Construction Update

December 2015

Transbay Transit Center

TJPA

Agenda

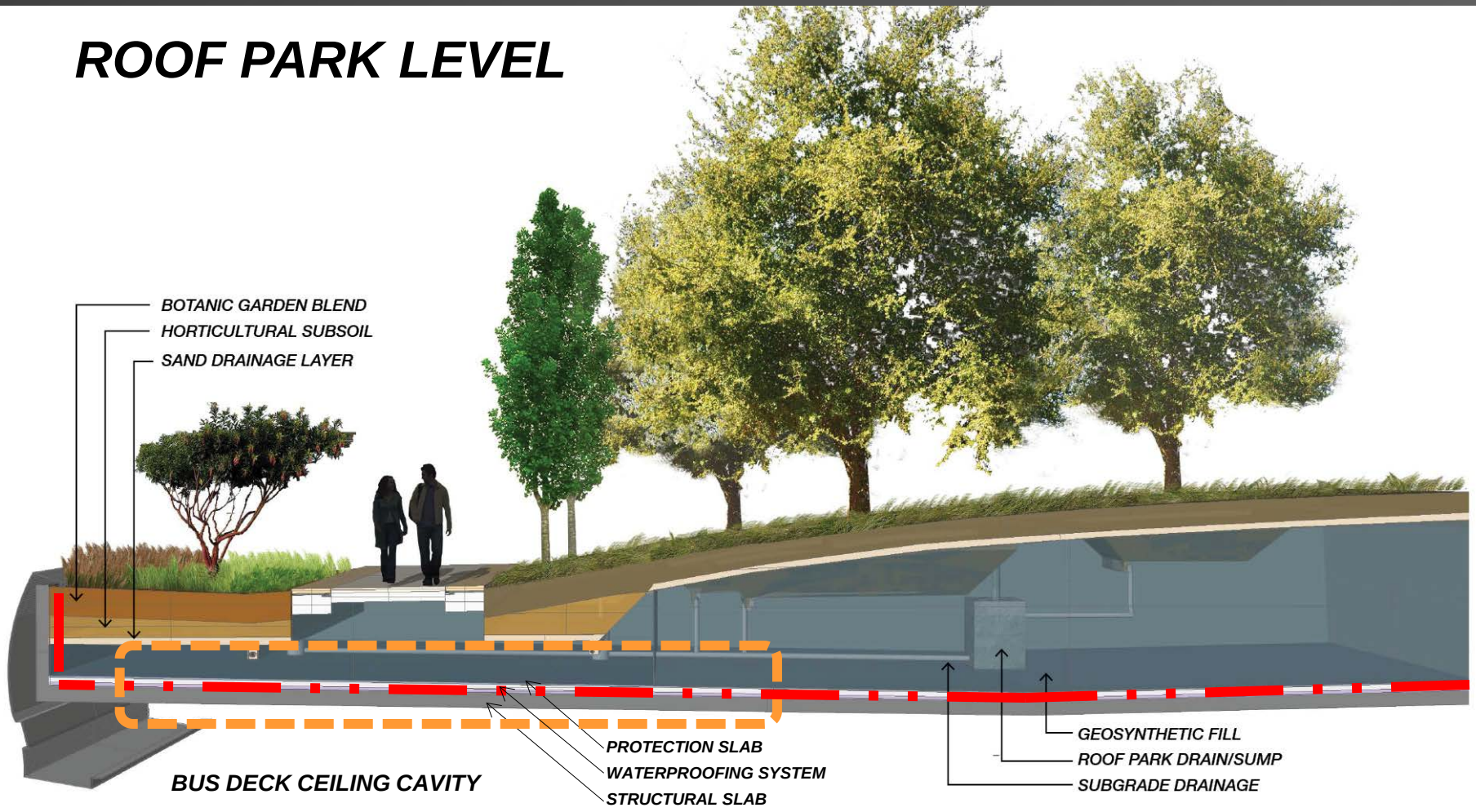
- Waterproofing Systems Overview
- Roof Level Waterproofing Systems
  - Physical Glass Monitoring Jar System
  - Electronic Leak Monitoring Mesh System
  - Fountain Waterproofing System
- Quality Measures
- Installation timeline
- Quality Implementation
- Regular Construction Update

Transbay Transit Center

Waterproofing Systems

Roof Park Level

Waterproofing System



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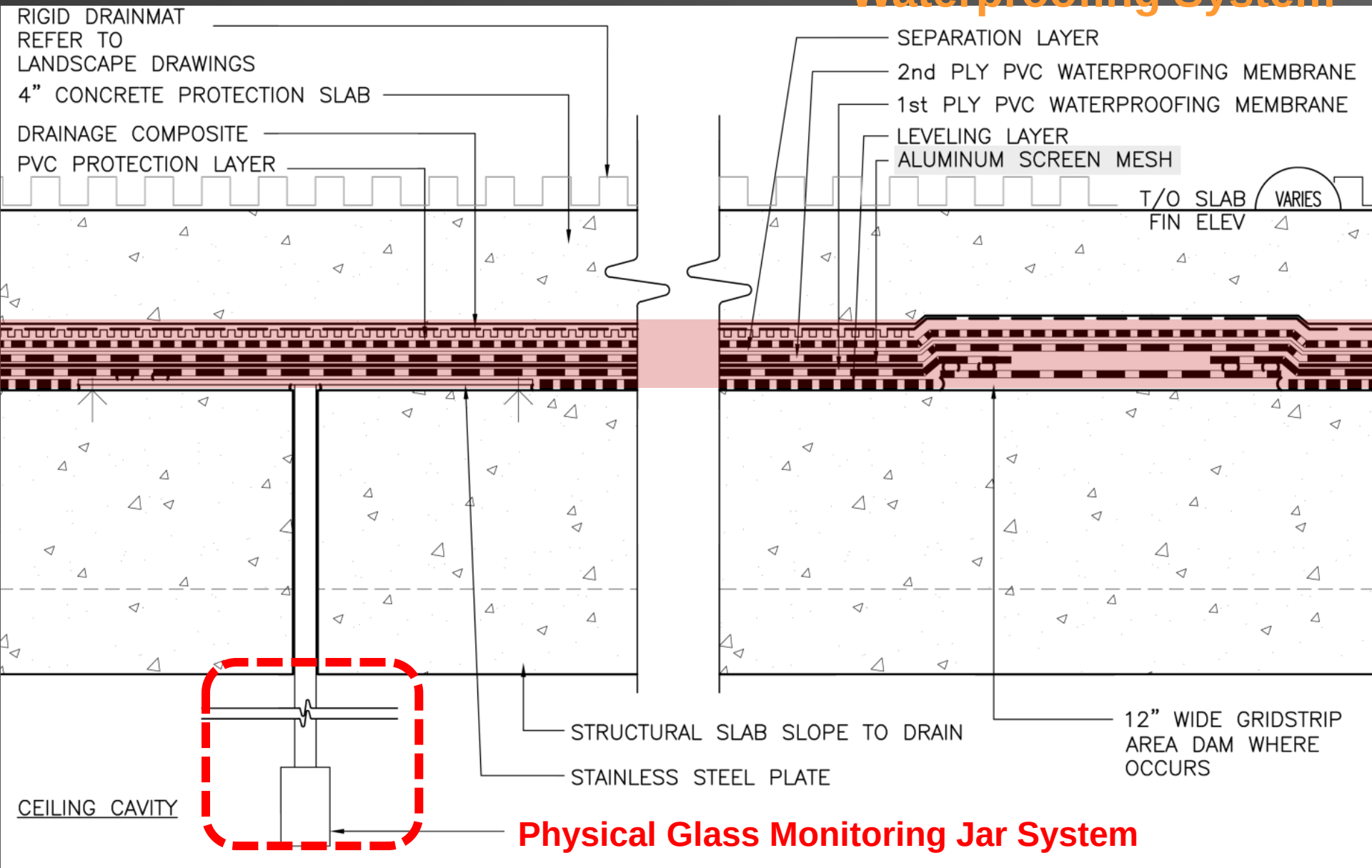
Roof Park Level

Waterproofing System



Physical Glass Monitoring Jar System

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Roof Park Level

Physical Glass Monitoring Jar System

Monitoring Jar

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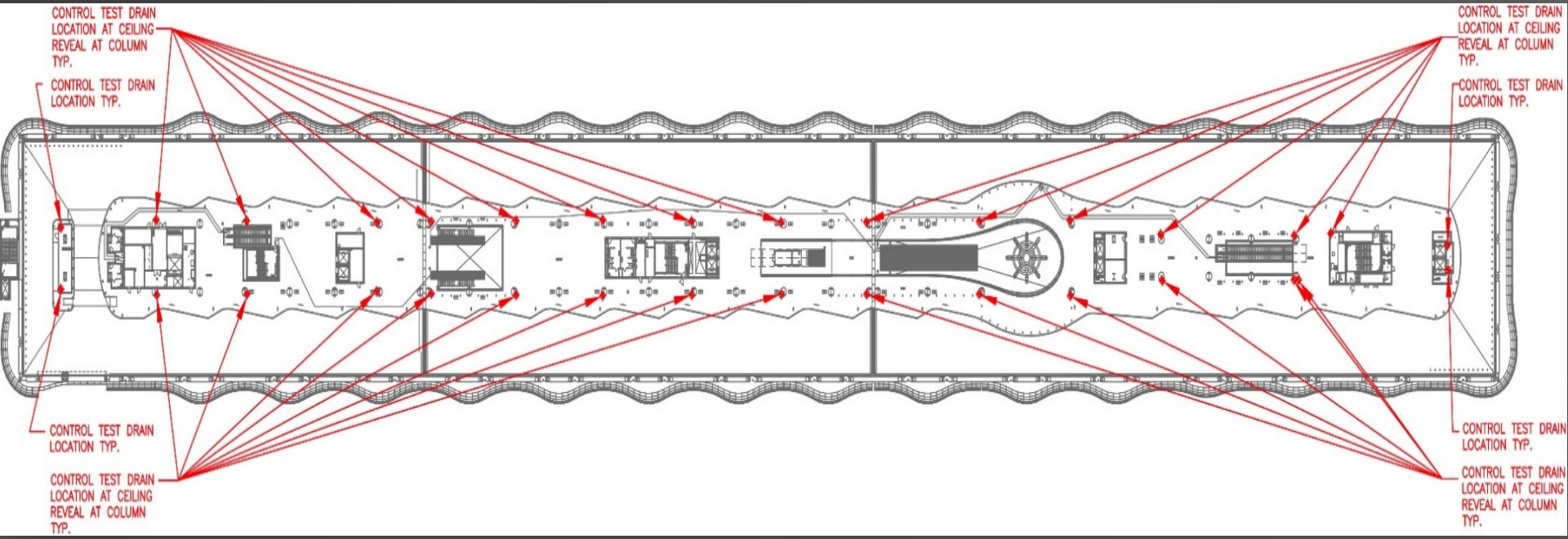
Roof Park Level

Physical Glass Monitoring Jar System



Benefits of the Glass Monitoring Jars

- 32 discrete compartments within the waterproofing system
- 32 proposed locations for the glass monitoring jars within the Bus Deck ceiling area near ceiling column pockets
- Approximately 2 jars every 85 feet
- Allows ongoing inspection of the system on an established periodic basis

Roof Park Level

Waterproofing System

Leak Monitoring Systems

During Construction / Installation:

- Mesh located between 1st and 2nd ply of PVC membrane to facilitate the electronic monitoring during construction.
- Flood testing required following installation of the first ply to ensure that it is watertight. Electronic testing required following installation of the second (top) ply.

During Building Operation:

- The glass monitoring jar system is included to allow for ongoing monitoring for leaks.
- The glass monitoring jar system also provides a conduit for leak repair if necessary utilizing urethane injection.

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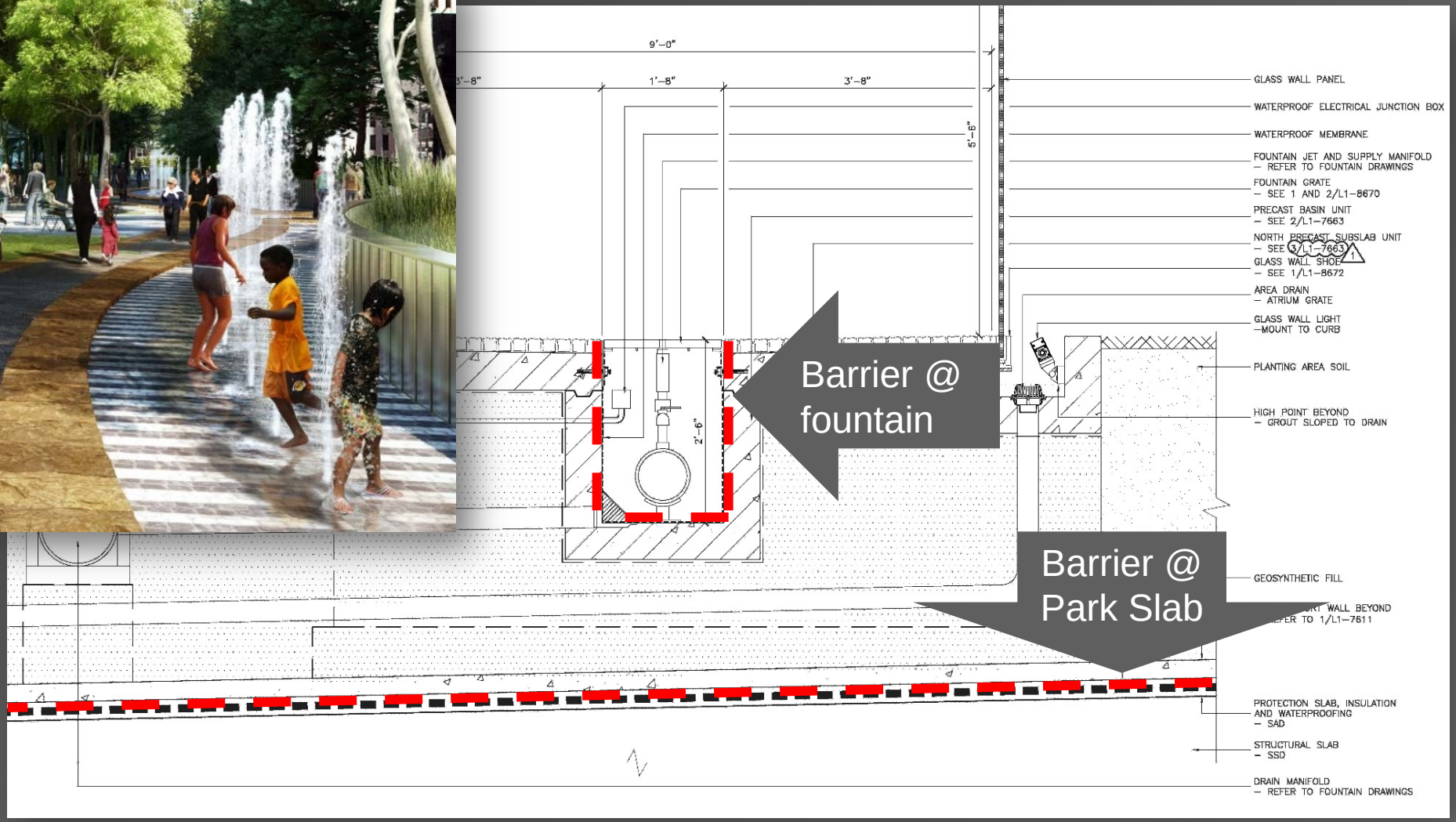
Roof Park Level

Fountain Waterproofing System



Quality Measures

Quality Control of Waterproofing

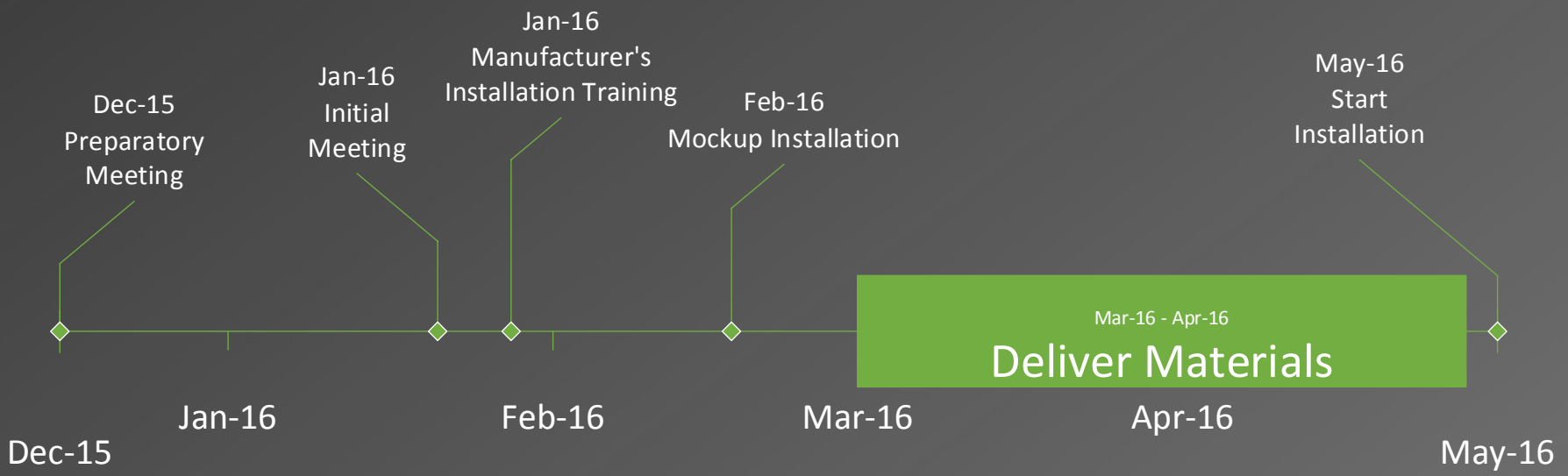
- Prequalified Installation Subcontractor.
  - Proven experience on Transit Center.
  - Certified by manufacturer.
- Submittals Reviewed & Approved.
- Manufacturer-Administered Installation Training.
- Quality Mockup.
- Manufacturer Technical Field Support.
  - Ongoing inspection and testing.
- 20-Year Warranty at the Roof Park.
- Construction Monitoring throughout Installation.
  - Substrate preparation.
  - Adhesion / seam welds.
  - Transitions and terminations.
- Field Reports and Conditions Log.
  - Track open items and resolution.

WEBCOR BUILDERS OBAYASHI JOINT VENTURE

BEST Contracting Services INCORPORATED Specialty Construction Services

Sarnafil®

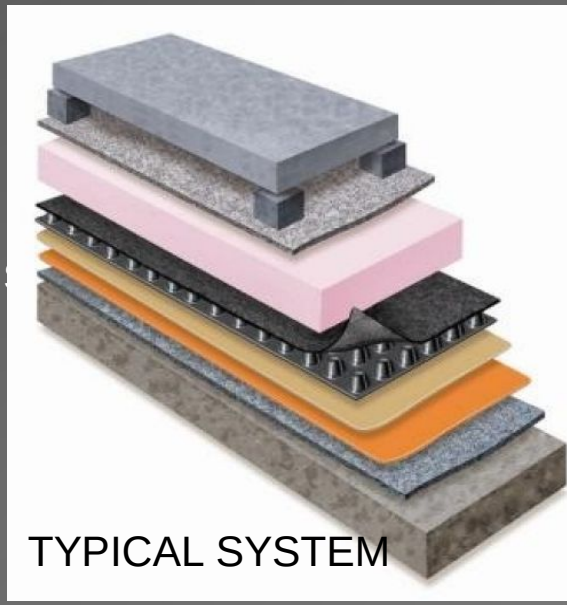
Installation



- Preparatory Meetings (Review all contract requirements) – December 2015
- Initial Meetings (Review open items) – January 2016
- Manufacturer-Administered Installation Training – January 2016
- Mockup of Waterproofing – February 2016
- Deliver all Materials – March & April 2016
- Start Installation – May 2016

Quality Implementation

1. Inspect substrate before waterproofing installation.
2. Set the monitor jars & inspect.
3. Install 12” grid strips to form containment sections.
4. Install puncture-resistant geotextile fabric leveling layer.
5. Weld ends to ensure uniform adhesion.
6. Install control test drain 24” from roof drains.
7. Install first ply of 80mil PVC membrane & test.
8. Install protection felt and aluminum grounding for electronic testing.
9. Inspect all edge conditions at all penetrations.
10. Perform electronic testing & inspection 80mil PVC membrane.
11. Install protection layer, drainage composite, insulation boards, filter fabric, and membrane flashing with termination bar.
12. Install 4” concrete protection slab.



TYPICAL SYSTEM

Quality Measures

Quality Assurance of Waterproofing

- Turner has engaged Simpson, Gumpertz & Heger (SGH) to provide independent construction oversight and quality assurance of key waterproofing systems.
- Review waterproofing and roofing submittals and shop drawings.
- Attend pre-construction meetings with the design and construction teams.
- Attend coordination meetings with the construction teams and provide input regarding installation methods and testing plans.
- Attend mockups of each installation with the construction teams and provide input and a field report summarizing SGH observations.
- Perform QA oversight surveillances of installed work and identify any nonconforming installations and deficiencies.
- Assist with problem-solving and with resolving nonconforming installations and deficiencies.

Turner
Building the Future

SIMPSON GUMPERTZ & HEGER
Engineering of Structures and Building Enclosures

Transbay Transit Center

Current Project Overview

Western Zone – Gridlines 1 to 10

Central Zone – Gridlines 10 to 20

Eastern Zone – Gridlines 20 to 35

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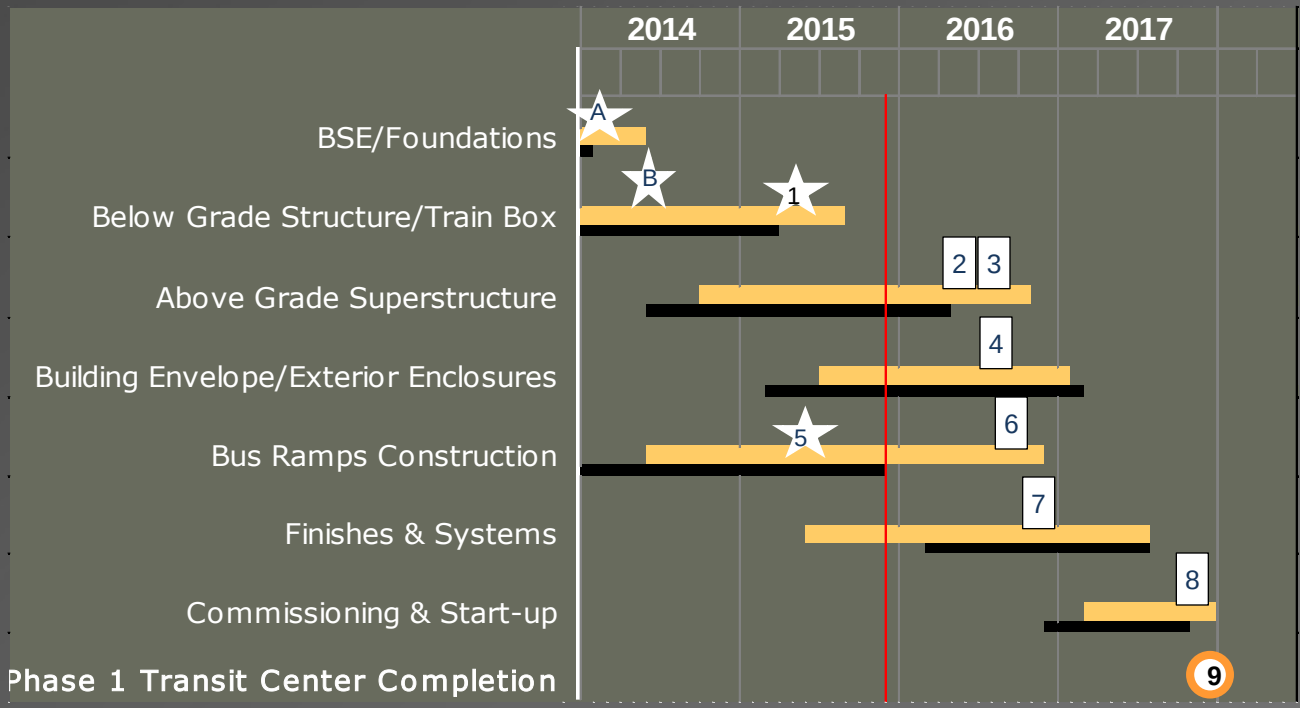
Project Status – Schedule

#	Milestone	Current
1	Complete TG 6.0 Below Grade Concrete	Actual Aug. 2015
2	Complete Structural Steel Erection and Welding	Q2 2016
3	Complete Above Grade Concrete	Q3 2016
4	Building Watertight	Q3 2016
5	Complete Bus Ramp Below Grade Concrete	Actual Jul. 2015
6	Complete Bus Ramp Viaduct and Cable Stay Bridge	Q3 2016
7	Permanent Power to Building	Q4 2016
8	Building Ready for Bus Driver Training	Q4 2017
9	Substantial Completion	Q4 2017



*** The current critical path of the project is as follows; structural steel fabrication, erection and roof (park) level structural concrete slabs and walls.**

Current Schedule

Baseline Schedule

★ = Completed Work; A) TG03 excavation through "rat" slab installation (re-bracing complete 9/18/15).
B) mat foundation slabs complete 10/11/14.
1) TG 6.0 Below Grade Concrete complete 8/10/15.
5) Bus Ramp below grade concrete July 2015.

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Project Status – Active Milestones

#	Milestone	Planned	Actual / Current
2	Complete Structural Steel Erection and Welding	**Q1 2016**	**Q2 2016**
	Milestone Activity Start	July 2014	Oct. 29, 2014 (A)
	Milestone Activity Finish	Dec. 2015	April 2016
	Percent Complete as of November 30, 2015	94%	79%
3	Complete Above Grade Concrete Decks	**Q2 2016**	**Q3 2016**
	Milestone Activity Start	December 2014	February 2015 (A)
	Milestone Activity Finish	June 2016	August 2016
	Percent Complete as of November 30, 2015	63%	49%

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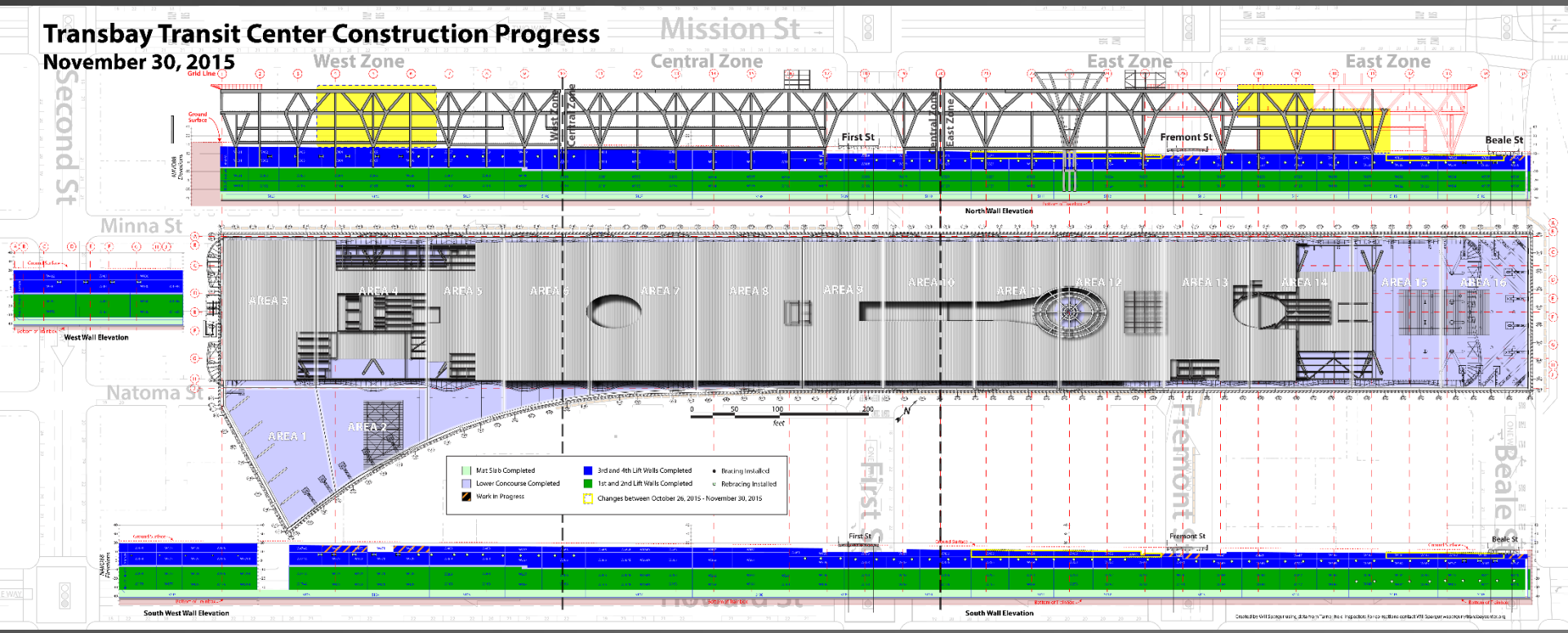
Project Status Diagram



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Project Status – Contingency Tracking *($millions)*

	Construction Contingency	CM/GC Contingency	Program Reserve	Total Contingency & Reserve
Baseline Budget Amounts (Nov 2015)	**$59.5**	**$30.7**	**$5.0**	**$95.1**
Structural Packages Change Orders	($0.1)			($0.1)
Bus Ramp Change Orders	($0.1)			($0.1)
Glass Curtain Wall Change Orders	($0.0)			($0.0)
Misc. Metals Change Orders	($0.8)			($0.8)
Total Draws/Adds Nov 2015	**($1.0)**	**$0.0**	**$0.0**	**($1.0)**
Remaining Balances	**$58.5**	**$30.7**	**$5.0**	**$94.1**

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Project Status – Safety Statistics

Project Safety	2010 / 2011 / 2012	2013	2014	2015 (through Nov. 30)
Total Craft Hours by Year	627,744	315,000	375,615	519,867
Number of Recordable Incidents	9	3	13	9
Number of Lost Time Incidents	1	0	4	1
WO Project Annual RIR / National Annual BLS* RIR Average / California RIR Average	2.87 / 3.6 / 3.8	1.90 / 3.8 / 4.0	6.92 / 3.3 / 3.0	tbd / tbd / tbd
WO Project Annual LTIR / National Annual BLS LTIR Average / California LTIR Average	0.32 / 1.9 / 1.8	0.00 / 1.8 / 1.7	1.60 / 1.9 / 1.8	tbd / tbd / tbd

NOTES:

RIR = recordable incident rate, LTIR = lost time incident rate.

These rates are calculated as follows: RIR and LTIR = (# of recordable or lost time incidents for the year X 200,000) / actual hours worked.

* BLS is the Bureau of Labor Statistics, U.S. Department of Labor and State of California, it takes these agencies more than 18 months to produce the statistics after year's end.

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Period Summary for November 2015

Project Wide

- There were no recordable or lost time injuries or incidents this period.
- Project wide there have been over 1,830,000 craft hours completed (excludes demolition) through November 30, 2015. This is an increase of over 29,000 craft hours this period.

Western Zone (GL 1-10)

- Structural steel erection is complete from GL1 to GL4.
- Structural steel erection is in progress from GL4 to GL7. Final west end crane pick scheduled for 12/3/15 followed by crane de-mob on 12/6/15.
- Steel erection, welding and decking is complete from both GL1 to GL2 and GL7.5 to GL10.
- Concrete placement for interior partition walls continues.
- Work continues at Stair 201, the west end exit stair.

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Period Summary for November 2015

Central Zone (GL 10-20)

- Mechanical, Electrical and Plumbing (MEP) trades continue with rough-in work at all levels between GL8 and GL23.
- Fireproofing started at Lower Mezzanine.
- Stair installation continues with a total of 5 stairs complete and 7 in progress.
- Ground Level, Level 2 and Bus Deck structural concrete is complete between GL10 and GL20.
- Roof level structural concrete slab and perimeter walls are complete GL10 to GL20. First roof scallop wall completed GL12, south side.

Eastern Zone (GL 20-35)

- One 4th lift concrete wall section remains between Fremont Street and Beale Street.
- Fabrication of Structural Steel continues in only one shop (XKT in CA).
- Structural steel erection is now complete from GL25 to GL29.
- Trestle removal and structural steel erection continues from GL30 to GL31. The final steel section is at GL33.2.

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Superstructure Concrete Progress Through November 30, 2015

Steel Erection Zones	4th Lift Walls	4th Lift Walls Poured	4th Lift Walls Percent	Ground Level Decks	Ground Level Poured	Ground Level Percent
Western	**27**	23	85%	**17**	2	11%
Central	**20**	20	100%	**10**	10	100%
Eastern	**35**	28	80%	**15**	1	7%
Total	**82**	**71**	**87%**	**42**	**13**	**31%**

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Superstructure Concrete Progress Through November 30, 2015

Steel Erection Zones	Bus and Level 2 Decks	Bus and Level 2 Poured	Bus and Level 2 Percent	Roof Level Decks	Roof Level Poured	Roof Level Percent
Western	**18**	2	11%	**9**	0	0%
Central	**17**	15	88%	**10**	10	100%
Eastern	**21**	0	0%	**14**	0	0%
Total	**56**	**17**	**30%**	**33**	**10**	**30%**

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Western Zone Activity

Above: Civil work at west end of project, preparation for Stair 201.

Above and Below Right: West end steel erection progress.

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Central Zone Activity

Above: CMU work at Train Level.

Above Right: Ongoing “eyebrow” formwork installation.

Below Right: Stair installation between Train Level and Lower Concourse.

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Central Zone Activity

Above: Exterior view of first scallop wall completed.

Above Right: Scallop wall formwork and reinforcing steel.

Below Right: Shotcrete being applied to first scallop wall.

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Eastern Zone Activity

Above: Covering light column bolts after final testing.

Above and Below Right: Ongoing east end steel erection.

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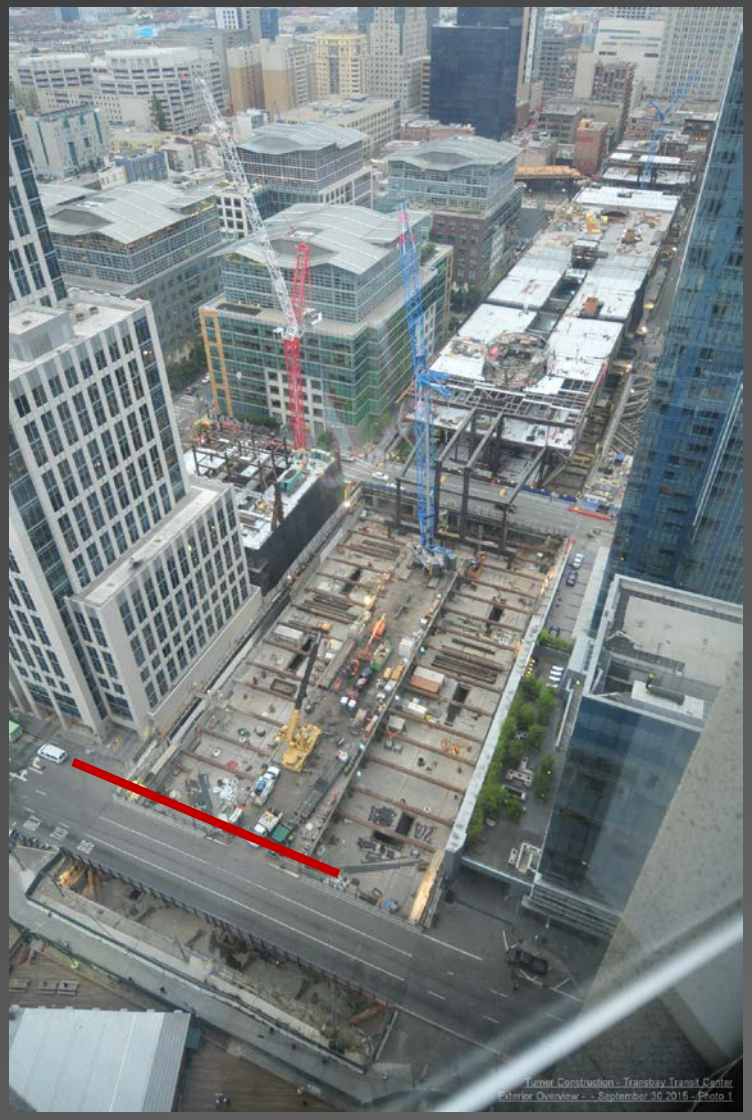
Eastern Zone Activity



September 30, 2015

November 30, 2015

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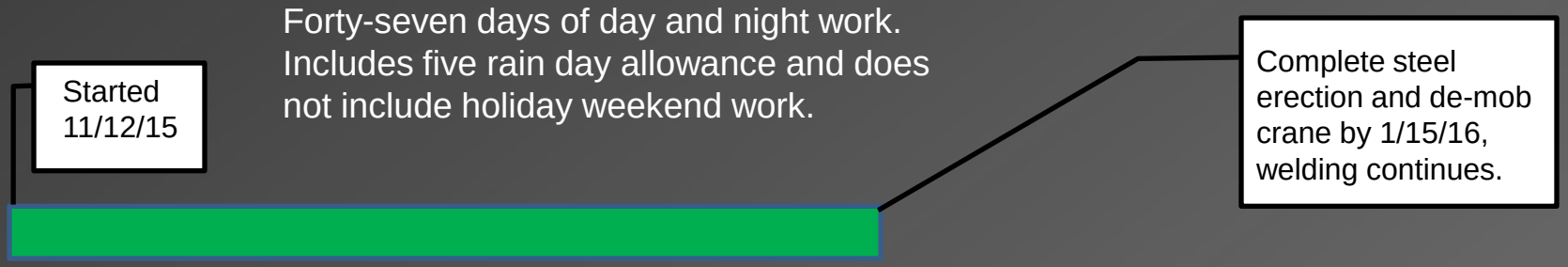
Steel Erection and Beale Street



Phase 1: Nov. 12 to Nov. 19; all Beale Street lanes open at all times.

Phase 2: Nov. 20 to Dec. 8; Beale Street, one lane closed, two lanes open at all times.

Phase 3: Dec. 5 ~~9~~ to Dec. 12 ~~17~~; Beale Street, two lanes closed, one lane open at all times.

Phase 4: Dec. 13 ~~18~~ to Jan. 16; **ALL** Beale Street lanes to be **CLOSED** with the exception of a single lane to be re-opened between 3:30 pm and 7:30 pm only.

CURRENT STATUS: As of December 7th, erection effort is five days ahead of plan, Phase 4 will begin December 13.

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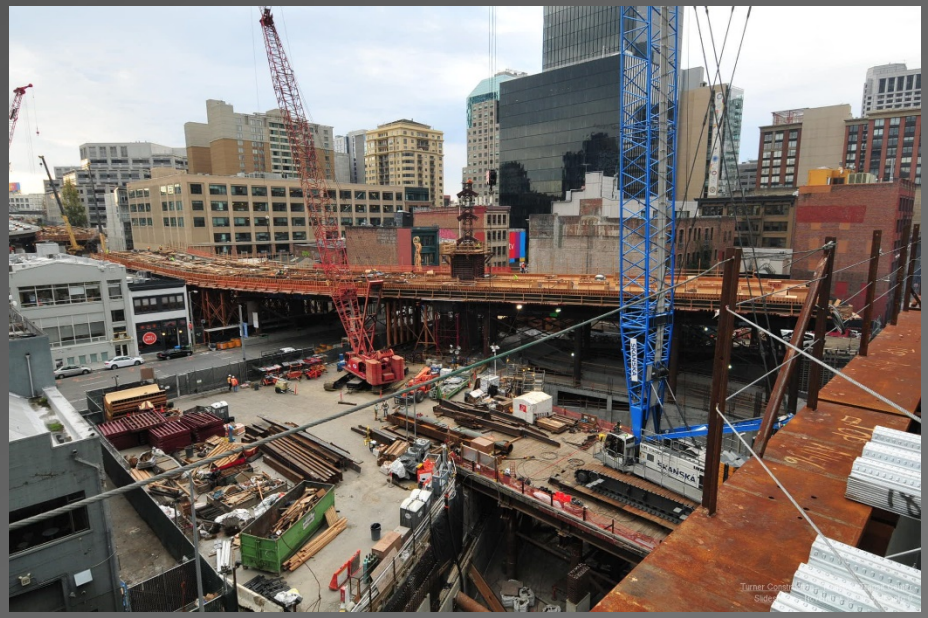
Bus Ramp and Cable Stay Bridge as of November 30, 2015

Current Status

- At the Bay Bridge off-ramp near Harrison Street and Folsom street, construction on abutments and retaining walls continues.
- Howard Street Cable Stay Bridge reinforcing steel continues in preparation for concrete placement.
- Three of seven cable saddles for the bridge have been installed.
- All cable guides have been set in place.
- Tehama Street viaduct overcrossing soffit poured on Nov. 5th.
- Folsom Street viaduct overcrossing reinforcing steel continues in preparation for the soffit pour.



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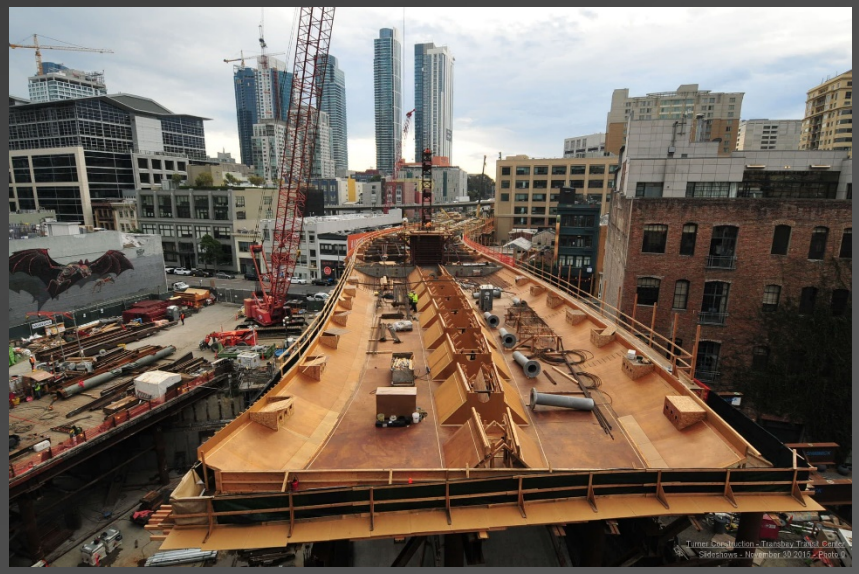
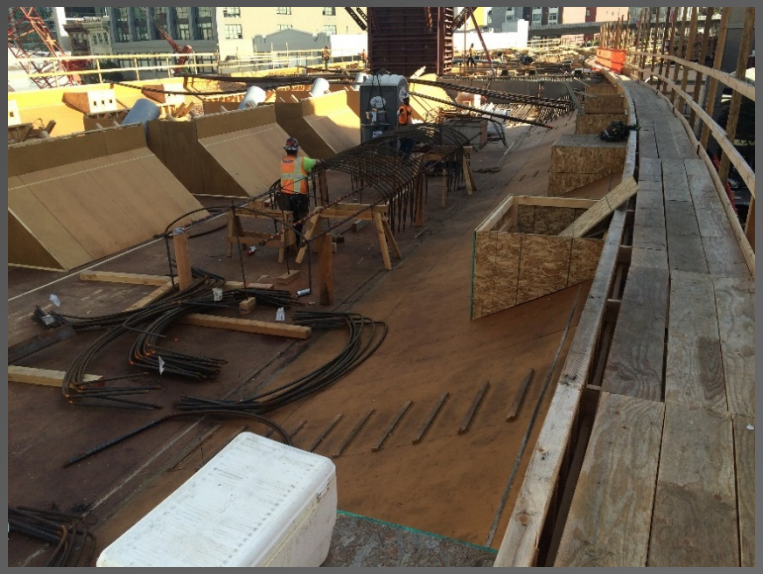
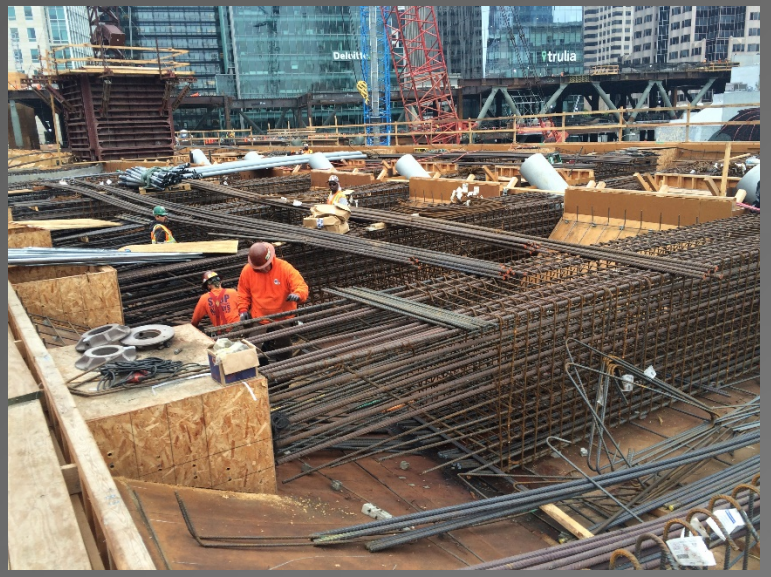
Bus Ramp and Cable Stay Bridge





Above: Bridge formwork, looking south from the transit center at cable stay pylon 9.

Above and Below Right: Bridge formwork and reinforcing steel ongoing.



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Construction
The Next 30 – 90 Days

- **Next 30 Days (Dec.)**
  - Complete structural steel erection in the western zone and de-mobilize crane by 12/6/15.
  - Continue MEPF rough-in of metal decks and slabs in central and western zones. Start MEPF rough-in for the eastern zone.
  - Continue the concrete deck placement in the eastern zone and western zone.
  - Start roof top (park level) concrete perimeter wall placement in western and eastern zones.
  - Continue “scallop” wall concrete placement in central zone.
  - Continue Bus Ramp viaduct and Cable Stay Bridge soffit and stem installations.
- **Next 60 - 90 Days (Jan. – Feb.)**
  - Complete 4th lift wall concrete placement in the eastern zone.
  - Complete structural steel erection in the eastern zone.
  - Continue welding of structure in the western and eastern zones.
  - Continue decks and slabs in western and eastern zones.
  - Continue Bus Ramp viaduct and Cable Stay Bridge soffit and stem formwork, rebar and concrete.
  - Start rebar and concrete placement at Harrison, Clementina and Howard Street viaduct.
  - Continue roof top (park level) concrete perimeter and scallop wall placement.

Transbay Transit Center

Bay Area Regional Labor Breakdown

	Through November 2015	
Location	**Total Hours Completed**	**Percent of Total**
East Bay (Alameda, Contra Costa, Solano)	**747,154**	**41%**
North Bay (Marin, Napa, Sonoma)	**64,509**	**4%**
South Bay (San Mateo, Santa Clara)	**172,043**	**9%**
San Francisco	**299,101**	**16%**
Other*	**555,419**	**30%**
Totals	**1,838,226****	**100%**

*Other includes workers from throughout California including the Central Valley as well as workers from out of state who are onsite for specific tasks.

**Total hours are for the Transit Center construction work and do not include the initial Demolition work represented by a total of approximately 55,000 craft hours.

Transbay Transit Center

Bay Area Regional Apprentice Hours Breakdown

	Through November 2015	
Location	**Total Hours Completed**	**Percent of Total**
East Bay (Alameda, Contra Costa, Solano)	**120,400**	**36%**
North Bay (Marin, Napa, Sonoma)	**15,066**	**5%**
South Bay (San Mateo, Santa Clara)	**40,437**	**12%**
San Francisco	**88,980**	**27%**
Other*	**65,530**	**20%**
Totals	**330,413***	**100%**

*Other includes workers from throughout California including the Central Valley as well as workers from out of state who are onsite for specific tasks.

Transbay Transit Center

Labor Breakdown by Trade through November 2015

Classification	TTC Building and RUP's*
Inspectors – Soils / Material Test	43
Carpenters and Related Trades	344
Cement Mason	91
Electrical – Utility Lineman	28
Electrician	83
Field Surveyor	38
Iron Worker	862
Laborer and Related Trades	871
Operating Engineer	492
Pile Drivers	230
Plumber	38
Roofer and Waterproofer	40
Sheet Metal	8
Teamsters	181
Tile Setters / Finishers	7
Water Well Driller	9
Totals	**3,365**

* Relocation of Utilities Project

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Questions?