



# Construction Update

September 11, 2014

## Transbay Transit Center

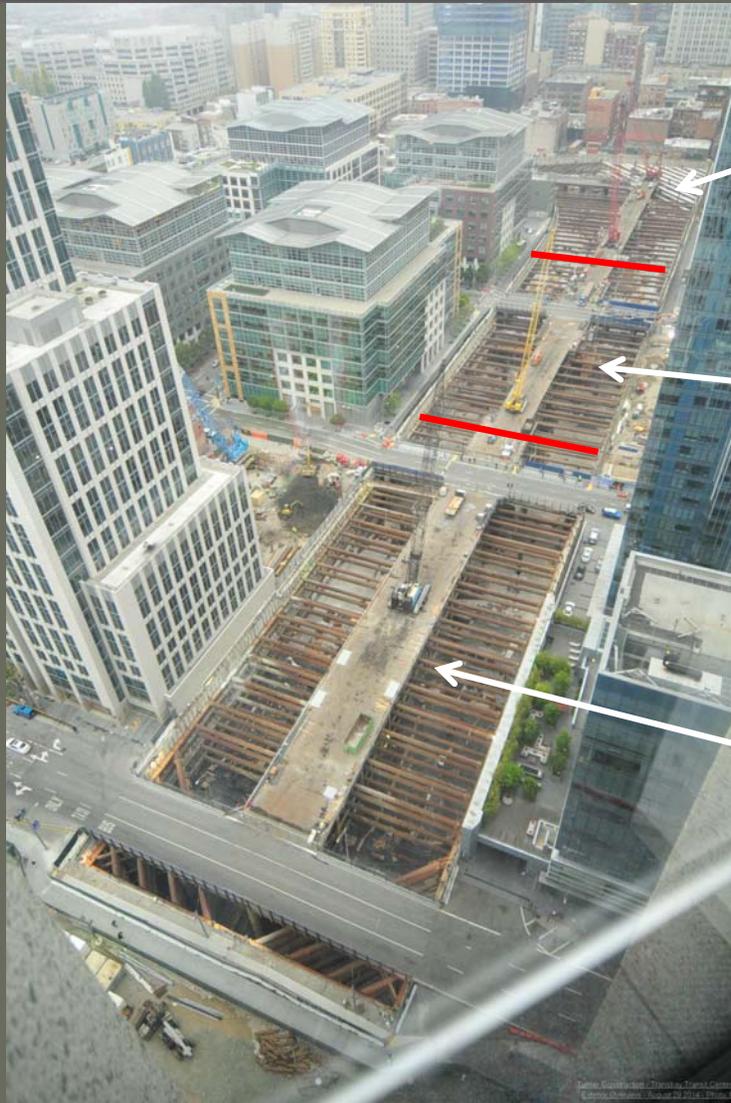
**TJPA**





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# Current Project Overview



Western Zone – Gridlines 1 to 10

Central Zone – Gridlines 10 to 20

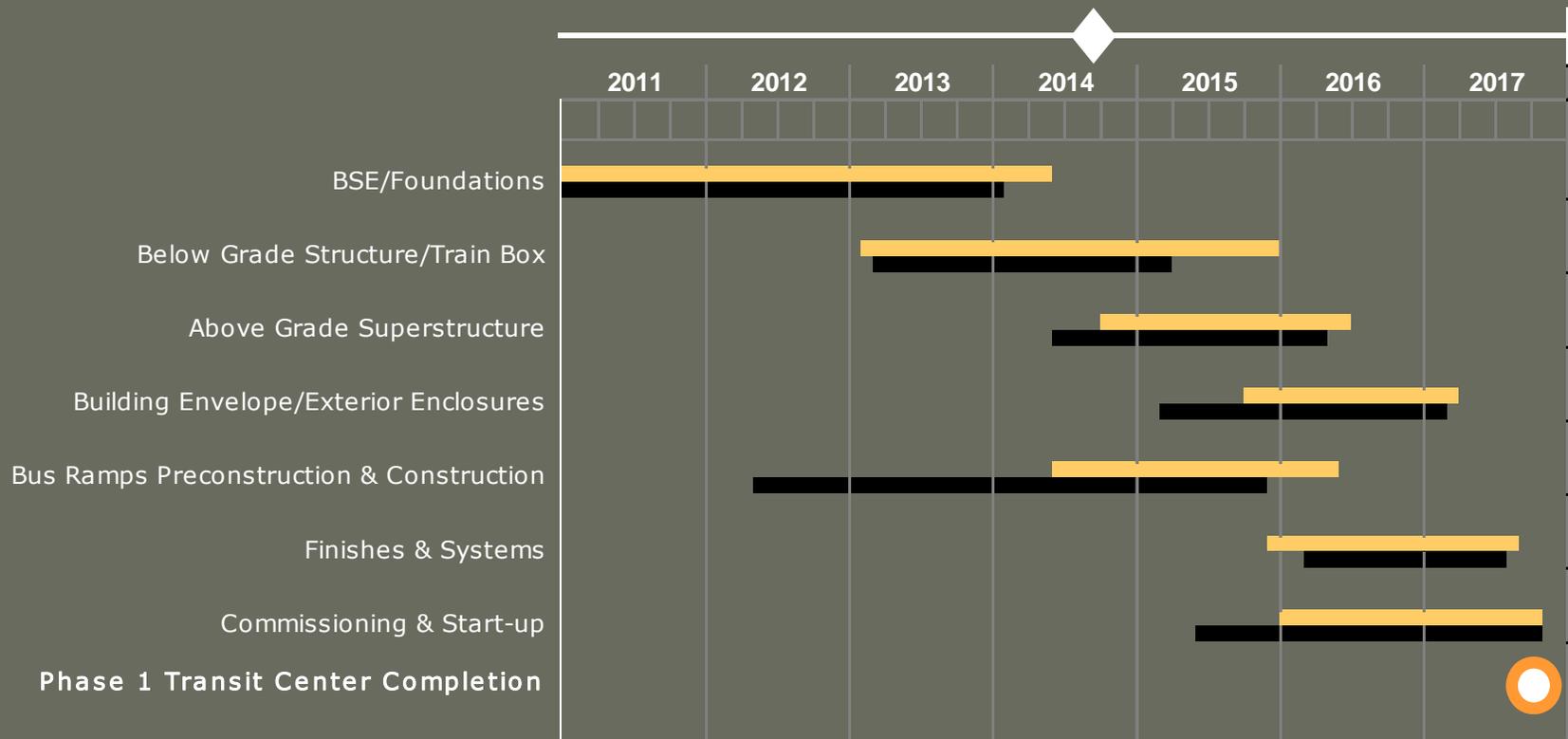
Eastern Zone – Gridlines 20 to 35

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Construction - August 2014, Phase 1

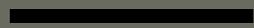


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# Project Status – Construction Schedule (Critical Items\*)



\* The current critical path of the project is as follows; structural steel fabrication (GL's 10 -16), central zone lift 3 walls, structural steel fabrication (GL's 16 – 20) and eastern zone train box mat slab, walls lifts 1 & 2 and re-bracing.

Current Schedule   
Baseline Schedule 



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## Project Status – Contingency Tracking (\$millions)

| Trend   | Design Contingency | Construction Contingency | CM/GC Contingency | Program Reserve | Escalation     | Total Contingency & Reserve |
|---|--------------------|--------------------------|-------------------|-----------------|----------------|-----------------------------|
| Baseline Budget Amounts (July 2013)           | \$8.2              | \$62.5                   | \$36.4            | \$87.5          | \$30.3         | \$224.9                     |
| Contingency Usage Through June 2014           | (\$1.7)            | (\$1.8)                  | (\$1.1)           | (\$28.6)        | (\$0.0)        | (\$33.2)                    |
| Remaining Baseline Budget Amounts (June 2014) | \$6.5              | \$60.7                   | \$35.3            | \$58.9          | \$30.3         | 191.7                       |
| Utility Relocation Change Orders              |                    | (\$0.5)                  |                   |                 |                | (\$0.5)                     |
| BGS Change Orders                             |                    | (\$1.0)                  |                   |                 |                | (\$1.0)                     |
| BSE Change Orders                             |                    |                          | (\$0.1)           |                 |                | (\$0.1)                     |
| 5 Trade Package Awards (7/10/14)              | (\$0.1)            |                          |                   | (\$15.9)        | (\$2.6)        | (\$18.6)                    |
| <b>Total Draws Jul/Aug 14</b>                 | <b>(\$0.1)</b>     | <b>(\$1.5)</b>           | <b>(\$0.1)</b>    | <b>(\$15.9)</b> | <b>(\$2.6)</b> | <b>(\$20.3)</b>             |
| <b>Remaining Balances</b>                     | <b>\$6.4</b>       | <b>\$59.2</b>            | <b>\$35.2</b>     | <b>\$43.0</b>   | <b>\$27.7</b>  | <b>\$171.5</b>              |



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## Project Status – Safety Statistics

|   | 2011              | 2012              | 2013               | 2014<br>(through Aug. 31 <sup>st</sup> ) |
|---|-------------------|-------------------|--------------------|--|
| Total Craft Hours by Year   | 203,560           | 421,488           | 315,000            | 227,171                                  |
| Number of Recordable Incidents  | 3                 | 6                 | 3                  | 10                                       |
| Number of Lost Time Incidents   | 1                 | 0                 | 0                  | 2  |
| WO Project Annual RIR / National Annual BLS RIR Average / California RIR Average    | 2.95 / 3.10 / 3.8 | 2.85 / 3.20 / 3.6 | 1.90 / tbd* / tbd* | n/a                                      |
| WO Project Annual LTIR / National Annual BLS LTIR Average / California LTIR Average | 0.98 / 0.90 / 1.8 | 0.00 / 1.10 / 1.7 | 0.00 / tbd* / tbd* | n/a                                      |

### 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. As a result, 2013 statistics are not yet available.



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## Period Summary

- There were two recordable safety incidents this period. One worker tripped and fell injuring their wrist. Another suffered a dislocated shoulder while relocating a large project sign. Corrective actions have been implemented.
- Lower Concourse concrete slab placement is 80% in the central zone of the project. Third lift train box walls and re-bracing are now occurring in this area.
- There have been over 1,169,000 craft hours completed, excluding demolition, through August 31, 2014. An increase of over 69,000 hours since our last construction update in July.
- The initial trial assembly of the perimeter Basket Columns, made up of pipe columns and cast nodes, began this period in Oregon.



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## Period Summary

- Wall lifts 1 & 2 and column concrete placement between the Rail Level and the Lower Concourse was completed in the western zone this period allowing for the continued installation of the Lower Concourse decking.
- The first 12 of 36 Lower Concourse decks have been completed.
- In the eastern zone, wall lifts 1 & 2 are in progress followed by re-bracing and column placement.
- Also in eastern zone, waterproofing and protection slab work has been completed. Mat foundation sections 13, 14 and 15 were also completed this period.
- The final mat foundation section, 16, is currently scheduled to be placed on September 27<sup>th</sup>.



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# Below Grade Concrete Progress Through August 29, 2014

| Steel Erection Zones | 1st Lift Walls | 1st Lift Walls Poured | 1st Lift Walls Percent | 2nd Lift Walls | 2nd Lift Walls Poured | 2nd Lift Walls Percent | 3rd Lift Walls | 3rd Lift Walls Poured | 3rd Lift Walls Percent |
|----------------------|----------------|-----------------------|------------------------|----------------|-----------------------|------------------------|----------------|-----------------------|------------------------|
| Western              | 35             | 35                    | 100%                   | 35             | 35                    | 100%                   | 35             | 2                     | 6%                     |
| Central              | 20             | 20                    | 100%                   | 20             | 18                    | 90%                    | 20             | 4                     | 20%                    |
| Eastern              | 35             | 8                     | 23%                    | 35             | 0                     | 0%                     | 35             | 0                     | 0%                     |
| <b>Total</b>         | <b>90</b>      | <b>63</b>             | <b>70%</b>             | <b>90</b>      | <b>53</b>             | <b>59%</b>             | <b>90</b>      | <b>6</b>              | <b>7%</b>              |

| Steel Erection Zones | Columns    | Columns Poured | Columns Percent | Lower Concourse Decks | Lower Concourse Poured | Lower Concourse Percent |
|----------------------|------------|----------------|-----------------|-----------------------|------------------------|-------------------------|
| Western              | 62         | 62             | 100%            | 10                    | 4                      | 40%                     |
| Central              | 48         | 44             | 92%             | 10                    | 8                      | 80%                     |
| Eastern              | 66         | 0              | 0%              | 16                    | 0                      | 0%                      |
| <b>Total</b>         | <b>176</b> | <b>106</b>     | <b>60%</b>      | <b>36</b>             | <b>12</b>              | <b>33%</b>              |



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# Western Zone Activity



Completion of perimeter lift 2 walls and internal concrete walls prior to start of Lower Concourse decking.





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# Western Zone Activity



Primary focus in the western zone has been the completion of the Lower Concourse level decking for concrete placement.



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# Central Zone Activity



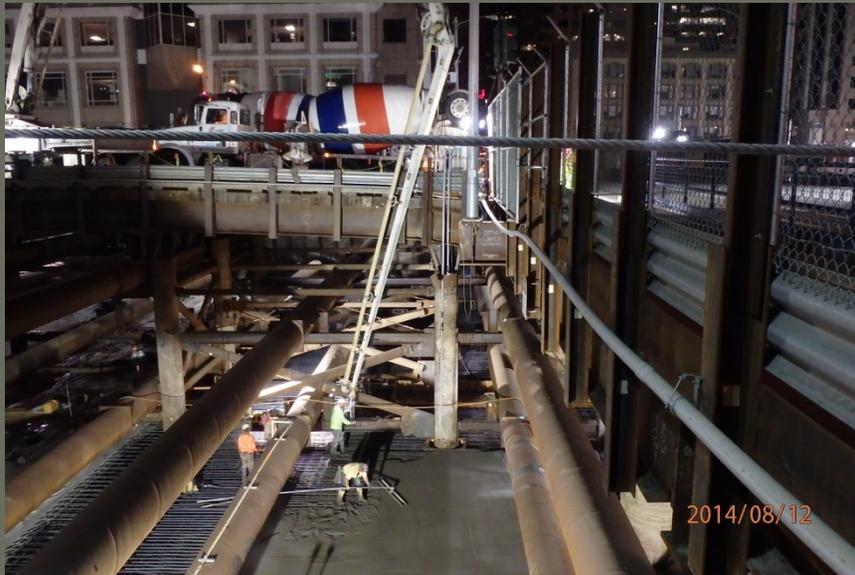
Rail Level in central zone  
is clear of internal  
bracing.





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## Central Zone Activity



Completion of 80% of the central zone lower concourse level slab has allowed for the placement of 3<sup>rd</sup> lift foundation walls and re-bracing. These are the items that need to be completed prior to start of structural steel.



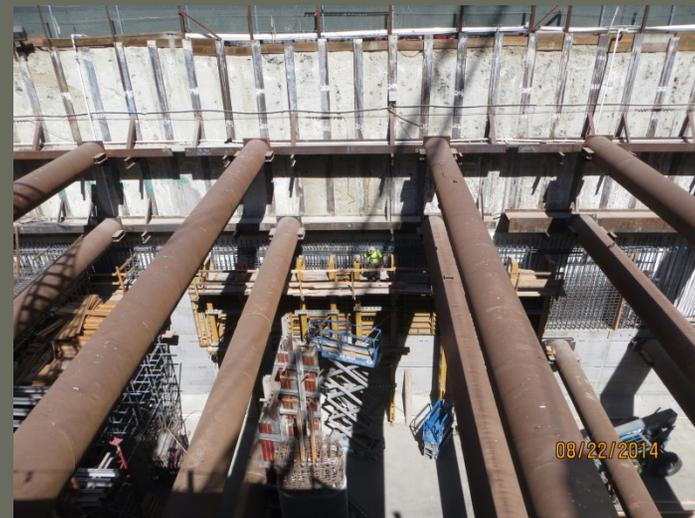


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# Eastern Zone Activity



Eastern zone bracing removal, 1<sup>st</sup> and 2<sup>nd</sup> lift wall construction.



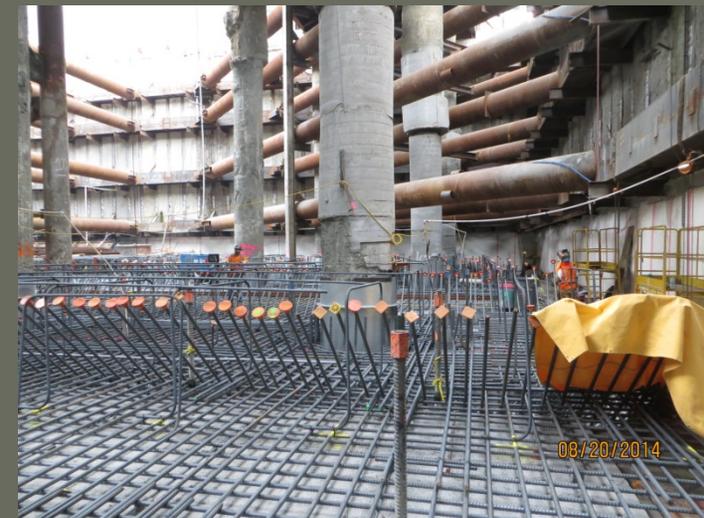


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# Eastern Zone Activity



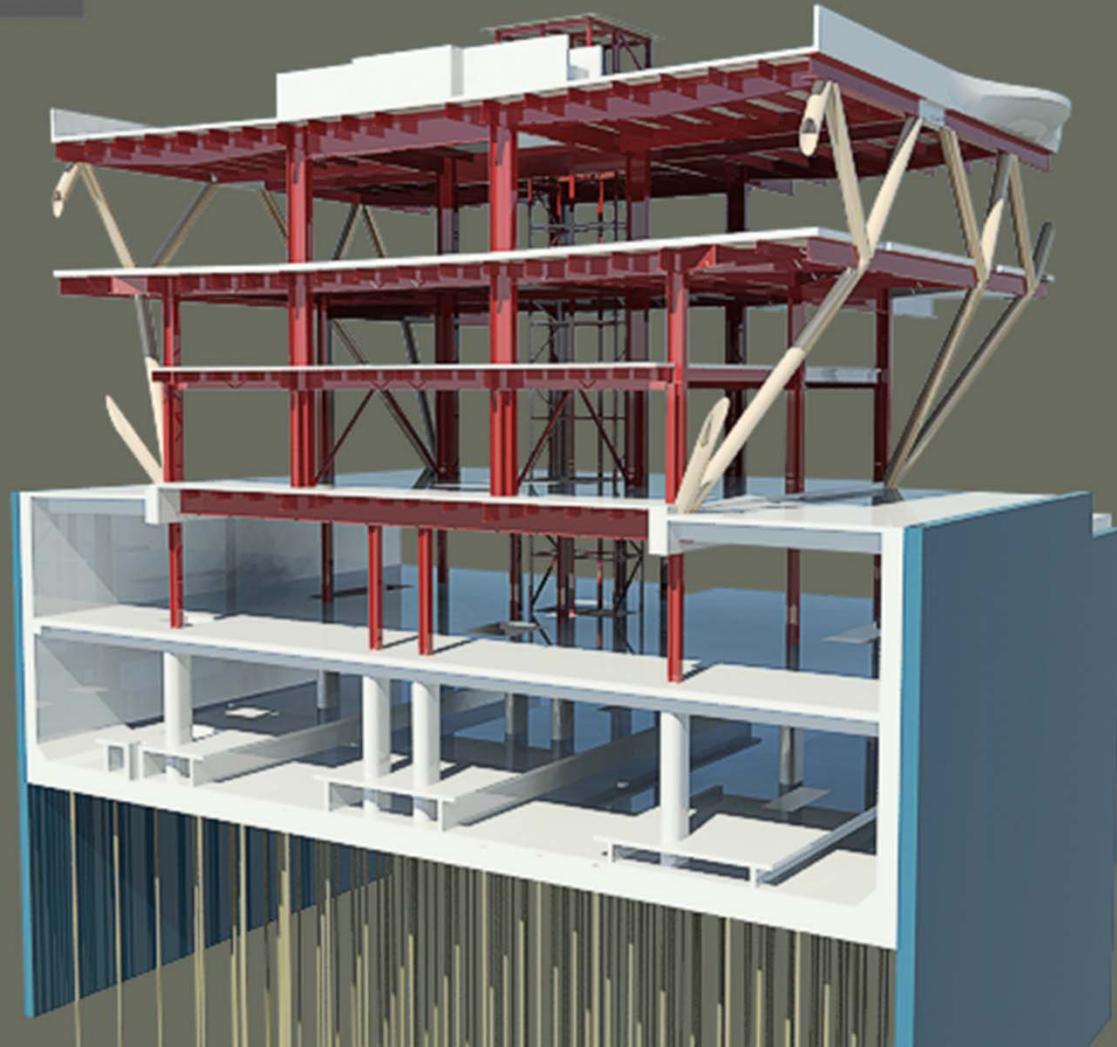
Mat foundation slab placement #15, reinforcing steel for mat foundation pour #16 (the last one).





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# Structural Steel and Cast Nodes





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# Structural Steel Fabrication

## Steel Fabrication

- Continue cast node fabrication in Louisiana and Kansas.
- Continue cast node shipments to Oregon and Washington.
- Continue fabrication of structural steel in Oregon and Washington.
- Continue fabrication of structural steel in Vallejo, CA.
- Continue fabrication of structural steel in San Bernardino, CA.

## Steel Erection : West of First Street

October 2014 – Deliver steel sections and start erection below grade near Shaw Alley.

## Steel Erection : First – Fremont

February 2015 – Deliver steel sections and start erection First St. to Fremont St.

## Steel Erection : Fremont – Beale

October 2015 – Deliver steel sections and start erection Fremont St. to Beale St.



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# Structural Steel Fabrication



Work Proceeding at Oregon Ironworks – robot welding, cast node with attachment plates, cast node attached to pipe column.



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# Structural Steel Fabrication



Initial Trial Assembly  
of Basket Columns.





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# Structural Steel Fabrication



Tapered Beam in fabrication at Herrick shop in Southern California and Column (Lower Concourse to Transfer Girder) in fabrication at XKT shop in Vallejo.





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# Cast Node Fabrication as of August 31, 2014

| Casting Group                                  | Totals     | In-Process Pattern Completion | In-Process Casting and Machining | Release 1 Shipments Mar.-May | Release 2 Shipment May-June | Release 3 Shipment August | Release 4 Shipment October | Release 5 Shipment December | Release 6 Shipment December | Total Shipped to Date |
|--|------------|-------------------------------|----------------------------------|------------------------------|-----------------------------|---------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------|
| Ground Level - Atchison<br>19,600 - 46,300 lbs | 35         | 16                            | 5                                | 8                            | 6                           | 8                         | 0                          | 0                           | 0                           | 22                    |
| Bus Deck - Amite<br>9,500 - 22,800 lbs         | 75         | 32                            | 23                               | 16                           | 5                           | 10                        | 0                          | 0                           | 0                           | 31                    |
| Roof Level - Atchison<br>4,400 - 5,400 lbs     | 138        | 2                             | 24                               | 32                           | 32                          | 14                        | 0                          | 0                           | 0                           | 78                    |
| Light Columns                                  | 56         | 27                            | 48                               | N/A                          | 0                           | 8                         | 0                          | 0                           | 0                           | 8                     |
| <b>Totals</b>                                  | <b>304</b> | <b>77</b>                     | <b>100</b>                       | <b>56</b>                    | <b>43</b>                   | <b>40</b>                 | <b>0</b>                   | <b>0</b>                    | <b>0</b>                    | <b>139</b>            |

Note: In-Process Casting quantity does not include already shipped nodes.



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# Cast Node Fabrication



Bradken workers with Type 21 A/B Node in Amite Foundry

QA Team with Light Column Node

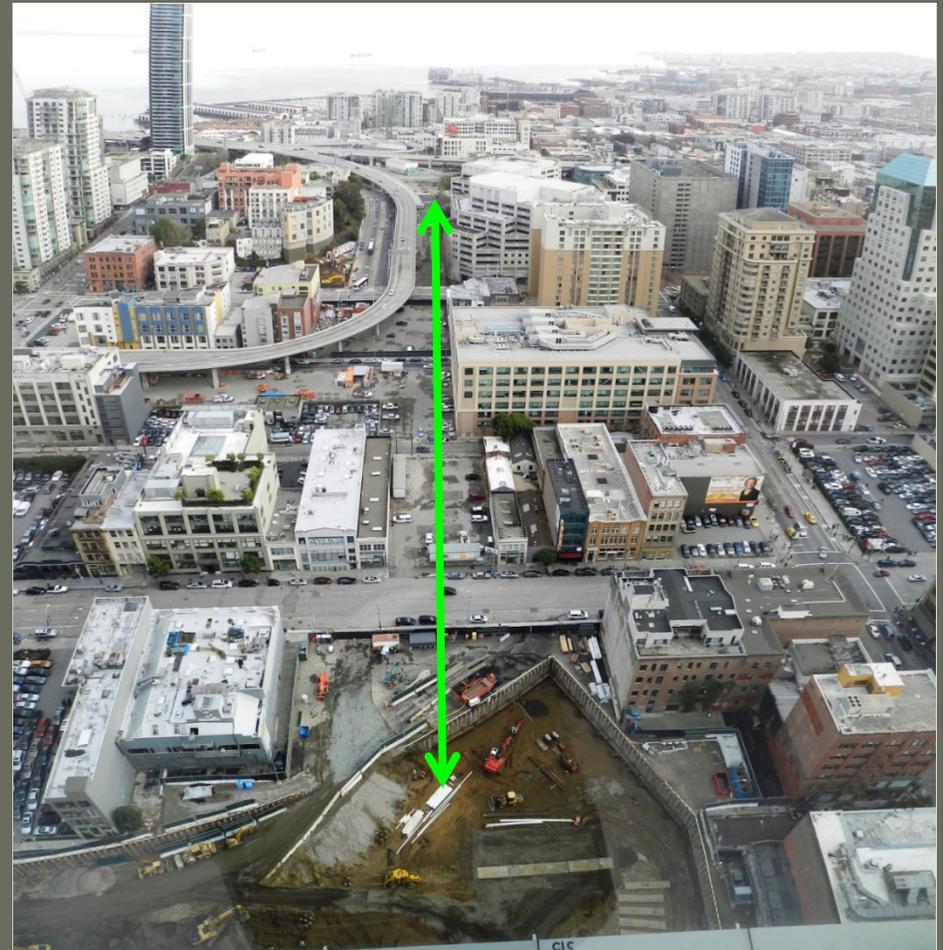




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# Bus Ramps and Bridge

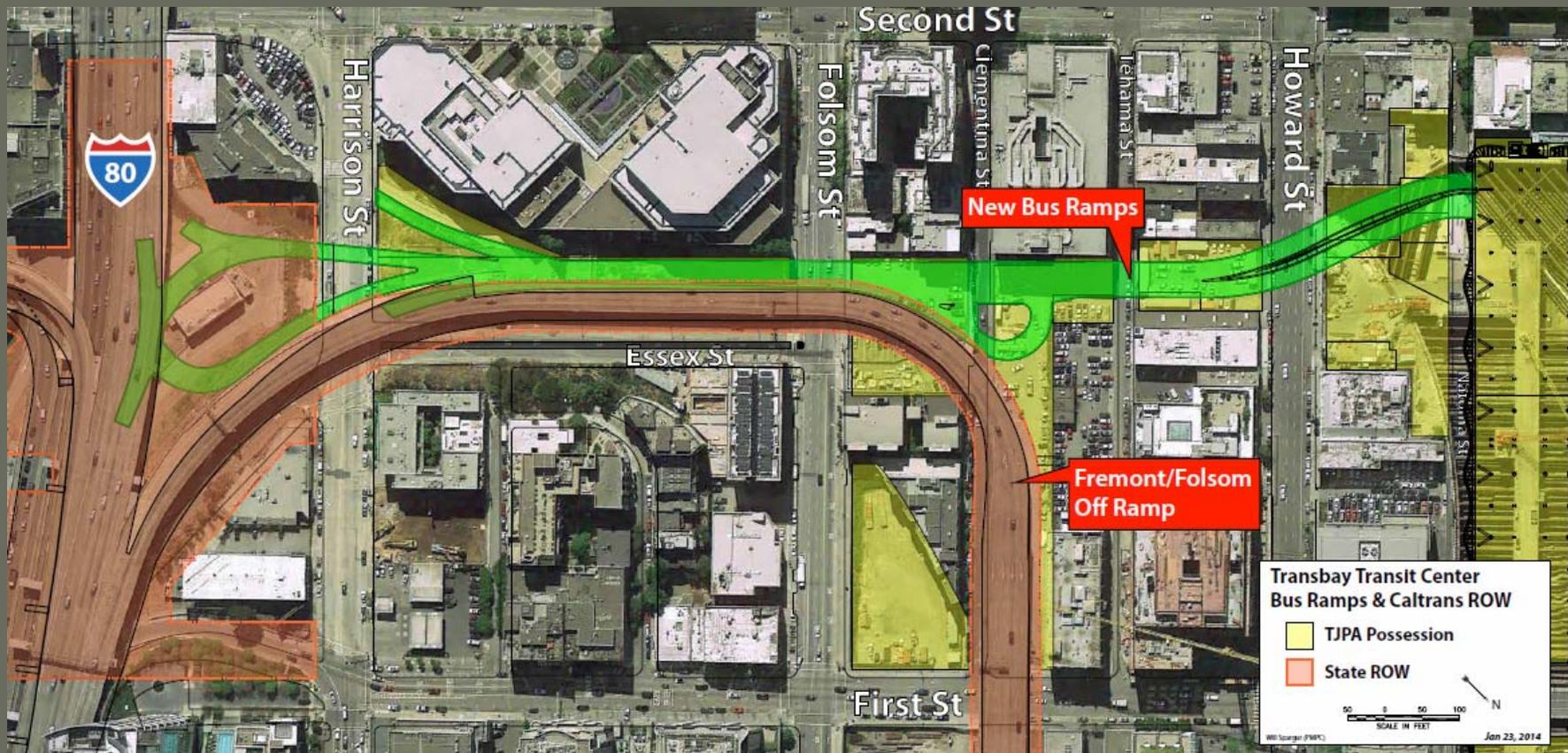
- Current Status
  - Contractor submittals in progress.
  - Contractor has mobilized and begun demolition of portions of original bus ramp foundations.
  - Mobilization of CIDH pile contractor as well as Barrette Pile contractor.





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# Bus Ramps and Bridge



Bus Ramps / Viaduct Layout



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# Bus Ramps and Bridge



Cable-Stayed Structure  
crossing Howard Street.





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## Bus Ramps and Bridge



Installation of shoring at Pylon 9 location in preparation for Barrette Pile installation work has been completed. Cable-stayed pylon structure requires the specialized *barrette pile* foundation to accommodate lateral seismic forces without impacting train box.





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## Utility Relocation - AWSS Installation Update

- PG&E has completed the re-routing of their conflict and AWSS work that has been idle since June 24<sup>th</sup> will re-start September 7, 2014 and continue at night at the direction of SFMTA/MUNI to accommodate bus traffic.
- Fremont to Beale Street along Mission Street remains and is anticipated to be completed by end of September.



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# Construction The Next 90 Days

- Next 30 Days (Sept.)
  - Continue Lower Concourse decking, rebar and concrete in the western zone.
  - Continue foundation walls (lift 3) and re-bracing in the central zone.
  - Continue foundation walls (lifts 1 & 2) and columns in the eastern zone.
  - Place final mat slab, #16, in zone 4.
  - Continue waterproofing for wall lifts 1, 2 and 3 in all areas.
  - Continue Structural Steel and Cast Node fabrication.
  - Continue Bus Ramp work between Harrison and Howard Streets.
  - Complete AWSS Work along Mission Street.
- Next 60-90 Days (Oct. – Nov.)
  - Continue concrete foundation walls and columns of the train box at various levels in west, central and eastern zones.
  - Continue Lower Concourse decking, rebar and concrete in western and eastern zones.
  - Continue re-bracing in western and eastern zones.
  - Continue Bus Ramp and Bridge work; CIDH and Barrette Piles.
  - Continue Structural Steel and Cast Node fabrication.
  - Deliver and erect Structural Steel gridlines 10 to 12.



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# Bay Area Regional Labor Breakdown

|  | Through August 2014   |                  |
|--|-----------------------|------------------|
| Location                                 | Total Hours Completed | Percent of Total |
| East Bay (Alameda, Contra Costa, Solano) | 394,320               | 34%              |
| North Bay (Marin, Napa, Sonoma)          | 39,868                | 3%               |
| South Bay (San Mateo, Santa Clara)       | 105,324               | 9%               |
| San Francisco                            | 209,376               | 18%              |
| Other*                                   | 420,927               | 36%              |
| <b>Totals</b>                            | <b>1,169,815**</b>    | <b>100%</b>      |

\*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.



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## Bay Area Regional Apprentice Hours Breakdown

|  | Through August 2014    |                  |
|--|------------------------|------------------|
| Location                                 | Total Apprentice Hours | Percent of Total |
| East Bay (Alameda, Contra Costa, Solano) | 47,596                 | 26%              |
| North Bay (Marin, Napa, Sonoma)          | 7,638                  | 4%               |
| South Bay (San Mateo, Santa Clara)       | 27,915                 | 15%              |
| San Francisco                            | 62,024                 | 34%              |
| Other*                                   | 39,555                 | 21%              |
|  |                        |                  |
| <b>Totals</b>                            | <b>184,728</b>         | <b>100%</b>      |

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



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# Labor Breakdown by Trade through August 2014

| Classification                     | TTC Building and RUP's* |
|------------------------------------|-------------------------|
| Inspectors – Soils / Material Test | 43                      |
| Carpenters and Related Trades      | 170                     |
| Cement Mason                       | 64                      |
| Electrical – Utility Lineman       | 28                      |
| Electrician                        | 46                      |
| Field Surveyor                     | 34                      |
| Iron Worker                        | 327                     |
| Laborer and Related Trades         | 634                     |
| Operating Engineer                 | 373                     |
| Pile Drivers                       | 151                     |
| Plumber                            | 18                      |
| Roofer and Waterproofor            | 39                      |
| Sheet Metal                        | 5                       |
| Teamsters                          | 166                     |
| Tile Setters / Finishers           | 7                       |
| Water Well Driller                 | 9                       |
| <b>Totals</b>                      | <b>2,114</b>            |

\* Relocation of Utilities Project



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# Questions?

