


Memorandum

CS Memorandum No. 1443

To: Distribution

From: Beverly Ward, CMB/Risk Management Assistant 

Date: May 16, 2013

Reference: Project No. M544.1, Contract No. CS-149
Task No. 1-8.02, Change Control

Subject: Configuration Management Board Meeting No. 126

Attached please find minutes for Configuration Management Board Meeting No. 126 held on May 15, 2013.

Attachments: CMB Meeting No. 126 Rev. 0 Minutes with attachments

Cc: David Kuehn, STV (w/attachments) david.kuehn@stvinc.com
Shahnam Farhangi, SFMTA (w/attachments)
Roger Nguyen, SFMTA (w/attachments)
Arthur Wong, SFMTA (w/attachments)
Eric Stassevitch, CSP (w/attachments)
Sarah Wilson, CSP (w/attachments)
Vivian Chow, SFMTA w/ attachments
Jane Wang, SFMTA (w/attachments)
Aileen Read, CSDG (w/attachments)
CS File No. M544.1.5.0890

Distribution:

Luis Zurinaga, SFCTA luis.zurinaga@sfcta.org
Brad Lebovitz, STV (w/attachments) bradley.lebovitz@stvinc.com
John Funghi, SFMTA
Albert Hoe, SFMTA
Joon Park, SFMTA
Ross Edwards, CSP
Mark Latch, CSP
Richard Redmond, CSP
Mark Benson, CSP
Mun Leong, CSP
Brian Kelleher, SFMTA
Beverly Ward, CSP

CMB Meeting Minutes #126

DATE: May 16, 2012

MEETING DATE: **May 15, 2013**

LOCATION: 821 Howard St, Main Conference Room

TIME: 3:00 PM

ATTENDEES: J Funghi (JF), A. Hoe (AH), R Edwards (RE), M. Benson (MB), J. Park (JP), M. Latch (ML), R. Redmond, (RR), B. Kelleher (BK), M. Leong (ML), B. Ward (BW), L. Zurinaga (LZ), B. Lebovitz (BL)

COPIES TO: Attendees: S. Farhangi (SF), V. Chow (VC), R. Nguyen (RN), A. Wong (AW), E. Stassevitch (ES), S. Wilson (SW), J. Wang (JW), A. Read (AR), D. Kuehn (DK)
File No. M544.1.5.0890

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

SUBJECT: Configuration Management Board Meeting # 126 – Rev. No. 0

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

ITEM #	DISCUSSION	ACTION BY DUE DATE
7- 04/03/13	1252 – R. Edwards presented PCC 012 - Revised Tunnel Alignment for approval of the Re-profile of tunnel to avoid the micropile installed under CN1251. In response to RFI 179 this PCC directs the Contractor to use the revised micropile northbound and southbound profile to avoid conflict with existing micropile. The change is required so that TBM and Tunnel structure is below previously installed micro-piles (see attached). The CMB recommend a request be made to the Contractor to segregate all changes so the information may be included in the documentation regarding the Designers E&O issue. Also the CMB need evidence that the design change has been routed and is signed off by the various disciplines as backup documentation for the files. Notification of the profile change will be submitted to BART and the IRP. Status: <i>05/15 This item was not discussed at this week's meeting.</i>	RE 05/22/13
8- 04/03/13	1252 – Design Services During Construction - M. Benson presented for a later discussion in more detail a summary of CS155-2 (DP2) Task16 Design Services expended for subtask 16.30 and 16.40. Demonstrating actual cost to date of design services expended during the construction phase. The CMB recommend the chart be expanded showing the total budget for the each individual task in column format, also a breakout of the submittal description and detailing the RFI category type reviewed under the headwalls. In addition information regarding hours spent on activities not included in 16.30 and 16.40. The CMB also requested the same level of effort be presented for review for Design Contract CS155-1 (DP1). This item will be brought back to the next CMB meeting. 04/10 M. Benson reported a modification to the DP2 Design Services chart was updated expanding the summary to demonstrate the burnout of the individual task/categories. Further investigation still needs to take place to resolve some issues with a conflicting burn rate between the actual progress payment invoice submitted and documentation submitted by	MB 05/22/13

ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>the Designer prior to being forward to the Deputy Program Manager for review. A detail presentation will be given at next week's meeting of DP2 and DP1 cost breakdown by category. <i>04/17:</i> An expanded summary spreadsheet was presented showing the break out of the categories for work under subtask 16.30 and 16.40 for - work completed to date, remaining work and reasons for overruns to support the reason for request for additional \$10K in funds. The CMB suggested the CM team put the Contractor on notice that any submittal regarding design substitution for review will be at the Contractor's expense. In addition the CMB requested a presentation of the DP1 Task 16 Design Services hours and cost detail summary also be brought to the CMB for review when finalize. This item will be brought back to next week's CMB. <i>Status: 05/15 This item was not discussed at this week's meeting.</i></p>	
<p>1- 05/08/13</p>	<p>1252- Submittal 31 74 17-025 Segments Spalls Repair Procedure, Rev 2 was presented for approval of response comments to SFMTA's review of Rev1 for the proposed Spalling Repair Procedure for stress relief portions of the tunnel segments (yellow and superficial) spalling. The Contractor submitted a revised submittal to address SFMTA's seven points of concerns (see attached). The CMB took exception to the revised submittals deficiency in demonstrating the repair procedure and missing information recommending the proposed design mix for the repairs. In addition a second Submittal 31 74 17-026 Segment Liner Alternate Repair Method data sheet proposing a new repair product <i>CTS Rapid Set Mortar Mix</i> as a possible alternate patching material for minor segment chips/spalls to the previously proposed <i>Speedcrete Red Liner Morta</i> was submitted. The CMB recommend that the CM Team request revised submittals demonstrating a clear line of responsibility for the design liability and a comprehensive and cohesive approach to repairs that specifically respond to the original comments. This item will be brought back to the CMB at a later date. <i>Status: 05/15 This item was not discussed at this week's meeting.</i></p>	<p>ML 05/22/13</p>
<p>2- 05/08/13</p>	<p>1252 – M. Benson requested approval for negotiation position for COR79 Compensation Grout – Old Navy additional cost associated with inefficiencies of installing the compensation grout tubes. Justification was based on the premise that the larger piece of equipment could have performed the work if the in place utilities had been found as shown in the Bid documents. Because of the actual configuration of underground utilities was much different than that shown on the Bid documents, payment is warranted for the inefficiencies caused by utilizing the smaller piece of equipment. The CMB raised several questions about the graphical depiction of the As Bid condition and requested that the graphical representation be properly updated to show the As Bid condition. Similarly, the actual condition graphic could be improved to better show actual conditions found. Detailed information demonstrating the cost of the inefficiency appear in order, however the requested NTE amount was not properly justified compared to the computed cost by the Engineer. The CMB was unable to provide approval due to the still open question that the utility obstructions potentially indicate the Contractor should have brought in a smaller rig to begin with. CMB suggested improved graphics and supporting information be developed to justify the requested negotiating position. This item will be brought back to the CMB next week. <i>Status: 05/15 A revised graphic was shown depicting the actual condition shown found incorporating the second PG&E 12" electrical line. Further determination from the BP dwgs indicates the Contractor could have actually accomplished the work by using the original larger Klemm machine as listed in the bid proposal. AGREE – CMB 0117 Not to exceed value of \$152,000 to be negotiated as a lump sum for inefficiencies associated with having to use a smaller drill rig to work around the existing utilities. In addition the CM Team will obtain the invoice from the Contractor to identify the actual cost for the rental of the smaller Comacchio drill rig.</i></p>	
<p>5- 05/08/13</p>	<p>1252 – M. Benson requested negotiation position for PCC 06 cost comparison of Additional BART Tunnel Instrumentation (see attached). The CMB expressed concerned that the \$624K price to perform the work was too high and requested Jane Wang to</p>	<p>JW 05/22/13</p>

ITEM #	DISCUSSION	ACTION BY DUE DATE
	contact the IRP in writing to find out if the additional instrumentation monitoring was still warranted given the new lowered tunnel alignment and the cost to implement the work. The RE will confirm the date for which a final decision by SFMTA is to be made to forward to the Contractor. This item will be brought back to the CMB at a later date. Status: 05/15 This item was not discussed at this week's meeting.	
1-	1252 – M. Benson requested negotiation position for COR 081 – Cost associated with installation of the new 12" Waterline Tee Connection at the Moscone south headwall. . Merit for the work was agreed to by the CMB at meeting #120. AGREE – CMB 0120 – Not To Exceed value of \$3,000.63.	
2-	The Program Trend/Change Control Log dated 05/15 was not viewed at this week's meeting. The log is updated to include the current items trending for Contract 1252 Tunnels and is attached for distribution with these meeting minutes.	

ACTION ITEMS

ITEM #	MTG DATE	MTG ACTION DATE	DESCRIPTION	BIC	DUE DATE	STATUS
1	11/07/12	11/07/12	1300 -- 1254 SF Planning Request - Cost	RE	05/22/13	Open
7	04/03/13	04/03/13	1252 – PCC 12 – Advise BART and IRP	RE	05/22/13	Open
8	04/03/13	04/03/13	1252 – DP2/DP1 – Design Services hours and cost during construction – DP1 Review	MB	05/22/13	Open
1	05/09/13	05/09/13	1252 - Spalls Repair Procedure - Revision	ML	05/22/13	Open
2	05/09/13	05/09/13	1252 – COR 079 – Revised Ref dwgs	MB	05/15/13	CLOSED
5	05/09/13	05/09/13	1252 – PCC 06 – Contact IRP – Revisit Monitoring Instrumentation plan	JW	05/22/13	Open
2	05/15/13	05/15/13	1252 – COR 079 – Rental Invoice for Klemm rig	MB	05/22/13	Open

Meeting adjourned at 4:15PM

These meeting minutes have been prepared by B. Ward and reviewed by, R. Edwards 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: 5/16/2013 [Date review completed]

Meeting Agenda

Project No. M544.1, Contract No. CS-149
Program/Construction Management
Configuration Management Board (CMB) Meeting No. 126
May 15, 2013
3:00pm – 5:00pm
 Central Subway Project Office
 821 Howard St. 2nd Floor
 Main Conference Room

Attendees:

Mark Benson	John Haley	Mark Latch	Eric Stassevitch
Vivian Chow	Albert Hoe	Brad Lebovitz	Beverly Ward
Ross Edwards	Brian Kelleher	Roger Nguyen	Sarah Wilson
Shahnam Farhangi	Jim Kelly	Joon Park	Arthur Wong
John Funghi	David Kuehn	Richard Redmond	Luis Zurinaga

1. **1252** – COR 079 – Compensation Grouting – Old Navy - *Cost NTE*
 – COR 081 - 12” Waterline Tee Connection Location (MOS) South – *Cost NTE*
2. **Trend/Change Log** – 05/15/13
3. **Other Business** –

Meeting Attendance Sheet

Project No. M544.1, Contract No. 149
Program/Construction Management
Configuration Management Board Meeting No. 126
May 15, 2013
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) 701-4295	Mark.Benson@sfmta.com	<i>MCB</i>
Chow, Vivian	SFMTA	(415) 701-5264	Vivian.chow@sfmta.com	
Edwards, Ross	CSP	(415) 701-5296	Ross.Edwards@sfmta.com	<i>RE</i>
Farhangi, Shahnam	SFMTA	(415) 554-0721	Shahnam.Farhangi@sfmta.com	
Funghi, John	SFMTA	(415) 701-4299	John.Funghi@sfmta.com	<i>JF</i>
Haley, John	SFMTA		John.Haley@sfmta.com	
Hoe, Albert	SFMTA	(415) 701-4289	Albert.Hoe@sfmta.com	<i>AH</i>
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>

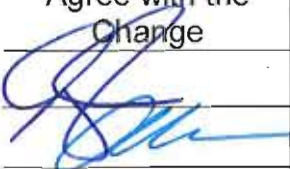

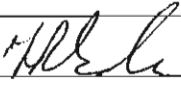

NAME	AFFILIATION	PHONE	E-MAIL (for minutes)	INITIALS
Nguyen, Roger	SFMTA	(415) 701-4312	Roger.Nguyen@sfmta.com	
Park, Joon	SFMTA	(415) 701-4742	Joon.Park@sfmta.com	<i>JP</i>
Redmond, Richard	CSP	(415) 701-4288	Richard.Redmond@sfmta.com	<i>RR</i>
Stassevitch, Eric	CSP	(415) 701-4426	Eric.Stassevitch@sfmta.com	
Ward, Beverly	CSP	(415) 701-5291	Beverly.Ward@sfmta.com	<i>BW</i>
Wilson, Sarah	CSP	(415) 243-0950	Sarah.Wilson@sfmta.com	
Wong, Arthur	SFMTA	(415) 701-4305	Arthur.Wong@sfmta.com	
Zurinaga, Luis	SFCTA	(415) 716-6956	Luis.zurinaga@sfcta.org	<i>LZ</i>
LEONG, MUN	SFMTA CSP	(415) 531-9476	MUN.LEONG@SFMTA.COM	<i>LM</i>

GENERAL	
Proposed Change Sponsor: <u>M. Benson</u>	Received by CMB: <u>05/15/2013</u> (Date)
Affected Disciplines: <u>Building Protection</u>	
Impacts of Change <u>Compensation Grouting – Old Navy - (Inefficiencies)</u>	
Change Order Request (COR 079) Amount Not To Exceed \$152,000	

Contract(s) Directly Affected by this Proposed Change:



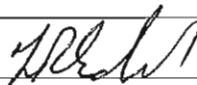

1250	1251	1252	1253	1254	1255	1256
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input checked="" type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
(CP01)	(CP02)	(CP03)	(CP04)	(CP05)	(CP06)	(CP07)

CONFIGURATION MANAGEMENT BOARD APPROVALS

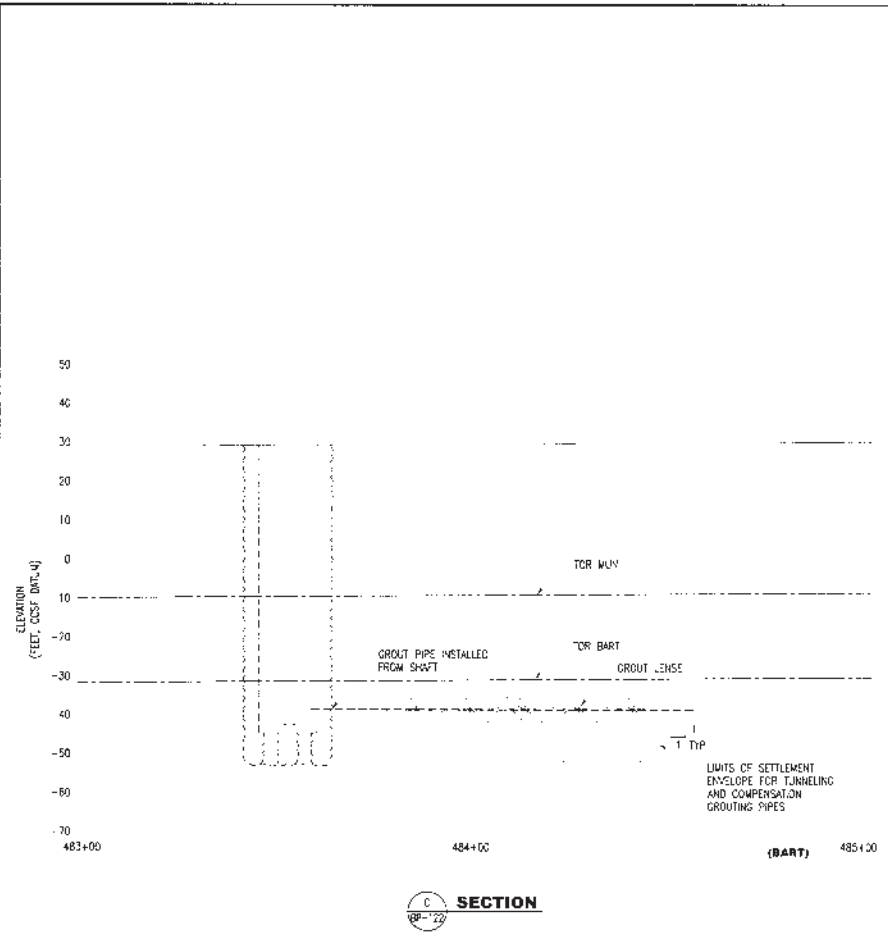
	Signatures		Date
	Agree with the Change	Disagree with the Change	
Senior Program Manager:			<u>5-15-13</u>
Deputy Program Manager:			<u>5/15/13</u>
PM Project Services:			
PM Project Development/Delivery:			<u>5/15/13</u>
SFMTA O & M Manager:			
SFMTA Safety and Security			
SFCTA PMO			<u>15 MAY 13</u>

CMB Approval agreed upon Comments proof of invoices of actual equipment price as paid by the Contractor. Cost to be negotiated on Lump Sum.

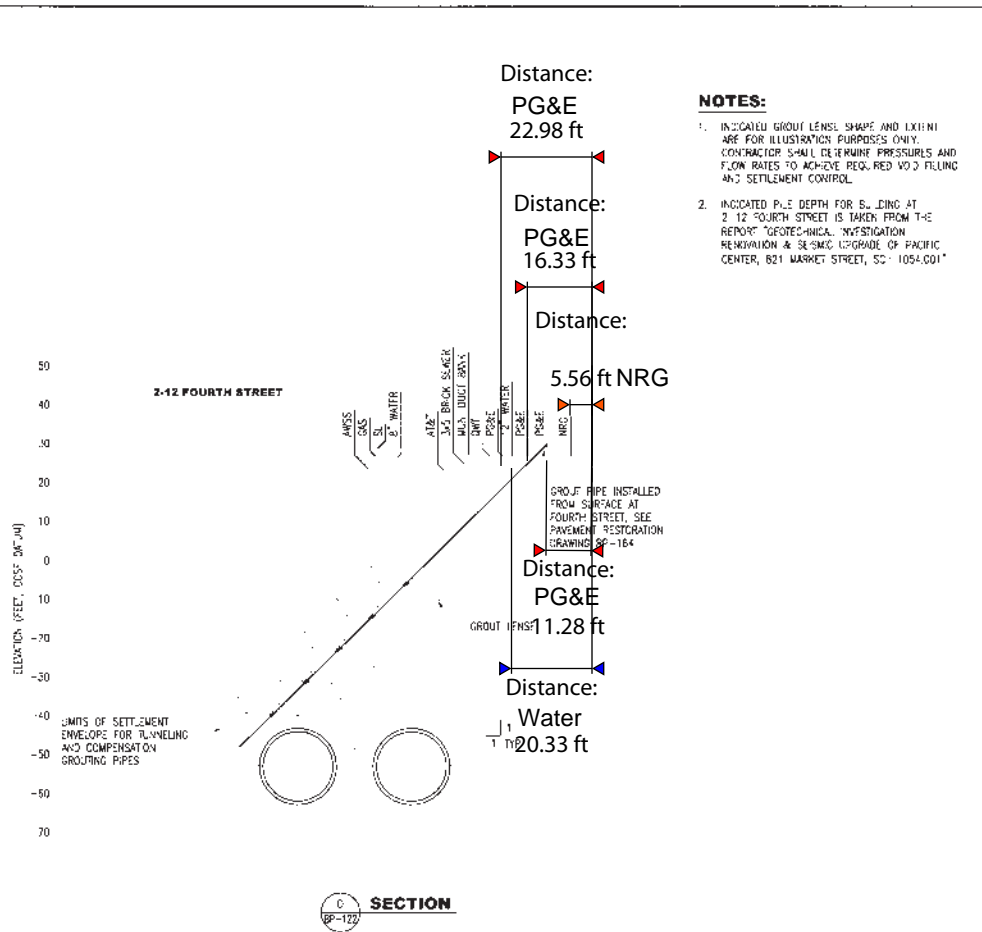
ITEM #	DISCUSSION	ACTION BY DUE DATE
	<p>prior to being forward to the Deputy Program Manager for review. A detail presentation will be given at next week's meeting of DP2 and DP1 cost breakdown by category. 04/17: An expanded summary spreadsheet was presented showing the break out of the categories for work under subtask 16.30 and 16.40 for - work completed to date, remaining work and reasons for overruns to support the reason for request for additional \$10K in funds. The CMB suggested the CM team put the Contractor on notice that any submittal regarding design substitution for review will be at the Contractor's expense. In addition the CMB requested a presentation of the DP1 Task 16 Design Services hours and cost detail summary also be brought to the CMB for review when finalize. This item will be brought back to next week's CMB. Status: 05/08 This item was not discussed at this week's meeting.</p>	
1-	<p>1252- Submittal 31 74 17-025 Segments Spalls Repair Procedure, Rev 2 was presented for approval of response comments to SFMTA's review of Rev1 for the proposed Spalling Repair Procedure for stress relief portions of the tunnel segments (yellow and superficial) spalling. The Contractor submitted a revised submittal to address SFMTA's seven points of concerns (see attached). The CMB took exception to the revised submittals deficiency in demonstrating the repair procedure and missing information recommending the proposed design mix for the repairs. In addition a second Submittal 31 74 17-026 Segment Liner Alternate Repair Method data sheet proposing a new repair product <i>CTS Rapid Set Mortar Mix</i> as a possible alternate patching material for minor segment chips/spalls to the previously proposed <i>Speedcrete Red Liner Morta</i> was submitted. The CMB recommend that the CM Team request revised submittals demonstrating a clear line of responsibility for the design liability and a comprehensive and cohesive approach to repairs that specifically respond to the original comments. This item will be brought back to the CMB at a later date.</p>	ML 05/15/13
2-	<p>1252 – M. Benson requested approval for negotiation position for COR79 Compensation Grout – Old Navy additional cost associated with inefficiencies of installing the compensation grout tubes. Justification was based on the premise that the larger piece of equipment could have performed the work if the in place utilities had been found as shown in the Bid documents. Because of the actual configuration of underground utilities was much different than that shown on the Bid documents, payment is warranted for the inefficiencies caused by utilizing the smaller piece of equipment. The CMB raised several questions about the graphical depiction of the As Bid condition and requested that the graphical representation be properly updated to show the As Bid condition. Similarly, the actual condition graphic could be improved to better show actual conditions found. Detailed information demonstrating the cost of the inefficiency appear in order, however the requested NTE amount was not properly justified compared to the computed cost by the Engineer. The CMB was unable to provide approval due to the still open question that the utility obstructions potentially indicate the Contractor should have brought in a smaller rig to begin with. CMB suggested improved graphics and supporting information be developed to justify the requested negotiating position. This item will be brought back to the CMB next week.</p>	MB 05/15/13
3-	<p>1252 – S. Wilson requested negotiation position for COR 073 – Force Account Reconciliation cost comparison (see attached) for cost associated with 16" pipe removal at north east headwall. Merit for the work was agreed to by the CMB at meeting #117. AGREE – CMB 0118 – Not To Exceed value of \$989.00.</p>	
4-	<p>1252 – S. Wilson requested negotiation position for COR 076 – Force Account Reconciliation cost comparison (see attached) for cost associated with 16" pipe removal at south east headwall. Merit for the work was agreed to by the CMB at meeting #118. AGREE – CMB 0119 – Not To Exceed value of \$1,116.00.</p>	
5-	<p>1252 – M. Benson requested negotiation position for PCC 06 cost comparison of Additional BART Tunnel Instrumentation (see attached). The CMB expressed concerned that the \$624K price to perform the work was too high and requested Jane Wang to contact the IRP in writing to find out if the additional instrumentation monitoring was still warranted given the</p>	JW 05/22/13

GENERAL						
Proposed Change Sponsor:	S. Wilson	Received by CMB:	05/15/2013 (Date)			
Affected Disciplines:	Excavation and Ground Support Utilities					
Impacts of Change	12" Waterline Tee Connection (MOS) South					
Change Order Request (COR 081) Amount Not To Exceed \$3,000.63						
<u>Contract(s) Directly Affected by this Proposed Change:</u>						
1250 1 <input type="checkbox"/> (CP01)	1251 2 <input type="checkbox"/> (CP02)	1252 3 <input checked="" type="checkbox"/> (CP03)	1253 4 <input type="checkbox"/> (CP04)	1254 5 <input type="checkbox"/> (CP05)	1255 6 <input type="checkbox"/> (CP06)	1256 7 <input type="checkbox"/> (CP07)
CONFIGURATION MANAGEMENT BOARD APPROVALS						
<i>Signatures</i>						
		Agree with the Change	Disagree with the Change	Date		
Senior Program Manager:				5-15-13		
Deputy Program Manager:				5/15/13		
PM Project Services:						
PM Project Development/Delivery:				5/15/2013		
SFMTA O & M Manager:						
SFMTA Safety and Security						
SFCTA PMO				5 May '13		
Comments						

\\s:\s\003\muni\slines\org\mst44\1\moldesign\trains\821\3-structure\building_protection\sheet_files\653\454423BP-24.dwg (mrc) Thu Jan 27 2011 3:40 pm BP-124



C SECTION
BP-122



C SECTION
BP-122

- NOTES:**
- INDICATED GROUT LEVEL SHAPE AND EXTENT ARE FOR ILLUSTRATION PURPOSES ONLY. CONTRACTOR SHALL DETERMINE PRESSURE AND FLOW RATES TO ACHIEVE REQ. RED VOID FILLING AND SETTLEMENT CONTROL.
 - INDICATED PILE DEPTH FOR BUILDING AT 2-12 FOURTH STREET IS TAKEN FROM THE REPORT "GEO-TECHNICAL INVESTIGATION REHABILITATION & SEISMIC UPGRADE OF PACIFIC CENTER, 821 MARKET STREET, SC-1054-001"

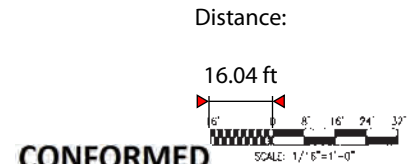
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PG&E
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PG&E
16.33 ft

Distance:
5.56 ft NRG

Distance:
PG&E
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Distance:
Water
20.33 ft

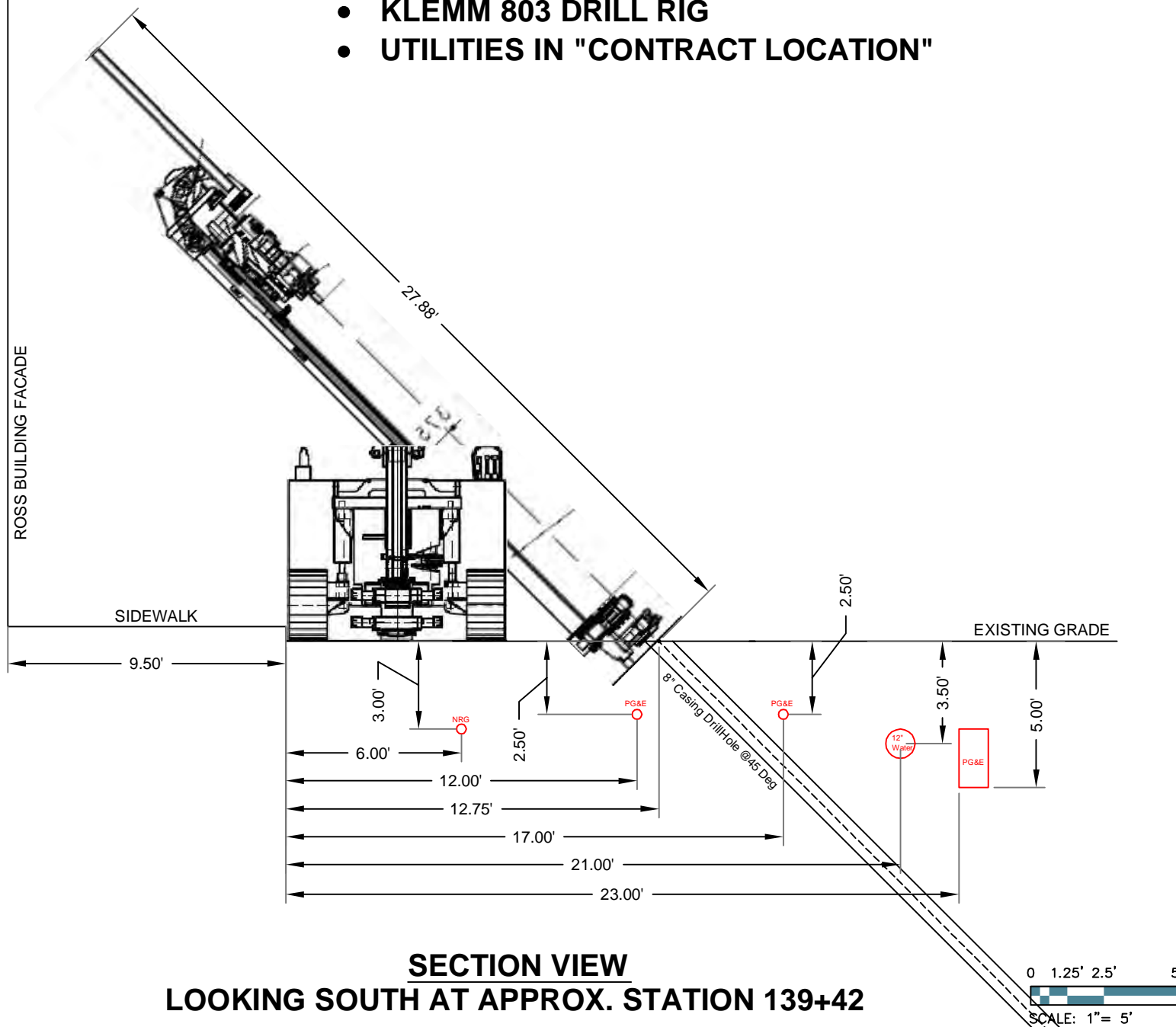


CONFORMED

 PB AMERICAS, INC.	DATE: 12/22/08 DRAWN BY: [Signature] CHECKED BY: [Signature] APPROVED BY: [Signature] PROJECT DIRECTOR: [Signature]	 CITY AND COUNTY OF SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY APPROVED: [Signature] EXECUTIVE DIRECTOR: [Signature]	THIRD STREET LIGHT RAIL PROGRAM PHASE 2 - CENTRAL SUBWAY TUNNELS	1252 CL-18489
			BUILDING PROTECTION COMPENSATION GROUTING MARKET STREET AREA, SHEET 3 OF 3	BP-124 498 0

AS-BID CONFIGURATION

- KLEMM 803 DRILL RIG
- UTILITIES IN "CONTRACT LOCATION"

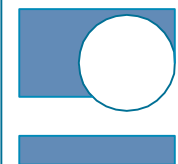


REVISION:

CENTRAL SUBWAY

"OLD NAVY"
COMP GROUT TRENCH
AS-BID

**BARNARD CONSTRUCTION
COMPANY, INC.**
701 GOLD AVE.
BOZEMAN, MT 59715
PHONE: (406) 586-1995
www.barnard-inc.com



PLAN
SHEET
TITLE

SHEET

H-1

Compensation Grouting Hole Production Rates		
Sample Size: 28 Compensation Grout Holes		
	COMACCHIO	KLEMM
Locations (ea)	28	28
Drill Length / Location (ft)	111	111
Production (ft/hr)	16.8	33.6
Set Up Time (hr/location)	0.33	0.33
Casing vs. Drill Bit Switch (hr/location)	1.48	
Shift Start / Stop	11.20	11.20
Total Time (hrs)	246.86	112.98
Production Loss (Based on 4min Switch Time)	54.2%	

No.	Activity	Days	Hourly rates:							Labor totals	Equipment Rates								Equipment Totals	
			Pile Driver	OE G3	Laborer G3						Drill - Klemm 803-2	Drill - Comacchio	Grout Plant	Skytrak 10042 Forklift	246 Cat Skidsteer	Truck	Compressor Sullair 1150XH	150kw Generator		
			\$ 81.95	\$ 70.59	\$ 52.48	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00		\$ 129.64	\$ 103.83	\$ 154.19	\$ 56.63	\$ 27.93	\$ 19.98	\$ 101.89	\$ 52.37	\$ 0.00	
1	Klemm 803-2	-14.12	1	1	4				\$ (40,950.12)	1		1	1	1	1	1	1			\$ (61,272.65)
2	Comacchio MC 602	30.86	1	1	4				\$ 89,478.06		1	1	1	1	1	1	1			\$ 127,512.29
3									\$ -											\$ -
4	Total								\$ 48,527.95											\$ 66,239.64

Labor	\$	48,527.95
Mob/Demob	\$	-
Equipment	\$	66,239.64
2nd Tier Sub	\$	-
Markup on 2nd Tier Sub - 5%	\$	-
1st Tier Sub OH&P - 15%	\$	17,215.14
1st Tier Sub Bond/Insurance - 0.52%	\$	686.31
Prime - Markup - 5%	\$	6,633.45
Prime - Bond/Insurance - 1.68%	\$	2,340.28
Total Amount	\$	141,642.76

Assumptions:
 - Includes approved CJA-NCC labor rates
 - Includes rates from CJA-NCC equipment rates REV 003

Grout Plant:
 \$3.59 - 7542 Supersax 1500 Silo LO
 \$34.68 - 7557 Trailer King Drop Neck
 \$5.71 - 6094 Soilmecc SGA-45 Agitator Tanks (2 ea)
 \$32.98 - 6057 Highshear 7/14 Grout Plant
 \$35.76 - 21134.AQ pumps (8 ea) 2 ea

Shift Duration: 8hrs


 Estimated By: Kenneth Barnhart

5/14/2013


 Checked By: Charles Dombrowski

5/14/2013

Compensation Grouting Hole Production Rates		
Sample Size: 28 Compensation Grout Holes		
	COMACCHIO	KLEMM
Locations (ea)	28	28
Drill Length / Location (ft)	111	111
Production (ft/hr)	16.8	33.6
Set Up Time (hr/location)	0.33	0.33
Casing vs. Drill Bit Switch (hr/location)	1.85	
Shift Start / Stop	11.20	11.20
Total Time (hrs)	257.22	112.98
Production Loss (Based on 5min Switch Time)	56.1%	

No.	Activity	Days	Hourly rates:							Labor totals	Equipment Rates							Equipment Totals	
			Pile Driver	OE G3	Laborer G3						Drill - Klemm 803-2	Drill - Comacchio	Grout Plant	Skytrak 10042 Forklift	246 Cat Skidsteer	Truck	Compressor Sullair 1150XH		150kw Generator
			\$ 81.95	\$ 70.59	\$ 52.48	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 129.64	\$ 103.83	\$ 154.19	\$ 56.63	\$ 27.93	\$ 19.98	\$ 101.60	\$ 52.37	\$ 0.00	
1	Klemm 803-2	-14.12	1	1	4				\$ (40,950.12)	1	1	1	1	1	1	1			\$ (61,272.65)
2	Comacchio MC 602	32.15	1	1	4				\$ 93,233.15		1	1	1	1	1	1			\$ 132,863.54
3									\$ -										\$ -
4	Total								\$ 52,283.03										\$ 71,590.89

Labor	\$	52,283.03
Mob/Demob	\$	-
Equipment	\$	71,590.89
2nd Tier Sub	\$	-
Markup on 2nd Tier Sub - 5%	\$	-
1st Tier Sub OH&P - 15%	\$	18,581.09
1st Tier Sub Bond/Insurance - 0.52%	\$	740.77
Prime - Markup - 5%	\$	7,159.79
Prime - Bond/Insurance - 1.68%	\$	2,525.97
Total Amount	\$	152,881.53

Assumptions:
 - Includes approved CJA-NCC labor rates
 - Includes rates from CJA-NCC equipment rates REV 003

Grout Plant:
 \$3.59 - 7542 Supersax 1500 Silo LO
 \$34.68 - 7557 Trailer King Drop Neck
 \$5.71 - 6094 Soilmec SGA-45 Agitator Tanks (2 ea)
 \$32.98 - 6057 Highshear 7/14 Grout Plant
 \$35.76 - 21134.AQ pumps (8 ea) Zca

Shift Duration: Shrs


 Estimated By: Kenneth Barnhart

5/14/2013


 Checked By: Charles Dembrowski

5/14/2013

Barnard Impregilo Healy JV

TRANSMITTAL

No. 01009

PO BOX 78270
San Francisco, CA 94107

Phone: 415-546-0799
Fax: 415-546-3822

PROJECT: Contract 1252 - Tunnels

DATE: 12/27/2012

TO: SF Municipal Transportation Agency
821 Howard Street
San Francisco, CA 94103

REF: Comp Grout Method Statement
Resubmittal
Sub. #: 31 43 14-001

ATTN: Sarah H. Wilson

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
<input type="checkbox"/> Shop Drawings	<input checked="" type="checkbox"/> Approval	<input type="checkbox"/> Approved as Submitted
<input type="checkbox"/> Letter	<input type="checkbox"/> Your Use	<input type="checkbox"/> Approved as Noted
<input type="checkbox"/> Prints	<input type="checkbox"/> As Requested	<input type="checkbox"/> Returned After Loan
<input type="checkbox"/> Change Order	<input type="checkbox"/> Review and Comment	<input checked="" type="checkbox"/> Resubmit
<input type="checkbox"/> Plans		<input type="checkbox"/> Submit
<input type="checkbox"/> Samples	SENT VIA:	<input type="checkbox"/> Returned
<input type="checkbox"/> Specifications	<input checked="" type="checkbox"/> Attached	<input type="checkbox"/> Returned for Corrections
<input checked="" type="checkbox"/> Other: Made from Submittal	<input type="checkbox"/> Separate Cover Via: Mail	<input type="checkbox"/> Due Date:

ITEM NO.	COPIES	DATE	ITEM	NUMBER	REV. NO.	DESCRIPTION	STATUS
1	5	12/27/2012	SUT	31 43 14-001	002	Comp Grout Method Statement Resubmittal	NEW

Remarks: In response to SFMTA comments, please see attached resubmittal of the Compensation Grouting Method Statement.

CC:

Signed:  Glenn Strid
2012.12.27
22:57:03 -08'00'
Glenn Strid

Barnard Impregilo Healy JV

SUBMITTAL

NO. 31 43 14-001

PO BOX 78270
San Francisco, CA 94107

Phone: 415-546-0799
Fax: 415-546-3822

PACKAGE NO: 314314

TITLE: Comp Grout Method Statement

REQUIRED START: 4/20/2012

PROJECT: Contract 1252 - Tunnels

REQUIRED FINISH: 5/18/2012

DRAWING:

DAYS HELD: 0

STATUS: NEW

DAYS ELAPSED: 255

BIC: SFMTA

DAYS OVERDUE: 223

RECEIVED FROM		SENT TO		RETURNED BY		FORWARDED TO	
CJANCC	TBA	SFMTA	SHW	SFMTA	SHW	CJANCC	TBA

Revision							Drawing				
No.	Description / Remarks	Received	Sent	Returned	Forwarded	Status	Sepias	Prints	Date	Held	Elapsed
001	Comp Grout Method Statement	4/16/2012	4/20/2012	6/12/2012	6/12/2012	ANR	0	0		0	57
002	Comp Grout Method Statement Resub	12/26/2012	12/27/2012			NEW	0	0		0	1

Condon Johnson & Associates/ Nicholson
Construction A Joint Venture
480 Roland Way, Suite 200
Oakland, California 94621
(510) 636-2100



Submittal

Submittal 33: Compensation Grouting: Method Statement

APPROVERS (ASSIGNEES):

Strid, Glenn (Barnard Impregilo Healy Joint Venture)

CREATED BY:

Mikael Calando

PROJECT:

Phase II Central Subway Contract 1252
San Francisco, California. United States

ISSUE DATE:

12/26/12

PROJECT NUMBER:

JV No. 21134

SUBMITTAL NO / REVISION:

33 / 1

COST CODE:**STATUS:**

Open

SUBMITTAL TYPE:**BALL IN COURT:**

Strid, Glenn (Barnard Impregilo Healy Joint Venture)

SPEC SECTION:

31 43 14 - Compensation Grouting

RECEIVED FROM:

Mikael Calando (CJA-NCC Joint Venture)

RECEIVED DATE:**REQUESTED REPLY DATE:**

01/16/13

COPIES TO:

Crews, Pati (CJA-NCC Joint Venture)
Alford, Dan (CJA-NCC Joint Venture)
Baddeley, Thomas (CJA-NCC Joint Venture)
Calando, Mikael (CJA-NCC Joint Venture)

DESCRIPTION:

This revision addresses SFTMA comments. Other main items in this revision are: an alternative preferred drilling method at the shafts location as well as an additional drill rig and sleeve port pipe type.

REFERENCES / ATTACHMENTS

- [Method Statement CG Rev 1 As_submitted.pdf](#)

APPROVER RESPONSES

APPROVER NAME	DATE SENT	DATE RETURNED	STATUS	ATTACHMENTS	COMMENTS
Glenn Strid	12/26/12		Pending	None	

BY

DATE

COPIES TO

RESPONSES TO SFMTA COMMENTS DATED 6-12-12

1. Methods statements and information submitted for Articles 1.06.3.h (grout pipe placement details), 3j (surveying pipelocation) and 3k (record keeping forms and methods for grouting operation) are acceptable.

No actions required.

2. Submittal does not conform to requirements of Article 1.06A.3.b “Submit...separate working drawings and methods statements ...for each building and structure...”

Please see revised method statements per location, working drawings will be addressed under a separate cover by Compensation Grouting Designer.

3. Submittal does not conform to requirements of Article 1.06A.8 “Submit...proposed grouting and re-grouting sequences...”

This requirement will be covered under a separate cover by the Compensation Grouting Designer.

4. Submittal proposes to use a Klemm KRS401CS (smaller drilling rig in Appendix B) for grouting from the shafts. Included datasheet indicates a maximum drilling length of 40 meters (132 ft). However, the required drilling lengths at the two shaft drilling locations (Green Shaft and Ellis Shaft) are greater than 132 ft and could exceed this rig’s limit. Please provide at least one project example where the Contractor has successfully used this machine to place grout pipes from a shaft for the range of lengths required for this work.

The rig to be used inside the shafts will be a modified Klemm 806 mounted on a platform. This rig is more than capable to drill in excess of 215 ft (longest hole on the project). Please refer to the revised method statement and appendix for details on the rig.

5. Grout mixes provided in Table 6.2.3-1-A and B appear to have indicated w/c ratios that are on the order of 2:1 which appears low for such applications. Actual mix used must be compatible with the required reaction of the soils at each grouting location to achieve the required pre-construction heave.

The Compensation Grouting Designer decided to proceed with testing of the mixes proposed. Comments of the SFMTA will be addressed in the Compensation Grouting Designer report under a separate cover.

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APPENDICES

- Appendix A: Grouting Material Product Sheets
- Appendix B: Drilling Equipment
- Appendix C: Computerized Grouting Equipment
- Appendix D: Grout Injection Product Technical Sheets
- Appendix E: ShapeAccelArray and Maxibor II (Borehole Survey)
- Appendix F: Example Grout I.T. Reports

1 Introduction

This submittal covers the compensation grouting at the Project's 5 locations (Market and Ellis, 1435 -1455 Stockton, Folsom and Fourth, Harrison and Fourth). This submittal addresses the Engineer's design provided on Contract Dwg. BP-121 to 126 and Specification §31 43 14 sub section 1.06.A.1, 2 and the relevant parts of 1.06.A.3.b, h, j, k and 1.06.A.8.

2 Working Drawings

Drawings and ground conditioning procedure for the compensation grouting program will be provided under a separate submittal.

3 Features of Work

The compensation grouting work at 5 locations detailed above includes:

- Drilling and Installing Sleeve Port Pipe (SPP)
- Grouting
 - Ground conditioning procedures, Compensation Grouting procedure, grouting instructions, grouting parameters and other design components will be provided under a separate submittal (by others).

4 Materials

4.1 Grout Materials

Grout materials for backfilling grout holes compensation grouting are indicated below:

- Ordinary Portland cement will be Type II-V manufactured by Lehigh or similar.
- Bentonite will be CETCO Premium Gel or similar.
- Silicate will be N38 or similar.
- Water from a local potable source.

Product information for the grout materials is included in Appendix A.

5 Equipment

5.1 Drills

Drilling from existing ground surface will be performed using a Klemm 806 or similar.

Drilling from the access shafts will be performed using a hydraulic rotary drill capable of duplex drilling. The rig will be set-up to control elevation and azimuth.

Cut sheets for potential drilling equipment are provided in Appendix B.

5.2 Grout Plant

A high shear colloidal mixer will be used for mixing grout.

5.3 Computerized Grouting Equipment

Grout I.T. will be used to monitor and control compensation grouting. Grout I.T. is a proprietary, computerized system developed by Soletanche Bachy (SB), the parent company of Nicholson Construction. Grout I.T. allows pressure, flow rate, and volume to be monitored and controlled. In addition, movement monitoring information can be integrated to automatically stop grout injection.

Grout I.T. consists of a suite of software, hardware, and a modular injection container. The modular injection container is called SINNUS and contains eight PH 5 positive displacement piston pumps. Appendix C contains information on the computerized grouting equipment, including the document “Grout I.T. and the Computerized Grouting Chain”, which provides details of the system.

Flow is measured with electromagnetic flowmeters located upstream on the suction line of each pump. Pressure is measured using pressure transducers located on the downstream side of each pump. Volume is determined by totalizing the flow.

Grouting will be controlled using the software SPICE and the communication hub ARCSINNUS. SPICE is installed on a PC. ARCSINNUS is a standalone hub communicating directly with the pump. SPICE controls the grouting process by transmitting the operator commands to ARCSINNUS and displaying data received from ARCSINNUS in real-time. In addition, SPICE records all the data. ARCSINNUS acquires data from the flow meter and pressure transducer installed on the pump. ARCSINNUS uses the pressure and flow information to control the pump by controlling the hydraulics powering the pump.

5.4 Grout Injection System

Steel and PVC sleeve port pipe (SPP) will be 2” to 5-3/4” ID. Port spacing may be 16” (40.64 cm) to 12” (30.5 cm).

All ports will have a flexible sleeve that will be recessed or surface mounted, as shown in Figures 5.4-A and B, respectively.



(A) SPP with recessed sleeve and (B) SPP with surface mounted sleeve

Packers will be pneumatically activated straddle packers. 1/8" high pressure packer rod (1,250 psi work - 5,000 psi burst) will be used to inflate the packer. Grout will be injected through HDPE hose; 1.050" od x 0.615" id x 0.218" wall. Approximate burst pressure 1,880 psi.

Product technical sheets are provided in Appendix D. These products or equivalent products will be used for this work.

6 Methods

6.1 *Drilling and Installing SPPs at all building and structure to be protected*

6.1.1 From existing ground surface

367-399 Fourth street location

Boreholes will be advanced using the rotary duplex drilling methods with air or water as a flush medium. Casing diameter will be 6". The flushing medium is pumped through the internal rods with the soil cuttings returned to the ground surface along the annulus between rods and casing.

A tremie will be installed with the SPP to the bottom of the hole. Grout will be pumped through the tremie to the top of the hole and then the casing will be pulled. While pulling the casing, the hole will be filled with grout as necessary to ensure grout remains to the top of the hole while removing the casing. If grout gets into the SPP, the SPP will be flushed.

Sleeves will be allowed to set for a minimum period prior to injection.

All SPP pipes installed from the surface will be surveyed using a ShapeAccelArray (SAA) manufactured by Measurand or equivalent. A cut sheet



of the SAA is included in Appendix E. The SAA consists of one foot segments that are instrumented with MEMS (Microelectromechanical systems) gravity sensors. Software generates a 3D shape in the form of a polyline for the geometry of the array. The polyline will be used to locate the end of the hole and thus the inclination and orientation of the SPP.

795 folsom street

Same method as 367-399 Fourth street location

Market street (surface installed)

Same method as 367-399 Fourth street location

6.1.2 From Access shafts

Green street shaft location (1435 Stockton St)

When executed from the access shafts, the drilling method will be dual rotary duplex.

This method may use the Elemex over-burden drilling system. This is a patented system comprised of an ingeniously simple concentric method of drilling through overburden with casing.

The three main components of the system are made up of:

- A pilot bit that drills away the center part of the hole and guides the drill string. The pilot bit is attached to any common DTH hammer shank or top hammer rod thread.
- A casing shoe welded to the casing pipe which is pulled down by the impact of the hammer and pilot bit.
- A symmetrical ring bit that is locked onto the pilot bit drills the void for the casing to advance down the hole

The casing does not have to rotate and is pulled down by the hammer. This system provides exceptional hole straightness.

Another feature of the Elemex design is built on redirecting the airflow. With a unique bit face design and extended ring bit walls, the high pressure air is redirected. Once the air reaches the bit face, it is blown against the extended ring bit walls, which redirect the flow across the face. This way the air pressure is decreased just enough to allow an efficient flushing of the bit face without escaping to the surrounding ground.

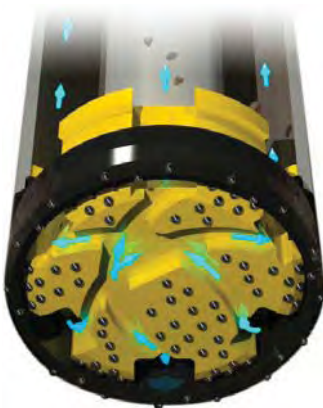


Figure 1: Redirecting the flushing medium



Figure 2: Elemex bit

A tremie will be installed with the SPP to the bottom of the hole. Grout will be pumped through the tremie to the top of the hole and then the casing will be pulled. While pulling the casing, the hole will be filled with grout as necessary to ensure grout remains to the top of the hole while removing the casing.

Ellis street shaft location (Market street Array 1 and 2)

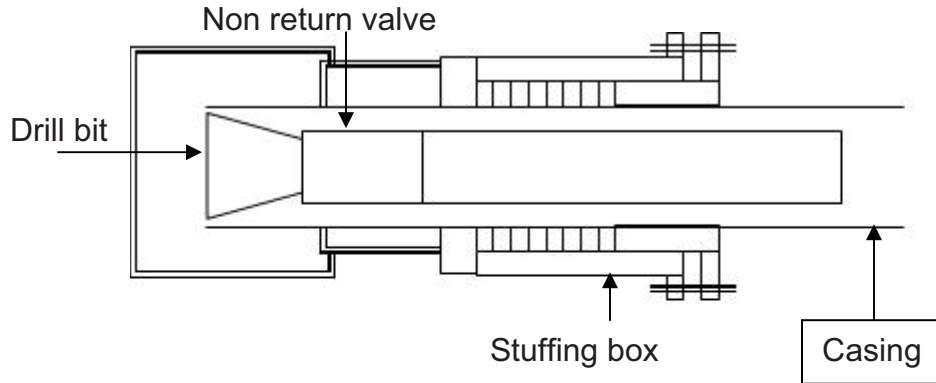
The Method will be similar to the Green street location, however, additional steps will be needed due to the water table elevation.

When drilling below the water table, a blow-out-preventer (BOP) will be used to prevent flow of water from the top of the borehole.

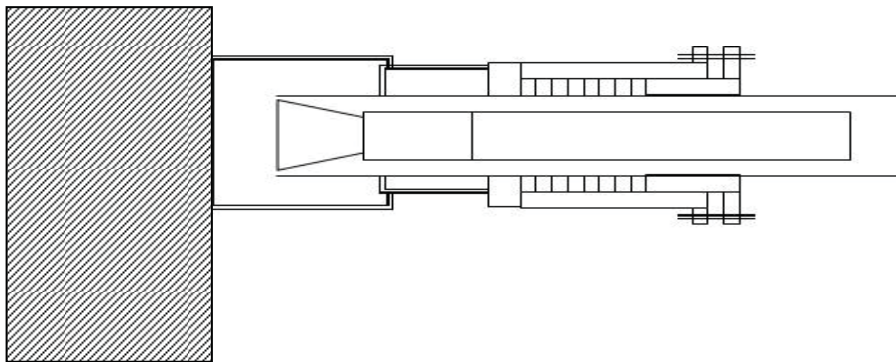
The BOP will be fixed and sealed on the liner of the access shaft

The following procedure will apply:

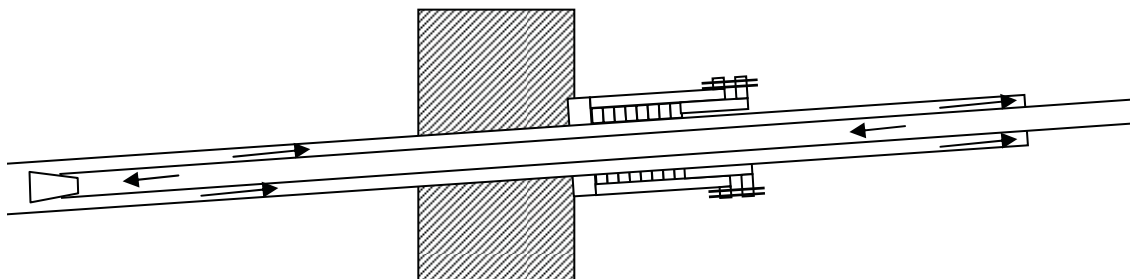
1. Placing the stuffing box on the drill rod and the 6" to 6 5/8" casing



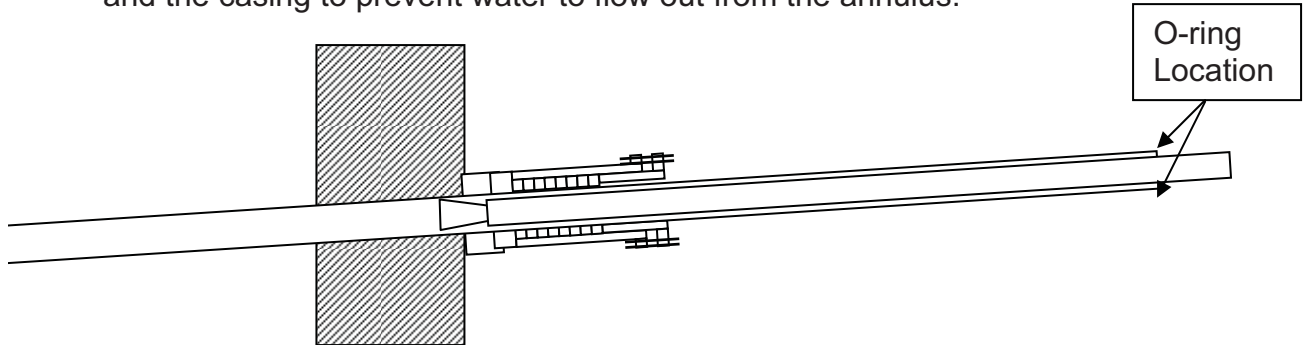
2. Connecting the BOP system to the shaft liner



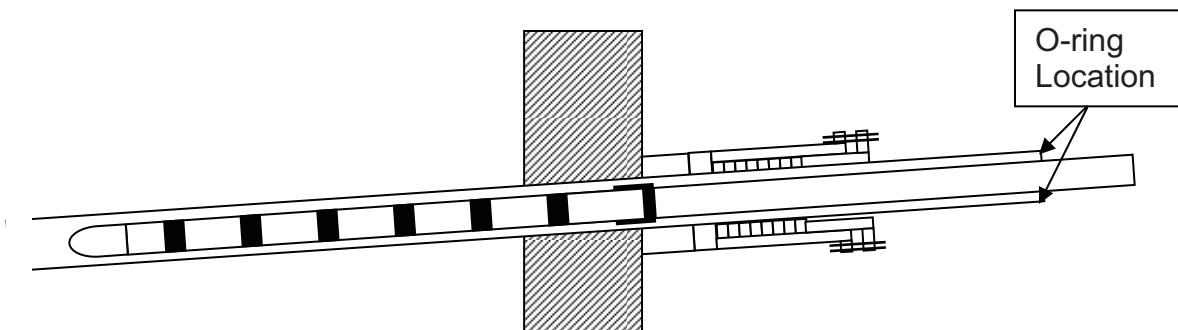
3. Drill to the required length



4. Once drilled to the required depth, the rod will be removed progressively. An adapted O-ring (“donut”) will be placed at the annulus between the rod and the casing to prevent water to flow out from the annulus.



5. Installing the grout pipe (SPP)



Once the SPP is placed in the hole, grout will be injected using an inflatable packer placed at the tip of the hole. While pulling the casing, the hole will be filled with grout as necessary to ensure the hole is fully grouted. A “Donut” system (as described above) placed at the top of hole will be used to maintain grout in the hole. If grout gets into the SPP, the SPP will be flushed. A clamp or holding mechanism will be used at the top of the hole to maintain the SPP at its correct depth, if required.

[An alternative drilling method is preferred at the shafts location, please refer to addendum below for details.](#)

**Addendum to paragraph 6.1.2 Drilling and installing SPP from Access shaft of
CJA-NCC method statement for Compensation grouting**

The elevation of the ground water table (GWT) at the Ellis street shaft location presents a significant risk of ground loss.

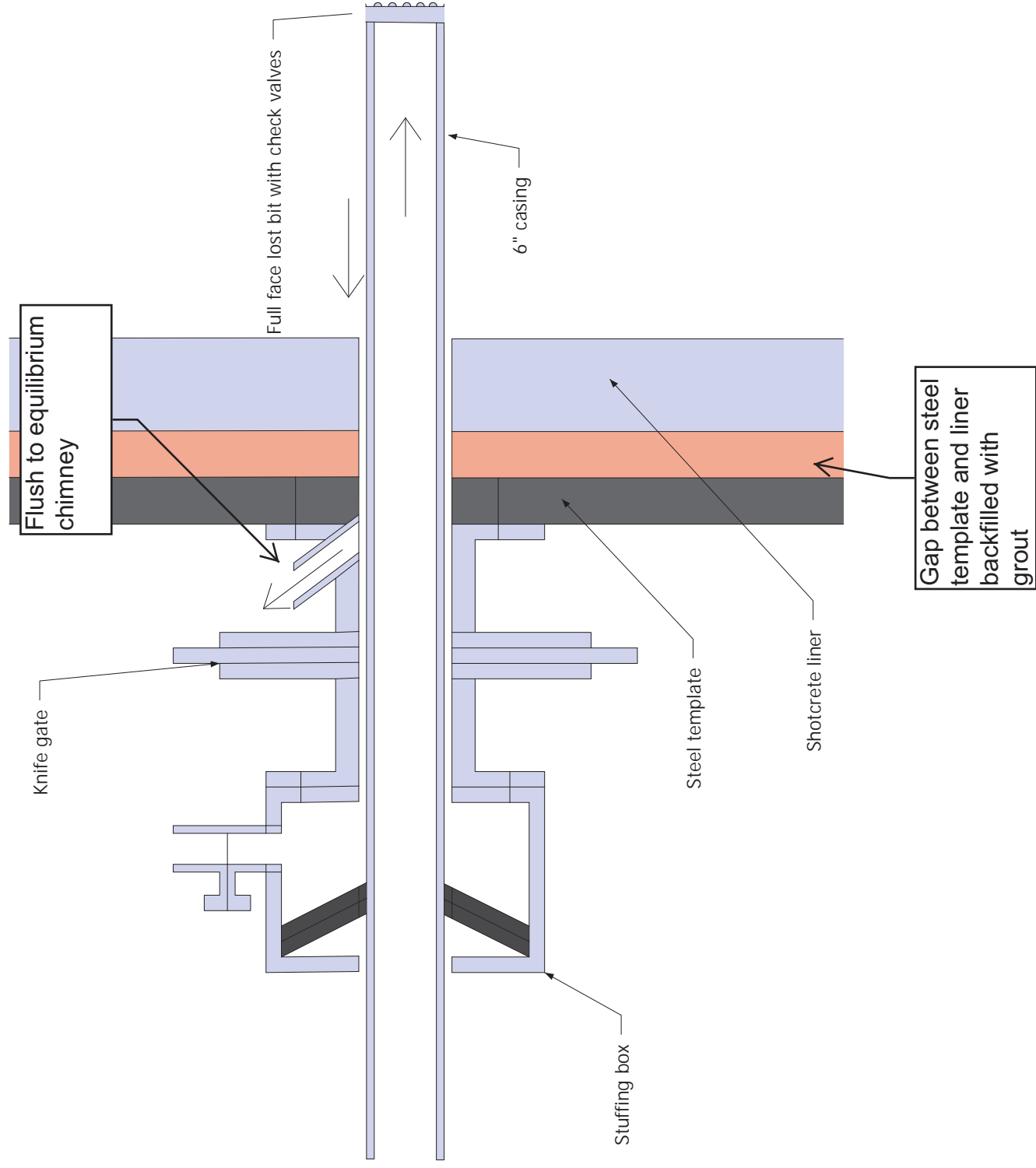
Contract specification 31 43 14 paragraph 2.02 G. call for an internal flush system.

| An alternative drilling method is preferred at the shafts location

Both the external flush and internal flush systems convey a risk of ground loss. However, when drilling below the GWT, an external flush method is preferred to minimize potential ground losses.

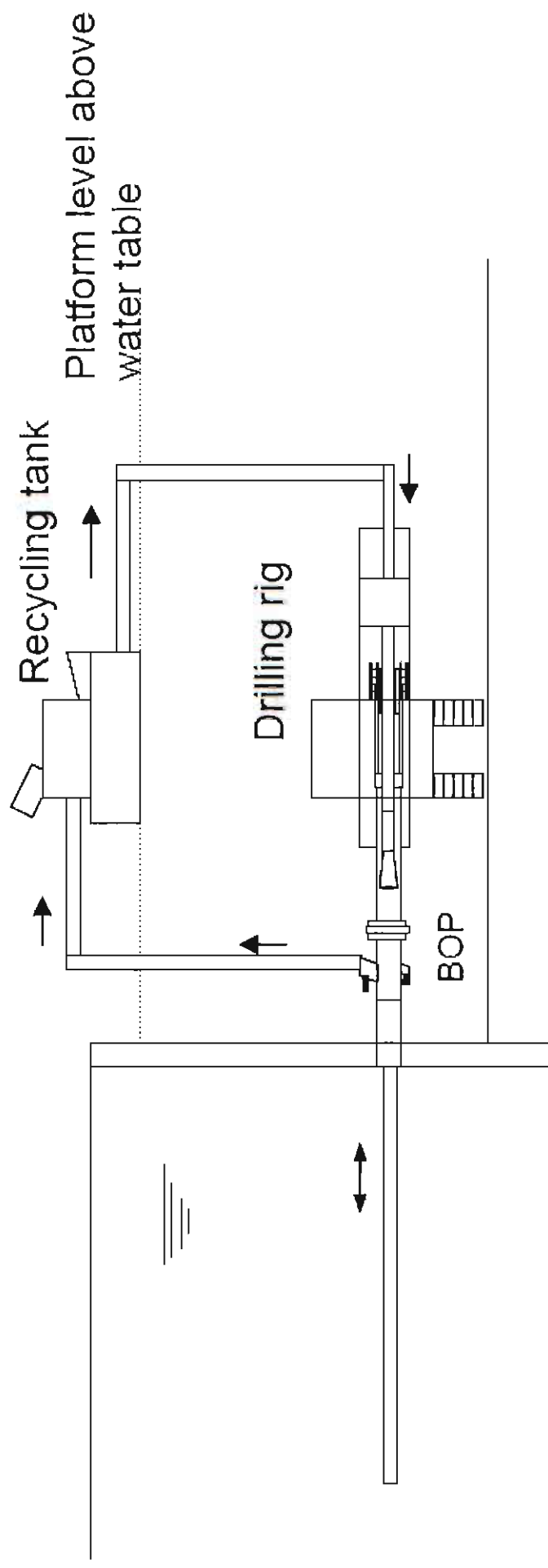
The external flush method is detailed below step by step..

Step 1: install stuffing box and start drilling with external flush

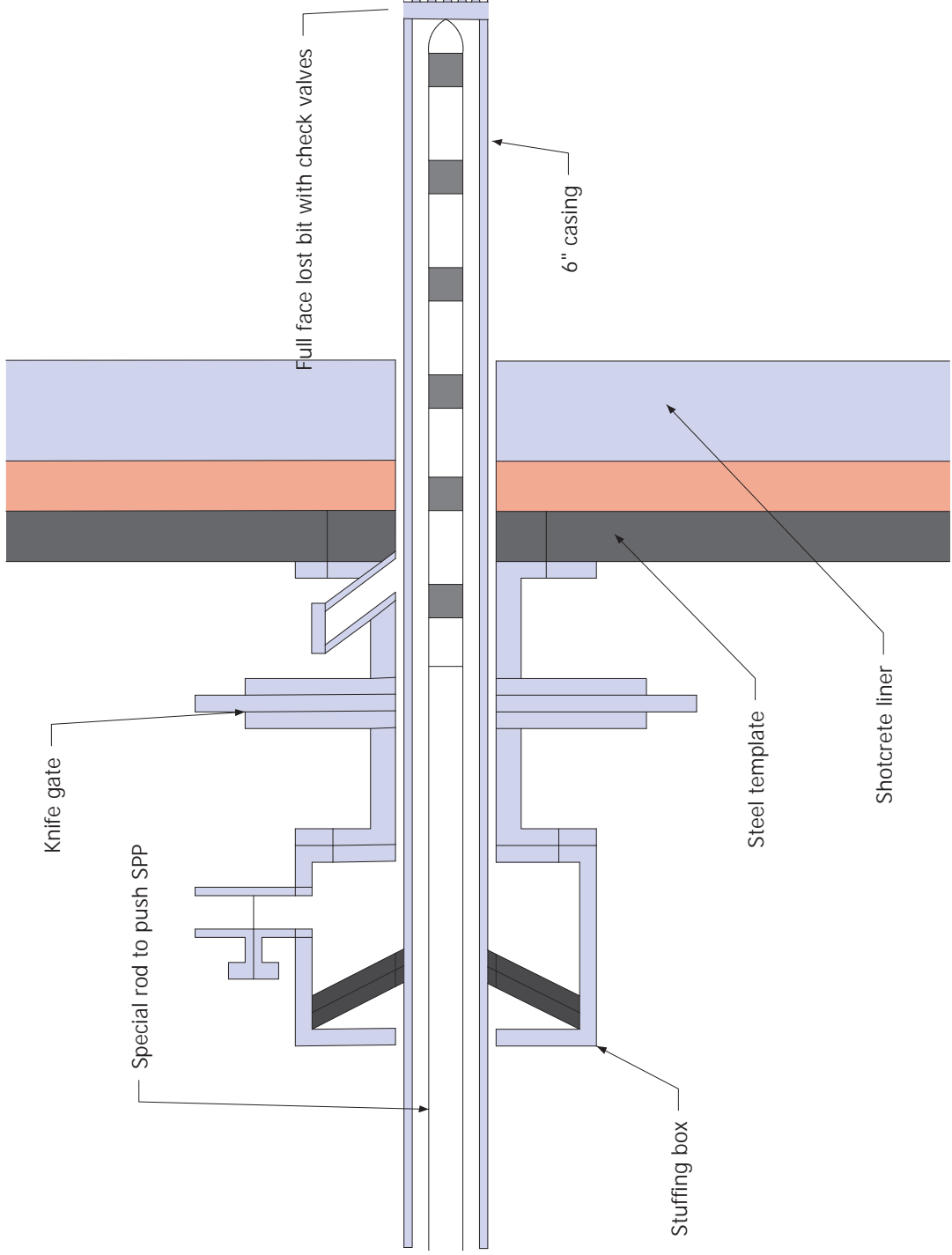


PRINCIPLE OF EQUILIBRIUM CHIMNEY

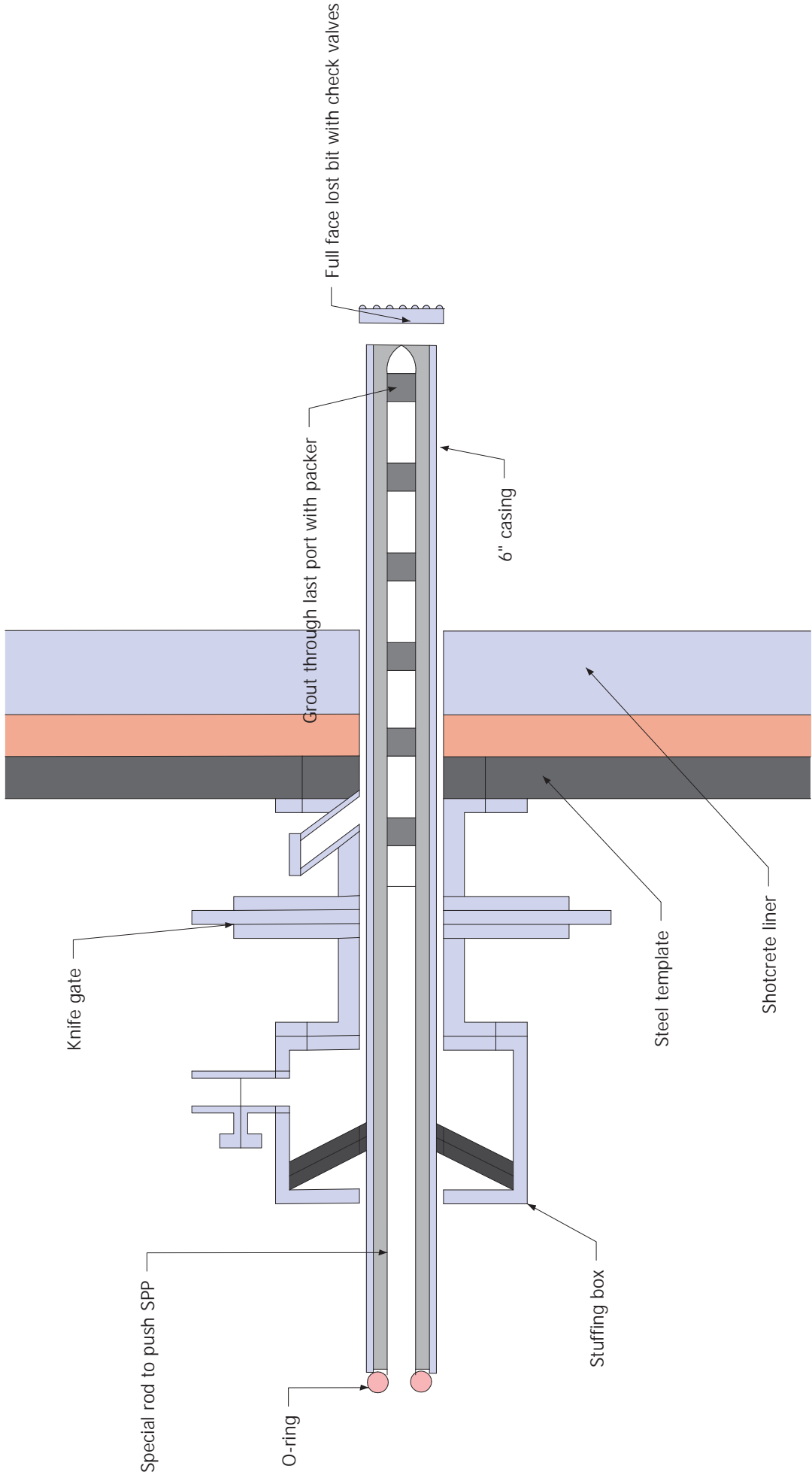
The head of the drilling fluid in the hole is greater than the ground water head.



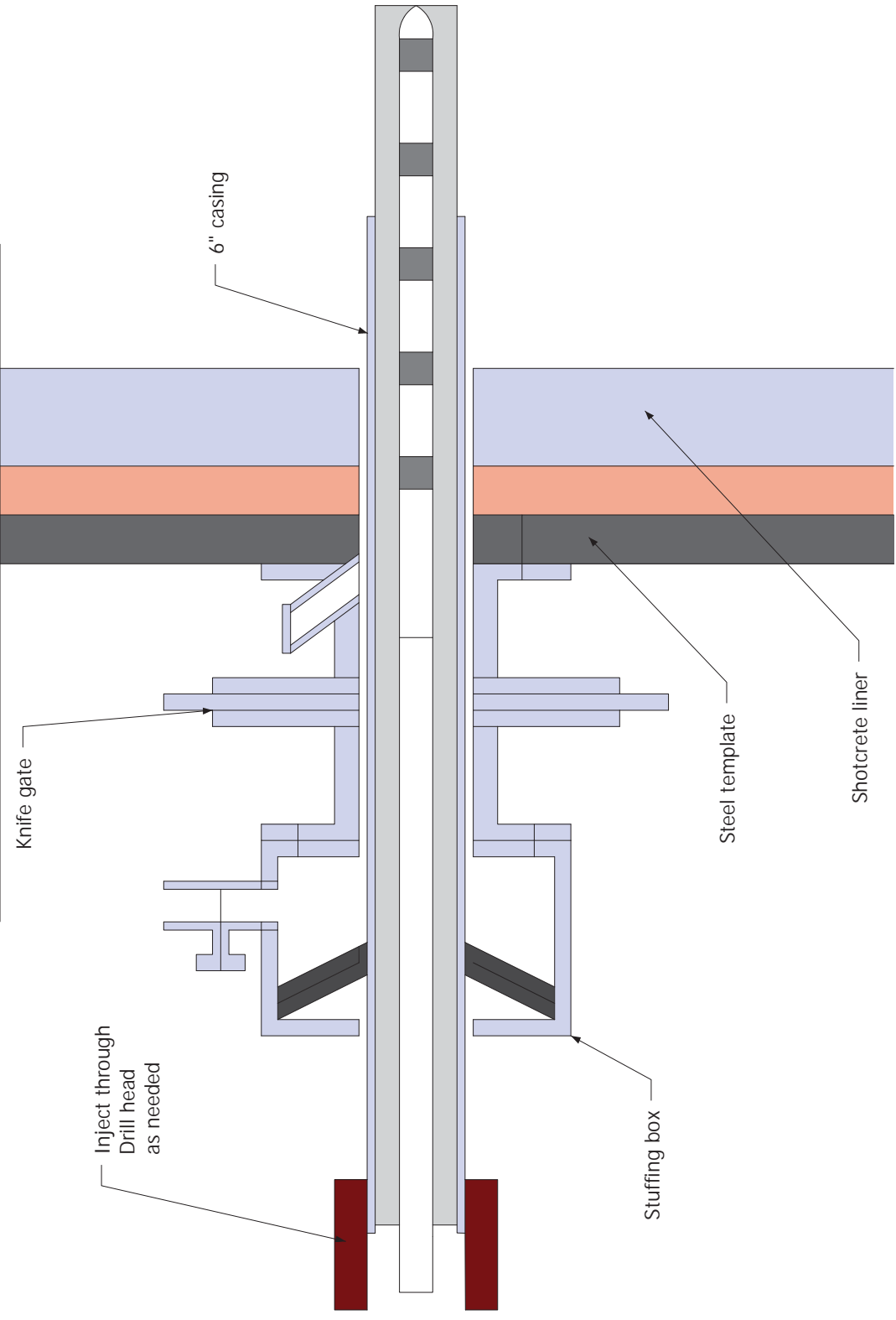
Step 2: install SPP



Step 3: Grout annulus using a packer and disengage bit



Step 4:
Retract casing
Top off grout as needed through drill head



Inject through
Drill head
as needed

Knife gate

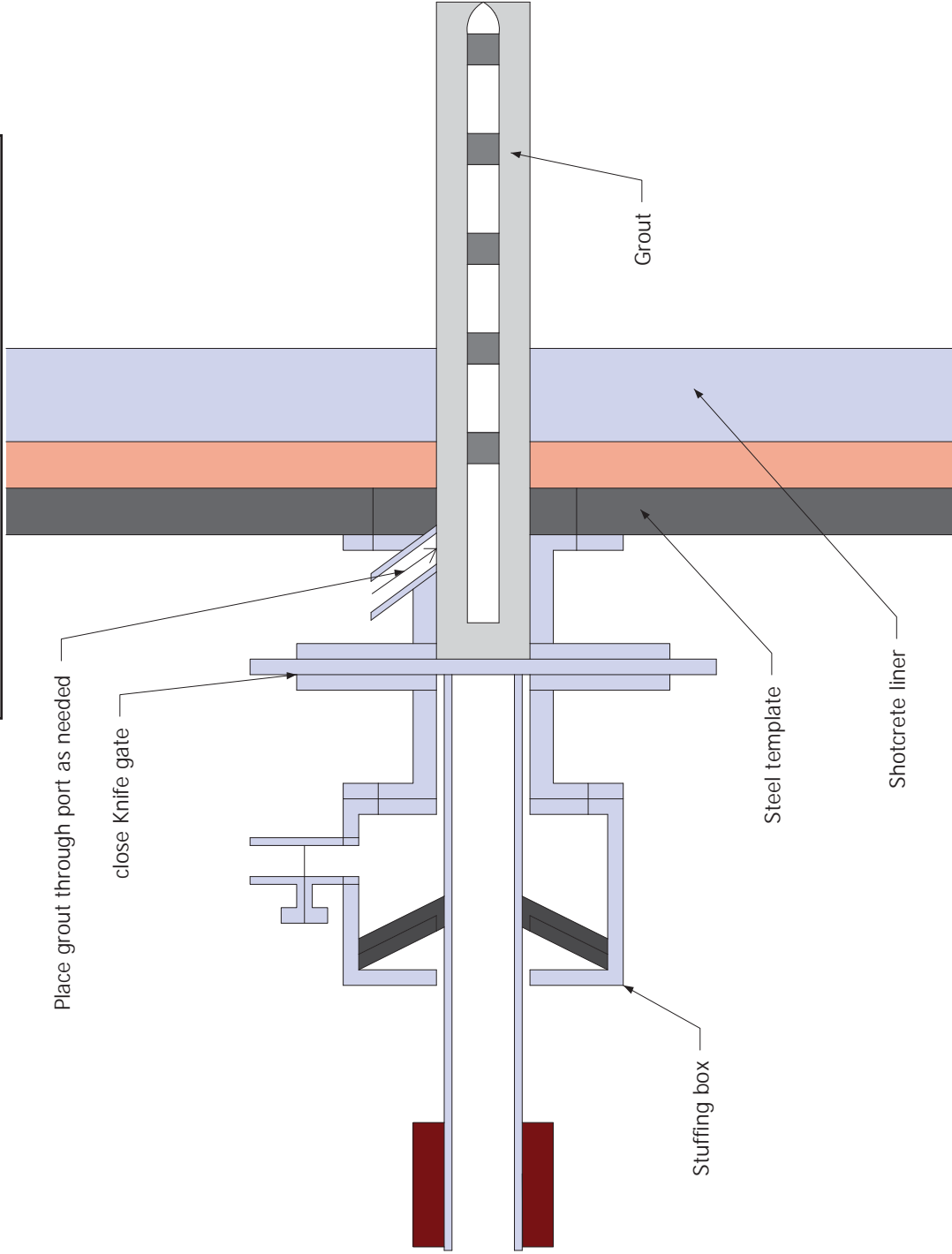
6\" casing

Stuffing box

Steel template

Shotcrete liner

Step 5:
Close knife gate
Top off grout as needed through side port



All holes (below the BART tunnels) will be surveyed prior to encroaching to within 20 feet of the BART tunnels. The goal is to ensure grout pipe installation will pass a minimum of 2 feet below the BART tunnels exterior including all tolerances and allowable deviations.

The survey of the horizontal holes within 20 feet of the BART tunnels and as-built SPPs will be conducted using Maxibor II or Gyro manufactured by Reflex or equivalent. A cut sheet of the Maxibor II and Gyro are included in Appendix E. The non-magnetic measuring principles make Reflex Maxibor II and Gyro enable to survey inside metal casing.

6.1.3 Grout mix to backfill grout holes

The sleeve grout mix for installing the SPP pipe will have a w/c ratio of 2.9. The mix based on cubic yard of grout is presented in Table 6.1-A. Modifications to the sleeve grout mix will be made in the field as required.

**Table 6.1-A: Sleeve Grout Mix
per cubic yard**

Material	Quantity
Water	180 gal
Bentonite	<u>113</u> lbs
Cement (or cementitious material)	<u>425</u> lbs

6.2 Grouting

Grouting will be a combination of ground conditioning and “active” compensation grouting. The methods will be similar for the two. All grouting will be performed with a computerized grouting system, which will control the process and maintain grouting within the defined parameters. Grouting parameters and computerized grouting are discussed further in the following sections.

At the beginning of grouting for each port, the sleeve grout must be “cracked”. This will be done by building pressure in the system with a limit on volume. The process will be controlled by the computerized grout system, as explained in a following section. If onsite conditions require, prior to any injection of grout, all sleeves will be “cracked” with water (not greater than 0.6 cf/sleeve) to reduce subsequent break out pressures during active grouting. Additionally, grout injected sleeves may be re-cracked with water once the grout has taken an initial set and before gaining full strength if required.

All SPPs will be flushed following grouting and maintained for additional grouting.

Compressed nitrogen, water or air will be used to inflate packers.

Hoses will have markers to determine their length within SPPs.

A constant head loss measurement will be performed for each line type, and grout mix at the start of the project. Pressure transducers are located directly downstream of each pump within the SINNUS container. While filling the lines with grout, the end of the line will remain open to the atmosphere. Once the line is filled, and a constant flow is established, the reading from the gauge will be used as the head loss value for that pump, line, and grout. The measured head loss value will be subtracted from the gauge pressure within the computerized grouting system.

6.2.1 Grouting Parameters

Grouting parameters will be adjusted based on the behavior observed during production work. Grouting parameters are chosen to limit unwanted travel due to hydrofracture.

For ground conditioning and compensation grouting, the grouting process will be flow controlled or pressure controlled. A target flow, target volume, and as necessary a limiting (maximum) pressure will be established at each location by the Compensation Grouting Designer under a separate cover.

6.2.2 Computerized Grouting

Computerized grouting will be performed with SB's system presented in Section 5.3. Instructions will be created within the software for each port injection that will include parameters for flow, pressure, and/or volume that will be used to control the grouting process. The computerized grouting system is capable of performing pressure control or flow control. The computerized grouting system will control the grouting process based on the instructions. The system will stop the grouting process if any of the limiting values of the instructions are reached.

Injection parameter graphical plots of pressure, flow, and cumulative volume will be visible in real-time on the control computers monitor as shown in Figure 6.2.2-A. A grouting technician will observe the injection plots at all times during the grouting process. If grout appears to be breaking away by hydrofracture, the injection process will be stopped and grouting parameters will be reviewed.



Figure 6.2.2-A: Computerized Grouting Display

6.2.3 Grout Mixes

Per the Compensation Grouting Designer decision, the following Grout mixes (listed below) will be used for this project depending on the ground reaction at each location. The mix to inject will be determined by the Compensation Grouting Designer.

**Table 6.2.3-A: Grout Mix A, Basic
per cubic yard**

Material	Quantity
Water	170 gal
Bentonite	75 lbs
Cement (or cementitious material)	760 lbs

**Table 6.2.3-B: Grout Mix B, “Fast Set”
per cubic yard**

Material	Quantity
Water	165 gal
Bentonite	75 lbs
Cement (or cementitious material)	760 lbs
Silicate	4 gal

**Table 6.2.3-C: Grout Mix C, “Low W/C ratio”
per cubic yard**

Material	Quantity
Water	162 gal
Bentonite	93 lbs
Cement (or cementitious material)	960 lbs

The Grout mixes above might be adjusted based on field and actual ground conditions encountered.

7 Testing and Calibration of Instruments

Pressure gauges will be checked on site with a master gauge.
Flowmeters will be checked using a container of known volume and the volume totalized by the computerized system.

8 QA/QC, Reporting, and Process Control

When grouting is occurring daily, daily records of the ground conditioning and compensation grouting data will be submitted to the Engineer.

The Grout I.T. stores flow, pressure, and volume data for reporting and analysis purposes. SPICE can generate a chart-type report with the following information recorded on a per-injection basis:

- mix design,
- injection time
- injection rate
- grout volumes
- grouting pressures at point of injection

Appendix F provides an example of Grout I.T. report.

Submittal 31 43 14
Compensation Grouting
Central Subway Project
San Francisco, CA



Appendix A: Grouting Material Product Sheets

**INDUSTRIAL
CHEMICALS
DIVISION**



Bulletin 17-2A

Typical Property Data for PQ[®] Liquid Sodium Silicates

PQ Liquid Sodium Silicates are solutions of soda (Na₂O) and silica (SiO₂) in water. PQ manufactures liquid sodium silicates from sodium silicate glass, which is produced in furnaces by melting high purity sand with soda ash.

PQ Liquid Sodium Silicates are alkaline (pH 11-12) and available in a wide range of silica:soda ratios and total dissolved solids for use in numerous industrial applications. For additional information, see our website: www.PQCorp.com

PQ Liquid Sodium Silicates are characterized by the property data shown below. The properties and ranges shown are typical values, not manufacturing specifications. Physical properties are measured at 20°C (68°F). Filtered product is available as N[®]Clear. For more information, contact PQ Technical Service at 416-201-4355.

PQ CORPORATION

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Phone: 800-944-7411

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PQ Europe
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IN AUSTRALIA

PQ Australia Pty. Ltd.
Phone: 61-3-9708-9200

IN TAIWAN

PQ Silicates Ltd.
Phone: 886-2-2383-0515

PQ Corporation is a leading producer of silicate, zeolite, and other performance materials serving the detergent, pulp and paper, chemical, petroleum, catalyst, water treatment, construction, and beverage markets. It is a global enterprise, operating in 19 countries on five continents, and along with its chemical businesses, includes Potters Industries, a wholly owned subsidiary, which is a leading producer of engineered glass materials serving the highway safety, polymer additive, metal finishing, and conductive particle markets.

PQ Product Name	Wt Ratio SiO ₂ :Na ₂ O ±0.05	Wt % Na ₂ O ±0.2	Wt % SiO ₂ ±1.0	Density			Viscosity cps
				°Be' ±0.5	lb/gal	g/cm ³	
N [®] , N [®] Clear	3.22	8.9	28.7	41.0	11.6	1.38	180
N [®] 38	3.22	8.2	26.4	38.0	11.3	1.36	60
STIXSO [®] RR	3.25	9.2	30.0	42.7	11.8	1.41	830
E [®]	3.22	8.6	27.7	40.0	11.5	1.38	100
O [®]	3.22	9.1	29.5	42.2	11.8	1.41	400
K [®]	2.88	11.0	31.7	47.0	12.3	1.48	960
M [®]	2.58	12.4	32.1	49.3	12.6	1.52	780
STAR [®]	2.50	10.6	26.5	42.0	11.7	1.41	60
RU [®]	2.40	13.8	33.2	52.0	13.0	1.56	2,100
D [®]	2.00	14.7	29.4	50.5	12.8	1.53	400
BJ 120 [™]	1.80	13.1	23.7	43.8	11.9	1.42	655
BW [®] 50	1.60	16.4	26.2	50.3	12.8	1.53	280

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LEHIGH

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PERMANENTE PLANT

24001 Stevens Creek Blvd.
 Cupertino, CA 95014-5659
 Telephone (408) 996-4033
 FAX (408) 996-4033

CEMENT TEST REPORT

Cement: Permanente Type II-V, Low Alkali; ASTM C 150-09

Production Period: December 2011

Report Date: 1/11/2012

STANDARD CHEMICAL REQUIREMENTS ASTM C 114	TEST RESULTS	ASTM C 150-09 SPECIFICATIONS	
		TYPE II	TYPE V
Silicon Dioxide (SiO ₂), %	21.4	20.0 Min	----
Aluminum Oxide (Al ₂ O ₃), %	3.7	6.0 Max	----
Ferric Oxide (Fe ₂ O ₃), %	3.6	6.0 Max	----
Calcium Oxide (CaO), %	65.4	----	----
Magnesium Oxide (MgO), %	1.3	6.0 Max	6.0 Max
Sulfur Trioxide (SO ₃), %	3.5	3.0 Max	2.3B Max
Loss on Ignition (LOI), %	1.5	3.0 Max	3.0 Max
Insoluble Residue, %	0.47	0.75 Max	0.75 Max
Alkalies (Na ₂ O equivalent), %	0.37	0.60 Max	0.60 Max
Tricalcium Silicate (C ₃ S), % ^a	60	----	----
Dicalcium Silicate (C ₂ S), % ^a	13	----	----
Tricalcium Aluminate (C ₃ A), % ^a	4	8 Max	5 Max
Tetracalcium Aluminoferrite (C ₄ AF), % ^a	11	----	----
2 (C ₃ A) + C ₄ AF, %	18	----	25 Max
PHYSICAL REQUIREMENTS			
(ASTM C 1038) Expansion @ 14 days, %	0.003	0.020 Max	0.020 Max
(ASTM C 452) Expansion @ 14 days, %	0.021	----	0.04 Max
(ASTM C 430) -325 Mesh, %	98.8	----	----
(ASTM C 204) Blaine, m ² /kg	383	280 Min	280 Min
(ASTM C114) Limestone, max, %	3.9	5 Max	5 Max
(ASTM C114) Limestone, %CaCO ₃	74.0	----	----
(ASTM C114) Cement, %CO ₂	1.26	----	----
(ASTM C 191) Time of Setting - Initial (Vicat)	119	45 Min	45 Min
(ASTM C 191) Time of Setting - Final (Vicat)	255	375 Max	375 Max
(ASTM C 451) False Set, %	93	50 Min	50 Min
(ASTM C 185) Air Content, %	6.6	12 Max	12 Max
(ASTM C 151) Autoclave Expansion, %	-0.01	0.80 Max	0.80 Max
(ASTM C 187) Normal Consistency, %	24.7	----	----
(ASTM C 109) Compressive Strength, psi (MPa)	0		
1 Day	1732	----	----
3 Day	3060	1500 (10.3) Min	1160 (8.0) Min
7 Day	4042	2500 (17.2) Min	2180 (15.0) Min
28 Day (previous month)	6626	----	3050 (21.0) Min

This cement meets the requirements of specification:

ASTM C150-09 Type II-V, Low Alkali

^a Adjusted per ASTM C-150-09 Section A1.6

Caltrans Section 90-2.01 - Type II-V Modified

ASTM C 1157 Portland Cement Type HS

AASHTO Practice R18 accredited laboratory

Alan Sabawi, Quality Control Manager

Applicable ASTM C 150 Notes:

Note B: There are cases where the optimum SO₃ (using Test Method C563) for a particular cement is close to or in excess of the limit in this specification. In such cases where properties of a cement can be improved by exceeding the SO₃ limit stated in this table it is permissible to exceed the values in the table, provided it has been demonstrated by Test Method C1038 that the cement with the increased SO₃ will not develop expansion in water exceeding 0.020% at 14 days. When the manufacturer supplies cement under this provision, he shall, upon request, supply supporting data to the purchaser.

Note C: Limestone addition as per C 150-09 Item 5.1.3

TECHNICAL DATA

PREMIUM GEL®

API BENTONITE

DESCRIPTION

PREMIUM GEL is a 200 mesh, 90 bbl yield sodium bentonite for freshwater drilling, slurry walls, and tunnel boring. PREMIUM GEL complies with API 13A Section 9, Specifications for Drilling Fluid Materials.

RECOMMENDED USE

May be used for all types of freshwater mud rotary drilling where higher solids are desired. PREMIUM GEL can also be used as a seal for earthen structures, slurry trenching, tunnel boring, and foundation drilling.

CHARACTERISTICS

- ▶ Cools and lubricates bit
- ▶ Mixes quickly and easily
- ▶ Reduces fluid loss into the formation
- ▶ Removes cuttings
- ▶ Stabilizes borehole

MIXING AND APPLICATION:

Mixing ratios are based on the use of freshwater; water purity will affect bentonite performance. For best results, acidic and hard make-up water should be pretreated with SODA ASH to a pH of 8.5-9.5. Add PREMIUM GEL slowly through jet/hopper mixer.

PACKAGING

50 lb (22.7 kg) bag, 48 per pallet, 100 lb (45.4 kg) bag, 35 per pallet, 1 ton or 2 ton supersacks, or bulk. All pallets are plastic-wrapped.

DRILLING FLUID AND SLURRY TRENCHING - PREMIUM GEL mixing ratio in pounds (kg) per 100 gallons (380 liters) of water		
Condition	Lbs (kg) of PREMIUM GEL	% Solids
Normal Conditions	30 - 50 lbs (13.5 - 22.5 kg)	3.5 - 5.7%
Sand and Gravel	50 - 70 lbs (22.5 - 31.5 kg)	5.7 - 7.7%
Fluid Loss Control	70 - 80 lbs (31.5 - 36 kg)	7.7 - 8.8%
SLURRY PROPERTIES - 6.04% SOLIDS		
Property	Typical Value	Specification/Procedure
Viscosity FANN 600 rpm	40 cps	30 cps Min - API 13A Section 9
Viscosity FANN 6 rpm	11 cps	ACC TP-2005
Viscosity FANN 3 rpm	11 cps	ACC TP-2005
Yield - 42 gal bbl of 15 cps slurry/ton	90 to 120 bbl/tn	90 Min - API 13A Section 9
Marsh Funnel, seconds/quart	42 seconds	ACC TP-1014
Apparent Viscosity (AV)	15 to 25 cps	ACC TP-2005
Plastic Viscosity (PV)	9 to 10	ACC TP-2005
Yield Point, lb/100 ft ²	15 to 25 lb/100 ft ²	ACC TP-2005
Filtrate, 30 minutes @ 100 psi, ml	13 to 15 ml	15 ml Max - API 13A Section 9
Filter Cake, in	3/32 in	N/A
pH	9.03	ACC TP-1018
GENERAL PROPERTIES		
Property	Typical Value	Specification/Procedure
Moisture %	7.4%	ACC TP-2006
Free Swell	28	ASTM D-5890
Plate Water Absorption	622.80%	ASTM E946-92
Specific Gravity	2.5	Generally Recognized
Bulk Density Non-compacted	53 lbs/ft ³	ACC TP-1005
Bulk Density Compacted	72 lbs/ft ³	ACC TP-1005
Grit % (<75 micron)	3.2%	4.0% Max - API 13A Section 9
Particle Sizing	70% Min passing #200 mesh sieve	ACC TP-1015



Appendix B: Drilling Equipment

10 Technical Data KR 803-2

(with drill mast type 162 and drill head unit)

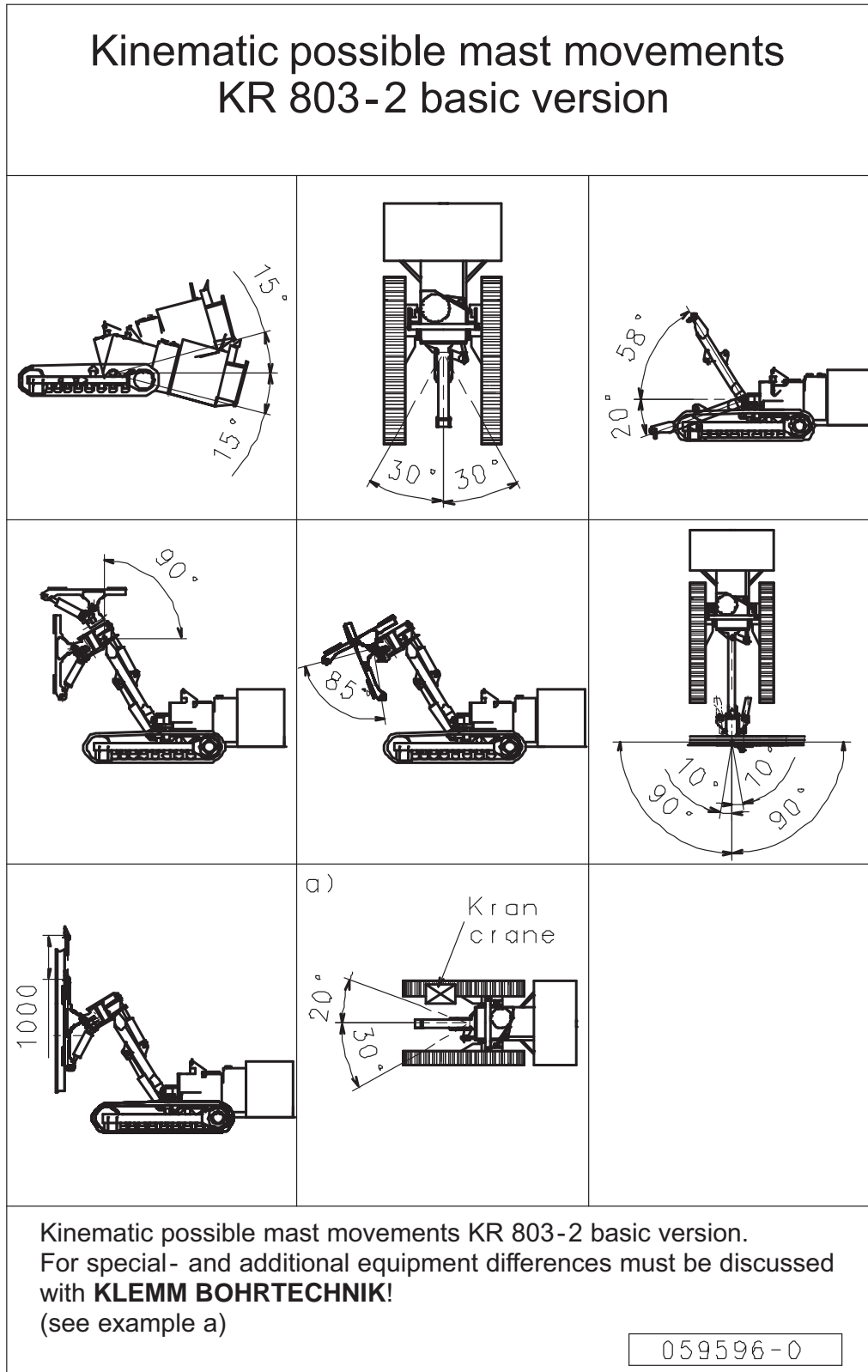
Power source:		
Caterpillar diesel engine Typ 3056 EATAAC		129,5 kW
rpm		2300 min ⁻¹
certified by		COM 2 / EPA 2
Undercarriage:		
Traction	approx.	110 kN
Tramming speed	max.	2,4 km/h
Specific ground pressure		6,3 N/cm ²
Hydr. track oscillation		+15° / -15°
Total width		2280 mm
Width of grousers		400 mm
Length (axle to axle)		2575 mm
Length of crawler units		3285 mm
Ground clearance		350 mm
Crawler type		3-Step, B1
Hydraulic system:		
Hydraulic pumps	1 x 290 l/min. load-sensing	
	1 x 35 l/min. constant	
	1 x 12 l/min. constant	
System pressure	max.	280 bar
Hydr. tank capacity	approx	500 l
Fuel tank capacity		340 l
Electrics		24V, 100Ah
Drill mast 162 with feed gear an two speed motor:		
Feed force / Retraction force		60 kN
Feed speed / Retraction speed		10,8 m/min
Fast feed speed / Fast retraction speed		46,0 m/min
Transport dimensions:	length	8900 mm
	width	2280 mm
	height	2500 mm
Weight total with drill mast 162 and drill head unit (without drill rods)	approx.	ca. 13,0 to

Caution!

The standard-ambient temperature range of -20°C (-4°F) up to +40°C (+104°F) shall not be exceeded.

Otherwise we cannot guarantee a trouble-free operation!

11 Kinematic possible mast movements KR 803-2



Klemm KR806-1



CJA 9021
 S/N 66012
 Model Year 1998
 Deutz BF6L913

CJA 3013
 S/N 66007
 Model Year 1994
 Deutz BF6L913

Overall Weight	14.5t	31,967lbs
Width	2500mm	8' 2"
Length	7700mm	25' 3"
Height	2800mm	9' 2"
Trucks needed to transport	1	

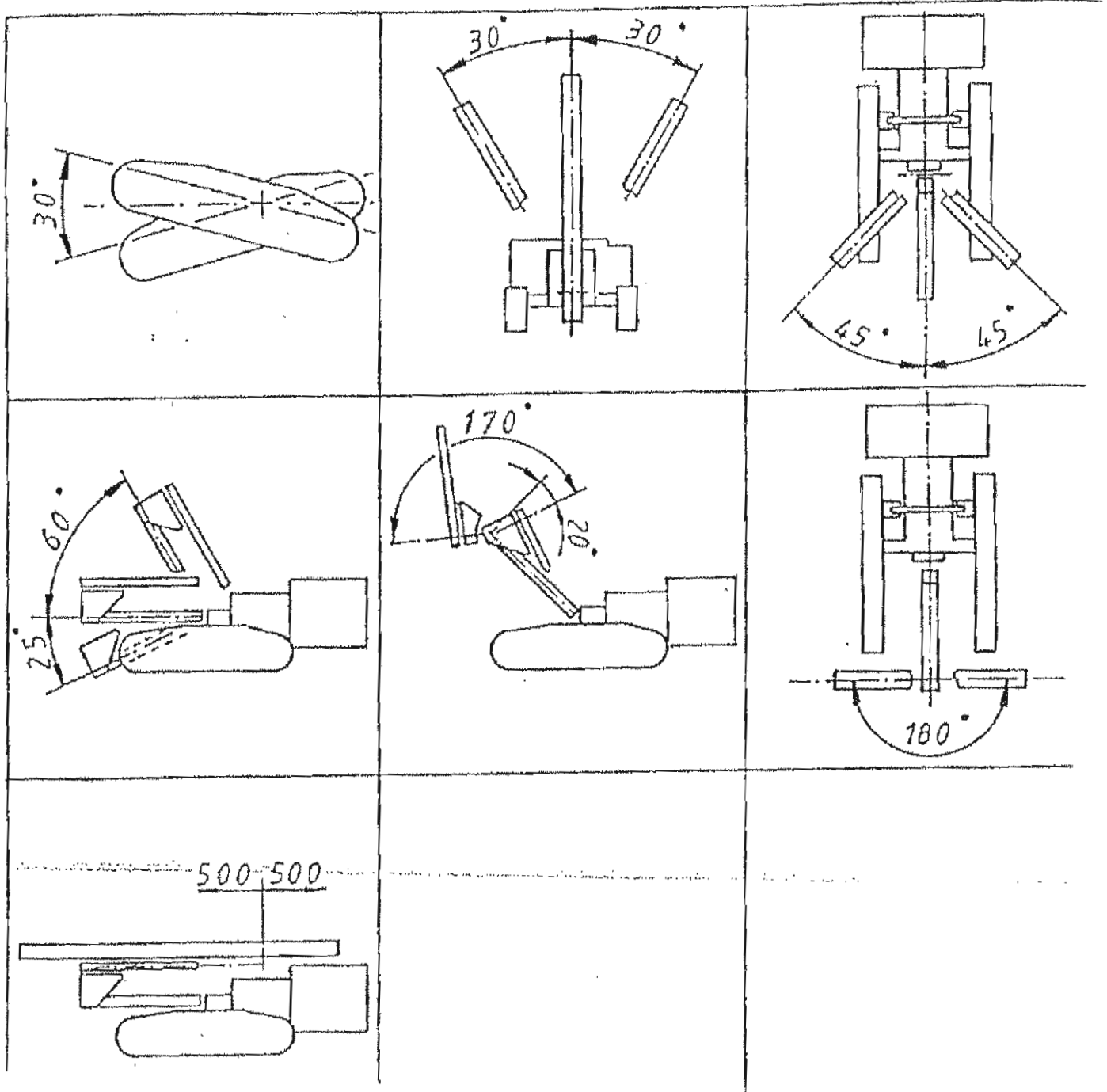
7. Technische Daten - KR 806-1
 (with drill mast type 240/8)
 (with drill mast type 200 V -feed cylinder-)
 (with drill mast type 200 V -feed motor / gear-)

Weight total with drill mast type 240/8	14,0 to
Weight total with drill mast type 200 V with feed cylinder	14,0 to
weight total with drill mast type 200 V with feed motor/gear.....	14,5 to
Undercarrriage, specific ground pressure :	
with drill mast type 240/8	6,0 N/cm ² (8.7psi)
with drill mast type 200 V with feed cylinder	6,0 N/cm ² (8.7psi)
with drill mast type 200 V with feed motor/gear.....	6,5 N/cm ² (9.4psi)
Drill mast type 240/8:	
Feed force	max. 40 KN (8992lbs)
Retraction force	max. 76 KN (17085lbs)
Drill mast type 200 V with feed cylinder:	
Feed force	max. 40,0 KN (8992lbs)
Retraction force	max. 78,5 KN (17648lbs)
Drill mast type 200 V with feed motor/gear:	
Feed force (197 bar).....	max. 80 KN (17985lbs)
Retraction force (197 bar).....	max. 80 KN (17985lbs)
Transport dimensions with:	
drill mast type 240/8	Length 7700 mm (25' 3")
.....	Width..... 2500 mm (8' 2")
.....	Height..... 2800 mm (9' 2")
drill mast type 200 V with feed cylinder....	Length mm
.....	Width..... mm
.....	Height..... mm
drill mast type 200 V with feed motor/gear	Length..... 7700 mm (25' 3")
.....	Width..... 2500 mm (8' 2")
.....	Height..... 2800 mm (9' 2")

Technical Data KR 806-1
(Basic unit without drill mast)

Power Source :	
DEUTZ diesel engine	BF6L 913 109 kW
RPM	2.300 min. ⁻¹
Tramming motors :	
Traction.....	ca. 90 KN <small>(20,233lbs)</small>
Tramming speed	max. 3.0 km/h (1.9mph)
Undercarriage :	
Oscillating facility	$\pm 15^\circ$
Total width	2.500 mm (8' 2")
Width of grousers	400 mm (1' 4")
Grouthers type	3-Step, B 2
Hydraulic system :	
Hydraulic pumps	min/max. ... 3x135, 1x25, 1x18 l/min
System pressure	max 250 bar
Hydraulic tank capac.	ca. 630 l (166gal)
Fuel tank :	
Volume	ca. 270 l (71gal)
Electrics :	2 x 12 V, 120 Ah

Slewing Ranges





Appendix C: Computerized Grouting Equipment



Pompes PH pumps

Pompes hydrauliques pour injection
Hydraulic pumps for grouting



Les pompes **PH 2x5** sont des pompes pour des injections :
 - de traitement de sol (écrans d'étanchéité, soutènements),
 - de consolidation de sol (amélioration de la portance),
 - de compensation (minimisation des tassements).

PH 2x5 pumps are pumps for grouting :

- for ground treatment (cut off walls, supports),
- for ground consolidation (increase of bearing capacity),
- for compensation grouting (less settling).

PH 2x5 D : 72200
 PH 2x5 E1 : 72205
 PH 2x5 E2 : 72206

PH 15.070 D : 72085 - PH 15.100 D : 72080
 PH 15.070 E1 : 72086 - PH 15.100 E1 : 72081
 PH 15HP.070 D : 72030 - PH15HP.100 D : 72090
 PH 15THP.070 D : 72040 - PH15THP.100 D : 72100

Les pompes **PH 15** sont des pompes pour des injections :

- de traitement de sol (écran d'étanchéité),
 - de consolidation de sol (remplissage de vides et clavage),
 - d'hydro-fracturation (fissuration de maçonnerie),
- ou de circulation pour le forage, associée à une foreuse.

PH 15 pumps are pumps for grouting :

- for ground treatment (cut off walls),
- for ground consolidation (increase of bearing capacity),
- for hydro fracture (fracture masonries).

or for drilling injection with one drilling rig.



PH 125 est une pompe pour la consolidation de sol (remplissage et clavage de vides), ou de meilleure circulation pour le forage associée à une foreuse.

PH 125 is a pump for ground consolidation (increase of bearing capacity), or for better flow drilling injection with one drilling rig.

PH 125.125 D : 72130

PH 160 est une pompe de circulation pour le forage, associée à une foreuse.

PH 160 is a pump for drilling injection with one drilling rig.



PH 160.160 D th : 72160
 PH 160.160 D el : 72170



PH 250 est une pompe pour le traitement de sol en tunnel avec très haute pression, ou de circulation pour le forage associée à une foreuse.

PH 250 is a pump for ground treatment in tunnels with very high pressure, or for drilling injection with one drilling rig.

PH 250.070 E1 : 72180
 PH 250.100 E1 : 72190

- D** : régulée et graissée / *regulated and greased*
- E1** : régulée et graissée UPC / *regulated and greased UPC*
- E2** : régulée et graissée UPC & connectique capteurs / *regulated and greased with UPC & sensor connections*

➤ **Accessoires / accessories :**

- Doseur silicate / *silicate measurer* PH15 d16 : 31573
- Doseur silicate / *silicate measurer* PH15 d25 : 31574
- Doseur silicate / *silicate measurer* PH15THP d16 :
- Doseur silicate / *silicate measurer* PH15THP d25 :
- Doseur silicate / *silicate measurer* PH250 d25 : 35782



Enrouleur / *hose drum* : 72235
 Pompe / *pump* : 07845



PH pumps

Présentation

Les pompes PH sont des pompes d'injection à piston, robustes, fiables, pilotables par ordinateur, ayant fait l'objet de nombreuses évolutions techniques afin d'améliorer leur sécurité et leur pilotage.

Usage

La gamme des pompes PH est très large et permet de couvrir la totalité des injections, des traitements de sols fins jusqu'à la circulation pour le forage.

Toutes les pompes peuvent prendre des boues chargées ou des coulis à fort c/e.

Les corps de pompe PH 15, 125 et 160 peuvent être directement montés sur des foreuses.

Les pompes PH 2x5 et PH 15 peuvent être montées dans des containers intégrant la fabrication et l'injection de coulis, avec pilotage complet éventuel par ordinateur.

Souplesse

La gamme des pompes PH est très facile à mettre en route et à entretenir.

Elles sont toutes équipées d'une centrale de graissage automatisée.

Toutes les pompes peuvent être manutentionnées par un élévateur ou à l'aide d'une grue. Elles sont toutes équipées de potentiomètres pour régler les débits d'injection.

Performance

La gamme des pompes PH couvre un panel très élevé de pressions (de 0 à 250 bar) et de débits (de 0 à 470 l/mn).

Sécurité

Toutes les pompes PH ont été conçues avec un système d'arrêt automatique au niveau des pistons en cas d'ouverture.

Presentation

PH pumps are robust, reliable piston grouting pumps, offering the possibility of computer piloting, with many improvements in safety and piloting.

Use

PH pump range is very large and allows covering the complete grouting range, from fine ground treatments to drilling injection.

All pumps can grout loaded mud or great c/w slurry.

PH 15 or PH 125 or PH 160 body can be directly mounted on drilling rigs.

PH 2x5 and PH 15 can be mounted in one container, with integration of mixer and grout machines, eventually piloted by one computer for complete integration.

Versatility

The PH pump range is very easy to start and to maintain.

All pumps are equipped with an automatic greasing unit.

All pumps can be handled with a fork lift truck or with a crane.

All pumps are equipped with a potentiometer in order to regulate the grouting flows.

Performance

The PH pump range has a large panel of grouting pressures (from 0 to 250 bar) and of flows (from 0 to 470 l/mn).

Safety

All PH pumps have been designed with automatic stop safety at the piston site, in case of opening.



PH pumps

Composition

Description

Les pompes PH sont composées de :
PH pumps are composed of :

- un châssis avec facilités de manutention :
a steel frame with handling facilities :



- une motorisation électrique ou thermique :
an electric motor or diesel engine :

- une centrale hydraulique avec réservoir :
a hydraulic power-pack with oil tank :



- un réfrigérant, hors PH 2x5 :
a cooling unit, excepted in PH 2x5 :

- une armoire électrique avec système de régulation :
an electric control panel with regulation system :



- un corps de presse avec piston plongeur :
a pump body with plunger piston :



- une centrale de graissage centralisée :
an integrated greasing central :



option

- un doseur injecteur de silicate (PH 15 & PH250)
a grouting measurer of silicate (PH15 & PH 250)

PH pumps

Spécifications

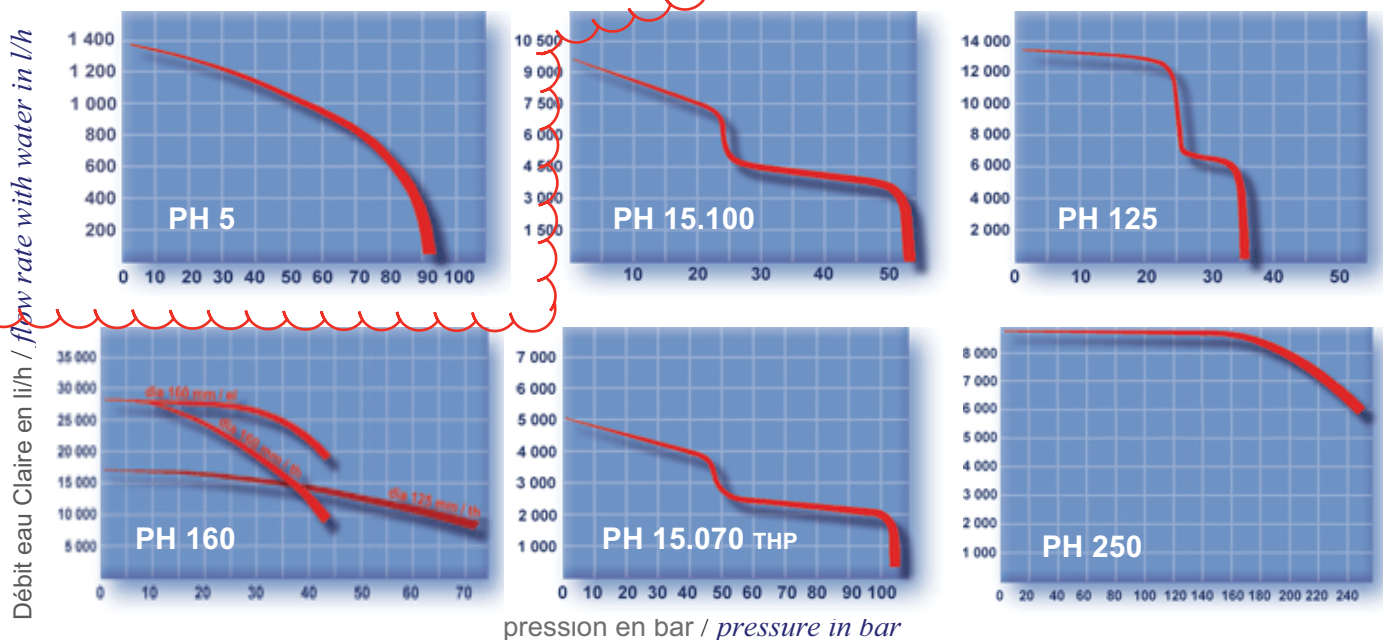
Technical data

PH 2x5 designates two PH 5 pumps with two hydraulic pumps powered by one electric motor.

		PH 2x5	PH 15	PH15 ^{THP}	PH 125	PH 160	PH 250
Power pack	Power-pack						
Moteur électrique (kW)	Electric motor (kW)	5,5	18,5	30	18,5	22	45
Vitesse de rotation (tr/mn)	Rotation speed (rpm)	1450	1450	1450	1450	1450	1450
Tension (v)	Voltage (v)	400	400	400	400	400	400
Pompe hydraulique (cm ³)	Hydraulic pump (cc)	2 x 7,5	32/24/16	2 x 100	32/24/16	100	2 x 100
Pression (bar)	Pressure (b)	250	210	190	210	230	275
Débit (l/mn)	Flow rate (l/mn)	2 x 11	47/35/23	2 x 145	47/35/23	145	2 x 145
Réservoir (l)	Hydraulic tank (l)	70	100	100	100	100	60
Indicateur niveau	Level indicator	X	X	X	X	X	X
Indicateur de colmatage	Filling indicator	X	X	X	X	X	X
Filtration (µm)	Hydraulic filter (µm)	10	10	10	10	10	10
Réfrigérant électrique	Cooling unit	N	X	X	X	X	X
Corps de pompe	Pump body						
Nombre de pistons	Piston number	2	1	1	1	1	1
Diamètre piston (mm)	Piston diameter (mm)	70	100	70	125	160	70
Course du piston (mm)	Piston stroke (mm)	175	400	400	400	400	400
Pression nominale (bar)	Nominal pressure (bar)	50	55	110	35	45	250
Pression de claquage (bar)	Breakdown pressure (bar)	90	N	N	N	N	N
Armoire électrique	Control panel						
Compte coups	Stroke counter	X	X	X	X	X	X
Réglage débit	Flow adjustment	X	X	X	X	X	X
Réglage de la pression	Pressure adjustment	X	N	N	N	N	N
Commande de graissage	Greasing control	X	X	X	X	X	X
Pilotage ordinateur	Computer piloting	X	Option	Option	N	N	Option
Doseur silicate	Silicate measurer	N	Option	Option	N	N	Option
Diamètre (mm)	Diameter (mm)		16 / 25	16 / 25			25
Rapport débit de 0 à	Flow report from 0 to		1/39 - 1/16	1/19 - 1/7,8			1 / 7,8
Pression maximum (bar)	Max. pressure (bar)		40	110			150

Curbes

Curves



PH pumps

Option pilotage

Piloting option

Toutes les pompes PH peuvent être pilotées par ordinateur avec le système **SPICE** ou **CINAUT**, à l'aide d'un capteur de pression et d'un capteur de débit.

*All PH pumps can be piloted by computer with a **SPICE** or a **CINAUT** system, with a pressure sensor and a flow rate sensor.*

Le principe de **SPICE system** consiste à piloter les injections à partir de critères de débits d'injection et/ou de critères de pression maximale prédéfinis, pour une quantité donnée, à partir des mesures avec un capteur de pression et un capteur de débit. Il permet en outre d'enregistrer tous les paramètres d'injection.

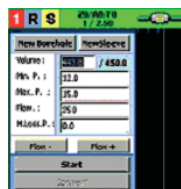
***SPICE system** principle is to pilot the grouting with flow and/or maximum pressure criteria for a defined quantity, from pressure sensor and flow sensor measurements. It can also record all the grouting parameters.*



Capteur de pression
Pressure sensor



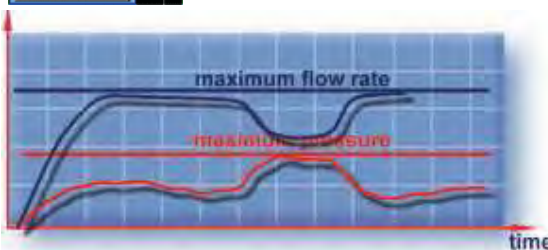
Capteur de débit
Flow sensor



Les valeurs de pression maximum ou de débit d'injection maximum, sont entrées indépendamment dans le PC.

The maximum pressure values or the maximum grouting flow values are entered independently in the computer.

Ecran / Screen

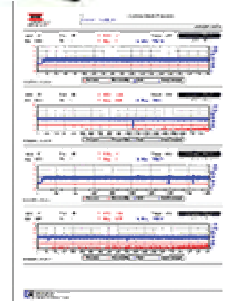


SPICE system permet un pilotage automatique des injections, sans intervention humaine ; ce qui en fait un outil indispensable de production pour les injections de compensation ou de traitement de sol à côté de mitoyens.

***SPICE system** automatically regulates the grouting without human intervention which makes it an essential production tool for compensation grouting or reinforcement grouting near terraced buildings or other engineering work sites.*

Outre l'affichage des pressions et quantités en temps réels, des rapports synthétiques peuvent être élaborés selon des présentations propres à chaque société. Des présentations 3D peuvent être obtenues avec **CASTAUR system**.

*In addition to the display of the pressure measurements and grouting quantities in real time, reports can be made with specific company presentations. Three dimensional views can be elaborated with **CASTAUR system**.*



Dimensions

Dimensions

Type pompe Pump type	PH 2x5	PH 15	PH 125	PH 160	PH 250
Longueur (mm) Length (in)	1420 55.91	2100 82.68	2100 82.68	2290 90.16	2400 94.49
Largeur (mm) Width (in)	820 3.25	1150 45.28	1150 45.28	1230 48.43	1150 45.28
Hauteur (mm) Height (in)	1540 60.63	1400 55.12	1400 55.12	1400 55.12	1400 55.12
Poids (daN) Weight (lb)	660 1505	1120 2554	1200 2736	1530 3489	1625 3705

SOFTWARE

CASTAUR

CASTAUR is CADD program that establishes a 3D framework on which to visually present grouting results for rapid evaluation and analysis.

SPHINX

SPHINX is a data processing program which sits at the core of the system and interfaces with CASTAUR, SPICE, and SCAN 3D.

SPHINX picks up the borehole geometry and 3D model data from CASTAUR. It is the platform where all the detailed grout injection parameters are defined for each injection for total control of the injection process. The parameters are then used to produce daily instructions for grouting in disk format, which are installed in the pump control unit (SPICE) at the start of each grouting program. The instructions control and record all the pump operations, and all grouting data is collected at the end of each shift on the same disk, and fed back into SPHINX for analysis, report preparation in graphical or tabular format, or to produce visual presentation of the results in SCAN 3D, using the CASTAUR model.

SCAN 3D

SCAN 3D is a second-level program which presents the data output from SPHINX in a 2D or 3D visual format. Data can be presented any a number of formats depending on the requirements, including individual boreholes, individual phases of injection, and groups of boreholes.

SPICE

SPICE software uses instructions developed by SPHINX to automatically control the grouting process by flow and pressure through the ARCSINNUS. SPICE provides a display for the operator to visually monitor the state of the grouting parameters in real-time. It will automatically stop grout injection when pre-set volume and pressure values are reached. It is the interface for the operator to start, stop, and directly manage the grouting process.

VISUSPICE

VISUSPICE displays in real time an overview of grouting, combining settlement targets, borehole arrays, and tube-a-manchette (TAM) pipes under injection.

ARCSINNUS

ARC = Acquisition Regulation Control

ARCSINNUS is a junction box connecting:

- flow meter and pressure transducer (acquisition of output signals)
- grout pump (start, stop and regulation)
- control computer – SPICE (storing and monitoring data and transmitting operator commands)

The ARCSINNUS can operate on two channels directly. It scans the monitoring instruments 100 times per second to collect the analogue output signals. It controls the pump on the basis of these readings, transmitting data to the control unit 3 times per second.

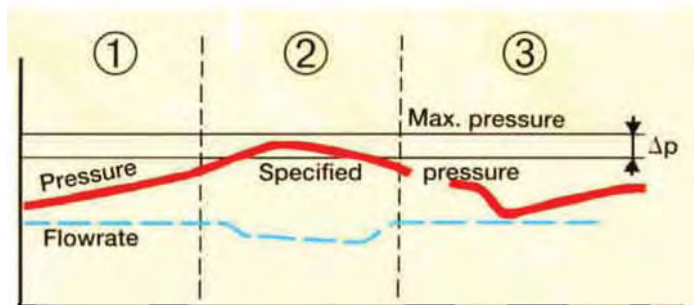


The ARCSINNUS box is the central communication hub of the system, routing between:

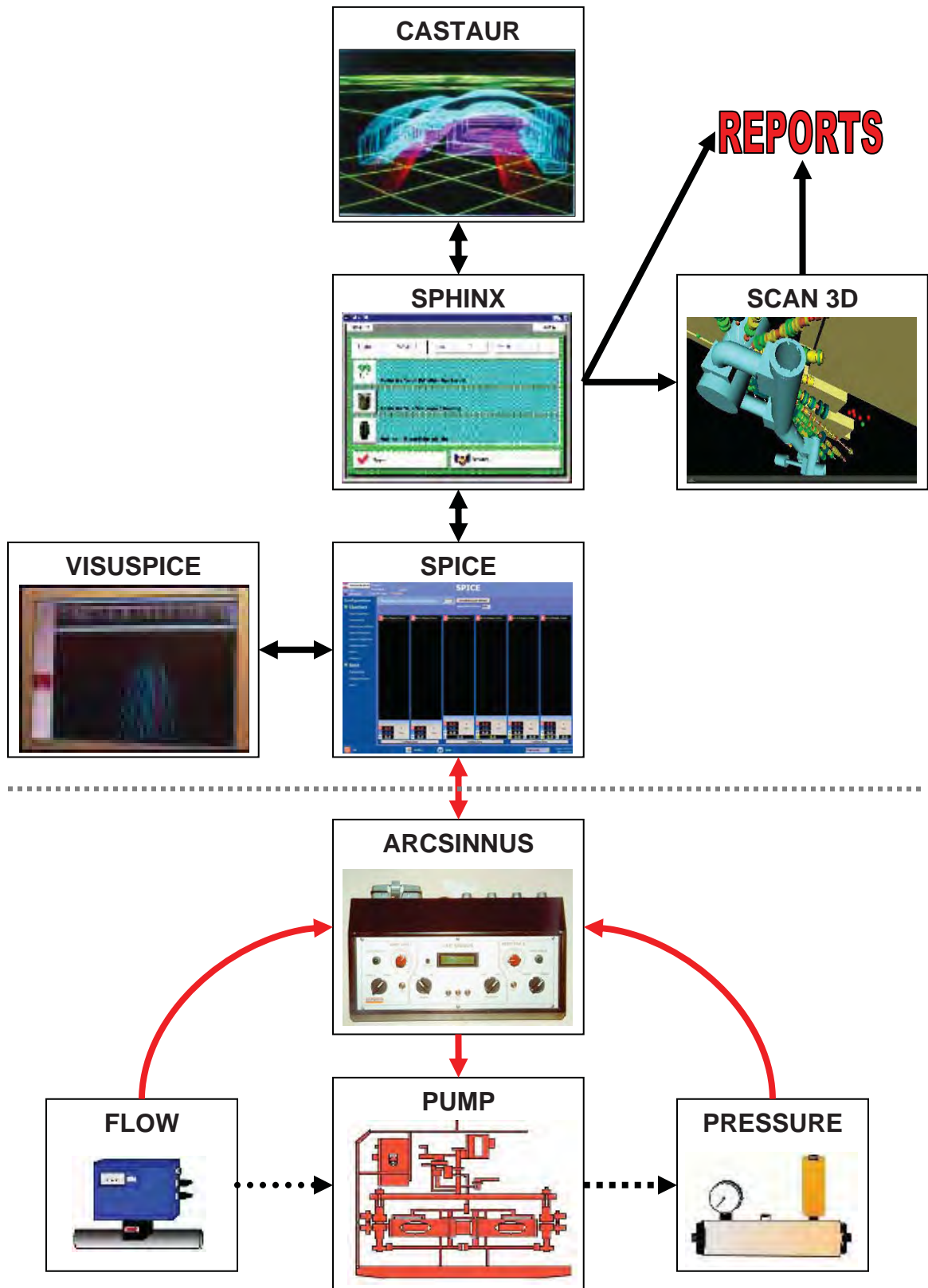
- grout pump (flow regulation, stop, start),
- monitoring instruments (acquisition of analogue output signals)
- electrical cabinet (power)
- control computer (display of instrument readings)

ARCSINNUS controls the grout pump by:

- 1) **Flow Regulation:** If measured pressure is less than control pressure, then flow rate remains at set value.
- 2) **Pressure Regulation:** If pressure exceeds control pressure, then flow rate is lowered to lower the pressure. If pressure still rises to the maximum pressure, the pump is stopped.
- 3) If pressure drops back below set pressure, then flow regulation continues.



THE CHAIN



SINNUS INJECTION CONTAINER

Container compartments

Control room
Pump room



Control Room:

Contains the computer(s) for running the grouting software

Pump Room:

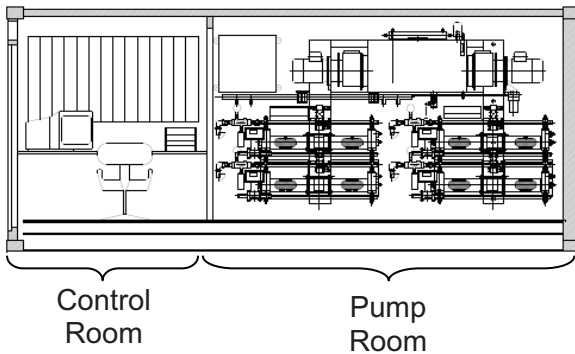
4 ea. – ARCSINNUS (two pumps each)
8 ea. - PH 5 pumps
2 ea. - hydraulic units
Each hydraulic unit has two electrical motors powering 4 hydraulic pumps.

Hydraulic Characteristics:

Electric motor: 4 x 6 KW at 1500 rpm
Hydraulic reservoir: 2 x 66 gal
Max. pressure (cracking): 3,625 psi
Max. pressure (injection): 2,755 psi

PH 5 Grout Pumping (Per Pump):

Max. flow: 6.2 gal/min
Max. pressure (cracking): 1305 psi
Max. pressure (injection): 725 psi
Stroke volume: 0.17 gal



Control Room

Pump Room

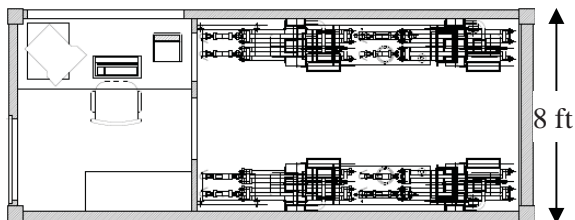
ELEVATION

Electrical:

External Feed:
480 V, 100 Amps, 80 KW

Internal:

Transformer for 110 V (computers, lights, etc.)
Transformer for 380 V (elec. Motors) and 220 V (ARCSINNUS)
220 V to 24 V transformer (instruments)



20 ft

8 ft

PLAN

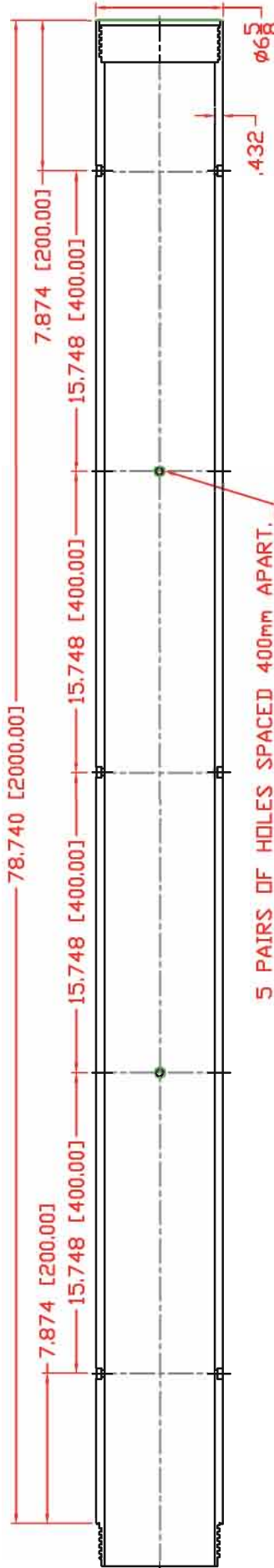
Dimensions:

Length – 20 ft (24 ft with doors open)
Width – 8 ft
Height – 8.5 ft

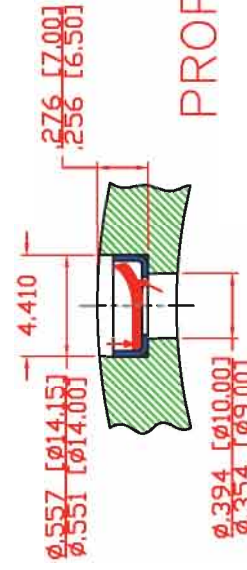
Submittal 31 43 14
Compensation Grouting
Central Subway Project
San Francisco, CA



Appendix D: Grout Injection Product Technical Sheets



5 PAIRS OF HOLES SPACED 400mm APART.
 ROTATE PAIRS 90° EVERY 400mm



HOLE DETAIL

PROPRIETARY INFORMATION

MATERIAL:
 6-5/8" OD X .432" WALL
 THREAD DETAILS:
 6-5/8" R.H. SQUARE

CASING, 6-5/8" OD X 2 METERS S-S, R.H. MALE X FEMALE, WITH GROUT HOLES	
OCI Division of Global Drilling Suppliers, Inc. Brookville, PA 15825	
DATE: 12/12/12	DWG NO.
SCALE NONE	BY D.R.N.
	REV
	06625D77

PVC SPECIALTY TUBING & HDPE GROUT TUBING (Tube-a-Manchette)



20,000 LF - Dana Point, CA project

PVC SPECIALTY TUBING (Tube-a-Manchette)

PVC tubes have four drilled holes offset at 90° and spaced on 15" centers. The holes are covered with a gum-rubber sleeve and taped at each end. Available in 1", 1.5" or 2" Schedule 40 in specified lengths through 20'. Belled (spicket) ends available on 20' lengths. Schedule 40 couplers and caps available for all diameters. Custom thin wall fittings (do not exceed rubber o.d.) available for small diameter holes. Other valve spacing available.

12" lengths
0.80 x 4" sleeves



STANDARD PVC PIPE & FITTINGS

Available for bond breaker sheathing, grout tube, post grout tube risers and drainage systems. Custom pipe slotting available for drainage fabric requirements.

All standard Class 200, Schedule 40 & Schedule 80 PVC pipe available in 20' lengths. Class 200 & Sch. 40 w/ belled ends. Schedule 80 w/ plain ends.

All standard PVC fittings, valves and drain grates available.

PVC primers & cements.

HIGH DENSITY PE GROUT TUBING

For industry-wide grouting requirements. 6-stock sizes available, from 3/8" to 2" diameter. Standard 100' rolls; custom lengths available.

HDPE Trimmie & Primary Grout Tube



O.D.	I.D.	WALL	MAX PSI
3/8"	1/4"	.0625	272 PSI @ 70°
1/2"	3/8"	.0625	194 PSI @ 70°
3/4"	5/8"	.0625	123 PSI @ 70°
1"	7/8"	.0625	90 PSI @ 70°
1"	3/4"	.125	195 PSI @ 70°

*2" HDPE trimmie pipe .216 wall thickness
Fits Victaulic fittings. Standard 500' rolls;
Custom lengths available.*

C&M Manufacturing Co.

9640-B Mission Gorge Road #165, Santee, CA 92071 • 800-458-6191 • 619-449-7200 • 619-449-0018 FAX
www.centralizers.com • e-mail: curt@centralizers.com



Manchette Tube System - An Overview

Components in a working Manchette tube system:

- A) [The Manchette tube](#), B) [Couplings](#), C) [Tips & Caps](#),
 D) [Packers](#), E) [Packer Rod](#),
 F) [Connecting Valve](#), and G) [Grout Pump](#).

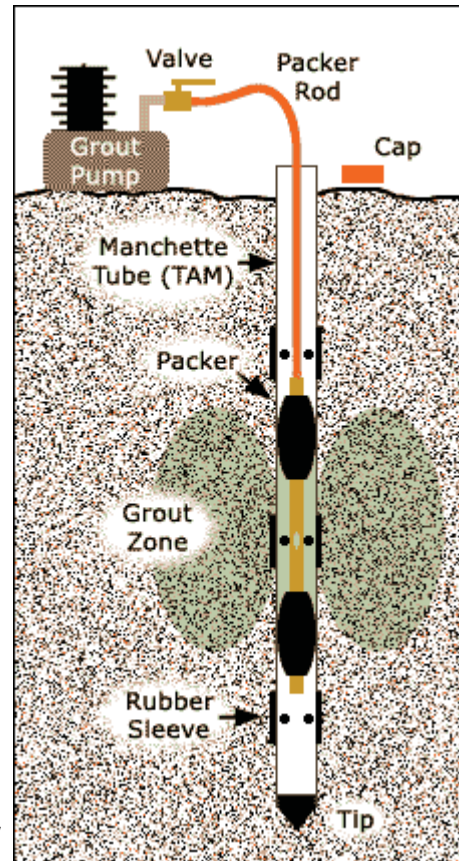
A Manchette tube is a PVC or metal pipe in which rubber sleeves cover holes that are drilled in the pipe at specific intervals. The tubes are inserted into holes that have been bored into the "work area" (soil, rock, concrete, etc.) known as the "grout zone". Grout is pumped to a packer that has been slid into the tube. Seals on the packer force the grout thru the holes in the tube, past the flexible rubber sleeve, and into the grout zone to help stabilize and/or seal it. Following is a more detailed explanation of the Manchette tube system and how it works.

A) The Manchette Tube

There are three basic categories of tubes: 1) Standard PVC Tube, 2) Recessed Rubber PVC Tube, 3) Metal Tube.



Common among the tubes are that at every 15 inches along its length, four holes are drilled around its circumference. The holes are covered by a flexible rubber sleeve which allows the grout to flow out into the surrounding environment and prevents it from flowing back into the tube once pumping has stopped. Rubber elements are made from a special compound which resists changes in durometer and extensibility due to UV and temperature. All rubbers are held in place with a light adhesive and are taped down at both ends with electrical tape. Custom lengths of tubing can be assembled via couplings.



Raised Rubber Tube



This tube is constructed of schedule 40 or greater PVC pipe with diameters of 1", 1.5" & 2" and lengths of 5 or 10 feet. The rubber sleeve is slid over, and affixed to, the outer surface of the pipe, thus causing the outer surface of the sleeve to be "raised" above the pipe surface. The ends are straight cut and extended lengths are created with couplings that slide over the outer diameter of the pipe.

Recessed Rubber Tube

This tube is also constructed of schedule 40 or greater PVC pipe. The rubber sleeve covering the grout exit holes sits in a recessed groove in the PVC, made by removing a specified amount of the pipe wall on a lathe. This causes the exterior surface of the rubber sleeve to be flush with the exterior surface of the PVC pipe. This is useful when sliding the Manchette tube along a horizontally bored hole as it helps protect the rubber sleeve against damage and prevents it from "catching" on anything as it slides into the hole. The ends of the pipe are machined on a lathe creating a "female" and "male" end. This allows extended lengths to be created by simply gluing and sliding a male end of one pipe to the female end of another. The effect of all this is that these Manchette tubes are flush on both the inside and outside.

Metal Tube



This tube is similar to the other two as far as grout holes and sleeves except, as its name implies, it's constructed of steel. It has a raised steel ridge on either side of the rubber sleeve. This is used in situations similar to the Recessed Sleeve PVC tube but is much stronger and offers more protection of the rubber sleeve via the raised steel ridges. It comes in diameters of 1.5" and 2", a length of 26" and a rubber spacing of 14".

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B) Tube Couplings

Tube couplings, as you might guess, connect lengths of Manchette tubes to create overall longer tubes. There are five basic types: 1) Center Stop, 2) Smoothbore, 3) Heavy Duty, 4) Extended Length, and 5) Metal.

Center Stop Coupling

This coupling, made of PVC, connects lengths of "Recessed Rubber" Manchette tubes. It has a small internal ridge, or stop, midway between the ends of the coupling. This stop makes it easier to splice two lengths of pipe in that you simply apply glue and push the two lengths of pipe into the coupling until they both "seat" against the stop, automatically centering the coupling between the two pipes.



Manchette tubes connected in this manner must use an "expandable" type of packer as the coupling leaves the two pipes with their ends slightly separated (the width of the internal stop). Packers that have compressed type seals will "catch" on this "space" or "groove". These different types of packers will be discussed later.

Smoothbore Coupling

This coupling, made of PVC, connects lengths of "Raised Rubber" Manchette tubes but has no center stop. This coupling allows the ends of the two adjoining pipes to "butt-up" against one another, thus creating a smooth "catch-free" bore. This type of coupling can use either a compressed seal packer or an expandable seal packer.



Heavy Duty Coupling

This coupling, made of heavy gauge PVC, connects lengths of "Raised Rubber" Manchette tubes and has no center ridge, thus creating a smooth "catch-free" bore. It also has fine internal serrations that hold glue, thus making for a stronger bond.





Extended Length Coupling

These are just like the other couplings except they are approximately 75% longer.

Steel Coupling

Metal Manchette tubes are threaded on either end and are joined via a threaded metal coupling. Steel couplings and tubes can only be used with an expandable type packer.

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C) Tips and Caps

Tips are cone shaped and made of plastic. They go on the bottom or "leading" end of the Manchette tube. The pointed bottom tip facilitates the insertion of the tube into the bored hole and prevents foreign matter from entering the tube. A cap can be placed on the top or "trailing" end of the tube to prevent foreign matter from entering the tube before grout is pumped or between multiple applications of grout.



D) Packers

The Packer is the device through which grout is pumped into, and forced through, the holes in the Manchette tube. There are two broad categories of Packers: 1. Inflatable Seal Packers, and 2. Sliding Seal Packers.

The two work in similar fashion; they are lowered or pushed (horizontal tube) into the Manchette tube until the packer is halfway past a set of the holes drilled into the tube. Grout is pumped into the top of the packer via a connecting hose (packer rod) and grout pump. The grout flows through the center of the top half of the packer and exits at openings around the middle of the packer which is approximately where the holes in the Manchette tube are. Seals at the top and bottom of the packer prevent the grout from simply filling the tube and pouring out the top of the tube. With no where else to go, the grout is forced thru the holes in the Manchette tube, past the flexible rubber sleeve into the surrounding environment (grout zone). When the desired amount of grout has been pumped at that particular level, the packer is slid to straddle the next set of holes and the process continues. Following is a more detailed look at the different packers.

Inflatable Seal Packer



As the name implies, this type of packer has expanding rubber seals at either end. Besides the grout hose, a second, smaller hose is connected to the top of the packer via which air or a liquid is pumped into the seals (with most people preferring hydraulic inflation for speed and control), thus expanding the seal tight against the walls of the Manchette tube. After the grout is pumped at that level, they are deflated in order to slide the packer to the next set of holes. There are two types of inflatable seals: 1. single chamber, and 2. multiple chamber, both of which are capable of 1,500 psi working inflation pressures. The multi-chamber type is modular, with exchangeable rubber elements to change pipe sizes. The modular rubber elements have steel rings imbedded inside the rubber which create a multiple hourglass shape when inflated. Both types can be either single element or two element (straddle) devices and can have varied straddle distances (by changing out the center section) for simultaneous multi-port injection. The single chamber type has a greater expansion range and thus, the advantage of being able to seal a greater range of tube

diameters with just one size seal.

Sliding Seal Packer



The seals on this type packer are slightly larger than the Manchette tube itself and thus fit tightly against the tube walls when the packer is inserted into the tube. There are three types of sliding seals: 1. o-ring, 2. leather cup, and 3. poly-cup.

Mechanical Packers



A mechanical packer is constructed of a short length of pipe with one rubber seal around it. It normally does not use a Manchette tube but one can be connected if necessary. Instead, a hole, slightly larger than the packer, is bored into the grout zone (such as a concrete wall), and the packer is inserted directly into this hole. A threaded screw, on top of the seal, is then turned against the rubber seal, compressing it and causing it to expand tightly against the walls of the bored hole. Grout is then pumped thru the packer and out the far end into the grout zone to be stabilized/sealed.

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E) Packer Rod

The packer rod is a tough but flexible plastic hose through which grout is pumped to the packer. Packer Rod comes in bulk rolls which are cut to the desired length. A threading kit allows the user to put threads on each end of the cut hose to which couplings are then affixed. These couplings allow the hose to be attached to the connecting valve on one end and the packer on the other end.



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F) Connecting Valve

The connecting valve controls the flow of grout into and out of the mechanical packer. There are two types: 1. Cone Valve, and 2. Ball Valve. The Cone Valve (left photo) can be quickly disassembled and cleaned should grout set up in it. Please see our separate [section on grout pumps](#) for more detailed information on pumps and connecting valves.



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G) Grout Pump

The grout pump does just that, pumps grout through the connecting hose to the packer inserted in the Manchette tube. Please see our separate [section on grout pumps](#) for more detailed information on pumps and connecting valves.

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Manchette Tube System - Manchette tubes, Regrout tubes, TAM pipe

Product Links

[TAM Pipe](#) • [Fittings](#) • [Slide Packers](#) • [Inflatable Packers](#)
[Packer Rod](#) • [Mechanical Packers](#)

Strata Tech, Inc. has been a Tube-a-Manchette (sometimes called TAM or Manchette Tube) systems supplier since 1981 and our people know TAM systems very well. Strata Tech has everything you need. All accessories & packer rods (0.5", 0.75", and 1.0") are normally in-stock off-the-shelf items.

New to the TAM System? [Detailed overview of the Manchette Tube System.](#)

Order/Info: Phone: 515-251-7770 • Fax: 515-251-7705 • [Email Strata-Tech](#)

TAM Pipe

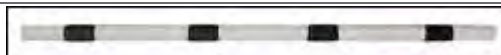
Strata-Tech supplies tubes in both meter and foot lengths, and also makes custom tubes, including schedule 80, schedule 120, and special rubber spacing. We offer both raised and recessed rubbers, pipes that attach using couplings, and pipes that couple with a glued slip joint for flush inside and outside assembly. All surface mounted rubbers are held in place with a light adhesive and are taped down at both ends with electrical tape.

Meter-length TAM pipe (one, two, three, and four meter lengths) has flush in/flush out glue joints with flush-to-surface rubbers on 33cm spacing. This pipe is non-stock special material. Please allow up to several weeks lead time.

For customers using TAM as an anchor re-grout strategy, Strata-Tech can also offer a coiling re-grout tube that has real benefits and significant cost savings. Call for details.

Strata Tech has several price options for TAM pipe. Normal prices apply to pipe and accessories bought off the shelf for shipment today. Special prices apply for big jobs where the customer gives us lead time, a large production quantity, a schedule, and the chance for other savings which accrue from planning. The customer may, for example, buy his own pipe because he feels he can get a better price, and we will convert it for him.





Raised Rubber




Part Number	I.D.	Length	Sched.	O.D.
5010-1005	1"	5'	40	1.315"
5010-1010	1"	10'	40	1.315"
5015-1505	1.5"	5'	40	1.9"
5015-1510	1.5"	10'	40	1.9"
5020-2005	2"	5'	40	2.375
5020-2010	2"	10'	40	2.375
Riser Pipe				
5010-1105	1"	5'	40	1.315"
5010-1110	1"	10'	40	1.315"
5015-1605	1.5"	5'	40	1.9"
5015-1610	1.5"	10'	40	1.9"
5020-2105	2"	5'	40	2.375
5020-2110	2"	10'	40	2.375

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Fittings (Tips, Caps, & Couplings)

<p>Bottom Tips</p>  <p>Bottom Point Bottom Cap</p>	<ul style="list-style-type: none"> Plastic tip for bottom of TAM tube Glue joint <table border="1"> <thead> <tr> <th>Part Number</th> <th>TAM I.D.</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>5010-1220</td> <td>1"</td> <td>Cap</td> </tr> <tr> <td>5015-2224</td> <td>1.5"</td> <td>Point</td> </tr> <tr> <td>5020-2224</td> <td>2"</td> <td>Point</td> </tr> </tbody> </table>	Part Number	TAM I.D.	Type	5010-1220	1"	Cap	5015-2224	1.5"	Point	5020-2224	2"	Point				
Part Number	TAM I.D.	Type															
5010-1220	1"	Cap															
5015-2224	1.5"	Point															
5020-2224	2"	Point															
<p>Top Caps</p> 	<ul style="list-style-type: none"> Plastic cap for top of TAM tube Debris entry protection <table border="1"> <thead> <tr> <th>Part Number</th> <th>TAM I.D.</th> </tr> </thead> <tbody> <tr> <td>5010-1212</td> <td>1"</td> </tr> <tr> <td>5015-1710</td> <td>1.5"</td> </tr> <tr> <td>5020-2210</td> <td>2"</td> </tr> </tbody> </table>	Part Number	TAM I.D.	5010-1212	1"	5015-1710	1.5"	5020-2210	2"								
Part Number	TAM I.D.																
5010-1212	1"																
5015-1710	1.5"																
5020-2210	2"																
<p>Couplings Choices of couplings include center stop, smoothbore, extra-length, heavy duty, and steel. Coupling choice is affected by depth of hole and by choice of packer, since slide packers (o-ring, leather cup, and poly-cup) work less well with center stop coupled pipe due to the tendency of the seals to hang up or catch in the gap created by the stop.</p>																	
<p>Center Stop</p> 	<table border="1"> <thead> <tr> <th>Part Number</th> <th>O.D.</th> <th>I.D.</th> <th>Length</th> </tr> </thead> <tbody> <tr> <td>5010-1230</td> <td>1.6"</td> <td>1"</td> <td>2"</td> </tr> <tr> <td>5015-1730</td> <td>2.375"</td> <td>1.5"</td> <td>2"</td> </tr> <tr> <td>5020-2240</td> <td>2.75"</td> <td>2"</td> <td>3.5"</td> </tr> </tbody> </table>	Part Number	O.D.	I.D.	Length	5010-1230	1.6"	1"	2"	5015-1730	2.375"	1.5"	2"	5020-2240	2.75"	2"	3.5"
Part Number	O.D.	I.D.	Length														
5010-1230	1.6"	1"	2"														
5015-1730	2.375"	1.5"	2"														
5020-2240	2.75"	2"	3.5"														
<p>Smoothbore (no stop)</p> 	<table border="1"> <thead> <tr> <th>Part Number</th> <th>O.D.</th> <th>I.D.</th> <th>Length</th> </tr> </thead> <tbody> <tr> <td>5010-1235</td> <td>1.6"</td> <td>1"</td> <td>2"</td> </tr> <tr> <td>5015-1745</td> <td>2.235"</td> <td>1.5"</td> <td>2"</td> </tr> </tbody> </table>	Part Number	O.D.	I.D.	Length	5010-1235	1.6"	1"	2"	5015-1745	2.235"	1.5"	2"				
Part Number	O.D.	I.D.	Length														
5010-1235	1.6"	1"	2"														
5015-1745	2.235"	1.5"	2"														

Heavy Duty (no stop) 	Part Number	O.D.	I.D.	Length
	5010-1240	1.675"	1"	3"
	5015-1740	2.375"	1.5"	3"
	5020-2240	2.75"	2"	3.5"

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Slide Packers

Slide Packers  <ul style="list-style-type: none"> • 4 seals, either leather cup or O-ring. • Aluminum foot valve • 0.5" NPT female rod connector 			
Part Number	O.D.	Seal	Description
5010-1320	1"	Leather cup	Single stage
5010-1330	1"	O-ring	Single stage
5015-1860	1.5"	Leather cup	Single stage



Replacement Seals - 4 per packer required			
Part Number	O.D.	Seal	Description
5010-1360	1"	Leather cup	
5010-1363	1"	O-ring	Viton
5010-1361	1"	O-ring	Neoprene
5015-1860	1.5"	Leather cup	


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Order/Info: Phone: 515-251-7770 • Fax: 515-251-7705 • [Email Strata-Tech](#)

Inflatable Packers

The inflatables can be operated either pneumatically or hydraulically. These packers are quality built, long lived, and very dependable.

Straddle Type Hourglass - (Illustration)  Wirewound - (Illustration)  <ul style="list-style-type: none"> • Two elements with center section • Single stage (spans one set of holes on 15" spacing) • 1500 PSI • Interchangeable elements - 1.5" & 2" (Hourglass type) 			
Part Number	TAM Size	O.D. min/max	Description
5060-1200	1.5"	1.2"/1.96"	Wirewound element
5060-2500	2"	1.8"/2.75"	Wirewound element

Single Element Type  <ul style="list-style-type: none"> • No center section • 1500 PSI • Interchangeable elements 			
Part Number	TAM Size	O.D. min/max	Description

5060-1205	1.5"	1.2"/1.96"	Wirewound element
5060-2505	2"	1.8"/2.75"	Wirewound element

Center Sections



• Fits: 5060-1500 & 5060-2000 (Hourglass type)

Part Number	Packer	Span	Description
-------------	--------	------	-------------

Replacement Elements

Hourglass - (Illustration)



Fits: 5060-1500 & 2000
1505 & 2005
1572 - 1574

Wirewound - (Illustration)



Fits: 5060-1200 & 2500
1205 & 2505

Part Number	TAM Size	O.D. min/max	Description
5060-1210	1.5"	1.2"/1.96"	Wirewound element
5060-2510	2"	1.8"/2.75"	Wirewound element

Inflation Hose

- 1/8"
- 2500 psi work - 10,000 psi burst
- #3 JIC female swivel at both ends

Part Number	Length
5060-8050	50'
5060-8075	75'
5060-8100	100'

Packer Service Kit

Part Number	Packer	Description
-------------	--------	-------------

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Packer Rod



Packer rod is a flexible yet stiff polyethylene plastic hose used to connect the packer to the grout pump. The type of polyethylene used is resistant to attack by cement and all other grouts, solvents, and cleaning chemicals normally found in grouting work.

Packers can be attached to the packer rod in a number of ways, but two methods are favored: 1. Tapered NPT threads cut directly into the packer rod using our Rod Threading Tool or an appropriate pipe threading die or 2. The rod can be equipped with a swagged hydraulic coupling.

Part Number	Thread NPT	Length	Burst PSI	Description
5055-1025	1/2"	250'	1,000	Orange
5055-1026	1/2"	250'	2,500	Black
5055-1120	3/4"	200'	1,000	Black
5055-1210	1"	100'		

Rod Threading Tool

- Hex shaped threading die for packer rod
- Carbon steel
- Can be held with C-clamp

Part Number	Thread NPT
5055-1026	1/2"
5055-1170	3/4"
5055-1270	1"



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Mechanical Packers



- Carbon steel
- Hex spinner
- Does not include valve or hose coupling

Part Number	O.D.	Overall Length	Seal Length
1/8" NPT inlet stem			
3020-0706	3/4"	6"	3"
3020-0712	3/4"	12"	6"
3020-0718	3/4"	18"	6"
3020-0724	3/4"	24"	6"
3020-0736	3/4"	36"	12"
3020-0748	3/4"	48"	12"
3020-0760	3/4"	60"	12"
3020-0772	3/4"	72"	12"
1/4" NPT inlet stem			
3020-1006	1"	6"	3"
3020-1012	1"	12"	6"
3020-1018	1"	18"	6"
3020-1024	1"	24"	6"
3020-1036	1"	36"	12"
3020-1048	1"	48"	12"
3020-1060	1"	60"	12"
1/2" NPT inlet stem			
3020-1206	1.25"	6"	3"
3020-1212	1.25"	12"	6"
3020-1212	1.25"	18"	6"
3020-1212	1.25"	24"	6"
3020-1212	1.25"	36"	12"
3020-1212	1.25"	48"	12"
3020-1212	1.25"	60"	12"
3/4" NPT inlet stem			
3020-1512	1.5"	6"	3"
3020-1512	1.5"	12"	6"
3020-1518	1.5"	18"	6"
3020-1524	1.5"	24"	6"
3020-1536	1.5"	36"	12"
3020-1548	1.5"	48"	12"
3020-1560	1.5"	60"	12"
1" NPT inlet stem			
3023-2006	2"	6"	3"
3023-2012	2"	12"	6"
3020-2018	2"	18"	6"
3020-2024	2"	24"	6"
3020-2036	2"	36"	12"
3020-2048	2"	48"	12"
3020-2506	2.5"	6"	3"
3020-2512	2.5"	12"	6"
3020-2518	2.5"	18"	6"
3020-2524	2.5"	24"	6"
3020-2536	2.5"	36"	12"
3020-2548	2.5"	48"	12"

3020-2706	2.75"	6"	3"
3020-2712	2.75"	12"	6"
3020-2718	2.75"	18"	6"
3020-2724	2.75"	24"	6"
3020-2736	2.75"	36"	12"
3020-2748	2.75"	48"	12"
3020-3006	3"	6"	3"
3020-3012	3"	12"	6"
3020-3018	3"	18"	6"
3020-3024	3"	24"	6"
3020-3036	3"	36"	12"
3020-3048	3"	48"	12"

[Return to Top](#)

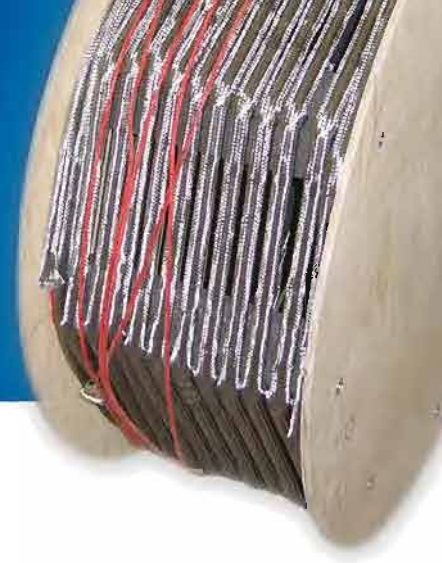
Order/Info: Phone: 515-251-7770 • Fax: 515-251-7705 • [Email Strata-Tech](#)

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Appendix E: ShapeAccelArray and Maxibor II (Borehole Survey)

SHAPEACCELARRAY



SAA is an array of rigid segments separated by special joints. MEMS gravity sensors in the segments measure tilt along three axes. When SAA is near-vertical, rotational transforms are used to calculate the 3D shape of the array. 2D shape is measured when the array, or some of its segments, are near-horizontal. In any pose, 3D vibration can be sensed at selected locations along the array.

There are two basic types: **Field** and **Research**. Each is available in increments of 8 segments, where standard segment lengths include 305 mm (12") and 500 mm (19.7"). The main distinctions are speed, number of segments, and power consumption.

SAAF (Field Arrays)

All microprocessors in an array (1 microprocessor per 8 segments) share the same communication line.

SAAF is designed for low power consumption and long length, and achieves the same accuracy and spatial resolution for 3D shape as do SAARs. Vibration data are available from up to 3 segments along the array at 40 Hz sampling, and at 35 Hz from 4 segments.

SAAR (Hi-Bandwidth Research Arrays)

Each microprocessor in an SAAR (1 microprocessor per 8 segments) has a dedicated communication line.

SAAR is designed to provide high speed data from all sensors all the time. The high-speed wiring limits the length of the SAARs.

FIELD AND RESEARCH

Specifications (SAAF or SAAR)

Size, configuration:

- May be used in vertical or horizontal modes.
- Measures 3D shape within 60 degrees of vertical as x, y, z displacements, and tilt angles. Near-horizontal shapes are measured as 2D projections in a vertical plane.
- Measures x,y, and z accelerations in each segment.
- Diameter: clears 25mm (1") in axial extension; joints expand to 27mm (1.049") in axial compression
- Standard Length of segments (English): 305mm (12 inches) (Joint center - Joint center).
- Standard Length of segments (Metric): 500mm (19.7 inches) (Joint center - Joint center).
- Segment lengths over 305mm have some shipping restrictions (consult Measurand).
- Standard length of non-sensorized Far anchor segment: 30cm (12 inches).
- Standard length of non-sensorized Near anchor and cable turn: 46cm (18").
- Sensorized Length (SAAF): increments of 8 segments to total of 320' (limited by pressure withstand for water).
- Sensorized Length (SAAR): increments of 8 segments to total of 24 segments (limited by number of internal wires).
- Total Length: See "SAA Lengths" in this document (to allow for parts beyond Sensorized Length).
- Temperature is measured in each octet (sub-array).

Mechanical:

- Maximum joint angle: 45 degrees.
- To activate auto-fitting joints, maintain: ≥ 10 kgf (22 lbs) per joint.
- Maximum axial compressive force while in 27mm (1.049") casing: 45 kgf (100 lbs).
- Maximum axial compressive force on joints not in casing & not bent: 22 kgf (50 lbs).
- Maximum axial extension force: 320 kgf (700 lbs).
- Maximum S curve for hand extraction of 305mm-segment SAA from 27 mm (1.049") casing: 50mm in 60cm (2" in 2').
- Casing: 27mm (1.049") ID PVC electrical conduit.
- Specific gravity: 1.6 +/- 15%.
- Weight: 0.5kg/m (0.34lbs/ft.).

Environmental:

- Waterproof to 980 kPa (100 m or 320 foot water column on lowest segment).
- Operating and storage temperature: -20 to 70 oC (-40 to 85 °C optional).

Power:

- Array: 12VDC @ <20mA/octet.

Dynamic Acceleration (Vibration) Measurements:

- Range: +/-2 G
- 3dB Bandwidth: 50 Hz (Subject to change; contact Measurand).
- Noise floor of MEMS: 220 microG/root-Hz.
- Data rates: See charts in this document.

Software:

- Software enables acquisition from remote arrays, visualization of arrays in 3D, changes to settings of arrays, and export of ASCII or Matlab data (x,y,z, angle, acceleration). (See specific manuals).

Static Shape Measurements:

- Angular range of sensors: +/-360 degrees (software selection required for 2D/3D modes).
- Range of software 3D mode: +/- 60 deg. of vertical (SAARecorder alarm at +/- 70 deg.)
- Range of 2D SAARecorder mode: 360 deg. in vertical plane. Rotations must be about Y axis.
- Range of Horizontal mode in SAA3D: +/- 60 deg. of horizontal.
- Long-term accuracy relative to starting shape: +/-1.5 mm for 32 m SAA (notes 1, 4, 5)
- Long-term accuracy of "absolute" center-line shape relative to gravity vector: +/-1.5 mm for 32 m SAA (notes 2, 4,5).
- Variation of accuracy with array length: see "Accuracy" Section.
- Short-term resolution relative to starting shape: +/-0.5 mm for 32 m SAA (notes 3, 4,5).
- Long-term accuracy of tilt/segment within 20 deg of vertical: +/- 0.0005 rad = 0.029 deg (notes 1, 4, 5).
- Azimuth error of joints: < +/- 0.25 deg.
- Orthogonality within segments: +/- 0.1 deg.

NOTES

(note 1: based on field measurements of vertical arrays for 1.5 years of operation).

(note 2: Absolute shape is the polyline describing the center-lines of the segments, without regard for variations in the dimensions of the SAA coverings).

(note 3: short-term <= 24 hours).

(note 4: based on averaging 200 - 1000 frames per reading).

(note 5: Specification is for vertical mode within +/-20 degrees of vertical. Vertical accuracy degrades with angular deviation from vertical as shown in "Accuracy" Section.



2111 Hanwell Rd | Fredericton, NB | CANADA E3C 1M7 | 506.462.9119

www.measurandgeotechnical.com

REFLEX GYRO

Directional surveying in all environments



The Reflex GYRO is a complete downhole surveying instrument capable of surveying in all environments, magnetic and non-magnetic, providing its own internal quality checks.

Key Features & Benefits

- Survey in magnetic & non-magnetic environments
- Measures in all directions including horizontal
- Rugged construction, no moving parts
- Standard running gear 38mm O.D.
- Fully remote operation with no cables
- Easy to operate
- One of the most cost effective GYROs on the market
- True North Finding
- Improved results in RC & BQ applications with 'Anti-Roll' equipment
- Faster Bluetooth download and processing speeds

True North Finding

The Reflex GYRO now has an integrated GPS based compass that produces True North azimuth measurements, a GPS position and degree of inclination - all in one system.

The Reflex APS (Azimuth Pointing System) is not affected by local magnetic interference.

Professional Running Equipment

Custom made 'Anti-Roll' running equipment has been developed to ensure that the highest quality data can be obtained at all times.

Instrument Control

The Reflex GYRO is setup and controlled using the rugged field PC supplied with the system. Twelve parameters are continuously recorded in memory throughout the survey to track the path of the drill hole.

Survey Methods

The Reflex GYRO provides accurate directional data (azimuth and dip) at any interval. The instrument's accuracy is not affected by magnetic interference, and can be used inside all types of drill rods or in magnetically disturbed ground.

Data Transfer and Display

Once the probe has been brought to the surface, data can be transferred from the Reflex GYRO's onboard memory to the field PC via improved high-speed Bluetooth. The full set of readings can be processed further using the advanced Reflex inertial navigation software. Users can also tabulate, plot and export data.

Reflex GYRO

The Reflex GYRO utilises a digital micro-gyro, which consists of a silicon sensor chip and an integrated circuit assembled in a ceramic (non-magnetic) package. These components work together to yield unparalleled flexibility. The Reflex GYRO is the simplest to use, yet most technically advanced, miniature digital gyro survey system available. It has been specifically designed to be rugged, tolerant to shock and cost effective. The Reflex GYRO represents decades of innovative development in borehole surveying systems.

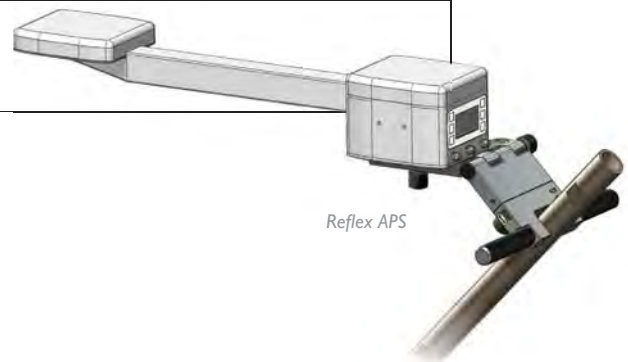


Reflex Gyro Technical Specifications



Reflex Gyro & ToughBook PC

Reflex GYRO	
Dimensions	O.D 32 mm, L 807 mm
Weight	1.1 kg
Operating temperature	0°C to +70°C
Digital Interface	Bluetooth 2.0
Power Source	Re-chargeable NiMH battery packs
Operating Time	8 hours continuous
Dip (Inclination)	± 0.2 °
Azimuth, magnetic	± 0.3 °
Azimuth, gyro*	± 0.5 °
Roll	± 0.3 °
* Verified to ±0.1° covering 100m with stations in max 8 min, est. to ±0.5° covering 800m with 5m stations in max 40 min.	
Field PC	
Model	ToughBook CF-19
Dimensions	271 × 49 × 216 mm
Weight	Approx. 2.3 Kg
Operating temperature	5°C to 35°C
Operating Time	9 hours
Operating System	Windows Vista or Windows XP Tablet PC
Other Features:	Fully Rugged Screen rotates 180° Built in Bluetooth, WLAN



Reflex APS

Rental, Sales & Support

Reflex is a leading global manufacturer of survey and orientation instruments for drill holes. Its product portfolio includes a complete program of borehole surveying instruments for mining, tunnelling, construction, and other geotechnical applications. Reflex is established in all major markets; the Americas, Africa, Europe and Asia Pacific. The success of Reflex is based on its leading innovative technology, customer focus and a network of local service centres world wide.

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reflex@imdexlimited.com
www.reflexinstruments.com



REFLEX MAXIBOR II®

Optical Borehole Survey System

The Reflex MAXIBOR II is an advanced optical instrument for accurate surveying of drill holes and tunnels in magnetically disturbed environments. The Reflex MAXIBOR II is the ultimate surveying tool for long inclined and horizontal holes. It can be used in boreholes with diameters of 45 mm or more (BQ-size).

Key Features & Benefits

- Fully sealed electronics reduce the risk of accidental water entry whilst on the surface
- Integrated lithium battery pack ensures a long operating lifetime
- Infra-red data link ensures reliable and rapid data communications
- Silicon accelerometers measure tool orientation and provide inclination and roll information directly
- 44mm outer diameter which increases the versatility of the tool
- Windows based software improves data processing ability in the field

Economical

The Reflex MAXIBOR II is a dependable tool of robust design, ensuring a low cost of ownership.

- Sealed electronics and optics help prevent accidental water entry.
- The integrated lithium battery pack does not need recharging or regular maintenance.
- Low power consumption assures many years of normal use between battery replacements.
- The infra-red data link provides reliable and simple data communications.
- Robust optics eliminate the need for continual re-calibration.

Accurate

The Reflex MAXIBOR II is a highly accurate surveying tool.

- Solid state silicon accelerometers guarantee precision and provide inclination and roll information directly.
- No calibration to perform and no manual calculations.
- No instrument drift corrections required.
- Surveys both in and out of the hole for instant repeatability check.

Note: The Reflex MAXIBOR II measures relative data, therefore the starting azimuth has to be entered carefully.

Versatile

The Reflex MAXIBOR II is a versatile survey instrument with an outer diameter of only 44 mm, which allows it to be used in a wide variety of applications.

- Optional centralisers are available for measurement inside large diameter holes.
- May be run on rods or wireline, or be pumped into the hole.
- Measures inclination and azimuth every 1.5 or 3 metres, depending on operating mode.
- Surveys can be run and results can be presented in either metres or feet.
- Convenient for roll orientation of in-hole tools.

Effective

The Reflex MAXIBOR II is an effective instrument which reduces time and costs.

- Comprehensive and straightforward operation.
- No need to pull the drill rods before the survey.
- Quick to use. A 100m survey can be performed in only 20 minutes (depending on the rig).
- Integrated lithium battery pack ensures uninterrupted operation.
- Totally automated calculations with immediate presentation of results on site.

Proven concept – modern design

The Reflex MAXIBOR II is based on a proven and successful principle for measuring the deviation of boreholes and tunnels. Whilst underground, the Reflex MAXIBOR II uses exactly the same measuring concept that a surveyor with a theodolite would use on the surface, that is, the optical measurement of angles and distances.

Extensive electronic and optical re-design has resulted in a state-of-the-art instrument which considerably improves reliability and lowers the cost of ownership.



Reflex MAXIBOR II

Technical Specifications



Reflex Maxibor II

Reflex MAXIBOR II																			
Dimensions	Tool diameter 44.0 mm Tool length 1,200 mm																		
Optics	Optical CMOS image sensor Light source 6 x high intensity LED Exposure interval minimum 5 s typical 10 s																		
Solid State Electronics	Down hole electronic recording Non-volatile memory and data retention Thermal modelling for accurate calibration																		
Batteries	Interchangeable industrial alkaline batteries																		
Memory	Memory capacity over 16 hours at 10 second intervals																		
System Accuracy	Better than 1:1000 relative to hole length																		
Pressure and shock rating	3,500 metre water pressure gives 50% safety margin Shock survival 6,000 g, 0.5 ms ½ sine																		
Operating Temperature	-40°C to +65°C (-40°F to + 150°F) (within lithium batteries) -20°C to +65°C (-4°F to + 150°F) (within alkaline batteries)																		
Standard Equipment	<table border="0"> <tr> <td>Camera probe</td> <td>TDS Recon Pocket PC</td> </tr> <tr> <td>Reflector tubes</td> <td>Reflex Maxibor II Pocket PC</td> </tr> <tr> <td>Reflector rings</td> <td>Application</td> </tr> <tr> <td>Reflector tube couplings</td> <td>Reflex SProcess software</td> </tr> <tr> <td>Bottom coupling</td> <td>Reflex Maxibor II Manual</td> </tr> <tr> <td>Camera cap</td> <td>Spare reflector material</td> </tr> <tr> <td>Sealing ring exchanger device</td> <td>Spare sealing rings</td> </tr> <tr> <td>Reflector ring extractor</td> <td>Silicon grease</td> </tr> <tr> <td></td> <td>Transport boxes</td> </tr> </table>	Camera probe	TDS Recon Pocket PC	Reflector tubes	Reflex Maxibor II Pocket PC	Reflector rings	Application	Reflector tube couplings	Reflex SProcess software	Bottom coupling	Reflex Maxibor II Manual	Camera cap	Spare reflector material	Sealing ring exchanger device	Spare sealing rings	Reflector ring extractor	Silicon grease		Transport boxes
Camera probe	TDS Recon Pocket PC																		
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Reflector rings	Application																		
Reflector tube couplings	Reflex SProcess software																		
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Sealing ring exchanger device	Spare sealing rings																		
Reflector ring extractor	Silicon grease																		
	Transport boxes																		
Optional Equipment	<table border="0"> <tr> <td>Pin spear coupling</td> <td>USB 2.0 Reader/Writer</td> </tr> <tr> <td>Top coupling with blank end</td> <td>Stylus pen</td> </tr> <tr> <td>Swivel sub assembly</td> <td>Centralisers</td> </tr> <tr> <td>Landing sub assembly</td> <td></td> </tr> </table>	Pin spear coupling	USB 2.0 Reader/Writer	Top coupling with blank end	Stylus pen	Swivel sub assembly	Centralisers	Landing sub assembly											
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Rental, Sales & Support

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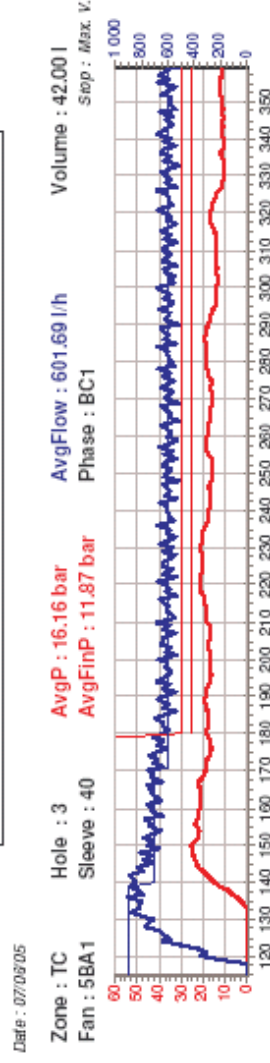
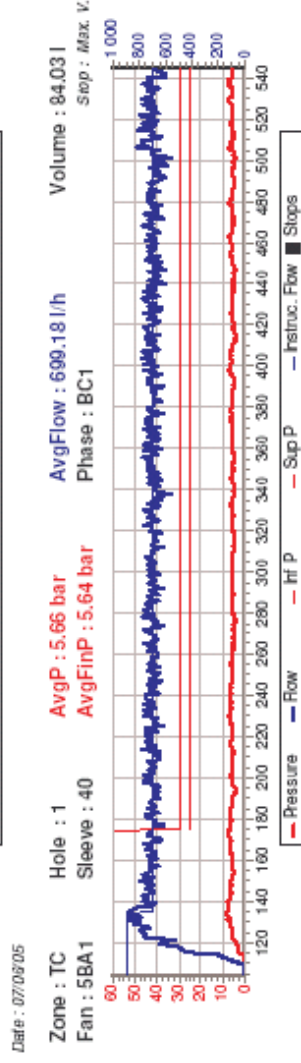
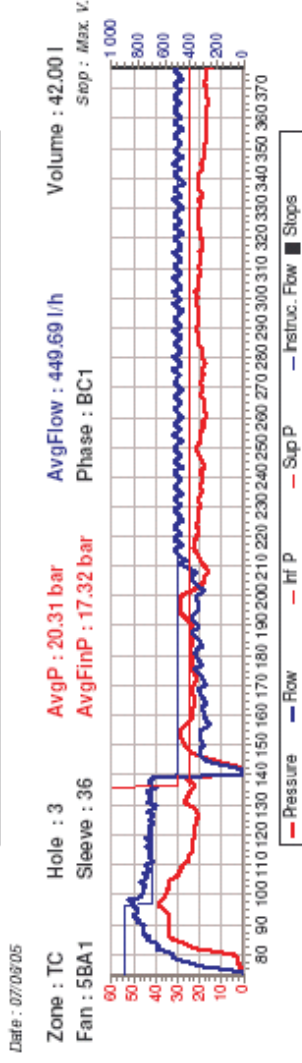
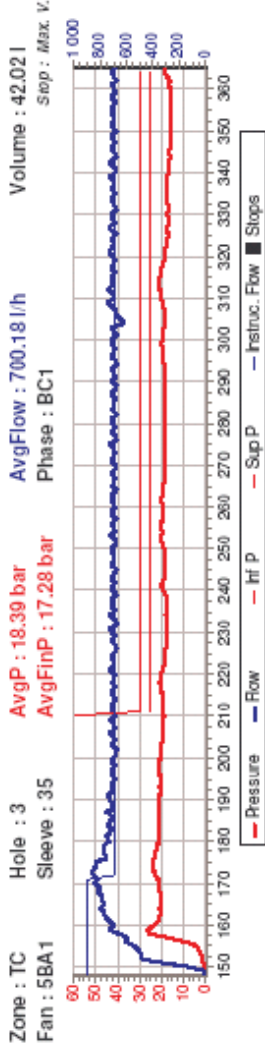


Submittal 31 43 14
Compensation Grouting
Central Subway Project
San Francisco, CA



Appendix F: Example Grout I.T. Reports


 法國地產建築公司
BACHY SOLETANCHE
 CA501
 Flow and Pressure Curves
 vs Time
 SPICE Injection
 Page n°7
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Exemple of REPORT

Flow-Pressure
Time Logs



COR 081								
No.	Activity Name	Days (C)	Days (EE)	Contractor (C)	Engineer's Estimate (EE)**	Delta (EE-C)	Comparison*	Negotiation Position*
Labor	1							
	FA4398 - 3/12/13 - Enlarge 12" Water Connection Hole @ 4th/Folsom.	0.5	0.5	\$ 865.24	\$ 865.22	\$ (0.02)		
Equipment	1						(C) proposal uses too few hours for the New Holland Excavator active time and too many hours for standby time. (C) proposal uses the rate for the backhoe which includes the clam shell bucket when only a backhoe and a breaker should be included.	
	FA4398 - 3/12/13 - Enlarge 12" Water Connection Hole @ 4th/Folsom.	.5	0.5	\$ 1,213.70	\$ 1,214.96	\$ 1.26		
	Material			\$ 38.70	\$ 38.64	\$ (0.06)		
	Markup LM&E - 15%			\$ 317.65	\$ 317.82	\$ 0.18		
	2nd Tier Subs			\$ 300.00	\$ 300.00	\$ -		
	Markup - 5%			\$ 15.00	\$ 15.00	\$ -		
	Sub. Bond/Insurance 2.14%			\$ 58.86	\$ 58.89	\$ 0.03		
	Prime Markup - 5%			\$ 140.46	\$ 140.53	\$ 0.07		
	Prime Bond/Insurance 1.68%			\$ 49.55	\$ 49.58	\$ 0.02		
	Total			\$ 2,999.15	\$ 3,000.63	\$ 1.48		
	RE Recommended NTE Amount:			\$	3,000.63			
<p>*The amounts shown in the "Comparison" and "Negotiation Position" columns are fully marked up for easy addition or subtraction from the bottom line.</p> <p>**The Engineer's Lump Sum Estimate uses SFMTA verified labor and equipment hours which are documented on Force Account Report No. 4398. Contractor provided invoices are used for 2nd Tier Sub Costs. Materials costs are determined by a Contractor provided quotation and quantities shown on the FA Report.</p>								

Estimate Summary

General Scope: The Contractor enlarged an excavation to facilitate SFWD's installation of a new 12" tee connection @ the Moscone south headwall. The hole was enlarged due to the connection moving to the west. Additional labor and equipment costs were incurred for additional excavation. As a result of enlarging the excavation a larger steel plate was needed to cover the excavation to allow traffic to return to the approved configuration at the end of the work day. To handle the larger steel plate it was necessary for the Contractor to mobilize a larger excavator than was currently being utilized.

Detailed Scope:

1. FA4398 - 3/12/13 - Enlarge 12" Water Connection Hole @ 4th/Folsom

	Labor	Equipment	Material / Sub	Mark Ups	Total
Cost Summary:	\$ 865.22	\$ 1,214.96	\$ 38.64	\$ 581.81	\$ 3,000.63

List of attached documents:

- Detailed Estimate
- Materials / Subcontractors
- Photographs
- FA Tags 4398

Estimate Prepared:
 5/8/2013

No.	Activity	Days	Hourly rates:						Labor totals	Hourly rates:										Equipment Totals
			Laborer (G3)	Operating Engineer (OE) (G3)	Laborer (G3)	Laborer (G3)	Labor Resource	Labor Resource		Labor Resource	Work Truck	Mini Excavator (Kubota U45)	Generator	Backhoe (John Deere ID 310G)	Breaker attachment for Backhoe	New Holland Excavator (E135)	New Holland Excavator (E135)	Total per Plate (small)	Total per trench shore	
	FA4398 - 3/12/13 - Enlarge 12" Water Connection Hole @ 4th/Folsom.	0.5	1	1	1	1		\$ 865.22	2	1	1	1	1	0.25	0.135	1	2	\$ 1,214.96		
Total								\$ 865.22										\$ 1,214.96		

Labor	\$	865.22
Material	\$	38.64
Equipment	\$	1,214.96
2nd Tier Sub	\$	300.00
Markup on 2nd Tier Sub - 5%	\$	15.00
1st Tier Sub OH&P - 15%	\$	317.82
1st Tier Sub Bond/Insurance - 2.14%	\$	58.89
Prime - Markup - 5%	\$	140.53
Prime - Bond/Insurance - 1.68%	\$	49.58
Total Amount	\$	3,000.63

Assumptions:
 Labor Burdens: FICA SS 6.2% - FICA Medicare 1.45% - FUTA .22% - SUTA 1.13% - SF Pay 1.5% - WC 4.61%

Shift Duration: 8hrs

Estimated By:  Kenneth Barnhart 5/8/2013

Checked By:  Charles Dombrowski 5/8/2013

Material	Qty.	Unit	Unit Price	Extension
4' x 8' x 15/32 inch Plywood	1	EA	\$ 34.97	\$ 34.97
Unit Price per Home Depot Quote Attached.				
Sales Tax 8.75%				\$ 2.97
Shipping 2%				\$ 0.70
Total				\$ 38.64

2nd Tier Subcontractor

Mac Namara trucking - Mobilization of New Holland Excavator	3 Hrs	\$ 100.00	\$	300.00
Mac Namara Invoice 6527				
		Sum	\$	300.00

Invoice

McNamara Transport, Inc.
 101-A Hickey Blvd, #329
 South San Francisco, CA 94080
 Office: (415) 382-1225
 Fax: (650) 755-5101
 Email: mcnamara_transport@yahoo.com

Date	Invoice #
3/31/2013	6527

Bill To
Synergy Project Management, Inc. 150 Executive Park Blvd. Suite 4100 San Francisco, CA 94134 Attention Manny/Linda

Job #
28th/Church Street

Date	Tag #	Equipment	Description	Hours/Tons...	Rate	Amount
03/06/13	200500	10-Wheeler	28th/Church Street, San Francisco Job #00040 (Ox Mtn tag attached)	8	85.00	680.00
03/08/13	29781	10-Wheeler	28th/Church Street, San Francisco Job #00040	6	85.00	510.00
03/11/13	000038	Lowbed	Pick up NewHolland from 28th/Church Street, 4th street / Folsom	3	100.00	300.00
03/11/13	000727	10-Wheeler	28th/Church Street, San Francisco Job #00040 (Sunquest tags attached)	8	85.00	680.00
03/11/13	000727		2 x dump fees	2	140.00	280.00
03/11/13	000534	End Dump	28th/Church Street, San Francisco Job #00040	8	95.00	760.00
03/11/13	000534		4 x dump fee (151607/151636/151673/151683)	4	265.00	1,060.00
03/12/13	000728	10-Wheeler	28th/Church Street, San Francisco Job #00040 (Sunquest tags attached)	8	85.00	680.00
03/12/13	000728		2 x dump fees	2	140.00	280.00
03/12/13	29786	10-Wheeler	28th/Church Street, San Francisco Job #00040	7	85.00	595.00
03/12/13	000535	End Dump	28th/Church Street, San Francisco Job #00040	4	95.00	380.00
03/12/13	000535		1 x dump fee (151739)	1	265.00	265.00
03/12/13	000715	End Dump	28th/Church Street, San Francisco Job #00040	6	95.00	570.00
03/13/13	29787	10-Wheeler	28th/Church Street, San Francisco Job #00040	8	85.00	680.00
03/13/13	29787		1 x dump fee	1	140.00	140.00
03/13/13	000158	10-Wheeler	28th/Church Street, San Francisco Job #00040	7	85.00	595.00

Total

Payments/Credits

Balance Due



Your Store: Santa Clara #630

15/32 in. x 4 ft. x 8 ft. 4-Ply Sanded Fir Plywood (FSC Certified)

Model # 577278 Store SKU # 577278

\$34.97 /EA-Each



PRODUCT DESCRIPTION

This is an appearance panel with a satin-smooth sanded face that is ideal for interior and exterior applications. Is often used where a combination of strength, stiffness and appearance are needed such as soffits, porch ceilings, cabinets, built-ins, shelving, utility trailers, yard art and hobbies. Wood components are from FSC managed timberlands. These thin sheets of wood (veneer) in alternating wood grain directions, which increases the strength and stiffness of our finished panels. Can be cut, drilled, routed, glued, fastened and finished with ordinary tools. Excellent nail, screw, and staple holding ability allows placement near panel edges without splits.

California residents: see [Proposition 65 information](#)



- Adhesive used is no added urea formaldehyde (NAUF) exterior, fully water resistant phenolic glue
- Every piece meets the highest grading standards for strength and appearance. Cross-laminated construction provides superior dimensional stability (resistance to warping). Resistant to splitting, puncturing and impact damage these panels are durable
- Can be cut, drilled, routed, glued, fastened and finished with ordinary tools. Excellent nail, screw, and staple holding ability allows placement near panel edges without splits
- Little or no additional sanding is required for most uses
- Excellent nail, screw, and staple holding ability allows placement near panel edges without splits
- MFG Model # : 577278
- MFG Part # : 488588

SPECIFICATIONS

Actual product thickness (in.)	.46875	Actual product width (in.)	48
Assembled Depth (in.)	96 in	Assembled Height (in.)	.47 in
Assembled Width (in.)	48 in	Manufacturer Warranty	n/a
Plywood Type	Sanded Plywood	Portion of product made from wood (%)	95
Pressure Treated	No	Product Length (ft.)	8 ft
Tounge and Groove	No		

PROJECT NO. CN 1251
 PROJECT NAME: Central Subway Tunnels
 CONTRACTOR: Synergy Project Management, Inc.

REPORT NO. **4398**

DATE PERFORMED 3/12/13

DATE OF REPORT 3/12/13

The following work was performed this date requiring the use of the Labor Force, Materials, Equipment, Special Forces and Services listed herein:

Work Description: ENLARGE 12" WATER connection hole @ 4th AND Folsom. Hole needed to be ENLARGED DUE TO CONNECTION BEING MOVED TO THE WEST PER SFWD.

NAME (FIRST, LAST)	HOURS	
	ST	OT
FRANCISCO F (FORUM)	4	
HERMAN A (LAR)	4	
GERALD (OP)	4	
Refugio M. (LAR)	4	

Material	Q/U	Comments
4'x8'x.125 plywood	1	

Services/Subcontractor	Quantity	Units	Comments
McNamara Low Boy (mob of New Holland)	1		

EQUIPMENT DESCRIPTION	Quantity	Active	Standby
Backhoe w/Breaker - John Deere	1	4	
Mini Excavator w/Breaker - Kubota U45	1	4	
Dump Truck			
End Dump			
Foreman's Truck	1	4	
Tool/Fuel Truck	1	4	
Triton Barriers			
Sawcutter w/ Truck			
Traffic Control Stockton			
Traffic Control Geary, Ellis, O'Farrell			
Steel Plates	1	8	
Shoring			

EQUIPMENT DESCRIPTION	Quantity	Active	Standby
Mini Komatsu w/Breaker			
Mini Komatsu w/Breaker			
40 K Komatsu w/Breaker			
New Holland Excavator	1	1	3
Generator	1	4	
Chipping Gun			
Air Compressor			
Mobilization of New Holland	1	3	

SFMTA Notes:

SFMTA Inspector was called before work commenced? YES NO

Daily Force Account Report was filled out at the end of the day the work was performed? YES NO

SFMTA signature below acknowledges verification of labor, equipment, material, and service/subcontractor hours and quantities only. Costs and contract allowability are subject to review and confirmation for compliance with contract terms and scope of work. Any costs determined not to be allowable for payment shall be deducted from the report prior to final resolution.

Prepared by [Signature] Date 3/12/13

[Signature]
 SFMTA Engineer/Inspector Date 3/12/13



03/12/2013



CAUTION

03/20/2013 07:01



03/19/2013 13:38



03/15/2013 08:14



03/14/2013 08:57



03/12/2013 07:13



FOLSOM

N
TURN
ON
RED

ONE WAY

03/08/2013 07:32

SFMTA Contract No. 1252

Contractor: Barnard Impregilo Healy JV (BIH)

EVALUATION OF MERIT

COR 081

Recommendation: Accept justification of Merit for COR 081, Moscone South - 12" Waterline Tee Connection Location. There is no time extension requested or recommended for this work.

Facts: Contract Drawing WD-404 Rev.0 shows the new 12" waterline on the south side of the MOS south headwall to make a tee connection to the existing 12" waterline in Folsom St. Upon exposing the connection location the Contractor encountered a vertical offset in the existing 12" waterline. The vertical offset was due to the presence of an existing 42" brick sewer. At the request of the SFWD and following a meeting with the SFMTA, the Contractor was requested to enlarge the excavation to the west to facilitate SFWD's installation of the new 12" tee connection. See attached sketch FS 1252 - 036 for more details.

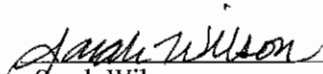
Justification: The vertical offset discovered in the 12" waterline constitutes a differing and unforeseen site condition as it was not shown in the Contract Documents, specifically Drawing WD-404 Rev.0. The additional work to enlarge the excavation was necessary to facilitate the SFWD's installation of the 12" waterline tee connection.

Additional labor and equipment costs were incurred for additional excavation and backfilling due to the enlarged excavation. As a result of enlarging the excavation to the west a larger steel sheet was also needed to allow traffic to return to the approved configuration at the end of the work day. To handle the larger steel sheet it was necessary for the Contractor to mobilize a larger excavator than was currently being utilized to move the smaller steel plates.

RE has evaluated the conditions outlined in Article 3.04 and found that: conditions differ materially and conditions caused the scope of work to increase.

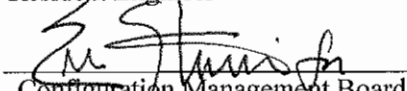
Change Type: (2) Unforeseen Condition

By:


Sarah Wilson

Resident Engineer

4/3/13
Date


Configuration Management Board
Approval

03A0013
Date

CENTRAL SUBWAY PROJECT
Project Trend/Change Control Log

Trend Log

Contract Cost Estimate and Allocated Contingencies										
Item #	Date Initiated	CMB No.	Change Description	Change Type	CMB No.	Change Status		Projected Cost Impact +Exposure/(Benefit)	Comments	Contract Modification Number
						Approval Action	Approval Date	Actual/Forecast		
CONSTRUCTION TRENDS										
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	CMOD #1 Approved
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	CMOD #2 Approved
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	CMOD #3 Approved
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	+170,000	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	CMOD #4 Approved
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	CMOD #5 Approved
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	CMOD #6 Approved
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	CMOD #9 Approved
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	CMOD #8 Approved
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	CMOD #7 Approved

- 1 - Owner Directed Change in Scope
- 2 - Unforeseen Conditions
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- 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	Contract Modification Number	
					Approval Action	Approval Date	Actual/Forecast			
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	CMOD #10 Approved
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	CMOD #16 Approved
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	CMOD #20 Approved
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	CMOD #20 Approved
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	CMOD #16 Approved
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	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	CMOD #12 Approved
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. Work was not performed and will need to be addressed in a future contract.	
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. Work was not performed and will need to be addressed in a future contract.	
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	CMOD #11 Approved
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.	

- 1 - Owner Directed Change in Scope
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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	Contract Modification Number
					Approval Action	Approval Date	Actual/Forecast		
1250-0022	10/06/10	081-0022	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	CMOD #15 Approved
1250-0023	10/06/10	081-0023	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	CMOD #13 Approved
1250-0024	10/06/10	081-0024	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	CMOD #19 Approved
1250-0025	10/06/10	081-0025	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	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	CMOD #20 Approved
1250-0027	10/06/10	081-0027	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	CMOD #20 Approved
1250-0028	12/08/10	081-0028	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	CMOD #14 Approved
1250-0029	12/08/10	081-0029	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	CMOD #17 Approved
1250-0030	12/08/10	081-0030	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	CMOD #16 Approved
1250-0031	12/08/10	081-0031	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	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	

- 1 - Owner Directed Change in Scope
- 2 - Unforeseen Conditions
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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	Contract Modification Number	
					Approval Action	Approval Date				Actual/Forecast
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	CMOD #18 Approved
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); Add 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	CMOD #20 Approved
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	
1250-0038	03/18/11	081-0038	Project Delay due to archaeological discovery and PG&E Issues.	2				-0	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 51 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)	N/A

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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)	N/A
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)	N/A
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)	N/A
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						VOIDED
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	CMOD #20 Approved
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	CMOD #4 Approved
1251-0002	03/18/11	082-0002	Installation of reinforced concrete slab underneath Joint Trench along Stockton at O'Farrell (East Side). CTL 133+66.37 (27.08 LEFT) to CTL 134+00.87 (27.08 LEFT)	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	CMOD #2 Approved
1251-0003	03/18/11	082-0003	Adjust placement of 3EA manholes along Geary Street and O'Farrell Street. The modified manhole locations require the installation of approximately 265LF of additional HDPE pipe inside the existing 3'x5' brick sewer.	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	CMOD #1 Approved

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1251-0004	04/06/11	082-0004	Changes to Neiman Marcus secondary enclosure wall due to various differing site conditions.	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	CMOD #3 Approved
1251-0005	04/06/11	082-0005	Existing PG&E conduits were found on top and parallel to existing AWSS on Geary Blvd. at 2 locations (east and west of Stockton)	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	CMOD #24 Approved
1251-0006	04/20/11	082-0006	Design changes to utilities on Stockton street between Post and Geary	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	CMOD #5 Approved
1251-0007	04/20/11	082-0007	Design changes to utilities on Ellis Street	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	CMOD #5 Approved
1251-0008	04/20/11	082-0008	Elimination of underpinning at 150 Stockton	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	Additional cost for police officers and/or Parking Control Officers for traffic control.	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	CMOD #4 Approved
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	CMOD #3 Approved
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	CMOD #6 Approved

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1251-0013	07/06/11	082-0013	Accelerate start of construction in front of Macys West by trenchless construction method	7				-0-	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)	CMOD #3 Approved
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	CMOD #9 Approved
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	CMOD #8 Approved
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	CMOD #8 Approved
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	CMOD #7 Approved
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	CMOD #7 Approved
1251-0019	08/03/11	082-0019	Extend joint trench and modify existing AT&T Manhole 403 on Ellis Street.	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	CMOD #11 Approved
1251-0020	09/07/11	082-0020	Change PG&E conduit material from PVC to GRS on west side of Stockton between Geary and Post	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	CMOD #21 Approved
1251-0021	09/07/11	082-0021	Revise PG&E service points and layout of primary lines at various locations, and delete Muni Vault 1850 A at Stockton/Ellis.	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	

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1251-0022	09/07/11	082-0022	Change OCS supports at SF Hilton Hotel on Mason Street from embedded eyebolts to poles w/foundations.	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	4th Street & Folsom Trolley Bypass	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	CMOD #12 Approved
1251-0024	09/07/11	082-0024	Install a 5" slurry wall between the gas line and wet utilities if the separation is less than 3 feet	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	CMOD #19 Approved
1251-0025	09/07/11	082-0025	Additional PG&E conduit crossings at Geary and O'Farrell to minimize service interruption during future UMS Station construction	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	Install cantilever footing in lieu of regular OCS foundation at 2 locations on Mason Street between Geary and O'Farrell	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.	
1251-0027	09/20/11	082-0027	Accelerate installation of AT&T facilities in order for AT&T to start cut-over sooner	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	CMOD #10 Approved
1251-0028	10/18/11	082-0028	Furnish and install AT&T Manholes 5828 (Stockton), 5831 (Geary), 5832 (O'Farrell) and 113 (O'Farrell)	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	CMOD #11 Approved
1251-0029	10/26/11	082-0029	Rebuild existing AT&T vault 133 at Post/Stockton and demolish existing AT&T vaults 403 (Ellis) and 113 (O'Farrell)	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	Enlarge existing PG&E vault 873 at SW Geary/Stockton	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	CMOD #21 Approved
1251-0031	10/26/11	082-0031	Additional PG&E conduits crossing O'Farrell on east side of Stockton (Task Order #32)	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	CMOD #21 Approved

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1251-0032	11/08/11	082-0032	Excavation and restoration cost for PG&E gas tie-in and kill holes.	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	CMOD #19 Approved
1251-0033	11/23/11	082-0033	Install secondary enclosure wall at One Stockton (Apple Store)	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)	CMOD #13 Approved
1251-0034	01/10/12	082-0034	Install temporary support as required to protect existing live utilities that are encroaching into the City right-of-way in front of 17-25 Stockton Street.	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	CMOD #17 Approved
1251-0035	01/11/12	082-0035	Potholing on Stockton between Post and Geary for UMS Station design	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.	
1251-0036	01/11/12	082-0036	Install three 6" PG&E conduits from vault 5800 to PG&E "A" pullbox at 4th/Bryant.	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	Install sewer lateral from the Gucci building (240 Stockton) to the main sewer on Maiden Lane. Work will involve plumbing modification inside building to raise invert.	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	CMOD #18 Approved
1251-0038	01/04/12	082-0038	Reimburse Synergy for JCDecaux work to remove kiosks	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	CMOD #22 Approved
1251-0039	01/17/12	082-0039	Furnish and install 2ea benches along 5th Street	1				+4,752	Requested by Muni Operation. COMPLETE, NO FURTHER ACTION; CMOD #22	CMOD #22 Approved

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1251-0040	02/15/12	082-0040	Furnish and install AT&T Manholes 133 at Post/Stockton	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	CMOD #14 Approved
1251-0041	02/15/12	082-0041	Install additional 55 LF of AT&T trench to extend conduits from vault 5832 to vault 113 on O'Farrell Street	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	CMOD #14 Approved
1251-0042	02/15/12	082-0042	Install additional 95 LF of AT&T trench to extend conduits from vault 5831 to vault 129 on Geary Blvd.	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	CMOD #14 Approved
1251-0043	02/15/12	082-0043	Force account work for demolition of existing AT&T vaults 113 (Post/Stockton) and 403 (Ellis)	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	CMOD #23 Approved
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	CMOD #18 Approved
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	CMOD #18 Approved
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	CMOD #24 Approved
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	CMOD #26 Approved
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.	

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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 RFI 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	CMOD #27 Approved
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	CMOD #20 Approved
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	CMOD #24 Approved
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	CMOD #28 Approved
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	CMOD #27 Approved
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	CMOD #22 Approved
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	CMOD #15 Approved
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	CMOD #16 Approved
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	CMOD #25 Approved
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	CMOD #27 Approved

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1251-0060	06/26/12	082-0060	4				(508,961)	Bid item analysis for entire contract as of 6/12/12.	CMOD #30 Approved
1251-0061	06/26/12	082-0061	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	CMOD #24 Approved
1251-0062		082-0062	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	CMOD #22 Approved
1251-0063		082-0063	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	CMOD #24 Approved
1251-0064		082-0064	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	CMOD #27 Approved
1251-0065		082-0065	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	CMOD #28 Approved
1251-0066		082-0066	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	CMOD #24 Approved
1251-0067		082-0067	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	CMOD #20 Approved
1251-0068		082-0068	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	CMOD #29 Approved

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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	CMOD #24 Approved
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 subsidewalk 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	CMOD #28 Approved
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	CMOD #14 Approved
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	CMOD #22 Approved
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	CMOD #20 Approved
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	CMOD #20 Approved
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	CMOD #26 Approved

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1251-0077	09/12/12			082-0077 Additional work related to Qwest, TCG and UCCO facilities	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	CMOD #25 Approved
1251-0078	09/12/12			082-0078 Unforeseen conditions encountered during excavation and installation of OCS poles along Mason and 5th Streets.	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	CMOD #26 Approved
1251-0079	09/12/12			082-0079 Additional work related to installation of PG&E Vaults 467, 571, 573, 586 and 594 including joint trench leading to these vaults	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	CMOD #24 Approved
1251-0080	09/12/12			082-0080 Additional work related to installation of AT&T Vaults 5828, 5829, 5830, 5831, 5832 and 5833 including joint trench leading to these vaults	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	CMOD #23 Approved
1251-0081	09/13/12			082-0081 PG&E concrete cover versus CDF on electrical duct bank	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	CMOD #24 Approved
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	Contract Modification No.
1252-0001	04/23/12	1		AWSS Conflict w/ Low Pressure Water	6	CMB-0091	Agree to Merit Agree to Cost	10/10/12 1/16/13	+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 - CMB - NOT TO EXCEED Amount \$16,900	

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						Approval Action	Approval Date	Actual/Forecast		
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	+58,000	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 - CMB - NOT TO EXCEED Amount \$58,000	
1252-0003	04/23/12	3	AT&T Vault Conflict-4th & Harrison	6	CMB-0092	Agree to Merit Agree to Cost	10/10/12 1/16/13	+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 - CMB - NOT TO EXCEED Amount \$21,089 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 - CMB - NOT TO EXCEED Amount \$7,600 04/01/13 - CM team must obtain in writing from PG&E a utility agreement or cost reimbursement.	CMOD #10 Approved
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 - CMB - NOT TO EXCEED Amount \$10,000	CMOD #5 Approved
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	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	
1252-0007	06/12/12	9	MOS - Live Utilities: PGE, AT&T, and SFWD 8" Water Line extra kill hole location	2		Agree to Merit	11/14/12	+49,007	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 Merit presented to CMB.	
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 1/16/13	+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 - CMB - NOT TO EXCEED Amount 4,919.54 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement.	CMOD #3 Approved
1252-0009	07/02/12	11	MOS - Traffic Signal line re-route south headwall	6	CMB-0095	Agree to Merit Agree to Cost	1/16/13	+37,500	After potholing Synergy discovered several traffic lines which were in the proposed location of the south MOS headwall. Traffic Lines re-routed. 01/16/13 - CMB - NOT TO EXCEED Amount \$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 1/16/13	+16,892	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 - CMB - NOT TO EXCEED Amount \$7,600	CMOD #6 Approved
1252-0011	07/06/12	13	PCC No. 13 - MOS - SL conduit from PG&E vault @ north headwall	6		Agree to Merit	11/28/12	+10,903	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.	
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 - CMB - NOT TO EXCEED Amount \$96,000	

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1252-0013	07/02/12	17	MOS - Standby Time @ south headwall due to live TS lines	6		Agree to Merit	11/21/12	+79,219	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.	
1252-0014	Closed	19	UMS - Grant street 2 way conversion (e- & striping)	7					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. CLOSED; NO FUTHER ACTION	
1252-0015	06/22/12	20	PROJECT WIDE - Utility Demo limit reduction credit	5					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. Closed - SFMTA to BIH/SPM "Build per Plan".	
1252-0016	04/02/12	21	UMS - Reduced Duration	5	CMB-0073	Agree Cost (Conditionally)	8/01/12	-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.	CMOD #8 Approved
1252-0017	07/10/12	22	MOS - Asbestos Pipe at north headwall	2	CMB-0090	Agree to Merit Agree to Cost	12/12/12 1/09/13	+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 - CMB - NOT TO EXCEED Amount \$6,000	CMOD #5 Approved
1252-0018	07/10/12	23	MOS - Brick Wall #2 discovered @ north headwall	2		Agree to Merit	12/6/12	+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 - Merit info presented to CMB - Agreed	
1252-0019	08/10/12	26	MOS - Asbestos Pipe at south headwall	2	CMB-0085	Agree to Merit Agree to Cost	12/12/12 1/09/13	+27,630	Transite pipe was discovered during MOS south headwall excavation. 12/12/12 - Merit info presented to CMB - Agreed 01/09/13 CMB - NOT TO EXCEED Amount \$30,000	CMOD #15
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 1/09/13	+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 Amount \$8,600	CMOD #5 Approved
1252-0021	06/19/12	29	MOS - Todco scaffolding reimbursement	2	CMB-0097	Agree to Merit Agree to Cost	12/12/12 1/16/13	+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 - CMB - NOT TO EXCEED Amount \$1,717	CMOD #3 Approved
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.	
1252-0023	05/30/12	4	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.	
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.	

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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.	
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.	
1252-0027	Closed	14	MOS - 76 Gas Station fencing	1					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.	
1252-0028	Closed	16	LB - SPTC delays due to concrete encased 8" sewer	2					Closed. Combined with COR 015. 07/25/12 - Verbal information presented to CMB as a potential change.	
1252-0029	08/06/12	18	MOS - South Headwall re-design	1				+145,000	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	
1252-0030	08/02/12	24	Ellis - Utility demolition	3		Agree to Merit	12/6/12	+38,678	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	
1252-0031	Closed	25	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.	
1252-0032	08/07/12	28	Ellis asbestos abatement	2		Agree to Merit	12/6/12	+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	
1252-0033	-	30	LB - Class 1 Hazardous Material Haul off	2				+198,276	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.	
1252-0034	-	70	LB - Jet Grout Quantity Overrun	4	CMB-0115	Agree to Merit Agree to Cost	3/20/13 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 - CMB - NOT TO EXCEED Amount \$599,900	
1252-0035	01/00/00	unsubmitted	Utility Removal UD-304 and UD-503	6				TBD	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."	
1252-0036	05/17/12	35	Additional Road Base on Fourth Street	2			12/6/12	+7,000	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.	
1252-0037	01/00/00	unsubmitted	DPW permitting potential impacts	7				TBD	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.	
1252-0038	05/30/12	38	Manhole in West Guidewall Footprint	3	CMB-0101	Agree to Merit Agree to Cost	12/05/12 1/23/13	+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 - CMB - NOT TO EXCEED Amount \$4,052.17	CMOD #12 Approved

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1252-0039	01/00/00	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.	
1252-0040	08/23/12		PCC No.1 - Revisions to Moscone North Headwall Elevation (Top)	1	CMB-0099	Agree to Cost	1/16/2013	+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 Amount \$20,500	CMOD #7 Approved
1252-0041	08/23/12		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	
1252-0042	08/24/12	31	Retrieval Shaft - Unmarked 12" Steel Pipe	2	CMB-0108	Agree to Merit Agree to Cost	1/2/2013 2/27/13	+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 2/27/13 - Cost presented to CMB - agreed to NTE \$1,250 04/01/13 - No reimbursement from SFWD.	CMOD #13 Approved
1252-0043	08/31/12	32	LB - Panel W29 Wood Pile	2		Agree to Merit	11/28/12	+81,000	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	
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.	
1252-0045	09/11/12	34	LB - Panel W28 Wood Pile	2				+81,000	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.	
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.	
1252-0047	01/00/00	37	UMS - 12" steel pipe removal	3				+3,500	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. Closed due to improper notification.	
1252-0048	09/07/12	39	MOS - 16" Steel Pipe removal @ northeast headwall	3	CMB-0102	Agree to Cost	1/23/13	+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 - CMB - NOT TO EXCEED Amount \$2,951.99 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement.	CMOD #14 Approved
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.	
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	1/16/13	+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 - CMB - NOT TO EXCEED Amount \$1,245 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement.	CMOD #10 Approved
1252-0051	01/00/00	executed	Contract Amendment No. 2	1				(3,040,713) 0		CMOD #2 Approved

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1252-0052	08/17/12	42	LB - Panel W25 Wood Pile	2		Agree to Merit	11/28/12	+116,785	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	
1252-0053	08/22/12	43	LB - Panel W30 Wood Pile	2		Agree to Merit	11/28/12	+47,185	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	
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 2/27/13	+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 - Cost presented to CMB - agreed to NTE \$1,800 04/01/13 - CM team must obtain in writing from PG&E a utility agreement for cost reimbursement.	CMOD #14 Approved
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.	
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 1/23/13	+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. 12/20/12 - CMB agreed with Evaluation of Merit 01/23/13 - CMB - NOT TO EXCEED Amount \$7,461	
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 1/23/13	+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	CMOD #13 Approved
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 - CMB - NOT TO EXCEED Amount \$12,474.65	
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. 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 - Cost presented to CMB - Agreed to NTE \$2,600 04/01/13 - No reimbursement from SFWD	CMOD #13 Approved
1252-0061	10/11/12	51	Ret Shaft - Elevation design conflict (30" low psi water / sewer)	3		Agree to Merit	3/13/13	+24,075	03/13/13 - Merit info presented to CMB - Agreed	
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				+110,967	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.	

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1252-0064	10/10/12		PCC 4 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.	
1252-0065	12/18/12	57	PCC 8 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 5 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.	
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 - Cost presented to CMB - Agreed to NTE \$860.85	CMOD #13 Approved
1252-0068	10/10/12		PCC 3 PCC No. 3 - General Detour Signage	1	CMB-0113	Agree to Cost	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	0
1252-0069	11/08/12		PCC 6 PCC No. 6 - Supplemental instrumentation of BART tunnel lining.	1				+657,884	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.	
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		Agree to Merit	1/2/13	+1,473	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.	
1252-0072	11/14/12	62	LB – Panel P-9 Buried Obstruction	2		Agree to Merit	1/23/13	+150,000	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.	
1252-0074	11/16/12	65	LB – Panel P-12 Buried Obstruction	2		Agree to Merit	1/23/13	+150,000	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.	
1252-0075	11/19/12	66	Retrieval Shaft - Unmarked 12" Steel Pipe	2	CMB-0112	Agree to Merit Agree to Cost	1/23/13 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 2/27/13 - Cost presented to CMB - Agreed to NTE \$3,800 04/01/13 - No reimbursement from SFWD	CMOD #13 Approved

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1252-0076	11/19/12	67	LB - Panel P-10 Buried Obstruction	2		Agree to Merit	1/23/13	+18,000	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	0
1252-0077	12/21/12		PCC No. 7 - Bart Temporary Annex Wall	1	CMB-0106	Agree to Cost	1/30/13	+15,500	SFMTA is requesting Contractor construct temporary wall for Bart Annex for SFMTA use. 01/30/13 - CMB - NOT TO EXCEED Amount \$15,380	CMOD #11 Approved
1252-0078	12/28/12		PCC No. 9 - UMS Headwall - Unknown Buried Pipe	1	CMB-0100	Agree to Merit Agree to Cost	1/16/13 1/16/13	+45,000	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 - CMB - NOT TO EXCEED Amount \$75,000 04/01/13 - CM team must obtain in writing from AT&T a utility agreement for cost reimbursement.	CMOD #4 Approved
1252-0079	01/09/13		PCC No. 10 - Relocation of TBM Retrieval Shaft	1					Modify Bid Item ST-4 Construction of Base Bid Permanent Retrieval Shaft to relocate the TBM retrieval Shaft to 1731-1741 Powell Street - 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.	
1252-0080	12/19/12	0	Segment Measuring Frequency	7				(1,300,000)	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.	
1252-0081	09/09/12	0	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	1/16/13	+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.	
1252-0083	11/08/12	69	UMS – Cap and Remove 48" Steel pipe	2					Closed	
1252-0084	01/24/13		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 - CMB - NOT TO EXCEED Amount \$150,000 04/01/13 - CM team must obtain in writing from AT&T a utility agreement for cost reimbursement.	
1252-0085	01/24/13	71	LB – Ramp Excavation Obstructions	2		Agree to Merit	4/3/13	+10,000	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	

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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.	
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	
1252-0088	NA	74	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.	
1252-0089	03/11/13	75	Hazardous Waste Disposal Denial - Spoils Containment Cost Impacts	7				+326,971	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.	
1252-0090	03/08/13	76	MOS - 16" Pipe removal @ SE Headwall	2	CMB-0119	Agree to Merit Agree to Cost	3/20/2013 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	
1252-0091	03/06/13	77	Comp Grout - WFB-5 Drilling Obstruction	2		Agree to Merit	4/3/13	+10,000	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	
1252-0092	03/07/13	78	Comp Grout - WF & ATT	2			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 - Agreed to No Merit for this change.	
1252-0093	03/07/13	79	Comp Grout - Old Navy	2	CMB-116	Agree to Merit Agree to Merit (addl) Agree to Cost	3/20/2013 04/24/13 04/26/13	+269,720	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 brought to special mtg to notify CMB of work need to have Contractor perform work on FA4 for a NTE amt \$70K.	
1252-0094	03/12/13	80	MOS - Asbestos Wrapped 20" water line @ Headwalls	2		Agree to Merit	4/3/13	+43,000	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	
1252-0095	03/11/13	81	12" Waterline Tee Connection Location (MOS South)	2		Agree to Merit	4/3/13	+2,999	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	

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1252-0096	03/13/13	82	MOS 20" Conflict with 16" AWSS @ South Headwall	2				+50,000	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.	
1252-0097	03/19/13	83	Ellis Shaft Concrete Obstruction	2		Agree to Merit	4/17/13	+4,000	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	
1252-0098	03/16/13	84	Crate & Barrel Water Intrusion	2				+50,000	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.	
1252-0099	04/05/13		PCC No. 12 - Modifications to Tunnel Alignment at Market Street	1			4/3/13	+292,000	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.	
1252-0100	03/26/13	85	SFWD Impacts at MOS North	2				+345,600	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 - Viewed at CMB 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.	
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 - Viewed at CMB 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.	
1252-0102	04/09/13	86	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. 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.	
1252-0103	04/18/13	88	SFWD Impacts at MOS South	2				+383,800	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.	

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Contract 1252 Totals									+1,225,948	Total Changes and Potential Change (trends) to the contract are currently \$1,225,948 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:									+1,225,948	The \$1,225,948 represents an UNDERRUN of allocated contingency. Current Balance = (33,658,463 - 1,225,948 = \$32,432,515) 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.]	
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-		

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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	086-0003	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	(18,000,000.00)	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.	
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.	

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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	
FD-038	11/07/12		Elongated Sidewalk Bulb-out at Chinatown Station					TBD	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. Design Impact: ROM - \$TBD Construction Impact: ROM - \$TBD	
FINAL DESIGN TRENDS (Based on All ECPs) - SUBTOTALS									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]	BT-0033, BT-0033-A, BT0036, BT-0036-A
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].	BT-0034
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]	BT-0037, BT-0037-A
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	

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X53-001	07/18/11	084-0001	CS 155-2 (DP2) CBP4 - Construction Budget Adjustment YOE	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 YOE 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 YOE	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 YOE	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)	
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	BT-0172, BT-0177
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	BT-0170, BT-0171, BT-0173
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.	BT-0187
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.	BR#51, BT-0181
X80-004	10/27/11	232-0001	Increase SFCTA Budget	7		Authorized		+20,000	Increase SFCTA budget per per Budget Authorization #51 to conduct travel forecast (TEP CEQA Modeling) to satisfy PMO review and SFMTA Fleet Plan light rail vehicle.	BR #51, BT-0182
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.	BT-0194, BR#53
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.	BT-0023, BT-0194

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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	BR #53, BT-0189
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.	BR #45, BT-0190
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.	BT-0188
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.	BT-0203
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.	BT-0203
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	TBD
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 Gargage, revised productin 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)									Current Forecast reflects a net +3,537,933 unfavorable impact for all Other Trends.	
GRAND TOTALS									Current Forecast reflects an estimated net +66,751,620 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 - ie 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.	Amendment 1 Pending
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	Amendment 2 Approved
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	Amendment 2 Approved

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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	Amendment 2 Approved
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	Amendment 2 Approved
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	Amendment 2 Approved
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	Amendment 3 Approved
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	Amendment 4 Approved
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	Amendment 4 Approved
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	Amendment 4 Approved
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	Amendment 4 Approved
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	Amendment 4 Approved
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.	
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	Amendment 1 Approved
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	Amendment 1 Approved
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	Amendment 1 Approved
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.	

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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.	Option
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	Option
1553-0002	08/09/11	073-0002	Authorization to commence optional tasks 12.05 Architectural Plans	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	Option
1553-0003	08/09/11	073-0003	Authorization to commence optional tasks 12.13J Facility SCADA Design	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	Option
1553-0004	08/09/11	073-0004	Authorization to commence optional tasks 12.12E traction power cables for CAD production	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	Option
1553-0005	09/19/11	073-0005	Proposal to hire Wilson Ihrig to support Acoustics, Noise and Vibration tasks.	7		Authorized	03/08/12	+38,380	Signed by Director of Transportation 3/8/2012. COMPLETE, NO FURTHER ACTION ; Amendment 2	Amendment 2 Approved
1553-0006	09/22/11	073-0006	Proposal to exercise optional task 12.07 Public Art.	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	Proposal to exercise optional sub-task 12.12 structural design of the OCS attachments.	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	Scope Clarification - Add Emergency and Location Signage.	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	Proposal to exercise mechanical optional task A 12.11 to design a water line on the FBS station platform.	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	Option
1553-0010		073-0010	Proposal to exercise Task 12.01 Surface Segment site Drainage	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	Option
1553-0011		073-0011	Proposal to exercise Task 12.02 Sewer Relocation and Analysis Report.	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	Option

- 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	Contract Modification Number
					Approval Action	Approval Date	Actual/Forecast		
1553-0012	11/09/11	073-0012	CTS - Alternate 5	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	Amendment 1 Approved
1553-0013	11/09/11	073-0013	Proposal for Geotechnical Services	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	Amendment 1 Approved
1553-0014	02/06/12	073-0014	Authorization to commence optional tasks 12.12E traction power cables for CAD production, Optional task 2.50 Coordination with Art		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	Option
1553-0015	03/20/12	073-0015	Proposal for additional services in Response to Approved (ECP) FD-034 Operation Performance and Safety Enhancements to 4th and King and 6th and King.	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	Option
1553-0016	03/23/12	073-0016	Proposal for additional work - Tunnel Air Replenishment System (Exercise Optional Service)	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	Option
1553-0017	05/14/12	073-0017	Extension of PC Support Technician	1	Authorized	05/04/12	+34,483	Signed by Director of Transportation 5/14/12 COMPLETE, NO FURTHER ACTION; Amendment #3	Amendment 3 Approved
1553-0018	05/14/12	073-0018	Extension of CSP Quality Manager	1	Authorized	05/04/12	+61,043	Signed by Director of Transportation 5/14/12 COMPLETE, NO FURTHER ACTION; Amendment #3	Amendment 3 Approved
1553-0019	04/09/12	073-0019	Authorization to commence optional task 12.02 Utility Plans for design of repositioned and reconstructed manholes for the 78 inch diameter sewer on 4th St.	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	Option
1553-0020	04/09/12	073-0020	Authorization to commence optional task 12.12 civil and structural support for traction power duct banks	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	Option
1553-0021	04/26/12	073-0021	Authorization to commence optional task 12.11 design of the tunnel based Air Replenishment System including fill panels, feeder pipes, gauges, valves, fire proofing, anchors, supports, low level alarms, wiring, signage, connections to SCADA and monitoring devices, equipment placement, and impact protection	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	Option
1553-0022	04/26/12	073-0022	Increased authorization for optional task 12.12.e CAD production support	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	Option
1553-0023	05/21/12	073-0023	Authorization to commence option task 12.11 structural design support for Fire Protection and Plumbing designs	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	Option
1553-0024	05/21/12	073-0024	Authorization to commence optional task 12.12 structural design support for Traction Power and Power/Lighting designs	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	Option
1553-0025	05/21/12	073-0025	Authorization to commence optional task 12.13 structural design support for Telephone and CCTV designs	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	Option
1553-0026	05/21/12	073-0026	Authorization to commence optional task 9.20 Technical Specifications for structural design support for above designs	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	Option
Contract CS-155-3 Total							+2,046,831	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.	

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

CMB LOG

CENTRAL SUBWAY PROJECT - Configuration Management Board Change Control Log

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Initial Implementing Procedure				CMB		
Change Form No.	Title of Change	Schedule Impact	*Cost Impact (X,000)	CMB No.	Agree / Disagree	Final Decision Record Date
1250-0002	Chgs to Sewer on 4th between Howard and Folsom		\$ 107	CMB-0001	Agree	07/12/10
1250-0003	Quantity Adjustment for JT-6 and JT-7		\$ 192	CMB-0002	Agree	08/04/10
1250-0004	Demolition of existing brick and concrete footing on 4th between Howard and Folsom		\$ 170	CMB-0003	Agree	07/12/10
1250-0005	Modify AWSS at 4th/Bryant and 4th/Harrison		\$ 586	CMB-0004	Agree	08/04/10
1250-0006	Install four additional piles and reinforce existing foundation at 401 4th Street		\$ 130	CMB-0005	Agree	08/25/10
FD-001	Narrowing of Platform at UMS		\$ (800)	CMB-0006	Agree	08/04/10
FD-004	UMS Structural Configuration		\$ (8,000)	CMB-0007	Agree	08/18/10
FD-006	Station Headwalls - UMS/MOS		\$ -	CMB-0008	Agree	08/18/10
FD-002	Redux of Station Emergency Ventilation Fans - UMS/CTS/MOS		\$ (3,000)	CMB-0009	Agree (Conditionally)	08/25/10
FD-005	UMS Alternate Station Access/Vent Shaft @ Union Square		\$ (22,500)	CMB-0010	Agree	12/29/10
FD-016	Underpinning of Mandarin Tower		\$ 5,000	CMB-0011	Over Taken by FD-021	01/19/11
FD-017	CTS Ground Improvement		\$ 10,300	CMB-0012	Over Taken by FD-021	01/19/11
FD-018	UMS Apple Store Entrance		\$ -	CMB-0013	Disagree	11/10/10
FD-019	MOS TOD Configuration		TBD	CMB-0014	Agree	11/10/10
FD-020	UMS Emergency Stair #4 Relocation		TBD	CMB-0015	Agree	11/10/10
1250-0016	Additional AWSS modification at 4th/Harrison		\$ 156	CMB-0016	Agree	11/10/10
FD-008	Trolley Re-route @ Columbus & Powell		\$ 2,000	CMB-0017	Agree	09/15/10
FD-007	Cross-passages		\$ -	CMB-0018	Agree	09/15/10
FD-009	ECP to Modify Sidewalk Vault Demolition and Construction Sequence to Facilitate Construction of Joint Utilities Trench and Future UMS Station		\$ 3,000	CMB-0019	Agree	12/15/10
FD-010	Redesign Stockton Street Sanitary Sewer to conform to SFPUC Sewer Criteria that preclude placement of relocated sanitary sewer under sidewalks		\$ 2,000	CMB-0020	Agree	11/17/10
FD-011	Reconfigure Routing of Water, Sewer and Gas laterals from buildings on north side of Ellis Street		\$ 500	CMB-0021	Agree	11/17/10
FD-012	Recognize cost transfers from design allowances allocated to contingency to explicit line items in final design estimates		\$ -	CMB-0022	Disagree	11/17/10
FD-013	Increase Extent of Sub-sidewalks Vault Secondary Closure Walls and Waterproofing		\$ 4,100	CMB-0023	Agree	11/17/10
FD-014	Include OCS system for rerouting trolley buses to Fifth Street		\$ 3,100	CMB-0024	Agree	12/15/10
FD-015	Subsidewalk Vault Secondary Closure Walls for Buildings at 800 Market and 838 Market		\$ 1,000	CMB-0025	Agree	11/17/10
1250-0022	Install additional 30 feet of DIP and new AWSS at 4th/Harrison		\$ 160	CMB-0026	Agree	01/12/11
FD-021	CTS Lowering and Stations Reconfiguration		\$ (18,000)	CMB-0027	Agree	01/19/11
1250-0026	Supporting working around and protecting SFWD existing facilities		\$ 66	CMB -0028	Agree	02/09/11
1251-003	Extending Sewer lines on O'Farrell and Geary - CMod 001		\$ 149	CMB-0029	Agree	02/23/11

CMB LOG

CENTRAL SUBWAY PROJECT - Configuration Management Board Change Control Log

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Initial Implementing Procedure				CMB		
Change Form No.	Title of Change	Schedule Impact	*Cost Impact (X,000)	CMB No.	Agree / Disagree	Final Decision Record Date
1250-0030	Differing site conditions during utility installations - CMod #16 - Public only		\$ 238	CMB-0030	Agree	04/13/11
1251-0004	Additional work related to secondary basement closure wall, 150 Stockton Street		\$ 190	CMB-0031	Agree	04/13/11
FD-023	Change to the emergency walkway configuration in the cross cavern at CTS		\$ -	CMB-0032	Agree	07/27/11
FD-024	Change No. 5 diamond X-over on surface segment to tandem (universal) crossover		\$ (350)	CMB-0033	Agree	08/24/11
FD-025	Bid Option for TBM Retrieval Shaft		\$ (10,000)	CMB-0034	Agree	04/13/11
1251-0002	Installation of concrete slab under joint trench at Stockton and O'Farrell CMod #02 <i>(Not to Exceed Total)</i>		\$ 71	CMB-0035	Agree	04/20/11
1250-0029	Adjustment to Additional Excavation and Backfill Bid Item CMod #17		\$ 112	CMB-0036	Agree	05/04/11
1250-0034	Supplement Bid Item TR -6 DPT Traffic Control Allowance CMod #18		\$ 69	CMB-0037	Agree	05/04/11
1251-0009	Supplement Bid Item TR-07- Allowance for Manual Traffic Control with Add'l funds		\$ 263	CMB-0038	Agree	06/01/11
1251-0006	Revising layouts of utilities, northern portion of Stockton Street		\$ 399	CMB-0039	Agree	06/08/11
FD-026	Air Replenishment Systems in the three underground stations		\$ 1,245	CMB-0040	Agree	07/13/11
1250-0036	<i>Rental/Maintenance costs for support of Archeological Trenches - 05/30: SFMTA Board approval due to contract value exceeding the 25% threshold remaining item will be handled through the claims process. CM will provide and update at a later date. 09/12/12: Rental/Maintenance costs for support of Archeological Trenches (Part 1 of 4), (Part 2 of 4), (Part 3 of 4), (Part 4 of 4)</i>		\$ 597	CMB-0041	Agree	09/12/12
1251-0012	Compensate Contractor for additional expenses to modified installation of AWSS on O'Farrell East on Stockton St CMod #07 representing change, now CMod #06 (Refer to Approve CMB-0050, which notes the contract modification amount for this work)		-	CMB-0042	Agree	08/03/11
FD-027	1 Stockton Street (Apple Store) Secondary Closure Wall		\$ 500	CMB-0043	Agree	08/03/11
X53-001	CS 155-2 (DP2) CBP4 (UMS) - Construction Budget Adjustment YOY		-	CMB-0044	Agree	07/27/11
X54-001	CS 155-2 (DP2) CBP5 (CTS) - Construction Budget Adjustment YOY		-	CMB-0045	Agree	07/27/11
X55-001	CS 155-2 (DP2) CBP6 (MOS) - Construction Budget Adjustment YOY		-	CMB-0046	Agree	07/27/11
1250-0012 & 0013	Differing site conditions during utility installations - CMod #21 - Private only		\$ 98	CMB-0047	Agree	08/03/11
1250-0024	Costs associated with support, workaround and protection of existing AT&T utilities - CMod #19		\$ 95	CMB-0048	Agree	08/24/11
1251-0007	Costs associated with design changes to utility layouts along Ellis Street - CMod #05		\$ (435)	CMB-0049	Agree	08/24/11
1251-0012	Additional expenses related to modified installation of the AWSS on O'Farrell East of Stockton St - CMod #06 (Ref. CMB-0042 for original CMod presented for this work)		\$ 278	CMB-0050	Agree	09/21/11
1251-0017 & 0018	Installation of AT&T manholes 5829 and 5830 located on Geary at Stockton - CMod #07		\$ 56	CMB-0051	Agree	09/21/11
FD-028	MOS Revisions to Emergency Ventilation Requirements		\$ 500	CMB-0052	Agree	09/07/11

CMB LOG

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Initial Implementing Procedure				CMB		
Change Form No.	Title of Change	Schedule Impact	*Cost Impact (X,000)	CMB No.	Agree / Disagree	Final Decision Record Date
FD-029	CTS Revisions to Emergency Ventilation Requirements		\$ 1,000	CMB-0053	Agree	09/07/11
FD-030	UMS Revisions to Emergency Ventilation Requirements		\$ 1,000	CMB-0054	Agree	09/07/11
1251-0014	Increase Bid Item WD-10 Allowance for Add'l Excavation and Backfill - CMod #09		\$ 200	CMB-0055	Agree	09/14/11
1251-0027	AT&T installation additional cost to accelerate work - CMod #10		\$ 281	CMB-0056	Agree	11/30/11
1251-0019 & 0028	Installation of AT&T manholes 5828, 5831, 113, 5832 and 403 - CMod #11		\$ 188	CMB-0057	Agree	10/26/11
1251-0020, 0030 & 0031	PG&E Field Changes - Cost will be part of the Form B calculations and be included in the reimbursement from PG&E. (Formally CMod #12 New CMod number is pending assignment)		\$ 89	CMB-0058	Agree	11/02/11
1251-0024 & 0032	PG&E Field Changes - (Formally CMod #13 New CMod number is pending assignment) 1/25: Revision to the number of Kill Tie in locations will reduced this CMod to \$315K when conditions are satisfactorily met. 04/11 : Discovery of the 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 . 05/02: Previously approved CMod for \$349K on 11/16/11. Revised CMod approved for 12 Kill hole locations and "not to exceed" value. PGE email concurrence presented 05/23/12		\$ 303	CMB-0059	Agree	11/16/11
X54-005	Revisions to MPS - CTS Construction Schedule		\$ -	CMB-0060	Agree	12/28/11
X55-002	MPS - STS Construction Schedule Revision for Procurement of Equipment		\$ -	CMB-0061	Agree	12/28/11
FD-034	STS 4th and King Operational Performance and Safety Enhancements. 12/14/11: Agree contingent up "Buy America" waiver. 03/14: "Buy America" contingency no longer applicable. Revised ECP change element - Removing H&K switches and replace with hydraulic/120V. Revised CSP Design Criteria to reflect element design change. CMB approval of replacement agreed on 03/14/12. Revision made to the approved ECP at Mtgs. #71 & #72.		\$ 450	CMB-0062	Agree	12/14/11
CS-155-2	CS 155-2 (DP2) CTS Construction Budget Adjustment - (65% Submittal)		\$ 45,261	CMB-0063	Agree	12/21/11
1251 -0038 (TO-035)	CN1251 (3EA) Kiosk Removal; previous work, and Addl (2EA) new work (see CMB 0080 approved on 10/24/12 for \$29,267.83) for all (5EA) Kiosks.		\$ -	CMB-0064	Agree	01/04/12
1251-0023	Overhead Contact System (OCS) Facilities along Folsom St. between 4th & 5th Streets and Installation of Foundations and Poles - CMod #12 (Formally CMod #15) 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.		\$ 542	CMB-0065	Agree	02/29/12
CS-155-2	CS 155-2 (DP2) UMS Construction Budget Adjustment - (65% Submittal)		\$ 27,986	CMB-0066	Agree	02/01/12
CS-155-2	CS 155-2 (DP2) MOS Construction Budget Adjustment - (65% Submittal)		\$ 22,947	CMB-0067	Agree	02/01/12
1251 - 0033	Installation of Secondary Closure Wall at 1 Stockton St. (Apple Store) - CMod #13 (Formally CMod #14) (Negotiated Direct Cost \$264K, & Negotiated OH Cost \$143K)		\$ 409	CMB-0068	Agree	03/07/12

CMB LOG

CENTRAL SUBWAY PROJECT - Configuration Management Board Change Control Log

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Initial Implementing Procedure				CMB		
Change Form No.	Title of Change	Schedule Impact	*Cost Impact (X,000)	CMB No.	Agree / Disagree	Final Decision Record Date
1251-0034	Additional work related to discovery of conflicting utilities within the subsidewalk basement at 17-19 Stockton Street. (Worst case scenario - "Not to Exceed" value) <i>CM team will report actual amount value at a later date.</i>		\$ 346	CMB-0069	Agree	04/04/12
1251-0040, 0041, & 0042	Installation of approximately 150LF in additional AT&T trenching (including conduit packages) and the installation of AT&T Vault No.133 (Reimbursement to SFMTA for this compensation value via the Form B process - CMod #14		\$ 100	CMB-0070	Agree	04/11/12
FD-035	Tunnel Air Replenishment System (ARS)		\$ 1,215	CMB-0071	Agree	07/11/12
FD-036	Surface Segment Sewers - 4th St. Base and SFPUC Option		\$ 2,200	CMB-0072	Agree	07/18/12
1252-025	UMS Reduced Duration - 08/01/12 : <i>Condition upon incorporating correctness to backup documentation as required by & documented in CMB mtg.</i>		\$ -	CMB-0073	Agree (Conditionally)	08/01/12
1251-0050, 0067, 0074 & 0075	Trend #50 - Installation of MUNI 770 Pole at 5th and Folsom Trend #67 - OCS Feeder Work On Folsom Trend #74 - Traffic Signal Modifications At 5th And Folsom Trend #75 - Unforeseen Conditions During Pole Foundation Installation On Folsom		\$ 1,100	CMB-0074	Agree	08/15/12
1251-0068	Additional time related overhead (TRO) costs resulting from the 29EA calendar day Contract extension		\$ 107	CMB-0075	Agree (Conditionally)	10/03/12
1251-0043, 0072 & 0080	Trend #43 FAR for Demolition of existing AT&T Vault #113 and 403 Trend #72 Additional AT&T trench from Vault #5829 and 127 Trend #80 Additional work related to installation of AT&T Vaults #5828, 5829, 5830, 5831, 5832 and 5833.		\$ 129	CMB-0076	Agree (Conditionally)	10/03/12
FD-037	Platform Display System Signs - 08/29/12 : Condition follow up action to evaluate procumbent by CN1260)		\$ 500	CMB-0077	Agree (Conditionally)	08/29/12
1251-0037, 0044 & 0045	Gucci Store, Macy's West and Union Square Garage Sewer Installations		\$ 71	CMB-0078	Agree	09/12/12
1251-0052, 0065 and 0070	Trend #52 - Reroute Unforeseen existing waterline discovered along Geary St (east of Stockton St.) Trend #65 - Additional fittings for AWSS lateral and chipping of pole foundation at Market/Ellis Streets Trend #70 - Core drill primary wall and install interior plumbing at Armani and Disney for the completion of fire service water cutover work.		\$ 65	CMB-0079	Agree	10/10/12

CMB LOG

CENTRAL SUBWAY PROJECT - Configuration Management Board Change Control Log

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Initial Implementing Procedure				CMB		
Change Form No.	Title of Change	Schedule Impact	*Cost Impact (X,000)	CMB No.	Agree / Disagree	Final Decision Record Date
1251-0038, 0039, 0054,0062 and 0073	Trend #38 - Reimburse Synergy for JCDecaux's removal of 2EA kiosks and other Central Subway related work (TO #35 for this work approved on 01/04/12 - CMB 0064). Trend #39 - Furnish and install 2EA benches along 5th Street. Trend #54 - Additional waterproofing at FIDM and north end of Crate and Barrel. Trend #62 - Additional waterproofing at Macy's Men's wall . Trend 73 - Additional work to install water and electrical utilities for flower stand on Geary west of Stockton.		\$ 86	CMB-0080	Agree	10/24/12
1251-0077	Additional Work Related to Qwest, TCG and UCCO Infrastructure - Contingent CMod pig to include evidence from all utilities that cost are reimbursable to SFMTA		\$ 41	CMB-0081	Agree (Conditionally)	10/31/12
1251-0047, 0058, 0076, and 0078	Muni Vault 900A, Additional SL Work, Additional OCS Work		\$ 76	CMB-0082	Agree	10/31/12
1251-0049, 0053, 0059 and 0064	Contract Acceleration work and Additional Rebar work at 1 Stockton Street Trend #49 Additional cost related to installation of additional rebar at 1 Stockton Street Trend #53 Additional costs to accelerate Contract work related to AT&T and PG&E vaults Trend #59 Additional costs to accelerate Contract work as required to clear Barneys frontage		\$ 41	CMB-0083	Agree	11/07/12
1252	Retrieval Shaft Options (Board Action) for approval presented to the Directors by J.F.		-	CMB-0084	Agree	12/05/12
1252-COR26	MOS - Asbestos Pipe at south headwall - Not To Exceed \$30K		\$ 30	CMB-0085	Agree	01/09/13
1252-COR02	Pre-excavation to remove concrete encased sewer line. \$13K increase of original \$45K for a total of \$58K Not To Exceed		\$ 58	CMB-0086	Agree	12/19/12
1252-COR15	Additional work to restrain the AWSS line - Not To Exceed \$96K		\$ 96	CMB-0087	Agree	12/19/12
1252-COR06	PG&E live electrical delays - Not To Exceed \$7,600		\$ 8	CMB-0088	Agree	01/09/13
1252-COR27	MOS Oil Filled Pipe at south headwall - Not To Exceed \$8,600		\$ 9	CMB-0089	Agree	01/09/13
1252-COR22	MOS Asbestos Pipe at north headwall - Not To Exceed \$6K		\$ 6	CMB-0090	Agree	01/09/13
1252-COR01	AWSS Conflict with Low Pressure Water - Not To Exceed \$16,900		\$ 17	CMB-0091	Agree	01/16/13
1252-COR03	AT&T Vault Conflict -4th & Harrison - Not To Exceed \$21,089		\$ 21	CMB-0092	Agree	01/16/13
1252-COR07	Oil Filled pipe @ Launch Box - Not To Exceed \$10K		\$ 10	CMB-0093	Agree	01/16/13
1252-COR10	MOS - Demo Pea duct bank / SF City 911 fiber optic line - Not To Exceed \$4,915		\$ 5	CMB-0094	Agree	01/16/13
1252-COR11	MOS - Traffic Signal line re-route south headwall - Not To Exceed \$37,500		\$ 38	CMB-0095	Agree	01/16/13
1252-COR12	MOS - Archaeological Standby North Headwall - Not To Exceed \$16,892		\$ 17	CMB-0096	Agree	01/16/13
1252-COR29	MOS - Todco scaffolding reimbursement - Not To Exceed \$1,717		\$ 2	CMB-0097	Agree	01/16/13

CMB LOG

CENTRAL SUBWAY PROJECT - Configuration Management Board Change Control Log

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Initial Implementing Procedure				CMB		
Change Form No.	Title of Change	Schedule Impact	*Cost Impact (X,000)	CMB No.	Agree / Disagree	Final Decision Record Date
1252-COR41	LB Impacts due to live PG&E electrical lines (Flagging) Not To Exceed \$1,245		\$ 1	CMB-0098	Agree	01/16/13
1252-PCC01	Revisions to Moscone North Headwall Elevation (Top) <i>Not To Exceed \$20,500</i>		\$ 21	CMB-0099	Agree	01/16/13
1252 PCC09	UMS Headwall - Unknown Buried Pipe - <i>Not To Exceed \$75K</i>		\$ 75	CMB-0100	Agree	01/16/13
1252-COR.38	Manhole in West side Guidewalls Footprint - <i>Not To Exceed \$4,052.17</i>		\$ 4	CMB-0101	Agree	01/23/13
1252-COR39	MOS - 16" Steel Pipe Removal at North east Headwall - <i>Not To Exceed \$2,951.99</i>		\$ 2	CMB-0102	Agree	01/23/13
1252-COR46	UMS - Unmarked Steel Pipes (6", 12" and 14") & Duct Bank - <i>Not To Exceed \$7,461.14</i>		\$ 7	CMB-0103	Agree	01/23/13
1252-COR47	Retrieval Shaft - Unmarked 10" Steel Pipe / Duct Bank Removal - <i>NTE \$2,201.54</i>		\$ 2	CMB-0104	Agree	01/23/13
1252-PCC11	Cap and Removal of 48" Steel Pipe - Not To Exceed \$150,000		\$ 150	CMB-0105	Agree	01/23/13
1252-PCC07	BART Annex Wall - Not To Exceed \$15,380		\$ 15	CMB-0106	Agree	01/30/13
1251-05, 46, 51, 61, 63, 66, 69, 79, 81	CMod #24 PG&E: 1. Trend 05 – Addll wok to work around and shift existing PG&E conduits on Geary Blvd. at 2 locations 2. Trend 46 – Additional cost for enlarging PG&E Vault No. 584 on O'Farrell east of Stockton 3. Trend.51 – Intercept existing PG&E ductbank and terminate into Vault No. 5464 Market/Ellis 4. Trend 61 – Excavate for PG&E service cut-over at 177 Stillman 5. Trend 63 – Excavation and restoration for PG&E gas tie-in and kill holes (Pt.2) 6. Trend 66 – Intercept PG&E conduits at Vault No. 573 at Geary east of Stockton 7. Trend 69 – Removal of abandoned PG&E gas valve (8EA and installation of anodes 8. Trend 79 – Additional work related to the installation of PG&E Vault Nos. 467, 571, 573, 586 and 594 (including joint trench leading to these vaults). 9. Trend 81 – Use of regular concrete as opposed to cover PG&E electrical ductbanks.		\$ 333	CMB-0107	Agree	02/13/13
1252-COR031	Retrieval Shaft Unmarked 12" Steel Pipe - <i>Not To Exceed \$1,250</i>		\$ 1	CMB-0108	Agree	02/27/13
1252COR-044	MOS - 16" Steel pipe removal at headwall - <i>Not To Exceed \$1,800</i>		\$ 2	CMB-0109	Agree	02/27/13
1252-COR050	MOS - 12" Steel pipe removal at Union/Columbus Streets - <i>Not To Exceed \$2,600</i>		\$ 3	CMB-0110	Agree	02/27/13
1252-COR058	10" Steel pipe removal at Union and Columbus Streets - <i>Not To Exceed \$860.86</i>		\$ 1	CMB-0111	Agree	02/27/13
1252-COR066	MOS - 12" Steel pipe removal intersection of Union and Columbus - <i>Not To Exceed \$3,800</i>		\$ 4	CMB-0112	Agree	02/27/13
1252-PCC03	Modified Stockton St. Detour Signage Plan - <i>Not To Exceed \$6,152.60</i>		\$ 6	CMB-0113	Agree	02/27/13
1252-COR048	Removal of 3" x 5" brick sewer at UMS South Headwall - <i>Not To Exceed \$12,474.65</i>		\$ 12	CMB-0114	Agree	03/13/13
1252-COR070	LB Jet Grout Quantity Overrun - Bid Item ES-3- <i>Not To Exceed \$599,900</i>		\$ 600	CMB-0115	Agree	04/03/13
1252-COR079	Compensation Grouting - Old Navy - <i>Not To Exceed \$70,000</i>		\$ 70	CMB-0116	Agree	04/26/13