



# Transit Center Waterproofing Systems

December 2015

## Transbay Transit Center

**TJPA**





- Waterproofing Systems Overview
- Roof Level Waterproofing Systems
  - Physical Glass Monitoring Jar System
  - Electronic Leak Monitoring Mesh System
  - Fountain Waterproofing System
- Quality Measures – Quality Control
- Installation Timeline
- Quality Implementation
- Quality Measures – Quality Assurance



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# Waterproofing Systems

Roof Park Level  
(WPM-3)

Bus Deck  
(WPM-2)

Train Box  
(WPM-1A)

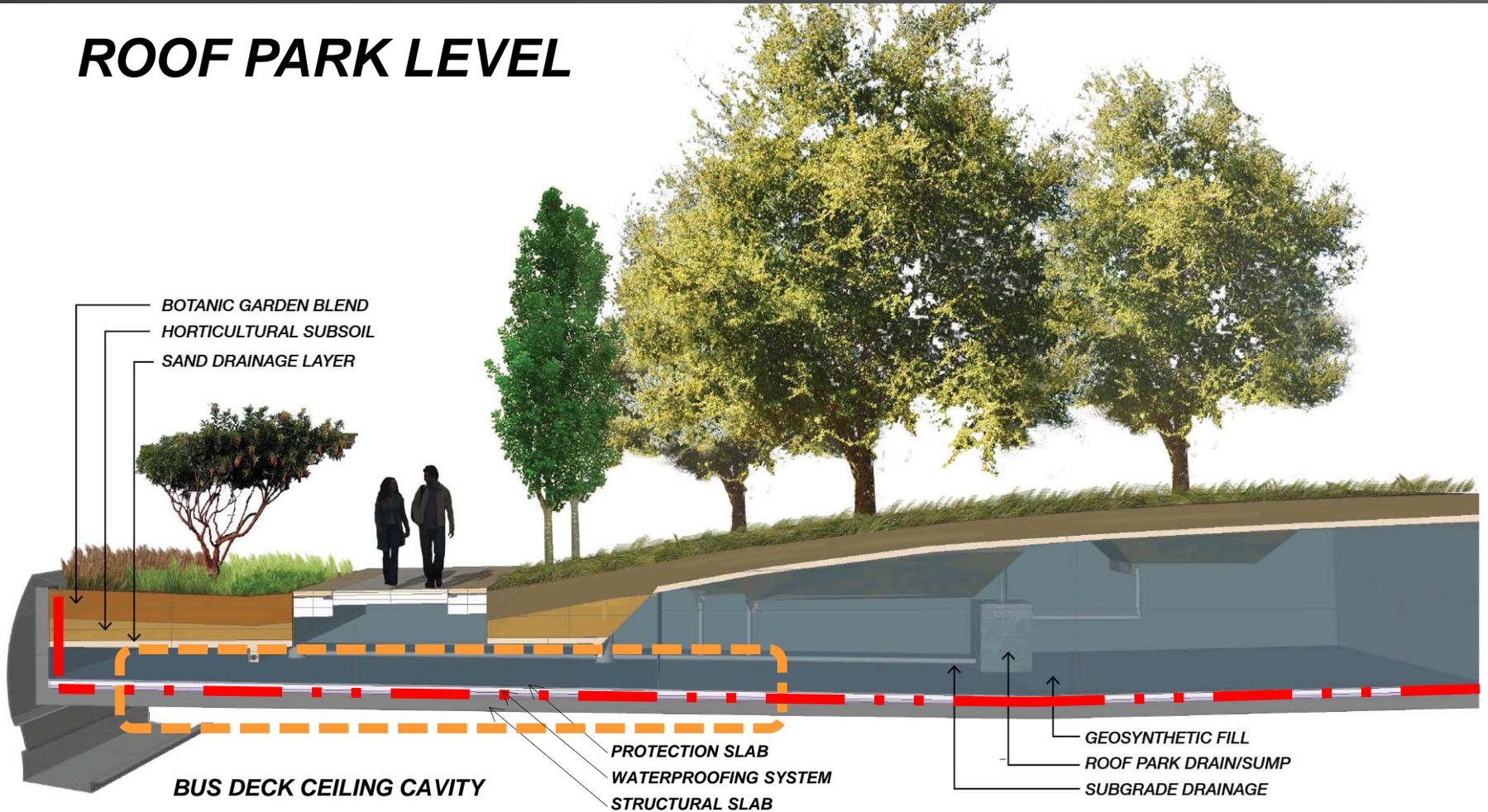
Train Box  
(WPM-1)





# Roof Park Level Waterproofing System

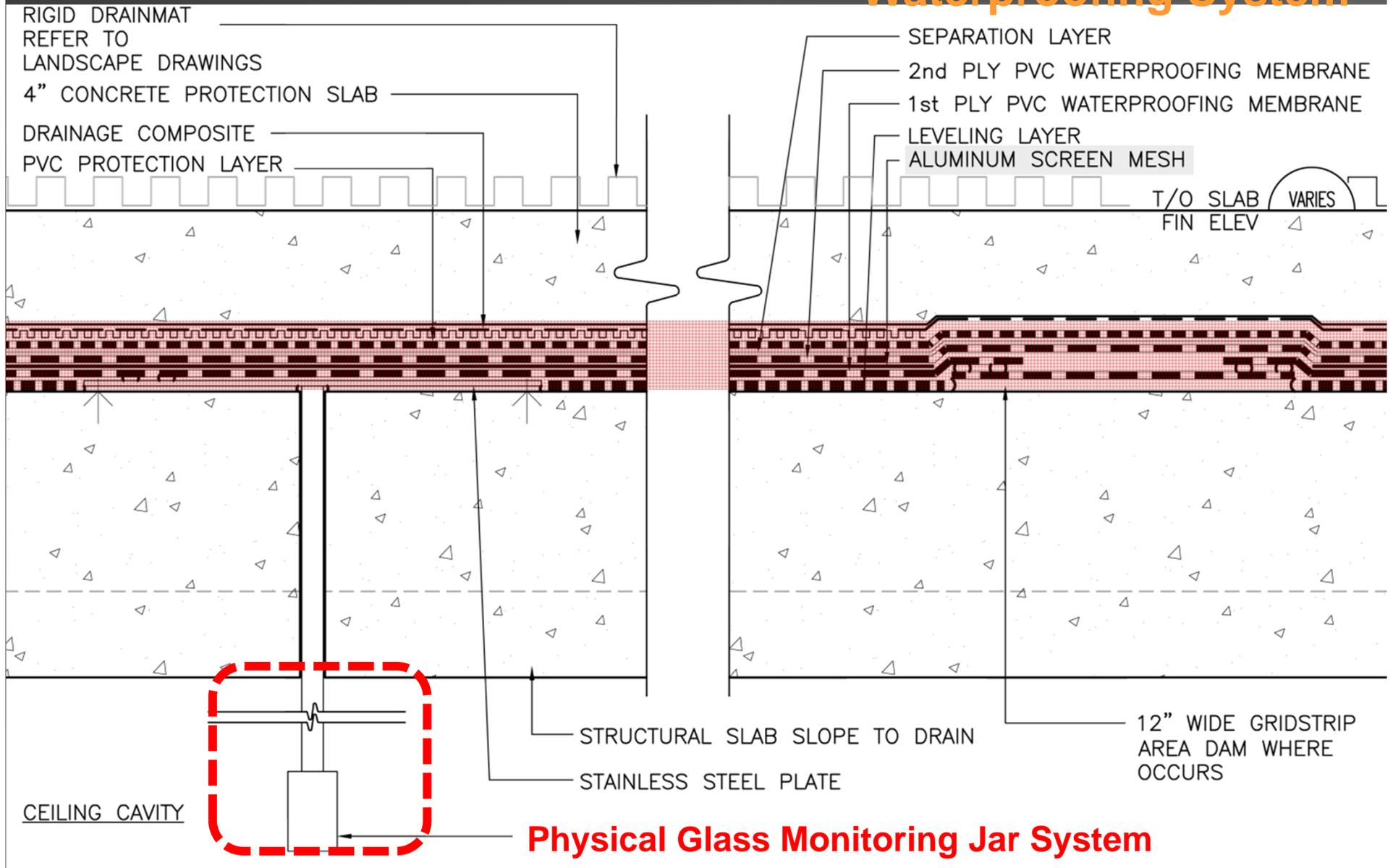
## ROOF PARK LEVEL





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# Roof Park Level Waterproofing System





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# Roof Park Level

## Physical Glass Monitoring Jar System

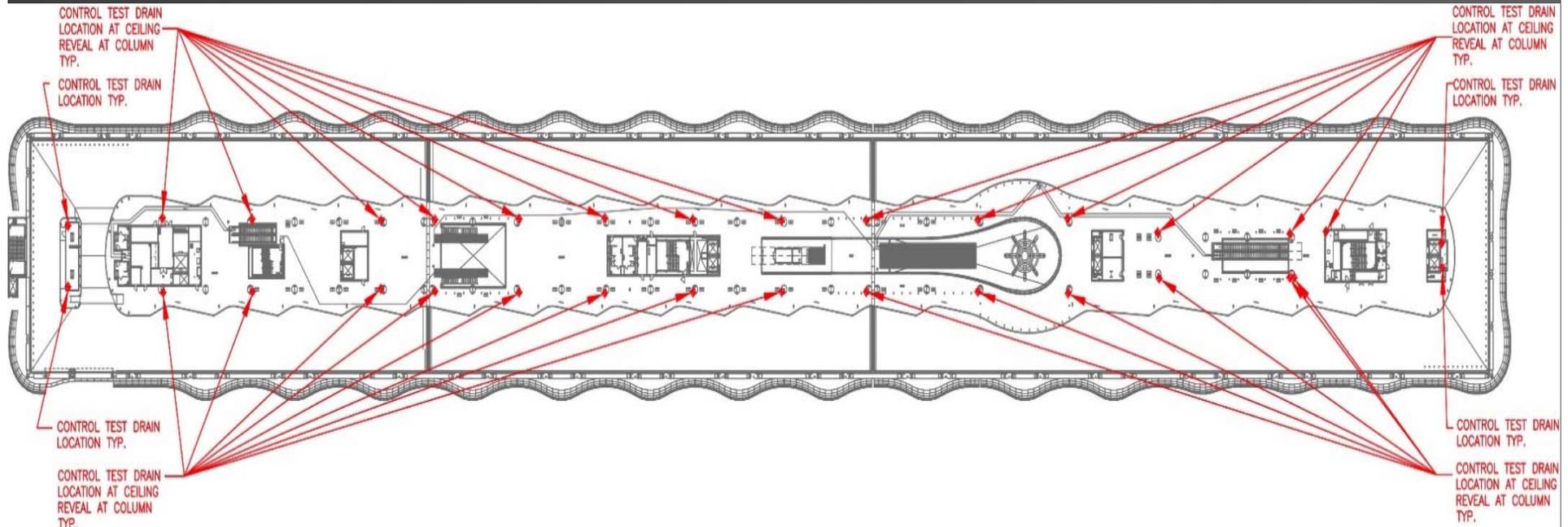


Monitoring Jar





## 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

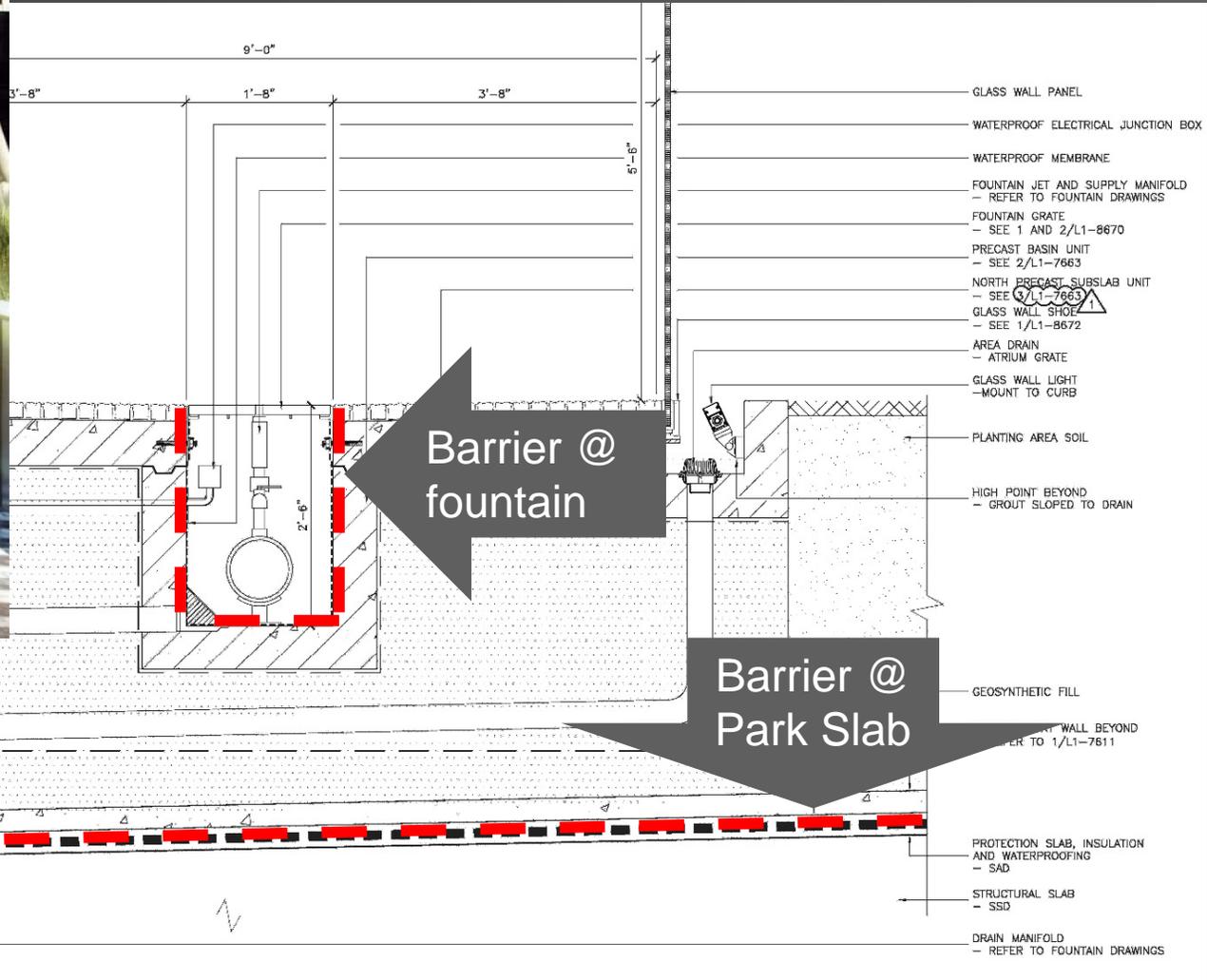
### During Construction / Installation:

- Mesh located between 1<sup>st</sup> and 2<sup>nd</sup> 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.

# Roof Park Level Fountain Waterproofing System





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# Quality Measures

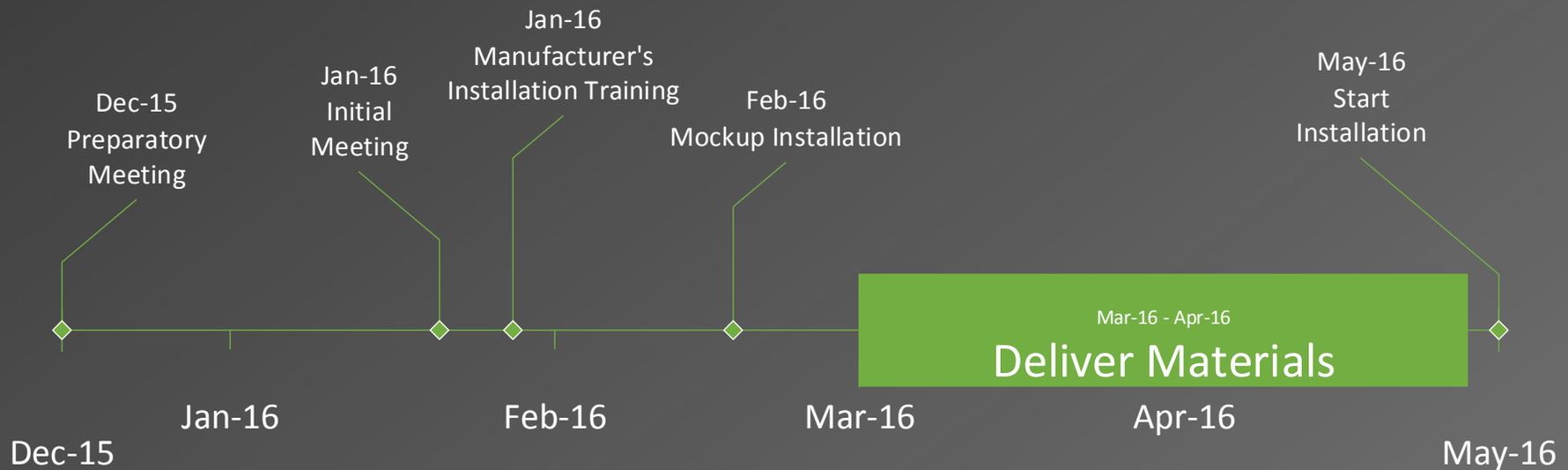
## Quality Control of Waterproofing

- 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.





# Installation Timeline

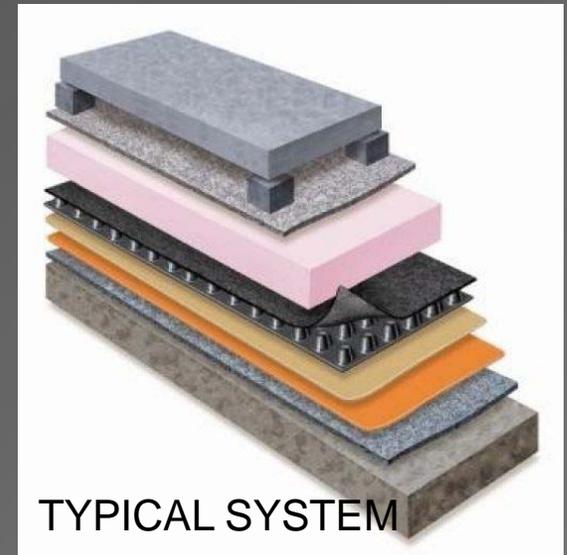


- Preparatory Meetings (Review all contract requirements) – December 2015
- Initial Meetings (Review open items) – January 2016
- Manufacturer-Administered Installation Training – January 2016
- Mockup of Waterproofing – February 2016
- Deliver all Materials – March & April 2016
- Start Installation – 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. Install second ply of 80 mil PVC membrane and perform electronic test.
11. Install protection layer, drainage composite, insulation boards, filter fabric, and membrane flashing with termination bar.
12. Install 4" concrete protection slab.

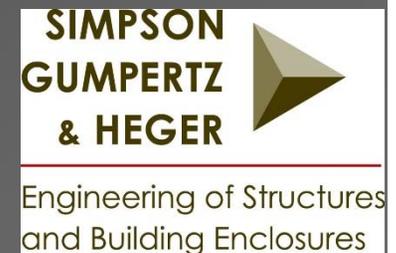




# Quality Measures

## 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.





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# Questions?



Transbay Transit Center Quality Team