Agree	06/01/11	+261,584	Contract bid item TR-7 for manual traffic control in the amount of \$120,000 is insufficient to control traffic for the duration of the contract. The \$120,000 allowance only equates to one police officer for a duration of 7.5 months. At a minimum, it is anticipated that one police officer or PCO will be needed at Stockton/Post for the entire contract duration of 16 months. Additionally, one PCO is required for each intersection at Geary/Stockton and O'Farrell/Stockton. COMPLETE, NO FURTHER ACTION; CMOD #4

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1251-0010	05/25/11	082-0010	Accelerate Stockton east between O'Farrell and Market	1				+27,409	Contractor needed to rent additional excavators to work concurrently with the other block on Stockton between O'Farrell and Market. Amount: \$27,409; COR #25 COMPLETE, NO FURTHER ACTION; CMOD #3
1251-0011	06/22/11	082-0011	Potholing at 4th/Howard for PUC sewer design	1					Request from MOS utility design team to pothole for the intercept of a 36" force main sewer and 96" sewer. PUC requested that this be done in order to ensure that we have accurate utility information to avoid costly change orders during construction. Per direction from CMB on January 18, 2012, this request is denied. COR #50, PCC #6 CLOSED, NO FURTHER ACTION: Per direction from CMB on January 18, 2012, this request is denied.
1251-0012	07/06/11	082-0012	Additional cost to lower the AWSS at O'Farrell, east of Stockton, due to numerous existing utility conflicts.	2	CMB-0042, CMB-0050	Agree	8/3/2011, 9/21/2011	+278,351	The AWSS is in conflict with AT&T, PG&E and several other utilities and needs to be installed under all these utilities at about 11' deep (instead of 6' depth as noted in Plan AW-501.4, sheet note #5). During negotiations with the Contractor several items of work were found to be missing for the original cost estimates which increase the amount to \$278,351. RFI #76, COR #31 COMPLETE, NO FURTHER ACTION; CMOD #6
1251-0013	07/06/11	082-0013	Accelerate start of construction in front of Macys West by trenchless construction method	7				-0-	Micropile installation on Stockton east between O'Farrell and Market has proven to be much slower than anticipated. To mitigate this potential delay, contractor requested to start construction in front of Macys West. COR 32 (CMB 0055 approval - see also Trend CN1251 #'s 04 & 10) COMPLETE, NO FURTHER ACTION; CMOD #3 (No Cost Change)
1251-0014	07/21/11	082-0014	Increase in Bid Item WD-10, Allowance for Additional Excavation and Backfill.	3	CMB-0055	Agree	09/14/11	+191,779	This allowance is for the contractor to perform additional excavation, backfilling and restoration associated with the water tie-ins and capping for the distribution piping system. The contractor has performed two water service tie-ins at an average cost of \$14,000 per tie-in. The current number of tie-ins and capping is 35 separate points. This amounts to a total cost of \$490,000. The current contract allowance amount is \$100,000, therefore an additional \$390,000 will be needed to augment is bid item. CMB made a partial approve of up to \$200K. The initial Contract Modification to supplement this allowance is in the amount of \$191,778.62. RE's cost analysis of this trend confirms that the initial CMod amount of \$191,778.62 is sufficient to cover for all water tie-in/capping work. COMPLETE, NO FURTHER ACTION; CMOD #9
1251-0015	08/03/11	082-0015	Additional traffic signal work at Post/Stockton	1				+17,530	Modification of the traffic signal at Post/Stockton is required to implement the detour shown in contract plan TR-010. There are no bid item to bill this work. COR #19 COMPLETE, NO FURTHER ACTION; CMOD #8
1251-0016	08/03/11	082-0016	Additional traffic signal work at Sutter/Mason	2				+32,054	Existing conduits shown in Plan ET-101 differs from what is actually in the field. City's response to RFI 73 directs contractor to install new conduits and conductors. RFI #73; COR #33 COMPLETE, NO FURTHER ACTION; CMOD #8
1251-0017	08/03/11	082-0017	Furnish and install AT&T Manhole 5830 on O'Farrell Street	6	CMB-0051	Agree	09/21/11	+25,000	AT&T was supposed to hire its own subcontractor to furnish and install all AT&T vaults in CN 1251. AT&T requested SFMTA for Synergy to perform this work as change order to CN 1251. AT&T agreed to reimburse SFMTA (\$25,000) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #7
1251-0018	08/03/11	082-0018	Furnish and install AT&T Manhole 5829 on Geary Blvd.	6	CMB-0051	Agree	09/21/11	+31,000	AT&T was supposed to hire its own subcontractor to furnish and install all AT&T vaults in CN 1251. AT&T requested SFMTA for Synergy to perform this work as change order to CN 1251. AT&T agreed to reimburse SFMTA (\$31,000) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #7

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1251-0019	08/03/11	082-0019	6	CMB-0057	Agree	10/26/11	+31,000	AT&T was supposed to furnish and install AT&T vault #5833 on Ellis Street. The current design was to intercept the existing AT&T conduit in the middle of Ellis Street. It was discovered that the existing AT&T conduit actually run adjacent to the southern curb line along Ellis Street. Therefore, AT&T requested SFMTA for Synergy to extend the joint trench approximately 200 feet to the West and tie into their existing AT&T vault #403. This work will also require Synergy to enlarge vault #403 to accept the additional conduit. . This additional work for AT&T will need to be reimbursed to SFMTA through the Form B process. Note: The agreed amount (\$31,000) is for enlargement of vault #403 only; the additional 200 feet of trench to be captured in the JT bid items. (See Trend 60) COR #43 COMPLETE, NO FURTHER ACTION; CMod #11
1251-0020	09/07/11	082-0020	6	CMB-0058	Agree	11/02/11	+19,537	PG&E requested to use GRS material in lieu of PVC in areas where PG&E conduits were expected to be exposed and temporary supported during future UMS station construction. PG&E agreed to reimburse SFMTA (\$19,537) through the Form B process. COMPLETE, NO FURTHER ACTION; CMod #21
1251-0021	09/07/11	082-0021	6					PG&E made changes to the locations of the service points and layout of some of the primary lines. In addition, due to changes to the limits of the UMS Station on Ellis Street, it was determined that Muni Vault 1850A is no longer needed. Cost for this trend is captured in Trend #31 or CMod #12. CLOSED; NO FURTHER ACTION. Cost for this trend is captured in Trend #31/CMod #12
1251-0022	09/07/11	082-0022	7					During the design phase the representatives of the Hilton Hotel agreed to and signed a license agreement with the SFMTA to allow embedded eyebolt supports. Hilton's Dir of Property Ops now wants to have OCS poles rather than the embedded building eyebolt supports. However, the OCS designer was able to revise the OCS design to eliminate the need for either eyebolts or poles in front of Hilton Hotel, resulting in a \$2,000 credit. CLOSED; NO FURTHER ACTION. Applicable bid items to be adjusted accordingly, See Trend #60.
1251-0023	09/07/11	082-0023	1	CMB-0065	Agree	1/25/2012, 2/29/12	+405,440	SFMTA Operations has requested a bypass be installed at 4th Street and Folsom Street. \$242,619 in labor costs for OCS installation has not been negotiated yet. 1/25: Condition agreed upon verification material from Contractor to be procured is available. (Verified 02/01/12). 02/29: CMod negotiated cost has been revised to incorporate original three items and the add'l OCS work on Folsom St. COR #52; PCC #7 Updated projected cost impact from \$490,000 to \$405,440. CMod #12 (Formally CMod #15) COMPLETE, NO FURTHER ACTION; CMod #12
1251-0024	09/07/11	082-0024	6	CMB-0059	Agree	11/16/2011, 05/02/12	+201,411	As a new requirement, PG&E had requested that a 5" slurry wall be installed between the gas line and wet utilities where the separation between the 2 utilities is less than 3 feet. PG&E agreed to reimburse SFMTA (\$201,410) through the Form B process. COR #58 COMPLETE, NO FURTHER ACTION; CMod #19
1251-0025	09/07/11	082-0025	6					PG&E requested to install additional conduits crossing Stockton Street at Geary and O'Farrell to minimize service interruption during future UMS Station construction. PG&E agreed to reimburse SFMTA through the Form B process. This item is captured under applicable JT Bid item, see Trend 60. CLOSED; NO FURTHER ACTION. Item is captured under applicable JT Bid Item, See Trend 60.
1251-0026	09/14/11	082-0026	2					The sub-basement in the public parking garage at O'Farrell/Mason extends beyond the property line up to the curb line. Therefore, regular foundations as per original design could not be installed. CLOSED; NO FURTHER ACTION. Item is captured under applicable OCS Bid Item, See Trend 60.

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1251-0027	09/20/11	082-0027	1	CMB-0056	Agree	11/30/11	+281,435	Acceleration is necessary to avoid potential delay impacts to Central Subway follow-on contracts. COR #40 COMPLETE, NO FURTHER ACTION; CMOD #10
1251-0028	10/18/11	082-0028	6	CMB-0057	Agree	10/26/11	+157,000	AT&T was supposed to hire its own subcontractor to furnish and install all AT&T vaults in CN 1251. AT&T requested SFMTA for Synergy to perform this work as change order to CN 1251. AT&T agreed to reimburse SFMTA (\$157,000) through the Form B process. COR #43 COMPLETE, NO FURTHER ACTION; CMOD #11
1251-0029	10/26/11	082-0029	6					Vault 133 rebuild is superseded by Trend 40. Demolition of existing vaults 403 and 113 is superseded by Trend 43 CLOSED; NO FURTHER ACTION. Demo of exiting vaults 403 and 113 are superseded by Trend 43. (See CMOD #23)
1251-0030	10/26/11	082-0030	6	CMB-0058	Agree	11/02/11	+46,366	PG&E asked SFMTA to enlarge vault 873. PG&E agreed to reimburse SFMTA (\$46,366) through the Form B process. CMB approved a NTE amount of \$40K COMPLETE, NO FURTHER ACTION; CMOD #21
1251-0031	10/26/11	082-0031	6	CMB-0058	Agree	11/02/11	+17,193	PG&E asked SFMTA to install additional conduits. PG&E agreed to reimburse SFMTA (\$17,193) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #21
1251-0032	11/08/11	082-0032	6	CMB-0059	Agree	11/16/2011, 05/02/12	+92,292	PG&E gas drawings were not included in the bid package and there was no bid item to capture this work. Gas drawings was issued by PG&E in June 2011. PG&E agreed to reimburse SFMTA (\$92,292) through the Form B process. Updated projected cost impact from \$202,400 to \$169,087 due to reduction in number of kill holes from 18 to 15. 04/11: Discovery of actual number of Kill/Tie locations being 26 instead of 15 will require confirmation from PG&E of the locations and the new cost of scope of work. COMPLETE, NO FURTHER ACTION; CMOD #19
1251-0033	11/23/11	082-0033	1	CMB-0068	Agree	03/07/12	+408,700	Additional enclosure wall is design initiated change. COR #47, PCC #9 Updated projected cost impact from \$262,484 to \$408,700. 39 Calendar Day Time Extension COMPLETE, NO FURTHER ACTION; CMOD #13 (formally CMOD #14)
1251-0034	01/10/12	082-0034	2	CMB-0069	Agree	04/04/12	+337,548	Existing utilities that are in active service were discovered in the City public right-of-way and are obstructing the performance of Contract work. Worst case scenario - "Not to Exceed" value) CM team will report actual amount value at a later date COR #71 CMB agreed to a Not-to-Exceed amount of \$346,456 on 4/4/12. All physical work was scheduled to complete by 4/13/12 COMPLETE, NO FURTHER ACTION; CMOD #17
1251-0035	01/11/12	082-0035	1					UMS Design Team requested 1251 to pothole (6'Wx12'Lx8'D) on Stockton between Post and Geary to locate existing piles and tie-backs at Union Square. Cost for this scope of work from the Contractor is \$19,870.73. Per direction from the CMB on Jan 18th this request is denied and the DP2 designer will cover this potential future obstruction with a note on the drawings. COR #53 CLOSED; NO FURTHER ACTION. Per direction of CMB on 1/18/12, this request is denied and DP2 Designer will cover this potential future obstruction with a note on the drawings.

- 1 - Owner Directed Change in Scope
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					Approval Action	Approval Date		
1251-0036	01/11/12	082-0036	6					CN 1252 Contract is requesting 1251 to install PG&E conduits in order to bring power in advance of the tunnel equipment arrival. The scope of work, which involves trenching at the busy 4th/Bryant intersection, was part of the 1252 contract, hence, a credit of same amount (\$54,892.07) to be due back to 1252. Based upon a field meeting and discussions with BIH on Jan 17th this work will be done under CN 1252 as originally planned. COR #55 CLOSED; NO FURTHER ACTION. Based on field meeting with BIH on 1/17/12; this work will be completed under CN 1252 as planned.
1251-0037	01/17/12	082-0037	3	CMB-0078	Agree	09/12/12	+27,428	After field investigation, the existing sewer lateral was found to connect to the Stockton main near Geary. However, the location where the lateral is connected to the main is inside the footprint of the UMS station, in which the main is shown in the contract plan to be slurry filled. The contract plan shows the lateral to be connected to the main on Maiden Lane but is not possible due to invert problem. At the CMB meeting on 1/18/12, Albert Hoe reported that he had instructed the design team during the design phase to investigate this lateral and make the connection to the sewer main at Maiden Lane. RE was asked to investigate if this could be a possible error and omission by the sewer design. (See Trends #44 and 45) COMPLETE, NO FURTHER ACTION; CMOD #18
1251-0038	01/04/12	082-0038	1	CMB-0064, CMB 0080	Agree	1/04/2012, 10/24/12	+29,273	JCDecaux refused to remove the remaining (2EA) kiosks without being paid for work already completed. The CMB approved on 1/04/12 Task Order No. 35 (Removal of 3EA sidewalk kiosks) as requested for the work already completed. On 10/24/12 the CMB approved Trend #38 removal of the remaining 2EA kiosks; work already completed and paid for as part of the approved CMB 0064 dated 01/04/12 for a total of 5EA kiosks removed. Total work priced at \$29,268. COMPLETE, NO FURTHER ACTION; CMOD #22
1251-0039	01/17/12	082-0039	1				+4,752	Requested by Muni Operation. COMPLETE, NO FURTHER ACTION; CMOD #22
1251-0040	02/15/12	082-0040	6	CMB-0070	Agree	04/11/12	+45,000	AT&T requested SFMTA for Synergy to rebuild manhole 133 at Post/Stockton. COR #64 AT&T agreed to reimburse SFMTA (\$45,000) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #14
1251-0041	02/15/12	082-0041	6	CMB-0070	Agree	04/11/12	+23,704	AT&T requested SFMTA for Synergy to extend their conduit from vault to vault instead of wye-casting into exiting duct bank. COR #63 AT&T agreed to reimburse SFMTA (\$23,704) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #14
1251-0042	02/15/12	082-0042	6	CMB-0070	Agree	04/11/12	+31,525	AT&T requested SFMTA for Synergy to extend their conduit from vault to vault instead of wye-casting into exiting duct bank. COR #62 AT&T agreed to reimburse SFMTA (\$31,525) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #14
1251-0043	02/15/12	082-0043	6	CMB-0076	Agree Conditionally	10/03/12	+52,607	Agreed cost shown in Trends 29 and 40 is for installing vaults only. Cost to demo existing vaults is tracked on force account (estimated cost at \$15k each vault). AT&T agreed to reimburse SFMTA (\$52,607) through the Form B process. CMB Agreed contingent on receipt of confirmation letter from AT&T for costs associated with these three trends (CMB 0076 approval - see Trend CN1251 #s 72 & 80) COMPLETE, NO FURTHER ACTION; CMOD #23

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						Approval Action	Approval Date		
1251-0044	02/15/12	082-0044	Install new sewer lateral from Macys West on O'Farrell including plumbing modification inside Macy's building.	3	CMB-0078	Agree	09/12/12	+11,438	Contract plan SW-4 shows an existing lateral to be connected to new main. However, the 8" lateral is too big to be connected directly to the new 14" main necessitating a new connection to the manhole. However, numerous existing utilities were in the way and required installation of a new lateral at a higher elevation. Due to the raised lateral invert, modification to the building is also needed. COMPLETE, NO FURTHER ACTION; CMOD #18
1251-0045	02/15/12	082-0045	Install new 2 each sewer laterals on Stockton between Post and Geary	3	CMB-0078	Agree	09/12/12	+30,260	Contract plan SW-3 shows 2 each existing laterals coming from the Union Square garage to be connected to the new main at approximate sta 128+55. However, the laterals were found to be connected to the downstream end of the existing main (toward Geary), which is called for to be abandoned in 1251 to make room for the future station. (See Trends #37 and 44) COMPLETE, NO FURTHER ACTION; CMOD #18
1251-0046	03/06/12	082-0046	Additional cost for enlarging PG&E vault 584 on O'Farrell east of Stockton	6				+80,000	The two (2) existing PG&E duct banks that were supposed to be intercepted by vault 584 were wider than shown on plan. Vault 584 was needed to be enlarged in order to capture the two (2) ductbanks. PG&E agreed to reimburse SFMTA (\$80,000) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #24
1251-0047	04/10/12	082-0047	Enlarge Muni Vault 900A on Stockton between Post and Geary	2	CMB-0082	Agree	10/31/12	+15,357	Contract plan JT-301 calls for an intercept vault to capture 2 (E) Muni ductbanks (DB). These DBs were found to be farther apart than shown on plan. The intercept vault needs to be widened. (CMB 0082 approval - see Trend CN1251 #'s 47, 58 & 78) COMPLETE, NO FURTHER ACTION; CMOD #26
1251-0048	04/10/12	082-0048	Additional cost and time for stuck auger during micropile drilling	2					Contractor's hollow stem auger got stuck during drilling of micropile #27C in front of 17 Stockton. Contractor claims differing condition as cause for the stuck auger. Contractor is asking for 1 day compensable time extension. SFMTA is reviewing claim for entitlement. COR #67 RE Denied COR (City Letter 26); however Contractor will most likely send rebuttal. CLOSED; NO FURTHER ACTION.
1251-0049	04/10/12	082-0049	Additional cost and time for added rebar and coordination with 17-19 Stockton Owner's contractor	2	CMB-0083	Agree	11/07/12	+9,058	Existing footing of One Stockton was found to be recessed from property line. City's response to RF1 171 called for additional rebar to compensate for the gap between back of new enclosure wall and existing footing. Also, the Owner's contractor of 17-19 Stockton asked that Synergy clear his work area so he can pour the primary wall and bring in his new switchgear. Synergy is asking 2 days compensable time extension. (CMB 0083 approval - see Trend CN1251 #'s 53, 59, and 64) COMPLETE, NO FURTHER ACTION
1251-0050	04/10/12	082-0050	Additional cost to install a Type 770 pole foundation at a different location, install 2 each DPT mast arms and demo existing wall in conflict with OCS footing	2	CMB-0074	Agree	08/15/12	+48,898	Type 770 pole foundation at SW 5th/Folsom could not be installed per plan due to a conflict with a cistern. Only solution is to remove an existing pole foundation (recently installed in 1251 as contract work) to make room for the 770 pole foundation. At 5th/Folsom, 2 DPT mast arms (not shown in original plan) need to be installed. At Pole #811, an existing concrete wall is in conflict with pole foundation. (CMB 0074 approval - see Trend CN1251 #'s 67, 74 & 75) COMPLETE, NO FURTHER ACTION; CMOD #20
1251-0051	04/10/12	082-0051	Intercept existing PG&E duct bank and terminate into vault 5464 at Market/Ellis	6				+23,633	PG&E requested to reroute existing duct bank running north out of MH 1803 at 4th/Pioneer Place into MH 5464 at Market/Ellis PG&E agreed to reimburse SFMTA (\$23,633) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #24

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					Approval Action	Approval Date			Actual/Forecast
1251-0052	04/10/12	082-0052	Reroute unforeseen existing waterline on Geary east of Stockton	2	CMB-079	Agree	10/10/12	+27,234	An unforeseen existing waterline was found to be in conflict with PG&E vault 573 and needs to be rerouted per City's response to RFI #182. (CMB 0079 approval - see Trend CN1251 #'s 65 & 70). This is potentially a E&O issue due to unforeseen existing waterline on discovered along Geary Street (east of Stockton Street) not shown in the contract drawings. COMPLETE, NO FURTHER ACTION; CMOD #28
1251-0053	04/10/12	082-0053	Additional cost for premium to accelerate contract work	1	CMB-083	Agree	11/07/12	+10,591	SFMTA directed Synergy to accelerate work to advance PG&E and AT&T cut-over and allow CN 1252 Contractor to start work at UMS COR #74 PG&E agreed to reimburse SFMTA (\$10,590) through the Form B process. 11/07/12 (CMB 0083 approval - see Trend CN1251#'s 49, 59, and 64) COMPLETE, NO FURTHER ACTION; CMOD #27
1251-0054	04/17/12	082-0054	Additional waterproofing at FIDM and north end of Crate & Barrel	2				+8,151	Sidewalk in front of FIDM and north end of Crate & Barrel did not have a sub-sidewalk basement, hence the original plan did not call for waterproofing of the primary wall. While excavating for the joint trench, contractor found the existing waterproofing to be spalling and peeling off from the primary wall. COR #72 COMPLETE, NO FURTHER ACTION; CMOD #22
1251-0055	04/17/12	082-0055	Install Swiveloc lids on all PG&E vaults	6					PG&E requested SFMTA to add this scope to the 1251 contract for safety reason. COR #72 SFMTA decided to defer this work to the 1252 contract. COMPLETE, NO FURTHER ACTION;
1251-0056	05/31/12	082-0056	Additional work on force account related to sewer installation	2				+45,156	Additional work due to unforeseen and differing conditions during installation of sewer. COMPLETE, NO FURTHER ACTION; CMOD #15
1251-0057	05/31/12	082-0057	Additional work on force account related to water installation and NRG vault demolition	2				+39,599	Additional work due to unforeseen and differing conditions during installation of water and demolish existing NRG vaults that are in conflict with utility installation. COMPLETE, NO FURTHER ACTION; CMOD #16
1251-0058	05/31/12	082-0058	Additional streetlight conduit on 5th Street between Harrison and Bryant	2	CMB-0083	Agree	10/31/12	+17,754	The existing streetlight pullboxes new cables were supposed to be connected to per contract plan did not have power. New conduit needs to be install from the power source. COR #75 (CMB 0082 approval - see Trend CN1251 #'s 47, 76 & 78) COMPLETE, NO FURTHER ACTION; CMOD #25
1251-0059	06/26/12	082-0059	Accelerate contract work at Barney's front	1	CMB-0083	Agree	11/07/12	+16,948	As a result of numerous meetings and complaints by Barneys, it was decided to accelerate contract work in order to restore Barneys sidewalk earlier (CMB 0083 approval - see Trend CN1251 #'s 53, 49, and 64) COMPLETE, NO FURTHER ACTION; CMOD #27
1251-0060	06/26/12	082-0060	Final Bid Item Reconciliation	4				(508,961)	Bid item analysis for entire contract as of 6/12/12.
1251-0061	06/26/12	082-0061	Excavate for PG&E cutover at 177 Stillman	6				+7,424	PG&E requested Synergy to excavate for PG&E cutover at 177 Stillman. Reference document: Email from Michael Lightstone dated 12/9/11 PG&E agreed to reimburse SFMTA (\$7,424) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #24
1251-0062		082-0062	Additional waterproofing at Macys Men's wall	2				+24,774	Contract did not call for waterproofing at Macys Men's wall. However, when contractor dug for the joint trench, it was found that the existing waterproofing has deteriorated and needed to be replaced. COR# 20 COMPLETE, NO FURTHER ACTION; CMOD #22

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1251-0063		082-0063	Excavation and restoration cost for PG&E gas tie-in and kill holes. Part II	6				+56,458	After completion of Part I (see trend 32), PG&E had offered to self-perform the excavation and restoration of the gas tie-in/kill holes because PG&E had crews available to perform the work. However, PG&E no longer have available crews, hence Synergy had to continue and finish excavating and restoring the last tie-in/kill holes. PG&E agreed to reimburse SFMTA (\$56,458) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #24
1251-0064		082-0064	Accelerate finish and detail work of AT&T and PG&E vaults	1	CMB-0083	Agree	11/07/12	+4,704	In order to expedite turn-over of AT&T and PG&E vaults, SFMTA directed Synergy to accelerate the detailing and finish work of these vaults. SFMTA will pay Synergy premium cost for OT hours. 11/07/12 - (CMB 0083 approval - see Trend CN1251 #'s 53, 59, and 49) COMPLETE, NO FURTHER ACTION; CMod #27
1251-0065		082-0065	Additional fittings for AWSS lateral and chipping of pole foundation at Market/Ellis	2	CMB-0079	Agree	10/10/12	+20,412	An existing Muni pole foundation is in the way of the AWSS lateral. Additional fittings are required to complete contract work. (CMB 0079 approval - see Trend CN1251 #'s 52 & 70) This is potentially an E & O issue due to an existing Muni pole foundation is in the way of the AWSS lateral. COMPLETE, NO FURTHER ACTION; CMOD #28
1251-0066		082-0066	Intercept PG&E conduits at Vault 573 at Geary east of Stockton	6				+6,466	During installation of PG&E intercept vault 573, PG&E had incorrectly identified the conduits to be intercepted. This error was discovered during cut-over process by PG&E. PG&E agreed to reimburse SFMTA (\$6,466) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #24
1251-0067		082-0067	Additional feeder span, no-bo insulator and adjustment of guywire for the Folsom OCS bypass	3	CMB-0074	Agree	08/15/12	+32,149	SFMTA Electrical Designer had pointed out the new Folsom Bypass does not have enough capacity to power the new OCS necessitating installation of feeder spans. Also, adjustments to the guywire are necessary to mitigate conflict with new signal mast arms. COR #76 7/25/12 - RE presented COR to CMB; direction given to develop one CMod with all remaining items to be purchased for the new OCS bypass. (CMB 0074 approval - see Trend CN1251 #'s 50, 74 & 75) COMPLETE, NO FURTHER ACTION; CMOD #20
1251-0068		082-0068	Extended Overhead cost from July 19, 2012 to August 16, 2012	1	CMB-0075	Agree Conditionally	10/03/12	+106,967	Contract is expected to be extended beyond the approved July 18, 2012 completion due to the following reasons: contractor was slowed due to accommodation of AT&T and PG&E cut-over, for example, contractor has to provide windows of time for AT&T to occupy its work space to provide continuity and efficiency for AT&T cut-over, contractor has to advance cleaning and detailing of vaults to turnover to AT&T and PG&E, these work are typically done as punchlist, contractor now has to sequence work and reallocate resources; SFWD cut-over is taking longer than expected; PG&E gas cut-over was delayed due to inability to access Armani building, this delay held up completion of sewer MH, SFWD connection and restoration on O'Farrell east; added change order work, i.e. additional PG&E conduit at vault 573 and additional excavation for AT&T cut-over at 240 Stockton CMB Agreed contingent on receipt of letter confirming e-mail as presented in the meeting and content viewed related to agreement and remaining actions and release of funds. COMPLETE, NO FURTHER ACTION; CMOD #24
1251-0069		082-0069	Removal of abandoned PG&E gas valve (8each) and install anodes	6				+4,737	PG&E asked Synergy to remove all abandoned gas valves (8each) PG&E agreed to reimburse SFMTA (\$4,737) through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #24

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					Approval Action	Approval Date			
1251-0070		082-0070	Core drill primary wall and install interior plumbing at Armani and Disney for the fire service water cutover	2	CMB-0079	Agree	10/10/12	+14,034	Existing fire service inside the building is a thin-wall steel pipe that extends out to the previously existing sub-sidewalk basement. However, 1251 had backfilled the sub-sidewalk basement per contract, which now made the steel pipe susceptible to corrosion. SFWD does not want to tie-in to the steel pipe due to corrosion issue plus the fact that the pipe is thin walled, which makes welding almost impossible. A ductile iron pipe needs to be installed from the main and into the building. COR #77 (CMB 0079 approval - see Trend CN1251 #'s 52 & 65) COMPLETE, NO FURTHER ACTION; CMOD #28
1251-0071		082-0071	Install a new 8" backflow preventer for the fire service inside Macys Men's building	6					The new water main (installed in the 1251 Contract) is closer to the property line than the existing backflow preventer. State law stipulates that a backflow preventer be installed in between the property's fire suppression system and the water main. The SFWD refuses to make this connection until a proper backflow preventer is installed. SFMTA will insist on Macys to install its own backflow preventer. CLOSED; NO FURTHER ACTION.
1251-0072	08/08/12	082-0072	Additional AT&T trench from new vault 5829 to existing vault 127 on Geary east of Stockton	6	CMB-0076	Agree	10/03/12	+23,993	AT&T requested new conduits to maintain continuity between the 2 vaults. AT&T agreed to reimburse SFMTA (\$23,993) through the Form B process. RE Tracking work on FAR CMB Agreed contingent on receipt of confirmation letter from AT&T for costs associated with these three trends (CMB 0076 approval - see Trend CN1251 #'s 43 & 80) COMPLETE, NO FURTHER ACTION; CMOD #14
1251-0073	08/08/12	082-0073	Additional work to install water and electrical utilities for Flower Stand on Geary west of Stockton	1				+17,966	Contract bid allowance for providing utility services for flower stands (UD-14) had been exhausted during relocation of 2 flower stands. A third and final flower stand is still needed to be relocated. COMPLETE, NO FURTHER ACTION; CMOD #22
1251-0074	08/08/12	082-0074	Traffic Signal modification at 5th/Folsom	1	CMB-0074	Agree	08/15/12	+16,429	Due to installation of OCS bypass on Folsom between 4th and 5th Streets, a left turn signal is required at 5th/Folsom. Additional signal heads and modification to the existing traffic signal is necessary. RE Tracking work on FAR (CMB 0074 approval - see Trend CN1251 #'s 50, 67, & 75 also). COMPLETE, NO FURTHER ACTION; CMOD #20
1251-0075	08/08/12	082-0075	Unforeseen conditions related to pole foundation installation for the Folsom OCS Bypass	2	CMB-0074	Agree	08/15/12	+12,568	Contractor encountered unforeseen concrete and brick substructures and abandoned utility lines. RE Tracking work on FAR (CMB 0082 approval - see Trend CN1251#'s 47, 58 & 78) COMPLETE, NO FURTHER ACTION; CMOD #20
1251-0076	08/08/12	082-0076	Adjustment to OCS on Mason Street	2/3	CMB-0082	Agree	10/31/12	+14,988	Modify bracket arm at existing Pole #511 to alleviate tension load and bending of pole. Realign trolley wire on Mason between Geary and Eddy to smoothen transition when shifting from right lane to left lane. Also, add intermediate guywire to prevent excessive sagging of bracket arms at various locations. RE Tracking work on FAR (CMB 0082 approval - see Trend CN1251#'s 47, 58 & 78) COMPLETE, NO FURTHER ACTION; CMOD #26

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					Approval Action	Approval Date			Actual/Forecast
1251-0077	09/12/12	082-0077	2	CMB-0081	Agree Conditionally	10/31/12	+37,181	Qwest, TCG and UCCO requested Synergy to tie-in their existing conduits into the new vaults that Synergy installed per contract. The utility companies are responsible for connecting existing conduits into new vaults, therefore, this request is considered extra work. Private Utilities companies agreed to reimburse SFMTA (\$37,181) through the Form B process. RE Tracking work on FAR CMB agreement contingent upon CMod package to include evidence from all utilities that cost are reimbursable to SFMTA through the Form B process. COMPLETE, NO FURTHER ACTION; CMOD #25	
1251-0078	09/12/12	082-0078	2	CMB-0082	Agree	10/31/12	+27,645	Several obstructions, i.e. buried concrete, boulders, brick, abandoned utilities were discovered during excavation and installation of OCS poles along Mason and 5th Street. RE Tracking work on FAR (CMB 0082 approval - see Trend CN1251 #'s 47, 58 & 76) COMPLETE, NO FURTHER ACTION; CMOD #26	
1251-0079	09/12/12	082-0079	2				+44,530	Unforeseen conditions were encountered during installation of select PG&E vaults including joint trenches leading to these vaults. PG&E agreed to reimburse SFMTA (\$44,530) through the Form B process. RE Tracking work on FAR COMPLETE, NO FURTHER ACTION; CMOD #24	
1251-0080	09/12/12	082-0080	2	CMB-0076	Agree	10/03/12	+56,806	Unforeseen conditions were encountered during installation of select AT&T vaults including joint trenches leading to these vaults. AT&T agreed to reimburse SFMTA (\$56,805) through the Form B process. CMB Agreed contingent on receipt of confirmation letter from AT&T for costs associated with these three trends (CMB 0076 approval - see Trend CN1251 #'s 43 & 72) COMPLETE, NO FURTHER ACTION; CMOD #23	
1251-0081	09/13/12	082-0081	6	CMB-0107	Agree	02/13/13	+43,882	Contract Plan JT-014 calls for CDF cover on PG&E duct bank. However, PG&E requested to use regular concrete due to heat dissipation problem with CDF. PG&E agreed to reimburse SFMTA (\$43,881) through the Form B process. 12/19/12 - Presented to CMB, direction given to finalize cost and obtain a Form B agreement with PG&E 02/13/13 - Revised CMod presented to CMB. PG&E agreed with negotiated reimbursement amount. COMPLETE, NO FURTHER ACTION	
Contract 1251 Totals								+3,962,032	Total Changes to the contract in the amount of 3,962,032 represents an UNDERRUN of allocated contingency in the amount of \$1,405,265.32. Changes that will be Utility Reimbursement credits through the Form B process in the amount of \$1,224,828 will increase the UNDERRUN. Final Contract Closeout Total \$20,794,581 will be reduce by \$7,618,112 Utility Reimbursement credits for a Final Program cost of \$13,176,469 for CN 1251
Contract 1252	COR No.	PCC No.	1252 Change Description	Change Type	CMB Change No.	Configuration Management Board Agree/Disagree	Decision Date	Actual/Forecast	Comments

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						Approval Action	Approval Date	Actual/Forecast	
1252-0001	04/23/12	1	AWSS Conflict w/ Low Pressure Water	6	CMB-0091	Agree to Merit Agree to Cost	10/10/12 01/16/13	+16,907	AWSS contract work was made more difficult by the proximity of a water line which was closer than indicated on UT-501. See COR 008 for TIA request. 10/10/12 - Merit info presented to CMB - Agreed 01/16/13 - EE brought to CMB for cost NOT TO EXCEED \$16,900 - Agreed
1252-0002	04/23/12	2	AWSS Add. Tie-Rods 4th-Harrison	6	CMB-0086	Agree to Merit Agree to Cost	10/10/12 12/19/12	+55,132	The AWSS line must be restrained a certain distance beyond the 90 degree elbow we are installing under contract 1252. The 1252 contract work includes excavating on both sides of this 12-foot portion of pipe. Additional work scope (per Michael Smith @ DPW): Station 162+80 to 162+90 - Restrain the existing 12-inch tee to the existing pipe north of the tee. Restrain any other joints that are not restrained on the existing pipe up to the new pipe to be installed. 10/10/12 - Merit info presented to CMB - Agreed 12/19/12 - EE brought to CMB for cost NOT TO EXCEED \$58,000 - Agreed
1252-0003	04/23/12	3	AT&T Vault Conflict-4th & Harrison	6	CMB-0092	Agree to Merit Agree to Cost	10/10/12 01/16/13	+16,015	After excavation of the roadway surface and subgrade at Fourth and Harrison streets an AT&T vault was discovered to be in conflict with the current alignment of the 42" RCP sewer main. Verbal authorization was given by an AT&T representative to make modifications to the vault. COR 003 has been submitted by BIH in response to this issue. Work is to be charged via SFMTA Form B agreement to AT&T. 10/10/12 - Merit info presented to CMB - Agreed 01/16/13 - EE brought to CMB for cost NOT TO EXCEED \$21,089 - Agreed 04/01/13 - CM team must obtain in writing from AT&T a utility agreement for cost reimbursement.
1252-0004	05/18/12	6	PG&E live electrical delays	6	CMB-0088	Agree to Merit Agree to Cost	11/28/12 1/9/2013	+7,402	PG&E lines indicated on contract drawing UD-502 thru 504 were to be abandoned yet were not yet abandoned when BIH started work. They were abandoned on 5/21. 11/28/12 - Merit info presented to CMB - Agreed 01/09/13 - EE brought to CMB for cost NOT TO EXCEED \$7,600 - Agreed 04/01/13 - CM team must obtain in writing from PG&E a utility agreement or cost reimbursement. COMPLETE, NO FURTHER ACTION: CMOD #10 - Final Cost \$7,402.36
1252-0005	06/06/12	7	Oil filled pipe @ Launch Box	2	CMB-0093	Agree to Merit Agree to Cost	1/16/13 1/16/13	+9,980	Synergy Demo Crew exposed an existing 6" steel line which had oil in it on the West side of 4th St between Harrison and Bryant. 01/16/13 - Merit info presented to CMB - Agreed 01/16/13 - EE brought to CMB for cost NOT TO EXCEED amount \$10,000 COMPLETE, NO FURTHER ACTION; CMOD #05 - Final Cost \$9,979.81
1252-0006	04/23/12	8	TIA - Associated w/ COR 001, COR 002, and COR 003	6		Agree to Merit	10/10/12	+269,904	TIA and Overhead Costs related to COR 001, 002 and 003. 10/10/12 - Merit info associated w/COR's 001, 002 & 003 presented to CMB - Agreed. 01/30/13 Elevation Ladder documentation presented for review of unresolved issue of payment of Indirect costs for TIA submittals- COR 008
1252-0007	06/12/12	9	MOS - Impacts due to SFWD low psi water line	2	CMB-0143	Agree to Merit Agree to Cost	11/06/13	+5,727	Live PG&E Electrical Lines Conflict: BIH was notified that PG&E had live electrical lines running through each headwall work zone @ Moscone station. 8 inch Low Pressure Water Line Conflict: Contract drawings show this utility to be abandoned and capped prior to work. Synergy struck and damaged the water line. SFWD directed Synergy to excavate a kill hole so they could properly abandon the line. 11/04/12 - COR Evaluation for No Merit presented to CMB for - Agreed. Contractor did not follow contract specification 02.30.00 and 02.41.00 requiring the Contractor to verify the locations of any City or public service utility company facilities that may be affected by excavation and to ensure no damage to existing underground facilities. 11/06/13 - Merit info presented to CMB - Agreed for partial merit of cost associated with excavating two additional "kill-holes on 06/20/12 & 06/21/12. 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$5,727.00 - Agreed

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1252-0008	06/19/12	10	MOS - Demo PGE duct bank / SF City 911 fiber optic line	2	CMB-0094	Agree to Merit Agree to Cost	10/10/12 01/16/13	+4,916	Upon excavation of the MOS north headwall, BIH's subcontractor Synergy Project Management (SPM) uncovered a PG&E duct bank that contained a live San Francisco 911 fiber optic line. 11/14/12 - Presented to CMB - The narrative will be rewritten CMB agrees with partial merit labor work involved in supporting the utility agencies. This item will be brought back to the CMB for approval. 01/09/13 - EE brought to CMB for cost NOT TO EXCEED \$4,919.54 - Agreed 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement. COMPLETE; NO FURTHER ACTION: CMOD #03 - Final Cost 4,915.54
1252-0009	07/02/12	11	MOS - Traffic Signal line re-route south headwall	6	CMB-0095	Agree to Merit Agree to Cost	01/16/13	+37,500	After potholing Synergy discovered several traffic lines which were in the proposed location of the south MOS headwall. Traffic Lines re-routed. Merit info presented to CMB - Agreed 01/16/13 - CMB - NOT TO EXCEED \$37,500
1252-0010	01/00/00	12	MOS - Archaeological Standby North Headwall	2	CMB-0096	Agree to Merit Agree to Cost	12/11/12 01/16/13	+16,893	Upon excavation of the MOS north headwall, BIH's subcontractor Synergy Project Management (SPM) uncovered a layer of "Midden" or Native American debris. 12/11/12 - Merit info presented to CMB - Agreed 01/16/13 - EE brought to CMB for cost NOT TO EXCEED \$7,600 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #06 - Final Cost \$16,892.96
1252-0011	07/06/12	13	MOS - SL conduit from PG&E vault @ north headwall	6		Agree to Merit	11/28/12	-0-	Permanent power is required to supply an existing Street Light box north of the MOS N headwall. 11/28/12 - Merit info presented to CMB - Agreed 04/01/13 - CM Team must obtain in writing from PG&E a utility agreement for cost reimbursement. Will be issued as a PCC with the approval of PG&E prior to requesting a proposal from the Contractor. CLOSED; NO FUTURE ACTION
1252-0012	06/26/12	15	LB - Pre-Excavation for Slurry Walls	2	CMB-0087	Agree to Merit Agree to Cost	11/28/12 12/19/12	+96,000	Pre-excavation of slurry wall panels due to CDF encased sewer line. The concrete encasement was found by the Contractor to extend to a depth of 9'-11' below the top of guide wall or street surface. The 8" VCP sewer main and concrete encasement was incorrectly shown in the contract drawings to be approximately 4'-5' below the street surface. 11/28/12 - Merit info presented to CMB - Agreed 12/19/12 - EE brought to CMB for cost NOT TO EXCEED \$96,000 - Agreed
1252-0013	07/02/12	17	MOS - Impacts @ North and South Headwalls due to live utilities	6	CMB-0144	Agree to Merit Agree to Cost	11/06/13	+43,219	Standby delays related to the discovery of traffic lines within the proposed location of the south MOS headwall. 11/14/12 - COR presented to CMB. CMB requested additional revisions to the evaluation. CMB agrees with partial merit. The COR will be brought back to the CMB for approval. 11/21/12 - COR revisited at mtg for clarification the issue is related to CMB action from item 3 -7/25/12 (Mtg #88) specifically acted on 08/01/12 (CMB Mtg. 89) referred originally as Trend #15. CMB Agreed to No Merit to this contract change. 11/06/13 - Merit info presented to CMB - Agreed to DSC for equipment standby costs for a period of 16 working days. 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$43,219 - Agreed
1252-0014	Closed	19	UMS - Grant street 2 way conversion (e- & striping)	7				-0-	In order to implement a full street closure for Stockton Street at the UMS location the DPT recommended that Grant Street be converted from an existing one-way street to a two way street for vehicular traffic. Closed - Work is done. 07/18/12 - This potential change was brought before the CMB. Board's decision to have DPT perform the work. Work is completed. CLOSED; NO FURTHER ACTION
1252-0015	06/22/12	20	PROJECT WIDE - Utility Demo limit reduction credit	7				-0-	BIH's subcontractor Synergy Project Management (SPM) would like to minimize the limits of utility demo at the Launch Box, Moscone station, UMS station and TBM Retrieval Shaft locations. SFMTA to BIH/SPM "Build per Plan". CLOSED; NO FURTHER ACTION

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1252-0016	04/02/12	21	UMS - Reduced Duration	5	CMB-0073	Agree Cost (Conditionally)	08/01/12	-0	No cost change for acceleration of utility relocation, ground improvements (jet grouting), and headwall construction at Union Square/Market Street Station. 08/01/12 - CMB approval condition upon incorporating correctness to backup documentation as required by & documented in CMB mtg. RE to prepare modification. COMPLETE; NO FURTHER ACTION: CMOD #08 - No Cost Change
1252-0017	07/10/12	22	MOS - Asbestos Pipe at north headwall	2	CMB-0090	Agree to Merit Agree to Cost	12/12/12 01/09/13	+5,705	Upon excavation of the MOS north headwall, BIH's subcontractor Synergy Project Management (SPM) uncovered friable asbestos-laden transite pipe. 12/12/12 - Merit info presented to CMB - Agreed 01/09/13 - EE brought to CMB for cost NOT TO EXCEED \$6,000 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #05 - Final Cost \$5,707.05
1252-0018	07/10/12	23	MOS - Brick Wall #2 discovered @ north headwall	2				+16,025	Upon excavation of the MOS north headwall, BIH's subcontractor Synergy Project Management (SPM) uncovered a buried wall. 11/14/12 COR presented to CMB. Evaluation for merit will be rewritten and brought back to CMB for approval. 11/21/12 - Evaluation of merit presented to CMB - Agreed to No Merit to this contract change.
1252-0019	08/10/12	26	MOS - Asbestos Pipe at south headwall	2	CMB-0085	Agree to Merit Agree to Cost	12/12/12 01/09/13	+27,630	Transite pipe was discovered during MOS south headwall excavation. 12/12/12 - Merit info presented to CMB - Agreed 01/09/13 EE brought to CMB for cost NOT TO EXCEED \$30,000 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #15 COMPLETE, NO FURTHER ACTION: CMOD#15 - Final Cost \$27,629.64
1252-0020	08/10/12	27	MOS - Oil filled pipe at south headwall	2	CMB-0089	Agree to Merit Agree to Cost	12/12/12 01/09/13	+8,226	A pipe containing oil was discovered during MOS south headwall excavation. 12/12/12 - Merit info presented to CMB - Agreed 01/09/13 CMB - NOT TO EXCEED \$8,600 COMPLETE; NO FURTHER ACTION: CMOD #05 - Final Cost \$8,225.68
1252-0021	06/19/12	29	MOS - Todco scaffolding reimbursement	2	CMB-0097	Agree to Merit Agree to Cost	12/12/12 01/16/13	+1,718	1252 contract work requires the removal of scaffolding erected by Fine Line Construction, the contractor performing renovations on the Woolf House. 12/12/12 - Merit info presented to CMB - Agreed 01/09/13 - EE brought to CMB for cost NOT TO EXCEED \$1,717 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #03 - Final Cost \$1,717.83
1252-0022	Closed	closed	Disputed Work Items - NTP2 vs. NTP3	7				-0	BIH interpretation of Special Provisions SP-3 NTP2 description includes activities that SFMTA interprets to be within NTP3. These activities include: Ellis Street and Green Street shafts and associated compensation grouting, MOS headwalls and jet grouting, jet grouting at cross passage 5, UMS head walls and jet grouting, OCS removal along Stockton Street from Geary to Ellis, and the TBM retrieval shaft. On April 13, SFMTA released the MOS headwalls and jet grouting, jet grouting at cross passage 5, UMS jet grouting, OCS removal along Stockton Street from Geary to Ellis, and preparatory and utility work necessary for the construction of the retrieval shaft. CLOSED; NO FURTHER ACTION.
1252-0023	05/30/12		Manhole in east guidewall footprint	2				-0	While performing excavation for the east side guidewalls at the TBM Launch Box, BIH's subcontractor CJA-NCC encountered a manhole near the bottom of the excavation which was unexpected. BIH has stated that removal of the manhole prior to the installation of the guidewalls was necessary to ensure the successful installation of the slurry walls. 05/20/12 - CM Team comment: Synergy traded this COR with SFMTA for shallow Force Main Installation. CLOSED; NO FURTHER ACTION.
1252-0024	Closed	closed	2" gas line inside 16" casing	2				-0	While performing excavation for the Sewer and AWSS trench at the intersection of Fourth and Harrison streets, BIHJV's subcontractor Synergy encountered what was identified to be a 16" depressurized gas main. This gas main contained a 2" gas line which is shown on contract drawing UD-502 to be abandoned/removed. CLOSED; NO FURTHER ACTION.

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1252-0025	04/23/12	5	CDF Encasement on 42" RCP	2				+140,596	While performing excavation for the east side guidewalls at the TBM Launch Box, BIH's subcontractor CJA/NCC encountered a CDF backfill at the existing 42" RCP sewer which reportedly had a significantly higher compressive strength than the 50-150 psi. which was anticipated. BIH claims that the CDF conflicted with the construction of the guidewalls and it could not be excavated by conventional means. Escalated to the IRL process
1252-0026	Closed	closed	Damage to Live LPW main at 4th and Folsom	2				-0-	Synergy Demo Crew hit a blow-off valve on the 8" water line at the Southwest corner of the MOS headwalls. SFWD is to install a permanent cap per contract drawing WD-404. CLOSED; NO FURTHER ACTION.
1252-0027	Closed		MOS - 76 Gas Station fencing	1				-0-	SFMTA requested BIH to install fencing around the perimeter of the 76 gas station at 4th and Folsom St. Issue closed, cost of fence paid by BIH in return for use of gas station lot. CMB - Temporary use of 800 Folsom Street site for construction staging. Use of this site would be a tradeoff between SFMTA and BIH. The Contractor would maintain the sites security and up-keep in exchange for not billing. CLOSED; NO FURTHER ACTION.
1252-0028	Closed		LB - SPTC delays due to concrete encased 8" sewer	2				-0-	Closed. Combined with COR 015. 07/25/12 - Verbal information presented to CMB as a potential change. CLOSED NO FURTHER ACTION
1252-0029	08/06/12	18	MOS - South Headwall re-design	1				+144,000	Costs related to leave end stops in place and a "T-Section" at the Moscone headwalls return walls. 11/14/12 - Presented to CMB. RE is recommending a possible compensation value of \$135K. CMB agrees with partial merit for labor and material cost of this COR. RE will proceed with scoping the work. 04/17/13 - Elevation Ladder of unresolved issue of End Stops presented to CMB - COR 018 09/18/13 - Contractor has submitted a Contract Claim No. 1 Permanent End Stops at MOS Headwall for \$169,379.17. CMB directed the CM Team to draft a letter rejecting the claim. Claim #1 has been negotiated for \$144K. CMod will be issued.
1252-0030	08/02/12	24	Ellis - Utility demolition	3	CMB-0135	Agree to Merit Agree to Cost	12/6/2012 10/09/13	+35,628	BIH says that no utilities were shown at Ellis; however, Reference Drawing UE-126 shows utilities. 12/06/12 - Merit info presented to CMB - Agreed 10/09/13 - Engineers Cost Comparison brought to CMB for cost NOT TO EXCEED \$35,628.22 - Agreed
1252-0031	Closed		Crack Gauges	4				-0-	BIH disagrees with SFMTA on the total number of crack gauges to be installed on the project. Per the contract drawings a total of 926 crack gauges are to be installed. BIH claims that a total of 50 are to be installed. CLOSED; NO FURTHER ACTION.
1252-0032	08/07/12	28	Ellis asbestos abatement	2		Agree to Merit	12/06/12	+35,386	A steam line containing asbestos was discovered during potholing at the Ellis Street Shaft. 12/06/12 - Merit info presented to CMB - Agreed 01/10/13 - CM Comment - To be paid out of Environmental Mitigation allowance GE-8.
1252-0033	-	30	LB - Class 1 Hazardous Material Haul off	2				+400,000	BIH trucking costs for Class 1 haul off generated at staging yard. Also see COR 054 regarding Class 1 Haz material haul off for Phase 2. 09/18/13 - Contractor has submitted a Contract Claim No. 2 Haz Mat Removal - Caltrans site (COR 30, 45 & 75) for 708,929.00 CMB directed the CM Team to draft a letter rejecting the claim. Claim #2 has been negotiated for \$400K cost to include COR's 030, 054 & 075.

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1252-0034	01/00/00	70	LB - Jet Grout Quantity Overrun	4	CMB-0115	Agree to Merit Agree to Cost	03/20/13 04/03/13	+768,600	The contract drawings call for the contractor to determine the extent of jet grouting at the launch box. Bid Item ES-3 has an estimated quantity of 2,831 CY of in-situ treated ground. The Contractor has currently installed 3,929 CY of Soilcrete (Jet Grout) for ground treatment. This translates to an additional quantity of 1,098 CY of ground treatment beyond the quantity listed for Bid Item ES-3. By subtracting 241 CY for the "scallop" portion of the columns the total is 857 CY. 03/20/13 - Merit info presented to CMB - Agreed 04/03/13 - EE brought to CMB for cost NOT TO EXCEED \$599,900 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #22 - Contractor may pursue addl amt. \$168,700 for "scallop" portion of jet grout.
1252-0035	01/00/00	unsubmitted	Utility Removal UD-304 and UD-503	6				-0-	RFI 00134 asks whether certain utilities indicated on drawings UD-304 (On Stockton inside limits of future UMS Station) and on UD-503 (On Fourth and Stillman Streets outside limits of Launch Box) may be left in place. Answer: "Confirmed, the utilities in question can be abandoned in place and are not required to be removed. The Engineer will seek an adjustment to Bid Item GB-3 for the elimination of this work." COR package not submitted by Contractor. CLOSED; NO FURTHER ACTION
1252-0036	05/17/12	35	Additional Road Base on Fourth Street	2				-0-	BIH's subcontractor Synergy Project Management (SPM) discovered what they believe to be an additional layer of road base under the existing asphalt and road base layer while performing roadway demo work along the west side of Fourth street between Harrison and Bryant St. The additional layer is estimated by BIH/SPM to be approximately 8" - 12" thick. 12/06/12 - Evaluation of merit presented to CMB - Agreed to No Merit for this change. CLOSED; NO FURTHER ACTION
1252-0037	01/00/00	unsubmitted	DPW permitting potential impacts	7				-0-	DPW Permitting issue to cause potential impacts. DPW is not issuing BIH permits for excavating the MOS headwalls, jet grouting at the LB, and excavating support at the LB, as they claim to have not been able to conduct a thorough review of the project's design documents and were not included in the design process. BIH may be required to re-sequence and stand many other potential impacts w/o said permits. COR package not submitted by Contractor. CLOSED; NO FURTHER ACTION
1252-0038	05/30/12	38	Manhole in West Guidewall Footprint	3	CMB-0101	Agree to Merit Agree to Cost	12/05/12 01/23/13	+3,821	While performing excavation for the west side guidewalls at the TBM Launch Box, BIH's subcontractor CJA-NCC unexpectedly encountered a manhole foundation within the excavation at approximate station 165+70. It was necessary to chip away a portion of the existing manhole to gain the necessary clearance to construct the west slurry wall. 12/05/12 - CMB agreed with Evaluation of Merit 01/23/13 - EE brought to CMB for cost NOT TO EXCEED \$4,052.17 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #12 - Final Cost \$3,820.84
1252-0039		unsubmitted	Panel W-33 Obstruction	2				TBD	While performing excavation for the slurry walls at the TBM Launch Box, BIH's subcontractor CJA-NCC unexpectedly encountered buried (wood pile?) debris located approximately 12 feet below the guide wall within Launch Box Diaphragm Wall Panel W-33. This trend is being tracked separately from Trend 20 because we believe it may be a different structure. BIH has not provided adequate information substantiating the merging of the two trends. CLOSED; NO FURTHER ACTION.
1252-0040	08/23/12	PCC 1	PCC No. 1 - Revisions to Moscone North Headwall Elevation (Top)	1	CMB-0099	Agree to Cost	01/16/13	+20,358	SFMTA initiated change to revise headwall elevations to facilitate a change in the roof elevation of MOS station. 01/16/13 CMB - NOT TO EXCEED \$20,500 Item is now being tracked as PCC 01 COMPLETE; NO FURTHER ACTION: CMOD #07 - Final Cost \$20,358.23
1252-0041	08/23/12	PCC 2	PCC No. 2 - Revisions to UMS Headwall Concrete and Reinforcement Limits	1				-0-	SFMTA initiated change to revise UMS headwall concrete and reinforcement limits to provide a cost savings. 08/29/12 - Revised PCC presented to CMB PCC No longer being pursued. CLOSED; NO FURTHER ACTION

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1252-0042	08/24/12	31	Retrieval Shaft - Unmarked 12" Steel Pipe	2	CMB-0108	Agree to Merit Agree to Cost	01/02/13 02/27/13	+1,200	While performing excavation for the joint trench at the retrieval shaft BIH's subcontractor Synergy Project Management (SPM) discovered an abandoned 12" dia. steel pipe which appears to run continuously under Columbus Ave. 01/02/13 - Merit info presented to CMB - Agreed 02/27/13 - EE brought to CMB for cost NOT TO EXCEED \$1,250 - Agreed 04/01/13 - No reimbursement from SFWD. COMPLETE; NO FURTHER ACTION: CMOD #13 - Final Cost \$1,200
1252-0043	08/31/12	32	LB - Panel W29 Wood Pile	2	CMB-0136	Agree to Merit Agree to Cost	11/28/2012 11/06/13	+121,917	While performing excavation for the slurry walls at the TBM Launch Box, BIH's subcontractor CJA-NCC unexpectedly encountered what appeared to be a wood pile within Launch Box Diaphragm Wall Panel W-29. 11/28/12 - Merit info presented to CMB - Agreed 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$41,961 - Agreed Direct Cost for CORs 32, 34, 42, 43, 62, 65, 67 have been negotiated. Time Impacts in IRL process.
1252-0044	09/04/12	33	Ret Shaft - 20" Water Line Conflict	2		Agree to Merit	11/14/12	-0-	During excavation for the joint trench at the retrieval shaft SPM discovered that the MRY Duct Bank is directly above an active 20" low pressure waterline. As a result the work at the Retrieval Shaft must reportedly be altered. 11/14/12 - Presented to CMB, the CMB agrees with some merit of this COR, element of change not define clearly. RE will proceed with scoping the work. Due to PCC 10 CLOSED; NO FURTHER ACTION
1252-0045	09/11/12	34	LB - Panel W28 Wood Pile	2	CMB - 0137	Agree to Cost	11/06/13	+112,862	While performing excavation for the slurry walls at the TBM Launch Box, BIH's subcontractor CJA-NCC unexpectedly encountered what appeared to be a wood pile within Launch Box Diaphragm Wall Panel W-28. 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$43,294 - Agreed Direct Cost for CORs 32, 34, 42, 43, 62, 65, 67 have been negotiated. Time Impacts in IRL process.
1252-0046	01/00/00	36	MOS - Catch Basin @ south headwall	3				-0-	A catch basin on the NW corner of 4th and Folsom interfered with the construction of the MOS Headwalls. Removal of the catch basin was needed in order for the headwalls to be built. BIH claims the catch basin was not shown in the contract drawings. Closed due to improper notification. COR package not submitted by Contractor. CLOSED; NO FURTHER ACTION
1252-0047	01/00/00	37	UMS - 12" steel pipe removal	3	CMB - 0132	Agree to Merit Agree to Cost	6/5/2013 08/28/13	+3,379	A 12" steel pipe at the north UMS headwall location interfered with the demolition of other existing UMS utilities. BIH claims the steel pipe was not shown in the contract drawings. 06/05/13 - Merit info presented to CMB - Agreed 08/28/13 - EE brought to CMB for cost NOT TO EXCEED \$3,379.19 - Agreed
1252-0048	09/07/12	39	MOS - 16" Steel Pipe removal @ northeast headwall	3	CMB-0102	Agree to Cost	01/23/13	+2,952	SPM removed an unmarked 16" steel pipe from the excavation of the NE MOS Headwall. Construction of the MOS headwall could not commence without this utility being removed. BIH claims the 16" steel pipe was not shown in the contract drawings. 01/23/13 - EE brought to CMB for cost NOT TO EXCEED amount \$2,951.99 - Agreed 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement. COMPLETE; NO FURTHER ACTION: CMOD #14 - Final Cost \$2,951.99
1252-0049	01/00/00	40	MOS - Extra Road Base @ northeast headwall	2				-0-	BIH's subcontractor Synergy Project Management (SPM) discovered what they believe to be an additional layer of road base under the existing asphalt at the NE MOS headwall location. The road base in this location was approx. 20" thick on a patch that was roughly 25' x 25'. Closed due to improper notification. CLOSED; NO FURTHER ACTION

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1252-0050	05/18/12	41	LB - Impacts due to live PG&E electrical lines (Synergy)	6	CMB-0098	Agree to Merit Agree to Cost	01/16/13	+1,217	Based on direction from the SFMTA, Synergy provided a full time flagger for one night shift of work @ the intersection of I-80 off-ramp near 4th/Bryant streets in order to assist PGE while they performed the abandoning of the existing live PGE electrical at the Launch Box location which was shown to be dead in the contract drawings. 01/13/13 - CMB agreed with Evaluation of Merit 01/16/13 - EE brought to CMB for cost NOT TO EXCEED \$1,245 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement. COMPLETE; NO FURTHER ACTION: CMOD #10 - Final Cost \$1,216.60
1252-0051	01/00/00	executed	Contract Amendment No. 2	1				(3,040,713)	COMPLETE; NO FURTHER ACTION: CMOD #02
1252-0052	08/17/12	42	LB - Panel W25 Wood Pile	2	CMB-0138	Agree to Merit Agree to Cost	11/28/12 11/16/13	+126,489	While performing excavation for the slurry walls at the TBM Launch Box, BIH's subcontractor CJA-NCC unexpectedly encountered an obstruction within Launch Box Diaphragm Wall Panel W-25. 11/28/12 - Evaluation of merit presented - CMB agreed 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$42,894 - Agreed Direct Cost for CORs 32, 34, 42, 43, 62, 65, 67 have been negotiated. Time Impacts in IRL process.
1252-0053	08/22/12	43	LB - Panel W30 Wood Pile	2	CMB-0139	Agree to Merit Agree to Cost	11/28/12 11/06/13	+88,677	While performing excavation for the slurry walls at the TBM Launch Box, BIH's subcontractor CJA-NCC unexpectedly encountered an obstruction within Launch Box Diaphragm Wall Panel W-30. 11/28/12 - CMB agreed with Evaluation of Merit 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$14,197 - Agreed Direct Cost for CORs 32, 34, 42, 43, 62, 65, 67 have been negotiated. Time Impacts in IRL process.
1252-0054	09/19/12	44	MOS - 16" steel pipe removal @ southeast headwall	3	CMB-0109	Agree to Merit Agree to Cost	12/06/12 02/27/13	+1,600	SPM removed an unmarked 16" steel pipe from the excavation of the NE MOS Headwall. Construction of the MOS headwall could not commence without this utility being removed. BIH claims the 16" steel pipe was not shown in the contract drawings. 12/06/12 - CMB agreed with Evaluation of Merit 02/27/13 - EE brought to CMB for cost NOT TO EXCEED \$1,800 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #14 - Final Cost \$1,600
1252-0055	06/09/12	45	Ret Shaft - Credit for reduced AT&T conduits	6				(331)	Credit to install 2 less conduits in the AT&T infrastructure at the Retrieval Shaft Joint Trench. The conduit notes on page JT-701 of the contract documents require 8 EA 4" conduits as laid out on the AT&T line. The reduced materials would result in 6 EA 4" conduits as a result. 04/01/13 - CM team must obtain in writing from AT&T a utility agreement for cost reimbursement. 09/18/13 - Contractor has submitted a Contract Claim No. 2 Haz Mat Removal - Caltrans site (COR 30, 45 & 75) for 708,929.00. The CMB directed the CM Team to draft a letter rejecting the claim.
1252-0056	09/25/12	46	UMS - Unmarked steel pipes (6", 12", 14") / Duct Bank	6	CMB-0103	Agree to Merit Agree to Cost	12/06/12 01/23/13	+7,475	While performing excavation for the utility demolition at the south UMS headwall BIH/Synergy discovered a 6" dia. steel pipe, 16" dia. steel pipe, 18" dia. steel pipe, and a concrete duct bank. BIH claims the utilities were not shown in the contract drawings. 12/06/12 - CMB agreed with Evaluation of Merit 01/23/13 - EE brought to CMB for cost NOT TO EXCEED \$7,461 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #16 - Final Cost \$7,475.28
1252-0057	09/25/12	47	Ret Shaft - unmarked 10" steel pipe/duct bank	6	CMB-0104	Agree to Merit Agree to Cost	12/06/12 01/23/13	+2,108	Synergy Project Management (SPM), discovered an abandoned duct bank and 10" steel pipe which traveled underneath Columbus Avenue between Powell and Union Streets. Removal of the duct bank was necessary to complete the construction of the 36" RCP sewer main relocation work in this area. The status of the removal of the steel pipe is uncertain and may have not been necessary for the sewer main relocation. 12/06/12 - CMB agreed with Evaluation of Merit 01/23/13 - CMB - Not to Exceed \$2,201 04/01/13 - No reimbursement from SFWD COMPLETE; NO FURTHER ACTION: CMOD #13 - Final Cost \$2,108.04

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1252-0058	09/28/12	48	UMS - 3'x5' brick sewer at south headwall	6	CMB-0114	Agree to Merit Agree to Cost	12/06/12 03/13/13	+11,675	Synergy Project Management (SPM), discovered a brick sewer within the utility demolition limits at the UMS South headwall. The sewer encountered was larger than the 12" pipe which was shown in the contract drawings. Removal and disposal of the sewer commenced on September 26th and was completed by September 28th. Removal of the sewer was necessary for headwall construction. 12/06/12 - CMB agreed with Evaluation of Merit 03/13/13 - EE brought to CMB for cost NOT TO EXCEED \$12,474.65 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #16 - Final Cost \$11,675.00
1252-0059	01/00/00	49	Ret Shaft - Tree trimming debris haul off	7				-0-	Synergy Project Management (SPM), was requested by the SFMTA to remove and dispose of debris near the Northeast corner of Columbus Avenue and Union Street. The debris resulted from tree trimming activities performed by MUNI operations. SFMTA Letter No. 119 of no merit sent to Contractor. CLOSED; NO FURTHER ACTION.
1252-0060	10/10/12	50	Ret Shaft - 12" steel pipe removal at Union/Columbus	6	CMB-0110	Agree to Merit Agree to Cost	12/12/12 02/27/13	+2,200	On October 4th 2012, the Contractor discovered and removed a 12" Steel pipe at the intersection of Union Street and Columbus Avenue. Removal and disposal of the steel pipe was necessary in order to complete the proposed sewer re-location work near the Retrieval Shaft. Sewer work included the construction of a manhole which had been positioned in the field to avoid an existing MUNI duct bank. 12/12/12 - CMB agreed with Evaluation of Merit 02/27/13 - EE brought to CMB for cost NOT TO EXCEED \$2,600 - Agreed 04/01/13 - No reimbursement from SFWD COMPLETE; NO FURTHER ACTION: CMOD #13 - Final Cost \$2,200
1252-0061	10/11/12	51	Ret Shaft - Elevation design conflict (30" low psi water / sewer)	3	CMB-0123	Agree to Merit Agree to Cost	03/13/13 7/10/2013	+13,386	03/13/13 - Merit info presented to CMB - Agreed 07/10/13 EE brought to CMB for cost NOT TO EXCEED \$21,100.
1252-0062	09/07/12	53	Chinatown - Night drilling for instrumentation	7				-0-	Closed.
1252-0063	-	54	LB Class 2 Hazardous Material Haul Off (Phase 2)	2				-0-	BIH trucking costs for Class 1 haul off generated at staging yard. Also see COR 030 regarding Class 1 Haz material haul off for Phase 1. Claim #2 has been negotiated cost to include COR's 030, 054 & 075.
1252-0064	10/10/12		PCC No. 4 - Ret shaft sewer pipe material change	1				-0-	Change approximately 65 ft. of pipe for sewer bypass around the TBM Retrieval Shaft from 3' X 5' oval glass fiber reinforced pipe to a 48-inch (OD) HDPE SD-17 pipe with casing insulator placed inside a 54-inch diameter, ½-inch thick steel casing pipe. In addition, delete permanent sheet pile wall that was to have been placed along the west side of the trench to facilitate future maintenance access to the sewer along the shaft. CLOSED; NO FURTHER ACTION
1252-0065	12/18/12		PCC No. 8 - UMS - Tree Removal	1				-0-	SFMTA is directing removal of a tree at the northeast corner of Stockton and O'Farrell St. CLOSED; NO FURTHER ACTION
1252-0066	10/10/12		PCC No. 5 - Ret Shaft Water Dist. Pipe Material Change	1				-0-	Change material type of approximately 188 linear feet of 20-inch water line and approximately 125 linear feet of 30-inch water line from Welded Steel Pipe (WSP) to Ductile Iron Pipe (DIP) with TR-Flex joints. Install 6-inch thick concrete cap over 20-inch water line where cover is less than 24 inches. CLOSED; NO FURTHER ACTION
1252-0067	10/26/12	58	Ret Shaft - Additional 10" steel pipe removal	6	CMB-0111	Agree to Merit Agree to Cost	12/12/12 02/27/13	+700	Work is a continuation of work performed in COR 047. 12/12/12 - CMB agreed with Evaluation of Merit 02/27/13 - EE brought to CMB for cost NOT TO EXCEED \$860.85 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #13 - Final Cost \$700

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1252-0068	10/10/12		PCC 3 PCC No. 3 - General Detour Signage	1	CMB-0113	Agree to Cost	10/03/12 02/27/13	-0-	Full closure of Stockton Street at Union Square was not anticipated under the 1252 Contract. The implementation of detour signage associated with the full closure of Stockton Street was to occur under the 1300 Contract. After the award of the 1252 Contract it was decided that a full closure of Stockton could be implemented to help reduce the headwall construction durations. As a result of the full closure the City Traffic Engineer has requested that a portion of the 1300 detour signs be installed now under the 1252 Contract to help alleviate traffic congestion and provide better detour signage around Union Square. 10/03/12 - PCC presented to CMB. CMB directed the RE to get a price quote from DPT do the work as a price comparison. This item will be brought back to the CMB at a later date. 11/14/12 - PCC presented to CMB. The CMB did not agree that Central Subway needed to take the lead on implementing detour signage, but suggested that the RE study the traffic activity and at the end of November report findings. 02/27/13 - Cost presented to CMB - Agreed to NTE \$6,152.60 Signs furnished and installed by SFMTA, PCC withdrawn. CLOSED; NO FURTHER ACTION
1252-0069	11/08/12		PCC 6 PCC No. 6 - Supplemental instrumentation of BART tunnel lining.	1	CMB-0124 (voided) CMB-0129 (voided) CMB 0131	Agree to Merit Agree to Cost Agree to Cost	10/13/12 07/10/13 08/07/13 08/09/13	+307,861	Implement additional instrumentation of BART tunnel lining: (A) Existing bolt preload force – Determine the actual load in 12 bolts. (B) Bolt force sensor – Install 12 bolt force sensors at bolts for a total of 24 bolts. (C) Rail movement under dynamic train loading – Install dynamic strain gauges (2 per rail, 8 per tunnel). 10/31/12 - PCC presented to CMB for merit. CMB directed RE to proceed with obtaining a price quote from Contractor to perform the work. 05/08/13 - PCC 06 cost comparison was presented. CMB felt \$624K to perform the work was too high and requested IRP be contacted in writing to find out if the additional instrumentation monitoring was still warranted given the new alignment. 06/05: CS Letter No. 1972 presented - Tunnel Design Changes sent to IRP notified them of recent changes and developments in the tunneling contract. 07/10/13 - CMB - Not to Exceed \$650,127.62 IRP's response to SFMTA letter is still pending. 08/07/13 - EE brought to CMB for cost NOT TO EXCEED amount \$305K contingent upon revised estimate to reflect deletion in scope of work. 08/09/13 - Special CMB Mtg to clarify direction and approval to proceed with direction to the Contractor on extra work contained in PCC 06 (BART Work Scope reduction) The CMB Agreed to a NTE revised value of \$307,860 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #19
1252-0070	01/00/00	unsubmitted	Full Closure of 4th Street	1				TBD	SFMTA allowed full closure of 4th Street in order to facilitate construction of Launch Box Slurry Wall Construction Week Ending 11/04/12 - 11/11/12.
1252-0071	11/07/12	61	LB - Panel P-17 Buried Obstruction	2	CMB-0125	Agree to Merit	01/02/13	+377	CJA-NCC discovered an unmarked buried water main at Panel P-17, approximately 6' below the guidewall at CTL Station 165+52, while performing slurry diaphragm wall excavation. 01/02/13 - CMB agreed with Evaluation of Merit. 07/24/13 - CMB agreed to cost of reconciliation change - NTE \$1,100 - Agreed
1252-0072	11/14/12	62	LB - Panel P-9 Buried Obstruction	2	CMB-0140	Agree to Merit Agree to Cost	1/23/2013 11/06/13	+116,663	CJA-NCC discovered a buried obstruction while excavating slurry diaphragm wall panel P-9 at the Launch Box location. 01/02/13 - Presented to CMB for merit, CMB did not agree. CMB suggested inspector's daily tags as backup or reference the tag numbers in the write-up when force account work is involved. 01/23/13 - Revised write up presented CMB agreed with Evaluation of Merit. 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$41,588 - Agreed Direct Cost for CORs 32, 34, 42, 43, 62, 65, 67 have been negotiated. Time Impacts in IRL process.

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1252-0074	11/16/12	65	LB – Panel P-12 Buried Obstruction	2	CMB-0141	Agree to Merit Agree to Cost	1/23/2013 11/06/13	+112,313	CJA-NCC discovered a buried obstruction (water main) while excavating slurry diaphragm wall panel P-12 at the Launch Box location. 01/02/13 - Presented to CMB for merit, CMB did not agree. CMB suggested inspector's daily tags as backup or reference the tag numbers in the write-up when force account work is involved. 01/23/13 - Revised write up presented; CMB agreed with Evaluation of Merit. 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$40,523 - Agreed Direct Cost for CORs 32, 34, 42, 43, 62, 65, 67 have been negotiated. Time Impacts in IRL process.
1252-0075	11/19/12	66	Retrieval Shaft - Unmarked 12" Steel Pipe	2	CMB-0112	Agree to Merit Agree to Cost	01/23/13 02/27/13	+3,700	While performing excavation for the joint trench at the retrieval shaft BIH's subcontractor Synergy Project Management (SPM) discovered an abandoned 12" dia. steel pipe which appears to be a Low Pressure Water Main. 01/23/13 - Merit info presented to CMB - Agreed 02/27/13 - EE brought to CMB for cost NOT TO EXCEED amount \$3,800 04/01/13 - No reimbursement from SFW COMPLETE; NO FURTHER ACTION: CMOD #13 - Final cost \$3,700
1252-0076	11/19/12	67	LB - Panel P-10 Buried Obstruction	2	CMB-0145	Agree to Merit Agree to Cost	1/23/2013 11/06/13	+82,933	CJA-NCC discovered a buried obstruction or concrete encased clay sewer pipe, approximately 7' below the top of the guide wall while excavating slurry diaphragm wall panel P-10 at the Launch Box location. 01/02/13 - Presented to CMB for merit, CMB did not agree. CMB suggested inspector's daily tags as backup be attached or reference the tag numbers in the write-up when force account work is involved. 01/23/13 - Merit info presented to CMB - Agreed 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$49,984 - Agreed Direct Cost for CORs 32, 34, 42, 43, 62, 65, 67 have been negotiated. Time Impacts in IRL process.
1252-0077	12/21/12		PCC 7 PCC No. 7 - BART Temporary Annex Wall	1	CMB-0106	Agree to Cost	01/30/13	+15,500	SFMTA is requesting Contractor construct temporary wall for Bart Annex for SFMTA use. 01/30/13 - NOT TO EXCEED Amount \$15,380 COMPLETE; NO FURTHER ACTION: CMOD #11 - Final Cost \$15,500
1252-0078	12/28/12		PCC 9, FA CO 1 PCC No. 9 - UMS Headwall - Unknown Buried Pipe	1	CMB-0100	Agree to Merit Agree to Cost	01/16/13 01/16/13	+75,000	Related to COR 063. SFMTA instructed BIH to perform investigation into the 48" diameter steel pipe as it is a Differing Site Condition. 01/30/13 01/16/13 - EE brought to CMB for cost NOT TO EXCEED amount \$75,000 04/01/13 - CM team must obtain in writing from AT&T a utility agreement for cost reimbursement. COMPLETE; NO FURTHER ACTION: CMOD #04
1252-0079	01/09/13		PCC 10 FA CO 3 PCC No. 10 - Relocation of TBM Retrieval Shaft - Excludes Button Up Costs	1					Modify Bid Item ST-4 (Construction of Base Bid Permanent Retrieval Shaft) and ES-4 (Ground Treatment at Retrieval Shaft Breakouts) to relocate the TBM Retrieval Shaft to 1731-1741 Powell Street - (Excludes Utility Button Up and Site Restoration) 01/09/13 - Draft PCC10 presented to CMB for Contractor Design Activity to be paid on Force Account. NTE value \$20K presented to CMB as a draft copy, final copy distributed to the Contractor increased to \$50K. 02/20/13 - COST IS NOT REFLECTED HERE - SCOPE IS FUNDED BY OTHER CPT 690 \$\$\$\$ 03/06/13 - Cost proposal received from BIH. SFMTA will develop a detail estimate of what is believed to be the scope of work. 03/13/13 - PCC 10 presented for CMB change approval of \$50K NTE amount to perform design activities. CMB requested CM team return with a more detailed estimate, Contractor's cost proposal of the bulleted items as listed on the PCC and backup documentation as evidence of work completed by the Contractor. COMPLETE; NO FURTHER ACTION CMOD #20 (separate funding source used - CPT 690).

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1252-0080	12/19/12		Segment Measuring Frequency	7					RFI 203.1 - In light of gauging frequency, and the difficulties of erecting a ring with cast in gaskets, BIH JV alternately proposes to assemble a ring on the Master ring at an interval of every 500th ring cast. The assembled ring would be comprised of randomly selected segments, or segments chosen by the Engineer. 12/11/13 - The CMB took exception to the deletion of the (\$1.3M) from the log without the consent of the Board. Direction was given to re-insert the credit and add a notation to the "comments section" the reasoning the dollar amount is no longer valid and should be removed.
1252-0081	09/09/12		F21 and Old Navy Instrumentation Proposal	7					-0- Wang Technology is proposing instrumentation changes to the Liquid Level Sensors and Tilt Beams in the basements of Old Navy and Forever 21.
1252-0082	01/14/13	68	UMS – AT&T Vault Walkway @ N Headwall	2		Agree to Merit	01/16/13	+2,000	SPM discovered an walkway at the UMS north headwall. This walkway is located at the UMS north headwall and connects the south AT&T vault, located within the utility demolition limits, to an north AT&T, located outside of the utility demolition limits. SPM proposes to construct 3'x5' wall to the extents necessary, inside this walkway. The wall will be constructed of plywood and necessary reinforcement in order to create a bulkhead that will isolate the walkway and north vault from the south vault. 01/16/13 - CMB recommendation Contractor/Sub-contractor proceed on Force Account with a "Not to Exceed Amount" \$2K. 04/01/13 - CM team must obtain in writing from AT&T a utility agreement for cost reimbursement. COMPLETE; NO FURTHER ACTION: CMOD #16 - Final Cost \$2,000.00
1252-0083	11/08/12	69	UMS - Shoring Impacts due to 48" ATT Pipe at SW Headwall	2				+45,715	On or about 10-25-13, BIH/Synergy were installing sheet piles at the UMS SW head wall to demolish the existing basement wall in conflict with the head wall construction per contract requirements. During the driving of the sheet piles, Synergy struck a buried object which was later identified as a 48" Diameter steel pipe. See PCC 9 and 11. Synergy thought they were hitting a buried tie-back which was shown on the contract drawings. Synergy did not know at the time that they were hitting a buried 48" pipe. After hitting the buried object, Synergy installed additional sheet piles and enlarged the excavation area in order to clear the buried object and drive the sheet piles to the minimum embedment depth. Due to the larger excavation, Synergy is claiming impacts as a result of encountering this DSC including shoring revisions and for installing additional sheets. 06/05/13 - CM TEAM NOTES: COR 069 reopened by BIH to cover cost for enlarging excavation due to encountering the 48" buried pipe. Previously COR 069 was to cover capping and removal of the pipe until it was changed to PCC 11. 02/05/14 - CM TEAM NOTES: In IRL process
1252-0084	01/24/13	PCC 11, FA CO 2	PCC No. 11 - UMS – Cap and Remove 48" Steel pipe	1	CMB-0105	Agree to Cost	1/23/13	+150,000	BIH/Synergy encountered a buried 48" Diameter steel pipe during work at the UMS S. Headwall. The pipe is located 6 feet from the south UMS headwall and 5 feet from the face of the curb. This PCC is to complete removal of pipe @ S. Headwall and Investigate and remove pipe if necessary @ the North headwall. 01/30/13 - EE brought to CMB for cost NOT TO EXCEED amount \$150,000 - Agreed 04/01/13 - CM team must obtain in writing from AT&T a utility agreement for cost reimbursement. COMPLETE; NO FURTHER ACTION: CMOD #09
1252-0085	01/24/13	71	LB – Ramp Excavation Obstructions	2	CMB 0133	Agree to Merit Agree to Cost	4/3/2013 09/25/13	+5,594	BIHJV encountered numerous groups of wood piles while performing excavation of the Launch Box ramp. The wood piles are approximately 16"+ in diameter and are located along the north and south perimeter walls of the Launch Box ramp excavation area. 01/30/13 - CMB did not agree with merit of change suggestion the RE negotiate w/Contractor for another concession. 04/03/13 - COR merit evaluation presented to CMB again due to a greater number of obstruction encountered. CMB - Agreed to Partial Merit. 09/25/13 - EE brought to CMB for cost NOT TO EXCEED amount \$5,700.

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1252-0086	02/08/13	72	Ellis Shaft Jet Grout Obstruction	2				-0-	On February 6th, 2013, CJA/NCC was drilling column R3 of the Ellis Shaft and reported hitting an obstruction 52ft below existing grade. The obstruction reportedly caused the jet grout monitor to shear off. At this time it is not known what the obstruction is or if it caused the monitor to be sheared off. Contractor no longer pursuing. CLOSED; NO FURTHER ACTION
1252-0087	02/14/13	73	MOS - 16" Pipe removal @ NE Headwall	2	CMB-0118	Agree to Merit Agree to Cost	3/13/2013 05/08/13	+940	BIH-JV's subcontractor, Synergy, encountered an abandoned 16" pipe while installing the 12" waterline at the north headwall of Moscone. The pipe was at the same elevation as the new 12" waterline and therefore needed to be removed to facilitate the installation of the new 12" waterline. 03/13/13 - Merit info presented to CMB - Agreed 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement. 05/08/13 - CMB agreed to cost of reconciliation of change on FA - NTE \$989.00 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #17
1252-0088	NA		Whole Foods - Unknown brick obstruction in Comp Grout Trench	0				-0-	BIH has decided not to submit a COR as production was not significantly impacted. CLOSED; NO FURTHER ACTION
1252-0089	03/11/13	75	Hazardous Waste Disposal Denial - Spoils Containment Cost Impacts	7				-0-	BIH submitted change order request (COR) 030 seeking reimbursement for the demonstrated additional costs of excavating, handling and disposing of excavated material found to contain hazardous material to a permitted landfill over that which can be disposed of at an unregulated dump site. The SFMTA refused reimbursement for such costs under the hazardous waste bid item allowance. As a result of this determination, BIH is modifying its approach to the construction and handling operations of tunnel spoils generated during tunneling operations. 09/18/13 - Contractor has submitted a Contract Claim No. 2 Haz Mat Removal - Caltrans site (COR 30, 45 & 75) for 708,929.00 CMB directed the CM Team to draft a letter rejecting the claim. Claim #2 has been negotiated to include COR 30, 54 and 75.
1252-0090	03/08/13	76	MOS - 16" Pipe removal @ SE Headwall	2	CMB-0119	Agree to Merit Agree to Cost	03/20/13 05/08/13	+1,116	BIH-JV's subcontractor, Synergy, encountered an abandoned 16" pipe while installing the 12" waterline at the south headwall of Moscone. The pipe was at the same elevation as the new 12" waterline and therefore needed to be removed to facilitate the installation of the new 12" waterline. 03/20/13 - Merit info presented to CMB - Agreed 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement. 05/08/13 - CMB agreed to cost of reconciliation of change on FA - NTE \$1,116.00 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #17 - Final Cost \$1,116.00
1252-0091	03/06/13	77	Comp Grout - WFB-5 Drilling Obstruction	2	CMB-0126	Agree to Merit Agree to Cost	04/03/13	+6,126	On March 06, 2013, BIHJV encountered a potential Differing Site Condition (DSC) while drilling the compensation grouting hole WFB-5 located at Whole Foods and more precisely at CTL Station 160+38. This potential DSC consists of an obstruction located at a depth of 9' below grade which prevented CJA-NCC from drilling any further. 04/03/13 - Merit info presented to CMB - Agreed 07/24/13 - CMB agreed to cost of reconciliation change - NTE \$6,125.93 - Final Cost \$1,116.00
1252-0092	03/07/13	78	Comp Grout - WF & ATT	2		Agree to Merit	3/20/13	-0-	BIHJV encountered multiple potential Differing Site Conditions (DSC's) of varying dimensions while excavating the compensation grouting trench for the drill holes located at Whole Foods and AT&T. 03/20/13 - Merit info presented to CMB - CMB agreed there was No Merit for this contract change. 05/24/13 - CM Team Notes - Contractor no longer pursuing due to failure to provide proper notification. CLOSED; NO FURTHER ACTION.

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1252-0093	03/07/13	79	FA CO 4	2	CMB-116 CMB 142	Agree to Merit Agree to Merit (addl) Agree to Cost Agree to Addl Cost	03/20/13 04/24/13 04/26/13 11/06/13	+259,373	BIHJV encountered a potential Differing Site Condition (DSC) while sawcutting the pavement for the compensation grouting holes located at Old Navy. The original design was to drill the compensation grout holes between two existing PG&E lines. It was discovered in the field that there is not enough clearance between the existing PG&E lines for the original design to be possible and multiple other potential DSCs were also encountered including, but not limited to, tile duct banks, concrete of unknown contents, and steel pipes. 03/20/13 - Merit info presented to CMB - Agreed 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement. 04/24/13 - Addl info presented for rationale for Contractor to demob and remob drill rig due to insufficient clearance between existing PG&E lines to drill the grout holes - Agreed 04/26/13 - COR presented at a special CMB mtg to notifying CMB of need to have Contractor perform work on FA4 for a NTE amount of \$70K. 05/15/13 - Addl request for funds to cover (Inefficiencies) - agreed for a not to exceed amount \$152,000. 11/06/13 - EE brought to CMB for cost NOT TO EXCEED \$37,380 for the (remaining cost) parts 2 and 3 of 4 - Agreed COMPLETE; NO FURTHER ACTION: CMOD #23
1252-0094	03/12/13	80		2		Agree to Merit	04/03/13	+18,906	BIHJV's subcontractor, Synergy Project Management was performing the installation of low pressure water distribution piping at the Moscone north headwall and discovered an unknown material wrapping around the existing 20" waterline which appeared to contain asbestos material. 04/03/13 - Merit info presented to CMB - Agreed 07/10/13 - CM Team Notes - To be paid out of Environmental Mitigation allowance GE-8.
1252-0095	03/11/13	81		2		Agree to Merit	04/03/13	+3,001	BIHJV's subcontractor, Synergy Project Management, encountered a potential Differing Site Condition (DSC) upon exposing the tie-in point for the 12" waterline at the south headwall of Moscone. The potential DSC consists of two 45 degree elbows in the existing 12" waterline at the point of the tee connection. SFWD has surveyed the field conditions and indicated that the tee connection will need to be moved to the west. 04/03/13 - Merit info presented to CMB - Agreed COMPLETE; NO FURTHER ACTION: CMOD #17 - Final Cost \$3,000.00
1252-0096	03/13/13	82		2				+31,573	Upon exposing the existing 20" waterline at the south headwall of MOS, in preparation for installing the new 20" waterline shown on WD-403 and amended by RFI 0155, BIHJV's subcontractor Synergy Project Management encountered a potential DSC. The potential DSC consisted of a crossing conflict between the new 16" AWSS, the new 20" waterline, and the existing 6" PE gas. These three utilities cross at multiple locations however the existing depths are roughly the same. 01/22/14 - Item reviewed at the CMB mtg as a status update to potential cost exposure. Item now being discussed in the IRL process.
1252-0097	03/19/13	83		2	CMB-127	Agree to Merit Agree to Cost	04/17/13 07/24/13	+1,420	During excavation for the Ellis Street Shaft, BIHJV's subcontractor, CJA-NCC, encountered a concrete obstruction at approximately 10 feet below grade. CJA-NCC spent 4 hours removing the obstruction. 04/17/13 - Merit info presented to CMB - Agreed 07/24/13 - CMB agreed to cost of reconciliation change - NTE \$1,424.52 - Agreed
1252-0098	03/16/13	84		2				-0-	Water was discovered seeping into the Crate & Barrel basement in concert with secant pile installation at Pile #SRV-A. At the time, pile excavation was approximately 90 feet deep. BIHJV's subcontractor, CJA-NCC, stopped pile installation and placed lean concrete within the pile excavation. This allowed them to continue secant pile construction on other piles until which time SFMTA could provide appropriate mitigation for the water leak. 07/03/13 - CM Team will deny merit, notice not received within 7 days. CLOSED; NO FURTHER ACTION

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1252-0099	04/05/13		PCC No. 12 - Modifications to Tunnel Alignment at Market Street	1	CMB-131	Agree to Merit Agree to Cost (Conditionally)	08/14/13 08/14/13	+1,671,332	IFB Tunnel Profile conflicts with micro-piles installed under Contract 1251. Tunnel Profile needs to be revised (lowered) such that TBM and Tunnel structure is below previously installed micro-piles. Contractor shall revise compensation grouting design to conform to Contract requirements given the revised tunnel alignment. 04/03/13 - CMB agreed to Micropile profile change being forwarded to the Contractor. 04/10/13 - Updated alignment was presented superseding 04/03/10 version - (lowered 4.9%) 04/10/13 - Original Contractor submittal needs to be evaluated to verify the new alignment has been incorporated. 08/14/13 - Merit Evaluation and PCC 12 Cost NTE (Construction portion) was presented to the CMB for approval. The CMB agreed to merit contingent upon verification signature by the Designer (DP1) of additional work and cost associated with the change. NTE Value \$41,470.01 - Agreed
1252-0100	03/26/13	85	SFWD Impacts at MOS North	2				+103,107	BIHJV's subcontractor CJA-NCC is in the process of constructing the Moscone Station headwalls, the sequence of construction is such that it requires the 12" and 20" waterlines on the eastside of 4th street to be rerouted prior to completing the headwalls. In accordance with the Contract the San Francisco Water Department (SFWD) is responsible for completing the waterline reroutes (chlorination and tie-in) in a specified duration. BIHJV claims the SFWD failed to complete this work in the contractual durations. As a result, BIHJV claims the headwall construction operation has been incurring stand by costs. 04/10/13 - Item reviewed at CMB meeting during review of Trend/Change Log COR's. CM team contends this is not a valid change and will reject the Contractor's claim of merit. Contractor has submitted a notification of Claim #3 for standby cost for this item. The CM Team will respond by 02/14/14.
1252-0101	01/28/13	87	Cross Passage 5 - Value Engineering Change Proposal	5				(2,674)	As indicated in Contract Drawing No. ES-144, ground treatment for the excavation of CP5 was anticipated to be performed using jet grouting methods. BIHJV proposes to perform ground freezing from within the tunnels as an alternative ground treatment methodology, thereby avoiding the need to disrupt and impact the public by occupying 4th Street for an extended period. 04/24/13 - Item reviewed at CMB mtg. during review of Trend/Change Log COR's. CMB suggested a credit from the Contractor should be received for Bid Item ES-5. In addition suggested a minimal review of the BIH's proposed ground freezing method be done by the PB. COMPLETE; NO FURTHER ACTION: CMOD #25
1252-0102	04/09/13		UMS - Secant Pile SRV-J Obstruction DSC	2				-0	BIHJV's subcontractor, CJA-NCC, encountered a potential Differing Site Condition (DSC) while drilling for UMS Secant Pile #SRV-J. The DSC consists of what appears to be an abandoned utility pipe located approximately 10 feet deep. -0- 04/24/13 - Information presented to CMB during review of Trend Log. CM Team states COR merit will be rejected due to notification of change not met in timely manner per the contract docs. 05/24/13 - CM Team update - Contractor no longer pursuing due to untimely notification of event. CLOSED; NO FURTHER ACTION.
1252-0103	04/18/13	88	SFWD Impacts at MOS South	2				-0	BIHJV's subcontractor CJA-NCC is in the process of constructing the Moscone Station headwalls, the sequence of construction is such that it requires the 12" and 20" waterlines on the eastside of 4th street to be rerouted prior to completing the headwalls. In accordance with the Contract the San Francisco Water Department (SFWD) is responsible for completing the waterline reroutes (chlorination and tie-in) in a specified duration. BIHJV claims the SFWD failed to complete this work in the contractual durations. As a result, BIHJV claims the headwall construction operation has been incurring stand by costs. 05/08/13 - Information presented to CMB during review of Trend Log. CM Team states COR will be rejected due to no merit. This item is not on the critical path. 06/17/13 - Contractor no longer pursuing. CLOSED; NO FURTHER ACTION.

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1252-0104	06/06/13		PCC 13 - SFWD Excavation, Support and Backfilling	1	CMB-0122 CMB 0128	Agree to Cost Agree to Addl Cost	6/19/13 08/09/13	+33,982	Excavation, support and restoration work at two locations required to facilitate fitting/valve installation work by the San Francisco Water Department. Installation of valves are to facilitate fire service connection cutover and cutting off of the existing water main. The existing water main is in the footprint of the UMS station piles and is to be abandoned. 06/05/13 - CMB agreed to change required; work must be completed sometime in June 2013 06/19/13 - Cost estimate presented; CMB agreed for a NTE of \$20K 08/07/13 - CMB viewed the estimate requesting the narrative be rewritten to tell the entire story of what has generated the change. 08/09/13 - Special CMB Mtg to clarify direction and approval to proceed with direction to the Contractor on extra work contained in PCC 13 (Macy's Backflow work). CMB approved additional work and scope for a NTE value of \$14,100 for a total change value of \$34,100 COMPLETE; NO FURTHER ACTION: CMOD #18 executed for \$20K. Supplementary CMOD #24 executed for #13,982 was issue for remaining cost.
1252-0105	05/30/13	90	Abandoned Well at MOS Panel N-4	2				+450,000	BIHJV's subcontractor, CJA-NCC, discovered an obstruction that appears to be an abandoned monitoring well within the Moscone Slurry Wall Panel "N-4". Contractor claims impacts resulting from this alleged DSC include, but are not limited to, excavation inefficiency, the required backfilling of the panel with lean concrete on multiple occasions, and re-excavations of the panel. 06/19/13 - Information presented to CMB during review of Trend Log. CM Team states COR will be rejected due to several reasons of "no merit " Items in in the IRL process
1252-0107	12/13/12	92	Credit - North headwall panel N-2 at Moscone	7				(4,943)	During installation of the reinforcement cage at panel N-2 at the Moscone North Headwall a 1-inch dia. Polyester sling used for lifting could not be detached from the reinforcement cage. The slings were then casted in-place. SFTMA requested a credit CO for the CN 1300 contractor to demolish the concrete and slings and replace the structural concrete. 07/10/13 - NCR condition of the wall be provided in order to prepare engineer's estimate for credit amount. Negotiated amount to be deducted from pay estimate. COR has been rescinded.
1252-0108	04/11/13	91	Credit - Secant pile SRV-H, UMS south headwall	7				(263)	During concrete placement, the dummy steel beam that was used to hold down the secant pile steel beam reinforcement for pile SRV-H @ the UMS south headwall could not be removed and was poured in-place. SFTMA requested a credit CO for the CN 1300 contractor to demolish this beam between El. 16.66' and the beam top. Negotiated amount to be deducted from pay estimate. COR has been rescinded.
1252-0109	09/24/12	93	Credit - 65 feet of water pipe not installed at MOS	7				+86,882	Contract Drawings WD-403 & WD-404 shows the 20" low pressure water line cutting through an area in the intersection where the joint trench is in the way. BIHJV's subcontractor, Synergy Project Management, with SFMTA's concurrence, installed the water line tie-in per a configuration which resulted in approximately 65' less line required to be installed. SFTMA requested a credit CO to eliminate 65' of the line.
1252-0110	02/06/13	94	Credit - Switching of the 12" and 20" lines at MOS	3				(30,466)	It was discovered that the field locations of the 12" water line and 20" water line were actually "switched" from the location shown in contract drawing WD-402 Rev.0. SFMTA requested a credit CO as less 20" water line was required to be installed than was originally anticipated.

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1252-0111	07/16/13	95	Green St Shaft – Design Cost Impacts for Jet Grout	7					BIHJV: "BIH and CJA-NCC are in receipt of the SFMTA's revised submittal review comments for Submittal No 31.43.14-003 (review cycle 3) dated July 10, 2013, where the SFMTA determined that the previously submitted content does not fulfill the contract requirements. The submittal status was changed from "Approved" on March 21, 2013, to "Disapproved - Resubmit" on July 10, 2013. The SFMTA states that the submittal was reviewed in further detail and it was determined the submittal didn't fulfill the contract requirements. This new submittal determination will result in additional costs to the SFMTA." 07/24/13 - Information presented to CMB during review of Trend Log. CM Team preparing letter of no merit, due to disagreement of dwg shown. CLOSED; NO FURTHER ACTION
1252-0112	07/16/13	96	Micropiles @ UMS Tangent Pile SRB-H	2		Agree to Merit	07/31/13		Excavation for battered secant pile SRB-H began on July 12. At approximate depth of 30', CJN reported hitting an obstruction. Two, 36" and 45" long, No. 18, Dywidag bars were discovered within spoils of the first bite of the clamshell bucket. The 2-1/2" diameter bar was consistent with the micro piles installed in the previous contract. 07/24/13 - Draft merit evaluation presented to CMB. CM Team reported further investigation needed to verify survey location of micropiles. CMB requested a specific dwg of 1251 As Built of piles be presented at next CMB. 1251 Contractor will be put on notice referencing the CS CN1251 Ltr. #018 - Future Potential Costs Due to Incorrect Micropile Placement. 07/31/13 - Merit Approval presented to CMB - Agreed. Notification of Possible Micropile Obstruction to CN1252 and possible CN1300 work was sent to CN1251 Contractor. COR was rescinded. CLOSED; NO FURTHER ACTION
1252-0113	01/09/13		Relocation of TBM Retrieval Shaft - Columbus Ave. Restoration	1				+261,057	Modify Bid Item GE-3 (Utility Demo, Sewer, Road Demo, Pavement Restoration, etc.) to relocate the TBM Retrieval Shaft to 1731-1741 Powell Street - (Includes Utility Button Up and Site Restoration Only) 07/24/13 - Information presented to CMB during review of Trend Log. CMB requested LS Bid Item be broken down based on contract work to see how much money would be put in to perform the restoration button up cost. In addition the CMB requested the item description be change to "Columbus Ave. Restoration" in order to not confuse it with PCC 10 Retrieval Shaft work. COMPLETE; NO FURTHER ACTION: CMOD #21
1252-0114	07/24/13	97	Ellis Shaft – TAM ES2-01 and ES2-17	2		Agree to Merit	08/28/13		BIHJV's subcontractor, CJA-NCC, discovered gravel material within the drill spoils from two separate Ellis Shaft TAM installations, TAM ES2-01 and ES2-17 08/14/13 - Item reviewed at CMB during review of Trend/Change Log COR's. GBR's will be checked to see if gravel material is known to exist in the drill location. 08/28/13 - Merit info presented to CMB - Agreed COR Rescinded CLOSED; NO FURTHER ACTION
1252-0115	08/07/13	98	Ellis Shaft – TAM ES2-16	2		Agree to Merit	08/28/13		BIHJV's subcontractor, CJA-NCC, discovered gravel material within Ellis Shaft TAM installations, TAM ES2-16 08/14/13 - Item reviewed at CMB during review of Trend/Change Log COR's. GBR's will be checked to see if gravel material is known to exist in the drill location. 08/28/13 - Merit evaluation presented to CMB - Agreed COR Rescinded CLOSED; NO FURTHER ACTION
1252-0116	08/08/13	99	MOS – AWSS Vault Over pour @ South Headwall)	2	CMB 0134	Agree to Merit Agree to Cost	09/25/13	+2,394	BIHJV: "While performing AWSS work at the MOS South Headwall, Synergy crews found the mechanical joint Tee bolts, required for the AWSS point of connection, to be completely encased in concrete. The concrete encasement appeared to be concrete over pour remaining from a previous contractor's AWSS vault wall pour." 08/14/13 - Item reviewed at CMB during review of Trend/Change Log COR's. 09/25/13 - Merit evaluation presented to CMB - Agreed. 09/25/13 - Eng. Est. presented to CMB for cost NOT TO EXCEED \$2,400 - Agreed
1252-0117	08/15/13	100	Ellis Shaft TAM ES2-08	2		Agree to Merit	08/28/13		BIHJV: "August 12, 2013, BIHJV's subcontractor, CJA-NCC, struck a hard unknown object while drilling the Ellis Shaft TAM ES2-08." 08/28/13 - Merit evaluation presented to CMB - Agreed CMB requested a investigation plan to be developed and included in this COR if the plan is implemented. COR Rescinded. CLOSED; NO FURTHER ACTION

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1252-0118	08/23/13	101	Ellis Shaft TAM ES2-11	2				-0-	BIHJV's subcontractor, CJA-NCC, discovered gravel material within Ellis Shaft TAM installations, TAM ES2-11 09/11/13 - Viewed at CMB during review of Trend/Change Log COR's.
1252-0119	09/03/13	102	UMS Jet Grout Column 18 DSC Headwall	2				-0-	While drilling down on column #18 at the UMS south headwall, BIHJV's subcontractor, CJA-NCC, encountered a hard unknown obstruction. 09/11/13 - Item reviewed at CMB mtg. during review of Trend/Change Log. 10/16/13 - DSC presented for merit approval - No action was taken by the CMB. The CM will investigate if the 1252 Contractor received the 1251 As built information by the start of operations. COR Rescinded. CLOSED; NO FURTHER ACTION
1252-0120	09/05/13	103	Retrieval Shaft Additional Slip Lining Pipe Qty	4				-0-	RFI 251.1 SFMTA Response: Specification 33 31 00 1.01.A.22 Sewer Work, states, " Slip lining existing 3-foot by 5-foot brick sewer with 16-inch and 24-inch diameter HDPE Pipe (polyethylene pipe) nominal size SDR 26." As such, slip lining is to be performed for both the 16" and 24" diameter HDPE pipe. Branches indicated in the supplied sketch to be relined along Stockton and Columbus are acceptable. In addition, the 33-ft long branch that crosses the alignment at CTL 86+35 must also be relined. Acceptable alternative (to fused HDPE) pipe materials and sizes for this branch can be proposed by BIH. BIH shall submit the propose alternative for this branch of pipe for SFMTA review. The use of coupled PVC is not acceptable." 09/11/13 - Item viewed at CMB mtg. during review of weekly Trend/change log. No dwg for this work only a table. CM Team working with designer to make the determination. Item now being tracked under PCC 16. CLOSED; NO FURTHER ACTION.
1252-0121	09/06/13	105	Retrieval Shaft Relocation of Seismograph	1				-0-	BIHJV: "BIHJV's instrumentation subcontractor, Wang, was directed to relocate one of the vibration monitoring devices (Seismograph) installed at the Retrieval Shaft area to monitor vibration induced by demolition operations of the existing Pagoda Theater building." 09/11/13 item reviewed at CMB meeting during review of weekly Trend/Change log. CMB doesn't agree with the relocation charge and requested a better definition of the item. 01/22/14 - Item viewed at CMB as an status update. SFMTA letter No. 241 sent to Contractor denying merit. CLOSED; NO FURTHER ACTION.
1252-0122	04/19/13	89	UMS - Suspended Remobilization of Jet Grout Rig	7				+52,305	BIHJV: "The SFMTA directed BIHJV/CJA-NCC to suspend the planned remobilization of the Jet Grout Rig at the UMS location due to external affairs with local UMS businesses." 09/11/13 - Item reviewed at CMB mtg. during review of weekly Trend/change log. CMB questioned the timeliness of the COR also requesting a better definition of the item. Item has been elevated to the Issue Resolution Ladder (IRL) process.
1252-0123	09/10/13	104	Retrieval Shaft - Additional Sewer Slip Lining 16" HDPE Pipe	4				+98,337	BIHJV: "BIHJV submitted RFI Nos. 275, 275.1 and 275.2 requesting clarification about specific sewer slip lining runs at the Retrieval Shaft, see Attachment Nos. 2, 4 and 6. The SFMTA responded, via RFI No. 275.2, stating that the slip lining is to be installed in a stacked configuration with the 24" over the 16" HDPE pipe, see Attachment No. 7. BIHJV and Synergy believe the SFMTA's response to install stacked HDPE slip lining pipes is additional work as the contract documents do not support this statement." 10/02/13 - Item reviewed at CMB mtg. during review of the weekly Trend/change log update. The CM states the DSC maybe eliminated. Waiting for a response from PUC now there is a as built condition. Letters are being written between SFMTA and SFPUC. 01/22/14 - Item viewed at CMB mtg as an update to potential cost exposure.

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1252-0124	Notification - 9/17/13, PCC - 12/11/13		PCC 17	Green Street Sewer Changes	2		Agree to Merit	9/25/2013	+459,476	In preparation to beginning slip lining work at the intersection of Columbus/Green/Stockton, the Contractor performed a site investigation of the existing 3'x5' brick sewer. The Contractor discovered 4 unknown pipes intersecting the sewer. Received email from DPW on Oct 18 regarding proposed new direction to spray mortar sewer line in lieu of slip lining. DPW also requested additional slip lining on Columbus from Sta. 83+50 to Sta. 85+50. 09/25/13 - DSC presented for merit approval - Agreed. CMB directed the CM Team to ask the Contractor for recommendation to slipline as much of the sewer line as possible without rerouting the conflicting pipe lines. 01/22/14 - Item viewed at CMB mtg as a status update to projected cost exposure. Item will be tracked under PCC17.
1252-0125	10/24/13		PCC 14	Modifications to AWSS Facilities at 4th and Bryant Streets	1				+33,749	Deletion of 12" AWSS diagonal sleeved pipe crossing and hydrant lateral. Installation of 12" AWSS restrained pipe and hydrant lateral. 10/16/13 - Draft PCC reviewed at CMB. The Board is in agreement with the modification. 10/23/13 - Engineers estimate for new work \$136,478 and deleted work (\$163,382) was presented to the CMB. PCC will be forwarded to the Contractor to price the work. In addition a cost estimate will be done for the work which would have been under the 1300 contract.
1252-0126	10/14/13	108		Ellis shaft and Old Navy Grouting	2				+500,000	BIHJV's subcontractor, CJA-NCC, claims to have discovered material (cemented zones) different than that described in the Geotechnical Baseline Report in the Ellis Shaft and Old Navy Grouting Zones. 10/23/13 - Item reviewed at CMB mtg. during review of weekly Trend/Change log. The CM stated this item will be rejected, due to a lack of information being supplied by the Contractor to validate the COR. SFMTA sent Letter No. 247 & 253 denying merit.
1252-0127	10/25/13		FA CO 8	Remove and replace material at Retrieval Shaft CSM wall	1				+22,300	Contractor to remove hazardous material (approximately 250 CY) found in the footprint of the Retrieval Shaft Cutter Soil Mix (CSM) wall and replace with both clean material found on-site (approximately 190 CY) and import material (approximately 60 CY). 10/30/13 - Item reviewed at CMB during review of weekly Trend/Change log. Work to proceed on FA for a NTE amount of \$22,300.
1252-0128	10/03/13		FA CO 7	Acceleration of Work Activities at Retrieval Shaft	1				+5,000	SFMTA to compensate BIHJV for premium time incurred on October 5th, 2013 to accelerate the completion of the site work and soundwall at the Retrieval Shaft. 11/06/13 - Item reviewed at CMB mtg. during review of weekly Trend/Change log. 01/22/14 - Item reviewed at CMB mtg as a status update to potential cost exposure.
1252-0129	10/30/13		0	UMPs on 96-inch Sewer	2				-0	BIHJV's subcontractor Wang Technology claims to have encountered a DSC (brick structure) while drilling for utility monitoring points on Howard Street. 11/06/13 - Item reviewed at CMB mtg. during review of weekly Trend/Change log.
1252-0130	Notification - 11/8/13, PCC - 12/9/13		PCC 16	Ret Shaft Sewer Changes	2				+642,048	BIHJV's subcontractor Synergy Project Management claims to have encountered the following DSCs while performing an investigation into planned slip lining work at the intersection of Columbus/Union/Powell: Internal clearance issues, unforeseen lateral connections, mixed debris and grease buildup inside sewer, and tighter radius than was anticipated for the planned junction structure. 11/20/13 - Item reviewed at CMB mtg. during review of weekly Trend/Change log. The Board suggested the CM Team ask the PUC to tell us what they would like the Contractor to do. 02/05/14 - FA CO 10 was presented for consideration to add a 16" pipe. The CMB took no action. Direction was given to investigate the use of the pipe and to determine the most cost effective approach to reach PUC's desired equivalency of the 36" pipe removed.

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1252-0131	11/13/13	FA CO 9	Obstruction hit at CSM panel W6	2	CMB 0146	Agree to Merit Agree to Cost	12/11/13	+7,829	BIHJV's subcontractor Drill Tech claims to have encountered a DSC (unknown steel members) while performing Cutter Soil Mixing (CSM) on panel W6 at the Retrieval Shaft. 11/20/13 - Item reviewed at CMB mtg. during review of weekly Trend/Change log. This item will be tracked on FA. 12/11/13 - Merit evaluation presented to CMB - Agreed. EE presented for cost NOT TO EXCEED \$9,000 - Agreed	
1252-0132	11/12/13	0	Material Hardness at Retrieval Shaft	2				TBD	BIHJV's claims to have encountered ground material characteristics that are significantly harder than anticipated based on the information provided during the negotiations of PCC 10 (Relocation of Retrieval Shaft). 11/20/13 - Item reviewed at CMB mtg. during review of weekly Trend/Change log.	
1252-0133	PCC - 11/25/2013	PCC 15	Deleted AWSS Work at Union St and Columbus Ave	1				(182,024)	PCC 15 issued to: 1.) Delete all work associated with the removal and disposal of the Auxiliary Water Supply System (AWSS) utilities as shown on Contract Drawing No. AW-501.1 Rev.0. 2.) Delete all work associated with furnishing and installation of AWSS utilities as shown on Contract Drawing No. AW-501.9 Rev.0. Note: Monitoring of existing AWSS line to be performed in lieu of installation of new AWSS utilities. 12/11/13 - Item reviewed at CMB during review of weekly Trend/Change log. Item has been elevated to the Issue Resolution Ladder (IRL) process.	
1252-0134	PCC - 12/27/2013	PCC 18	Retrieval Shaft Site Supervision	1				TBD	PCC 18 issued to provide for the Contractor's supervision and engineering services during the compensation grouting activities at the Retrieval Shaft. 01/08/14 - Item reviewed at CMB meeting during review of weekly Trend/Change log. 01/29/14 - PCC presented for review. CMB agreed with change.	
1252-0135	Notification - 12/18/13		Retrieval Shaft Comp Grout Array 045 Obstruction	2				-0-	BIHJV's subcontractor, Drill Tech, encountered a concrete obstruction at the Retrieval Shaft location on December 17th, 2013 when performing survey layout of the design location for several of the comp grout holes in the 045 array. 01/08/14 - Item reviewed at CMB meeting during review of weekly Trend/Change log. The CM reported the Contractor will be notified there is no merit for this change request. SFMTA denial letter No. 270 sent to Contractor.	
Contract 1252 Totals									+5,093,618	Total Changes and Potential Change (trends) to the contract are currently \$5,093,618 Out of Scope Changes to the Contract for Relocation of TBM (Trend 79, PCC 10) to be paid out of CPT690, funded separately. Not include in total above and being tracked separately from original Program Costs of \$1.5783B
CONSTRUCTION TRENDS (Based on #1252 Trending Log and CMod) - SUBTOTALS:									+5,093,618	The \$5,093,618 represents an UNDERRUN of allocated contingency. Current Balance = (23,658,463 - 5,093,618 = \$18,564,846) This does not include potential reimbursements from utilities.
DESIGN TRENDS										
FD-001	07/31/10	084-0001	Narrowing of Platform at UMS	1	CMB-0006	Agree	08/04/10	(800,000)	[In "Current Forecast" - Sep2010 Cost Report.]	
FD-002	07/12/10	084-0002	Redux of Station Emergency Ventilation Fans (UMS)	1	CMB-0009	Agree (Conditionally)	08/25/10	(2,000,000)	Further actions: Designer required to receive Fire/Life/Safety approval before proceeding with this change. Designer to allocate cost impacts by Station (Current figures are "place-holders.". [In "Current Forecast" - Sep2010 Cost Report.]	
FD-002	07/12/10	085-0001	Redux of Station Emergency Ventilation Fans (CTS)	1	CMB-0009	Agree (Conditionally)	08/25/10	(500,000)	Further actions: Designer required to receive Fire/Life/Safety approval before proceeding with this change. Designer to allocate cost impacts by Station (Current figures are "place-holders.". [In "Current Forecast" - Sep2010 Cost Report.]	

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					Approval Action	Approval Date	Actual/Forecast		
FD-002	07/12/10	086-0001	Redux of Station Emergency Ventilation Fans (MOS)	1	CMB-0009	Agree (Conditionally)	08/25/10	(500,000)	Further actions: Designer required to receive Fire/Life/Safety approval before proceeding with this change. Designer to allocate cost impacts by Station (Current figures are "place-holders.". [In "Current Forecast" - Sep2010 Cost Report.]
FD-003	07/31/10	085-0002	Lowering of CTS	1	To be verified	Info Only	08/25/10	+7,000,000	Presented to CMB for information/consideration.
FD-004	07/29/10	084-0003	UMS Structural Configuration	1	CMB-0007	Agree	08/18/10	(8,000,000)	[In "Current Forecast" - Sep2010 Cost Report.]
FD-005	08/22/10	084-0004	UMS Alternate Station Access/Vent Shaft @ Union Square	1	CMB-0010	Agree	12/29/10	(22,500,000)	Documentation to be filed.
FD-006	08/03/10	084-0005	Station Headwalls - UMS	1	CMB-0008	Agree	08/18/10	-0-	
FD-006	08/03/10	086-0002	Station Headwalls - MOS	1	CMB-0008	Agree	08/18/10	-0-	
FD-007	08/03/10		Cross-passages	1	CMB-0018	Agree	09/15/10	-0-	
FD-008	07/30/10		Trolley Re-route @ Columbus & Powell	1	CMB-0017	Agree	09/15/10	+2,000,000	
FD-009	10/06/10	082-0003	ECP to Modify Sidewalk Vault Demolition and Construction Sequence to Facilitate Construction of Joint Utilities Trench and Future UMS Station	1	CMB-0019	Agree	12/15/10	+3,000,000	
FD-010	10/06/10	082-0004	Redesign Stockton Street Sanitary Sewer to conform to SFPUC Sewer Criteria that preclude placement of relocated sanitary sewer under sidewalks	1	CMB-0020	Agree	11/17/10	+2,000,000	
FD-011	10/06/10	082-0005	Reconfigure Routing of Water, Sewer and Gas laterals from buildings on north side of Ellis Street	1	CMB-0021	Agree	11/17/10	+500,000	
FD-012	10/06/10	082-0006	Recognize cost transfers from design allowances allocated to contingency to explicit line items in final design estimates	1	CMB-0022	Disagree	11/17/10	-0-	
FD-013	10/06/10	082-0007	Increase Extent of Sub-sidewalks Vault Secondary Closure Walls and Waterproofing	1	CMB-0023	Agree	11/17/10	+4,100,000	
FD-014	10/06/10	082-0008	Include OCS system for rerouting trolley buses to Fifth Street	1	CMB-0024	Agree	12/15/10	+3,100,000	
FD-015	10/06/10	082-0009	Subsidewalk Vault Secondary Closure Walls for Buildings at 800 Market and 838 Market	1	CMB-0025	Agree	11/17/10	+1,000,000	
FD-016	10/06/10	085-0003	Underpinning of Mandarin Tower	1	CMB-0011	over taken by FD-021	01/19/11	+5,000,000	Additional Information Pending.
FD-017	10/06/10	085-0004	CTS Ground Improvement	1	CMB-0012	over taken by FD-021	01/19/11	+10,300,000	Additional Information Pending.
FD-018	10/06/10	084-0006	UMS Apple Store Entrance	1	CMB-0013	Disagree	11/10/10	-0-	Additional Information Pending.
FD-019	10/06/10	088-0003	MOS TOD Configuration	1	CMB-0014	Agree	11/10/10	TBD	
FD-020	10/06/10	084-0007	UMS Emergency Stair #4 Relocation	1	CMB-0015	Agree	11/10/10	TBD	
FD-021	01/14/11	085-0005	CTS Lowering and Stations Reconfiguration	1	CMB-0027	Agree	01/19/11	(18,000,000)	Agreement with changes to project configuration only. Additional Information required related to cost and schedule impacts. No agreement on Design cost impact, Design costs directly related to this change to be tracked separately
FD-022	02/16/11	084-0008	Sewer Replacement along Geary & O'Farrell	1	CMB-0029	Agree	02/23/11	(134,000)	This trend has both an EPC number as well as a Construction Trend Number. See also Construction Trend No. 1251-0003
FD-023	11/17/10	087-0001	Emergency walkways through crossover cavern changed from outside the main tracks to between the main tracks.	1	CMB-0032	Agree	07/27/11		
FD-024	11/17/10	087-0002	Diamond crossover on surface segment to a tandem (universal) crossover.	1	CMB-0033	Agree	08/24/11	(350,000)	
FD-025	04/13/11	083-0001	Bid Option for TBM Retrieval Shaft		CMB-0034	Agree	04/13/11	(10,000,000)	Will require changes to Bid Schedule to incorporate Traffic, Utilities and Pavement Demo/Restoration as incidental costs to the Bid Option. Estimated DP1 cost impact is approx. 80-100 hrs. of engineering time.
FD-026	05/31/11	084,085,086	Air Replenishment System for Stations	1	CMB-0040	Agree	07/13/11	+1,245,000	Install air replenishment system at MOS, CTS and UMS to address the requirements of the SFFD Bulletin 5.07. The air replenishment system will be used to fill firefighter's self-contained breathing apparatus during firefighting operations in the three subway stations.

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FD-027	07/21/11	082-0010	1 Stockton street (Apple Store) Secondary Closure Wall		CMB-0043	Agree	08/03/11	+500,000	1) Add secondary closure wall to supplement recently completed primary closure wall built by owner to isolate the sub-sidewalk basement of 1 Stockton Street (Apple Store). 2) Modify position of joint trench (and all associated conduits, ducts etc.) for secondary closure wall to be constructed.
FD-028	08/03/11	086-0004	MOS Revisions to Emergency Ventilation Requirements		CMB-0052	Agree	09/07/11	+500,000	Changes will extend the date of the 90% (pre-final) submittal by 20 working days and the 100% (final) submittal by 40 working days. CMB did not approve a time extension for 90% or 100% submittal delivery. Project Controls estimated \$321,645.
FD-029	08/08/11	085-0006	CTS Revisions to Emergency Ventilation Requirements		CMB-0053	Agree	09/07/11	+1,000,000	Changes will extend the date of the 90% (pre-final) submittal by 20 working days and the 100% (final) submittal by 40 working days. CMB did not approve a time extension for 90% or 100% submittal delivery. Project Controls estimated \$411,895.
FD-030	08/08/11	084-0009	UMS Revisions to Emergency Ventilation Requirements		CMB-0054	Agree	09/07/11	+1,000,000	Changes will extend the date of the 90% (pre-final) submittal by 20 working days and the 100% (final) submittal by 40 working days. CMB did not approve a time extension for 90% or 100% submittal delivery. Project Controls estimated 733,420.
FD-031	10/31/11		Accessibility Improvements at the SE corner of Union Square (UMS)						
FD-032	10/31/11		Union Square Entrance Reconfiguration (UMS)						
FD-033	10/31/11		Additional Compensation Grouting due to Tunnel Settlement Alert and Trigger Levels (All Stations)					+21,040,000	ECP dated 11/17/11. ECP being routed for approval.
FD-034	12/09/11		Operational Performance and Safety Enhancement at 4th and King		CMB-0062	Agree	12/14/11	+450,000	SFMTA Operations requested that the design of the 4th & King tie-in work be expanded to include a number of improvements at the junction involving the turn-back area extending to the scissors crossover at 6th & King. SFMTA Ops confirmed that the requested changes result in an arrangement that is consistent with standard operation practices and therefore does not involve new or unacceptable risks. CS 1553 Memorandum No. 0081. Conditionally agreed upon verification/resolution of Buy America issue for the switches. 3/14/12: "Buy America" issue no longer applicable. Revised ECP element - remove H&K switch machines and replace with hydraulic/120V switch machines such as Nortrak or equal.
FD-035	06/26/12		Tunnel Air Replenishment System		CMB-0071	Agree	07/11/12	+1,215,000	Design and construct a fire fighter air replenishment system for Central Subway tunnel as described in SF Fire Code 511.2, Bulletin 5.07 except as noted in the Central Subway Request for Approval of Variance for the ARS to SFFD on March 5, 2012, and subsequently approved by SFFD. Design Impact: ROM - \$215K Construction Impact: ROM - \$1M
FD-036	06/26/12		Surface Segment Sewers - 4th St.		CMB-0072	Agree	07/18/12	+2,200,000	Replace current unreinforced brick crown from 1906 as it may not be able to withstand loading for construction of the CS trackway section. Reconstruct manholes between Brannan and King Streets as existing are in conflict with proposed rail. Replace service laterals and provide sleeves for future replacement. Additional potential scope option of \$1.5M-Sewer and \$2.3M-Force Main may be requested. If so, it will be Cost to SFPUC
FD-037	08/27/12		Platform Display System Signs		CMB-0077	Agree (Conditionally)	08/29/12	+500,000	Modify Stations (Contracts 1253, 1254 and 1255) and Surface, Track and Systems (Contract 1256) technical specifications and drawings for the Platform Display System (PDS) to match the changes made to the PDS units being supplied under the Integrated Systems Replacement (ISR) Project, Contract No.1260. 08/29/12 - CMB agreement condition upon follow up action to evaluate procurement by CN1260

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FD-038	11/7/2012 06/05/13		Elongated Sidewalk Bulb-out at Chinatown Station		CMB-0121	Agree	06/05/13	+36,000	CTS Sidewalk Bulb out (Southwest corner Stockton/Washington To bring the Central Subway Project - Chinatown Station in closer conformance wit the City's General Plan, SF Planning Department in its May, 2012 GPR Letter (recommends) making design changes specifically the extension of the sidewalk bulb-out at Stockton Street to help create a "station plaza". This elongated bulbout on the southwest corner (SWC) of Stockton and Washington Streets in front of the station headhouse would also include bike racks, benches, trees and other landscape features. 06/05/13 - CSDG designer estimate cost is not a CS expense. Addl funding source will need to be establish by San Francisco Planning to support the investigation study Design Impact: Estimated Construction Cost ROM \$36,200 Construction Impact: Estimated ROM 97 Hrs.: DPW Pavement/Sidewalk Design Modification Estimated ROM 60 Hrs.: CSDG bus door/mirror/tree/bike rack coordination
FINAL DESIGN TRENDS (Based on All ECPs) - SUBTOTALS								+4,902,000	Incorporated budget increases have been absorbed by allocated and unallocated funds and the program budget to date remains \$1,578,300,000.
OTHER TRENDS									
X51-001	07/31/10	082-0001	1251 Revised estimate, escalation impact and contingency.	7				+9,532,314	Cost Transfer #0033 (Base \$\$), 0033a (Allocated Contingency), 0036 (Base \$\$ Escalation , 0036a (Allocated Contingency Escalation). [Sep2010 Cost Report]
X51-002	07/31/10	082-0002	Form B Credit for 1251 Utilities	7				(7,697,949)	Reserve and Contingencies removed as per communications with PG&E. This is consistent with the 1250 utility agreement. [Cost Transfer #0034 - Aug2010 Cost Report].
X52-001	07/31/10	083-0001	1252-(TUN) Revised estimate, escalation impact and contingency	7				(2,165,462)	Cost Transfer #0035 (Base \$\$), 0035a (Allocated Contingency), 0037 (Base \$\$ Escalation , 0037a (Allocated Contingency Escalation). [Sep2010 Cost Report]
X03-001	08/31/10	003-0001	OEWD's Pilot Training Program	7				+75,000	Workforce training pilot program in conjunction with the City/County's Office of Economic and Workforce Development (OEWD). Provides specialized training to SF residents to perform tunneling work. Central Subway financial responsibility being investigated. Requires further clarification
X53-001	07/18/11	084-0001	CS 155-2 (DP2) CBP4 - Construction Budget Adjustment YOY	7	CMB-0044	Agree	07/27/11		Adjust construction budget in Section 6 of Contract No. CS 155-2 to Year of Expenditure
X53-002	10/25/11		Change UMS Advertise Date to April 4th, 2012						DP2 Designer's new proposed dates for Pre-Final and Final Design have pushed out Advertise Dates.
X53-003	04/11/12	084-0002	CN1253 (UMS) Construction Budget Adjustment 90%					+55,720,600	CMB is currently vetting the 90% estimate of \$221,534,723 which represents a \$XX increase from the 65% base amount in 2010\$. Increase would deplete current YOY dollars and require use of unallocated contingency.
X53-004	06/26/12	084-0002	Approve/Execute/Certify durations change for UMS Contract						Shortened the duration for Approve/Execute/Certify - UMS Contract from 40 to 24days to reflect an optimistic but doable duration for contractor submittals.
X54-001	07/13/11	085-0001	CS 155-2 (DP2) CBP5 - Construction Budget Adjustment YOY	7	CMB-0045	Agree	07/27/11		Adjust construction budget in Section 6 of Contract No. CS 155-2 to Year of Expenditure
X54-002	10/25/11		Change CTS Advertise Date to May 23rd, 2012		CMB-0061	Agree	12/28/11		DP2 Designer's new proposed dates for Pre-Final and Final Design have pushed out Advertise Dates.
X54-003	11/02/11		Change CTS Advertise Date to February 8th, 2012						Change CTS Advertise Date from May 23, 2012 to February 8, 2012 (-74 working days)
X54-005	12/06/11		Revisions to CTS Construction Schedule		CMB-0060	Agree	12/28/11		
X54-006	12/07/11	085-0002	CS 155-2 (DP2) CBP4 - Construction Budget Adjustment - allowed	7					
X55-001	07/18/11	086-0001	CS 155-2 (DP2) CBP6 - Construction Budget Adjustment YOY	7	CMB-0046	Agree	07/27/11		Adjust construction budget in Section 6 of Contract No. CS 155-2 to Year of Expenditure
X55-002	10/25/11		Change MOS Advertise Date to June 25th, 2012						DP2 Designer's new proposed dates for Pre-Final and Final Design have pushed out Advertise Dates.
X55-003	11/02/11		Change MOS Advertise Date to May 23rd, 2012						Change MOS Advertise Date from June 25, 2012 to May 23, 2012 (-22 working days)

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X55-004	06/26/12	Change MOS Advertise Date to Aug 20, 2012						Change MOS to August 20, 2012	
X56-001	10/25/11	Change STS Advertise Date to July 27th, 2012						DP2 Designer's new proposed dates for Pre-Final and Final Design have pushed out the Station's Advertise Dates. STS Advertise Date is staggered from Station's Advertise Dates.	
X56-002	12/14/11	STS Construction Schedule Revision for Equipment Procurement							
X56-003	06/26/12	Change STS Advertise Date to October 1, 2012						Change STS Advertise Date to October 1, 2012	
X40-001	10/19/11	028-0001 SFPUC CDD Updated Budgets	7		Authorized		+505,127	1250 SFPUC CDD Monthly Service Report Final & 1251 SFPUC CDD Estimate	
X80-001	10/19/11	071-0001 DP1: CS 155-1 Modifications No. 2 & 3	see Prof. Serv		Authorized		+560,585	Modification No. 2: \$395,584.59, Modification No. 3: \$165,000. Individual details listed in Professional Services. See trend 1551-0002,1551-0005 - 1551-0009	
X80-002		071-0002 DP1: CS 155-1 Modification No. 4	7		Authorized		+135,898	Modification No. 4: \$135,898 Individual details listed in Professional Services. See trends 1551-0010 - 1551-0014.	
X80-003	10/27/11	029-0001 Increase City Auditor Budget	7		Authorized		+50,220	Reduce unallocated Contingency to increase City Auditor budget as authorized in Budget Authorization #51.	
X80-004	10/27/11	232-0001 Increase SFCTA Budget	7		Authorized		+20,000	Increase SFCTA budget per Budget Authorization #51 to conduct travel forecast (TEP CEQA Modeling) to satisfy PMO review and SFMTA Fleet Plan light rail vehicle.	
X80-005	7/1/10, 11/2/10,3/24/11	072-0001 DP2: CS 155-2 Modification No. 1	7		Authorized		+1,010,000	Modification No. 1: \$1,010,600 Individual details listed in Professional Services. See trends 1552-0002, 1552-0003 and 1552-0005.	
X80-006	5/6/10,7/25/11, 9/22/11	072-0002 DP2: CS 155-2 Exercised Options	see Prof. Serv		Authorized		+366,771	Individual details listed in Professional Services. See trends 1552-0001, 1552-0007 and 1552-0014.	
X80-007	11/08/11	151-0001 Operations SFMTA Transit Services			Authorized		+50,000	CSP request services to support and test OCS for 30/45 trolley reroute. Authorized per Budget Revision #53	
X80-008	09/01/11	081-0001 SFMTA Safety, Training, Security & Enforcement Div PCOs	7		Authorized		+60,000	CSP request PCOs to support 1251 and 1252 construction for one year. Authorized \$60,000 per Budget Revision #45.	
X80-009	11/30/11	016-0001 SFMTA Sustainable Streets 30 and 45 re-route	7		Authorized		-0-	CSP request services to support 30/45 trolley reroute. \$162,600 was reduced from DPT staffing plan budget.	
X80-010	11/09/11	073-0001 DP3: CS 155-3 Modification No. 1	7		Authorized		+152,882	Modification No. 1: \$152,882 Individual details listed in Professional Services. See trends 1553-0012 and 1553-0013.	
X80-011	8/9/11, 9/22/11, 10/11/11, 11/9/11	073-0002 DP3: CS 155-3 Exercised Options	see Prof. Serv		Authorized		+1,026,398	Individual details listed in Professional Services. See trends 1553-0001 - 1553-0004, 1553-0006, 1553-0009 - 1553-0011, 1553-0014. Updated from \$971,686 to include Trend 1553-0014.	
X80-012		151-0002 OCS materials procured directly for work in reference to CN1251 CMOD#12.		CMB-0065	Agree	1/25/2012, 2/29/12	+126,149	See also Trend 1251-0023	
X80-013	05/30/12	073-0003 DP3: Provide Vibration Impact Analysis and Extend PC Support Technical and CSP Quality Manager	1				+133,906	Amend #2: Vibration Impact Analysis \$38,380 Amend #3: PC Support Tech \$34,483; Quality Manager - \$61,043	
X80-014	12/17/12	For combining the stations and track and systems into Contract 1300 (SSTS)	7					Combined all the Station ad Track and Systems into one Contract. Removed the buffer float activities from the satin to track and systems and overlapped work that can now be done concurrent.	
X80-015	12/17/12	Changing the Bid Opening date and condensing the Contract Duration for Contract 1300	7		Agree	11/14/12		Change bid opening to March 19, 2013 and reevaluated procurement durations, revised calendars for UMS Garage, revised production rates for steel. 11/14/13 CMB Agreed verbally to change @ Mtg #101	
X80-016	02/19/13	Change to Tunnel and CTS interface and buffer float Contract 1300 (SSTS)	7		Agree	01/23/13		Change (MPS) reducing the number of days currently in (from 550 calendar days from NTP to 450 calendar days) for the key interface between CTS and the tunnel completion. Reduced number of days will be issued as part of Add #3 of the 1300 contract. 1/23/13 CMB Agreed verbally to change @ Mtg #111.	
OTHER TRENDS (Based on Various Trends)							+59,662,439	Current Forecast reflects a net +3,537,933 unfavorable impact for all Other Trends.	

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GRAND TOTALS							+69,658,057	Current Forecast reflects an estimated net +69,658,057 3 unfavorable exposure to the project to date. Incorporated budget increases have been absorbed by allocated and unallocated funds and the program budget to date remains \$1,578,300,000.	
PROFESSIONAL SERVICES TRENDS: The following trends are listed for administrative purposes. The dollar amounts are reflected in the "Other Trends" section of this log in the form of cost (budget) transfers - i.e. CCOP's. The total values indicated for each professional contract are for tracking all potential cost exposures and may or may not be approved.									
Contract CS-155-1									
1551-0001	07/30/10		071-0001	Conform Contract Terms per Negotiations from 10/2/09 to 11/6/09	7		-0-	To be addressed in Amendment 1.	
1551-0002	02/18/11		071-0002	Project Office Delay (Adjustments for OH Rate and Team Productivity impact)	7	Authorized	07/29/11	+101,411	Amendment Signed by ED/CEO 7/29/11 COMPLETE, NO FURTHER ACTION; Amendment #2
1551-0003	02/18/11		071-0003	Additional Construction Support for CP-1	7				
1551-0004	02/18/11		071-0004	Redesign Required by Barney's and PUC for CP-2	7				
1551-0005	02/18/11		071-0005	Archeological Monitoring 16.20.C1 (total)	7	Authorized	07/29/11	+197,173	Amendment Signed by ED/CEO 7/29/11 COMPLETE, NO FURTHER ACTION; Amendment #2
1551-0006	02/18/11		071-0006	Eyebolts	7	Authorized	07/29/11	+50,000	Amendment Signed by ED/CEO 7/29/11 COMPLETE, NO FURTHER ACTION; Amendment #2
1551-0007			071-0007	Secondary Closure Walls 800/838 Market	1	Authorized	07/29/11	+47,400	Amendment Signed by ED/CEO 7/29/11 COMPLETE, NO FURTHER ACTION; Amendment #2
1551-0008			071-0008	Delete Optional Tasks - Tasks 1-14	1			-0-	Deleted Options in the amount of (\$529,952) in Amendment has been reversed through Budget Authorization #50. COMPLETE, NO FURTHER ACTION; Amendment #2
1551-0009			071-0009	CTS Lowering	1	Authorized	12/08/11	+165,000	Amendment Signed by ED/CEO 12/8/11 COMPLETE, NO FURTHER ACTION; Amendment #3
1551-0010			071-0010	Modify Sidewalk Vault Demo ECP-FD009	7	Authorized	12/08/11	+39,311	Amendment Signed by ED/CEO 12/8/11 COMPLETE, NO FURTHER ACTION; Amendment #4
1551-0011			071-0011	Modify Stockton St. Sewer ECP-FD010	7	Authorized	12/08/11	+4,112	Amendment Signed by ED/CEO 12/8/11 COMPLETE, NO FURTHER ACTION; Amendment #4
1551-0012			071-0012	Reconfigure Utilities N. Side Ellis ECP-FD011	7	Authorized	12/08/11	+2,448	Amendment Signed by ED/CEO 12/8/11 COMPLETE, NO FURTHER ACTION; Amendment #4
1551-0013			071-0013	Extend SubSidewalk Closure Wall ECP-FD013	7	Authorized	12/08/11	+85,233	Amendment Signed by ED/CEO 12/8/11 COMPLETE, NO FURTHER ACTION; Amendment #4
1551-0014			071-0014	Reroute OCS to Fifth St. ECP-FD014	7	Authorized	12/08/11	+4,794	Amendment Signed by ED/CEO 12/8/11 COMPLETE, NO FURTHER ACTION; Amendment #4
1551-0015			071-0015	Retrieval Shaft Redesign - Sewer By Pass	7			+56,000	Awaiting documentation from Designer
1551-0016			071-0016	Design Measures for Settlement Protection	7			+99,000	Awaiting documentation from Designer
1551-0017			071-0017	Incorporate Headwalls MOS/UMS	1	Disagree at this time	11/01/11	+42,000	In letter dated November 1, 2011 DPM responded that until concurrence with DP2 on cost transfer or additional documentation, the requested change is denied.
1551-0018			071-0018	Prepare Utility Composite	-	Disagree	11/01/11	+50,000	DPM responded that Program does not agree in letter dated November 1, 2011.
1551-0019			071-0019	Incorporate Cross Passages	1	Disagree at this time	11/01/11	+43,000	In letter dated November 1, 2011 DPM responded that until concurrence with DP2 on cost transfer or additional documentation, the requested change is denied.
Contract CS-155-1 Total							+986,882	Of the total cost exposure shown, Contract Modifications and Authorized Option dollars have been absorbed by DP1 allocated contingency in the amount of \$696,483 of a total budget of \$705,000. Additional potential exposure is +\$391,411. Currently, overall contract value remains unchanged in the amount of \$6,500,000.	

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CENTRAL SUBWAY PROJECT
Project Trend/Change Control Log

Item #	Date Initiated	Change Description	Change Type	CMB No.	Change Status		Projected Cost Impact +Exposure/(Benefit)	Comments	
					Approval Action	Approval Date			Actual/Forecast
Contract CS-155-2									
1552-0001	05/06/10	072-0001	Optional Task 2.50 and Task 12.07	1		Authorized	05/06/10	+274,775	CS Letter 0473 from ED/CEO Optional Task 2.50 to support art enhancement activities NTE \$164,383 and Optional Task 12.07 to support design structures for Public Art NTE \$110,392.
1552-0002	07/01/10	072-0002	Expanded Hydraulic Testing at CTS	7		Authorized	07/01/10	+26,100	Estimated cost breakdown is included in the 7/1/10 letter from CSDG and includes signed approval by SFMTA. Amendment No. 1 authorized by ED/CEO on 12/21/11. COMPLETE, NO FURTHER ACTION; Amendment #1
1552-0003	10/11/10	072-0003	Additional Soil Borings at UMS Station - Task No. 3.10 Supplemental Investigations	7		Authorized	11/02/10	+34,500	Estimated cost breakdown is included in the 10/11/10 letter from CSDG and includes signed approval by SFMTA. Amendment No. 1 authorized by ED/CEO on 12/21/11. COMPLETE, NO FURTHER ACTION; Amendment #1
1552-0004	02/11/11	072-0004	MOS TOD White Paper Proposal	1				+33,847	Conceptual study will assess a potential high rise building at the Moscone station headhouse. Estimated cost breakdown is included in the 2/11/2011 letter from CSDG - On Hold .
1552-0005	03/24/11	072-0005	CTS - Alternate 5	7		Authorized	03/24/11	+950,000	CS Letter from DED dated 3/24/11 has agreed to a modification of \$950,000 for performing additional work. Amendment No. 1 authorized by ED/CEO on 12/21/11. COMPLETE, NO FURTHER ACTION; Amendment #1
1552-0006	06/28/11	072-0006	Audited Overhead Rate Adjustment for Year 2010 - Request for Amendment	7				-0-	Estimated cost of \$406,320 is included in the 6/28/11 letter from CSDG. See 1552-0006 Rev. 1 for most current estimate
1552-0007	07/25/11	072-0007	REVIT and CAD Support (to City Staff) Option to DP2 Contract (Optional Services Task 12.12)	1		Authorized	07/25/11	+79,200	CS Letter No. 0768 from ED/CEO dated 7/25/11 has authorized Optional Task 12.12 NTE \$79,200.
1552-0008	08/03/11	072-0008	MOS Revisions to Emergency Ventilation Requirements	-		Provide further Justification	09/07/11	-0-	CMB did not approve a \$60,000 proposed increase. Document References ECP FD028, CSDG letter dated 8/8/11. DPM responded that program does not agree in letter dated 10/17/11.
1552-0009	08/03/11	072-0009	CTS Revisions to Emergency Ventilation Requirements	-		Provide further Justification	09/07/11	-0-	CMB did not approve an \$80,000 proposed increase. Document References ECP FD029, CSDG letter dated 8/8/11. DPM responded that program does not agree in letter dated 10/17/11.
1552-0010	08/03/11	072-0010	UMS Revisions to Emergency Ventilation Requirements	-		Provide further Justification	09/07/11	-0-	CMB did not approve a \$100,000 proposed increase. Document References ECP FD030, CSDG letter dated 8/8/11. DPM responded that program does not agree in letter dated 10/17/11.
1552-0011	08/17/11	072-0011	Audited Overhead Rate Adjustment for Year 2010 - Request for Amendment - Rev. 1	7				+426,322	Estimated cost breakdown is included in the 8/17/11 letter from CSDG. This is a revision to the 6/28/11 letter and cost breakdown.
1552-0012	08/23/11	072-0012	Station Air Replenishment System	-		Disagree	10/17/11	+36,240	Estimated cost breakdown is included in the 8/23/11 letter from CSDG. DPM responded that program does not agree in letter dated 10/17/11.
1552-0013	09/01/11	072-0013	COR for Additional Services Related to MOS Constructability Review and Assessment of Alternatives	-				-0-	Cost charged to Task 2.70- part of base work
1552-0014	09/22/11	072-0014	Proposal for Additional Work to provide Structural Engineering Support (Optional Services)	1		Authorized Optional Task 12.01.C5 only	11/04/11	+35,724	Estimated cost breakdown is included in the 9/22/11 letter from CSDG. Referenced Optional Work Tasks 12.01.C5 and 12.07.C5 - Effort re-evaluated - proposed cost to be resubmitted. CS Letter No. 1232 dated 11/4/11 from Director of Transportation has authorized Optional Task 12.01.C5 for the amount of \$12,796.
Contract CS-155-2 Total								+1,896,708	Of the total cost exposure shown, Contract Modifications and Authorized Option dollars have been absorbed by DP2 allocated contingency in the amount of \$1,046,324 of a total budget of \$4,890,707. Overall contract value remains unchanged in the amount of \$39,949,959.
Contract CS-155-3									
1553-0001	08/09/11	073-0001	Authorization to commence optional tasks 9.20J Technical Specifications Item J Facility SCADA	1		Authorized	08/01/11	+259,305	SFMTA letter 0933 from ED/CEO dated 8/9/11 authorizing \$738,787 in optional tasks. COMPLETE, NO FURTHER ACTION; OPTION

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CENTRAL SUBWAY PROJECT
Project Trend/Change Control Log

Item #	Date Initiated	Change Description	Change Type	CMB No.	Change Status		Projected Cost Impact +Exposure/(Benefit)	Comments
					Approval Action	Approval Date		
1553-0002	08/09/11	073-0002	1		Authorized	08/01/11	+257,129	SFMTA letter 0933 from ED/CEO dated 8/9/11 authorizing \$738,787 in optional tasks. COMPLETE, NO FURTHER ACTION; OPTION
1553-0003	08/09/11	073-0003	1		Authorized	08/01/11	+169,553	SFMTA letter 0933 from ED/CEO dated 8/9/11 authorizing \$738,787 in optional tasks. COMPLETE, NO FURTHER ACTION; OPTION
1553-0004	08/09/11	073-0004	1		Authorized	08/01/11	+52,800	SFMTA letter 0933 from ED/CEO dated 8/9/11 authorizing \$738,787 in optional tasks. COMPLETE, NO FURTHER ACTION; OPTION
1553-0005	09/19/11	073-0005	7		Authorized	03/08/12	+38,380	Signed by Director of Transportation 3/8/2012. COMPLETE, NO FURTHER ACTION; Amendment 2
1553-0006	09/22/11	073-0006	1		Authorized	11/04/11	+10,285	Letter dated 9/22/11 to DOM. PMCM response pending. Priced level of Effort assumed for this task. SFMTA Letter 1213 from Director of Transportation dated 11/4/11 authorizing optional task.
1553-0007	09/27/11	073-0007	7				+59,460	Letter dated 9/27/11 to DOM. NOT FOLLOWING CONTRACT REQUIREMENTS FOR PROPER NOTIFICATION OF CHANGE. PMCM has responded to clarify scope in stations and Tunnel Design. Awaiting resubmittal of request by DP3
1553-0008	10/05/11	073-0008	7		Disagree A.12.08- Signage	11/09/11		Letter dated 10/5/11 to DOM. NOT FOLLOWING CONTRACT REQUIREMENTS FOR PROPER NOTIFICATION OF CHANGE. CS Memo No. 0882 from DOM to DP3 PM considers A.12.08 Signage as part of the work necessary to complete the trackway elements of the scope. The work in question is considered part of the base scope of services.
1553-0009	10/11/11	073-0009	1		Authorized	11/04/11	+33,000	SFMTA Letter 1213 from Director of Transportation dated 11/4/11 authorizing optional task. COMPLETE, NO FURTHER ACTION; OPTION
1553-0010		073-0010	1		Authorized	11/04/11	+108,240	SFMTA Letter 1213 from Director of Transportation dated 11/4/11 authorizing optional task. COMPLETE, NO FURTHER ACTION; OPTION
1553-0011		073-0011	1		Authorized	11/04/11	+81,374	SFMTA Letter 1213 from Director of Transportation dated 11/4/11 authorizing optional task. COMPLETE, NO FURTHER ACTION; OPTION
1553-0012	11/09/11	073-0012	7		Authorized	01/18/12	+88,855	Contract Modification No. 1 authorized by ED/CEO on 1/18/12 COMPLETE, NO FURTHER ACTION; Amendment #1
1553-0013	11/09/11	073-0013	7		Authorized	01/18/12	+64,027	Letter dated October 7, 2011 to DOM. PM/CM response pending. Contract Modification No. 1 authorized by ED/CEO on 1/18/12 COMPLETE, NO FURTHER ACTION; Amendment #1
1553-0014	02/06/12	073-0014			Authorized	02/06/12	+54,712	SFMTA Letter 1381 from Director of Transportation dated 2/06/12 authorizing optional tasks 12.12e in the amount of \$41,280 and 2.50 for \$13,432 COMPLETE, NO FURTHER ACTION; OPTION
1553-0015	03/20/12	073-0015	1				+26,026	FD-034 was updated by CMB on 3/14/12. Proposal transmitted via letter CS1553 No. 0012 dated 3/20/12 to DOM. Amendment #4 PENDING
1553-0016	03/23/12	073-0016	7		Authorized	04/26/12	+173,119	SFMTA letter 1658 from Director of Transportation dated 4/26/2012 authorizing \$173,119 in optional tasks. Included in FD-035 to be presented to CMB on 6/26/12
1553-0017	05/14/12	073-0017	1		Authorized	05/04/12	+34,483	Signed by Director of Transportation 5/14/12 COMPLETE, NO FURTHER ACTION; Amendment #3
1553-0018	05/14/12	073-0018	1		Authorized	05/04/12	+61,043	Signed by Director of Transportation 5/14/12 COMPLETE, NO FURTHER ACTION; Amendment #3
1553-0019	04/09/12	073-0019	1		Authorized	04/09/12	+52,712	SFMTA Letter 1630 from the Director of Transportation dated 4/9/2012 authorizing optional task 12.02 in the amount of \$52,712 COMPLETE, NO FURTHER ACTION; OPTION

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1553-0020	04/09/12	073-0020	1		Authorized	04/09/12	+109,000	SFMTA Letter 1630 from the Director of Transportation dated 4/9/2012 authorizing optional task 12.12 in the amount of \$109,000 COMPLETE, NO FURTHER ACTION; OPTION
1553-0021	04/26/12	073-0021	1		Authorized	04/26/12	+173,119	SFMTA Letter 1658 from the Director of Transportation dated 4/26/2012 authorizing optional task 12.11 in the amount of \$173,119 COMPLETE, NO FURTHER ACTION; OPTION
1553-0022	04/26/12	073-0022	1		Authorized	04/26/12	+30,000	SFMTA Letter 1658 from the Director of Transportation dated 4/26/2012 authorizing the increase in optional task 12.12e in the amount of \$30,000 COMPLETE, NO FURTHER ACTION; OPTION
1553-0023	05/21/12	073-0023	1		Authorized	05/21/12	+39,204	SFMTA Letter 1688 from the Director of Transportation dated 5/21/2012 authorizing the increase in optional task 12.11 in the amount of \$39,204 COMPLETE, NO FURTHER ACTION; OPTION
1553-0024	05/21/12	073-0024	1		Authorized	05/21/12	+43,638	SFMTA Letter 1688 from the Director of Transportation dated 5/21/2012 authorizing the increase in optional task 12.12 in the amount of \$43,638 COMPLETE, NO FURTHER ACTION; OPTION
1553-0025	05/21/12	073-0025	1		Authorized	05/21/12	+24,328	SFMTA Letter 1688 from the Director of Transportation dated 5/21/2012 authorizing the increase in optional task 12.13 in the amount of \$24,328 COMPLETE, NO FURTHER ACTION; OPTION
1553-0026	05/21/12	073-0026	1		Authorized	05/21/12	+3,039	SFMTA Letter 1688 from the Director of Transportation dated 5/21/2012 authorizing the increase in optional task 9.20 in the amount of \$3,039 COMPLETE, NO FURTHER ACTION; OPTION
Contract CS-155-3 Total							7,814,010.46	Of the total cost exposure shown, Contract Modifications and Authorized Option dollars have been absorbed by DP3 allocated contingency in the amount of \$1,168,995 of a total budget of \$4,598,725. Overall contract value remains unchanged in the amount of \$19,919,526.

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