Board Meeting: October 2016
Data Date: 08/31/2016

# Finance and Audit Committee Performance Metrics

## State Route 99 Realignment Project
## Contract No. HSR 12-06

**Safety**
- Authority Safety Incident Rate
- Contractor Safety Incident Rate

**Cost**
- Construction Support Cost
- Contingency
- Cost Performance Index (CPI)

**Schedule**
- Schedule Performance Index (SPI)

**Quality**
- NCR Resolution Rate

**Economic Benefits**
- Disadvantaged/Small Business Enterprise

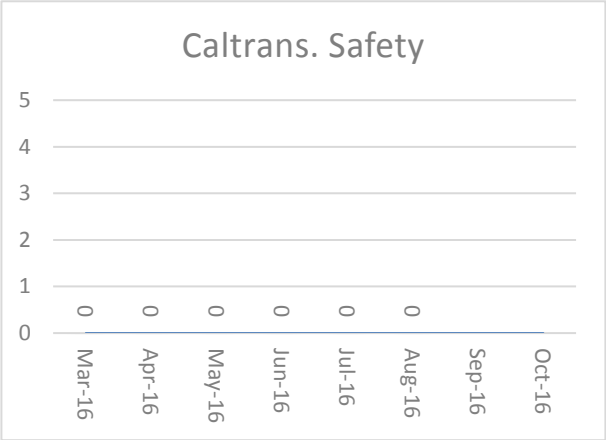
***PERFORMANCE METRICS***

The following performance metrics for SR99, a Caltrans Construction Manager / General Contractor (CM/GC) project within the limits of CP1, are intended to give the Authority's Board of Directors and other key stakeholders a high level overview of the performance of this project.
Safety is a top priority and listed first, followed by key metrics for cost, schedule, and quality, as all are fundamental metrics for the management of the project. In addition and in support of the business aspects of the project, a key metric is included for economic benefits. The Authority's management team, both on the project site and at the headquarters in Sacramento, will also review other aspects of the project's performance. The Authority will track and monitor the trends of these performance metrics to proactively manage the project.

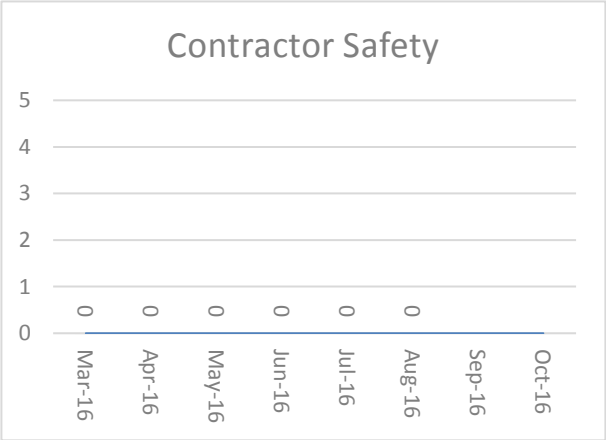
## Performance Metrics

### SAFETY

**Caltrans Safety Incident Rate**
[Number of injuries and illnesses] ÷ [Employee hours worked] * [200,000]

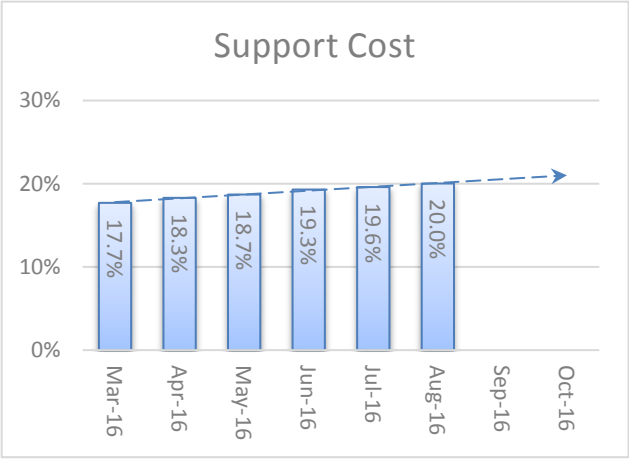



**Contractor Safety Incident Rate**
[Number of injuries and illnesses] ÷ [Employee hours worked] * [200,000]



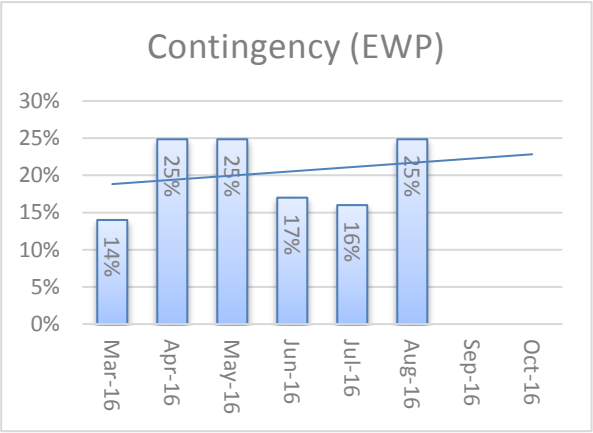
## COST

**Total Support Cost**
[Invoiced to Date Amount] ÷ [Total Capital Cost]

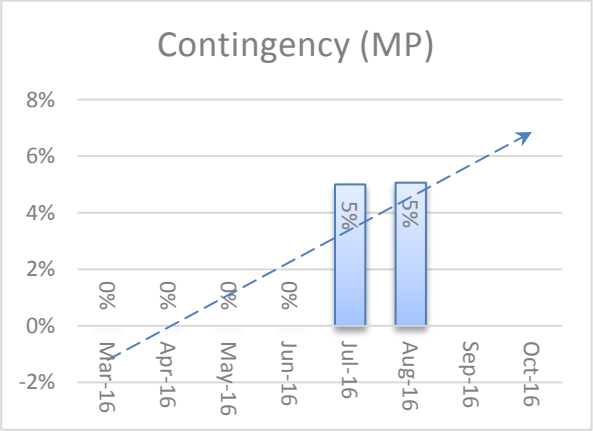


## COST (Continued)

**Construction Contingency (EWP)**
[Remaining Contingency Value] ÷ [Remaining Construction Contract Value]

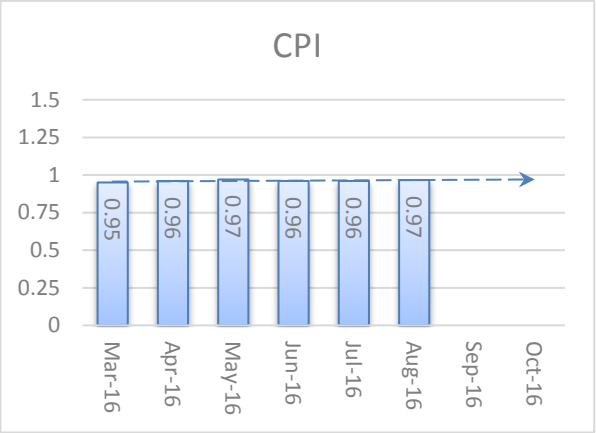



**Construction Contingency (MP)**
[Remaining Contingency Value] ÷ [Remaining Construction Contract Value]



## COST (Continued)

**Cost Performance Index**
[Earned Value] ÷ [Actual Cost]



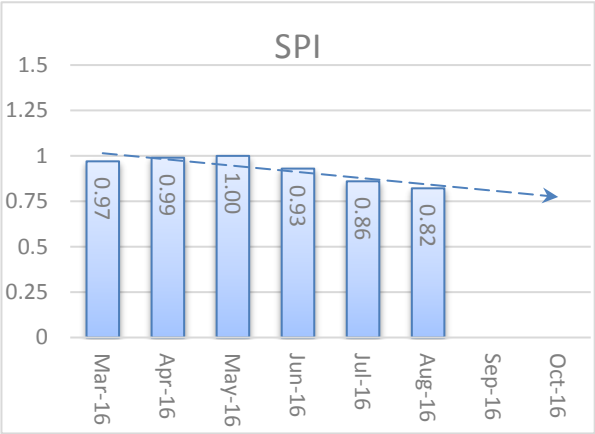

Earned Value (EV) = $86,055,821
Actual Cost (AC) = $89,055,608
Currently at 0.97, performance target is >1.0.

**Reason –** The project has been broken up into two separate phases. An Early Work Package (EWP) has been created to account for construction of some critical items of work to avoid significant delays to maintain the current project schedule. Work associated in development of this package has resulted in expending additional resources. There has been ongoing clarifications in the design and scope of work for the project. There has also been continuous Value Engineering through the design phase that has resulted in a large effort in support during the PS&E phase of the project. The project has been delayed due to budget shortfall discussions.

**Mitigation/Improvements –** The project is implementing CMGC procurement methodology that has a significant upfront effort to resolve issues and add value to the project in the design phase. The goal is to reduce risks and eliminate changes and change orders in construction thereby potentially reducing capital cost in the construction phase. The EWP has been awarded and construction has begun. The construction contract for the MP was awarded to Granite and executed on July 25, 2016 the anticipated Notice to Proceed (NTP) is August 8, 2016. The Interagency Agreement with the Authority will need to be amended to supplement the construction capital and update schedule. Caltrans is managing scope modifications that will maintain the overall integrity of the project. This metric will improve once the agreement is amended.

## SCHEDULE

**Schedule Performance Index (SPI)**
[Earned Value] ÷ [Planned Value]



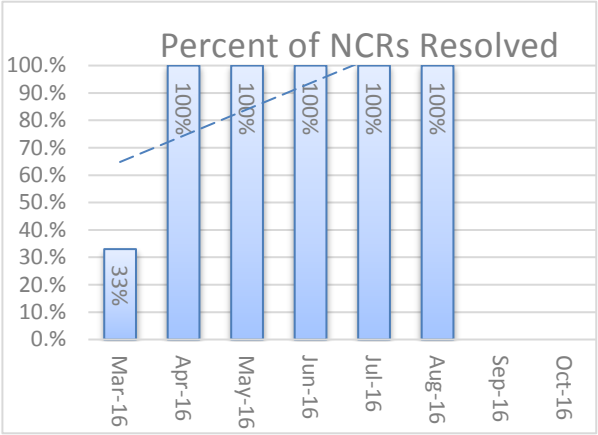

Earned Value (EV) = $86,055,821
Planned value (PV) = $104,766,647
Currently at 0.82, performance target is >1.0.

**Reason –** The project has been broken up into two separate phases. An Early Work Package has been created to account for construction of some critical items of work to avoid significant delays to maintain the current project schedule. Work associated in development of this package has resulted in expending additional resources. There has also been continuous Value Engineering through the design phase that has resulted in a large effort in support during the PS&E phase of the project. Additionally, the EWP was held up due to Right of Way constraints in acquiring Order of Possession and relocation of utilities. UPRR requested to resubmit 60 and 90% submittals before they will approve final plans. The Construction and Maintenance (C&M) agreement with UPRR has not yet been approved. The begin construction of the MP has been delayed by a couple of months.

**Mitigation/Improvements –** The project is implementing CMGC procurement methodology that has a significant upfront effort to resolve issues and add value to the project in the design phase. Due to the various challenges associated in getting to agreement with UPRR on the design of the project and Right of Way acquisition, the schedule has been slipping. The phasing of the project by creating smaller packages while expending additional resources helps in managing the schedule and avoiding additional delays to the project. The construction of the EWP is ahead of schedule. The construction contract for the MP was awarded to Granite on June 30, 2016 the anticipated begin construction date is August 8, 2016. This metric is lagging due to no invoices paid on the MP. It will improve once invoicing of the MP begins and the interagency agreement is amended.

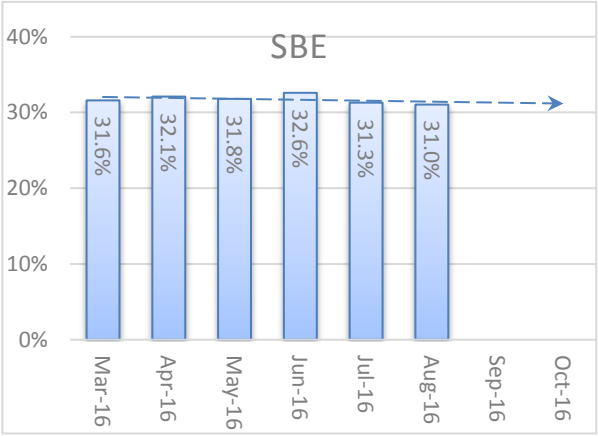
## QUALITY

**Percent of NCRs Resolved**
[Total NCRs Resolved to Date] ÷ [Total NCRs Issued to Date]




## ECONOMIC BENEFITS

**Disadvantaged/Small/Disabled Veteran/Micro Business Enterprise**
[Total SB/DVBE/DBE/MB payments to Date] ÷ [Total Subcontract payments to Date]



## Performance Metrics – Explanatory Details

| Category | Description |
|---|---|
| **General** | **Data Period** |
| Description | The Performance Metrics represent the period of 2/19/2013 to 08/31/2016. |
| **Safety** | **Caltrans Safety Incident Rate:** [Number of injuries and illnesses] ÷ [Employee hours worked] * [200,000] |
| Description | • The goal is to contain the incidence rate at ≤ 3.2.<br>• Benchmark: The average incidence rate per the 2012 U.S. Bureau of Labor Statistics, U.S. Department of Labor for heavy and civil engineering construction is 3.2.<br>• Caltrans has 0 incidents of recordable injury or illness to date.<br>• Caltrans has 24,623.75 construction hours worked to date.<br>• The incidence rate represents the number of nonfatal occupational injuries and illnesses per 100 full-time workers and is calculated as: (N/EH) x 200,000, where<br>N = number of injuries and illnesses<br>EH = total hours worked by all employees during the calendar year<br>200,000 = base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year) |
| **Safety** | **Contractor Safety Incident Rate:** [Number of injuries and illnesses] ÷ [Employee hours worked] * [200,000] |
| Description | • The goal is to contain the incidence rate at ≤ 3.2.<br>• Benchmark: The average incidence rate per the 2012 U.S. Bureau of Labor Statistics, U.S. Department of Labor for heavy and civil engineering construction is 3.2.<br>• The Contractor has 0 incidents of recordable injury or illness to date.<br>• The Contractor has 88,540 hours worked to date.<br>• The incidence rate represents the number of nonfatal occupational injuries and illnesses per 100 full-time workers and is calculated as: (N/EH) x 200,000, where<br>N = number of injuries and illnesses<br>EH = total hours worked by all employees during the calendar year<br>200,000 = base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year) |
| **Cost** | **Total Support Cost:** [Construction Support Cost] ÷ [Total Capital Cost] |
| Description | • The goal is to keep the support cost at ≤ 20% of the Capital cost.<br>• Benchmark: The statewide average Support to Capital ratio for project development cost on the State Highway System is approx. 32% of the Capital costs for major projects.<br>• For this project the Total Support Cost encompasses the effort required to provide Project Management, Contract Administration, Inspection and Quality Control for the Design, Right of Way and Construction phases.<br>• Expended to date amount = $ 36,039,539<br>• Total Capital Cost = $ 180,000,000<br>• Project Total Support to Capital ratio = 20 % |

| **Cost** | **Construction Contingency:** [Remaining Contingency Value] ÷ [Remaining Construction Contract Value] |
|---|---|
| Description | • The goal is contain the contingency to 10% of the total Construction Capital Cost for the EWP and 5% of the total Construction Capital Cost for the MP.<br>• Benchmark: Caltrans is using an alternative procurement method called CMGC. This procurement method helps define, manage and allocate risk before the project is awarded. A reduced contingency of 5% will be established for the MP.<br><u>Early Work Package</u><br>• Contract amount is $27,616,924 which includes Contract items, supplemental work and State furnished material. The total contingency for the EWP is $ 2,783,076.<br>• The Remaining Contingency (EWP) = [Current Allocated Contingency Amount] – [Executed unplanned Change Orders] = ($2,783,076 - $1,641,774) = $1,141,302<br>• The Remaining Construction Contract Value (EWP) = [Construction Contract Amount + Executed unplanned Change Orders] – [Monthly Progress Payment Estimates] = ($27,616,924 - $24,482,755) = $3,134,169.<br><u>Main Package</u><br>• Contract amount is $132,494,387 which includes Contract items, supplemental work and State furnished material. The total contingency for the MP is $ 6,705,613.<br>• The Remaining Contingency (MP) = [Current Allocated Contingency Amount] – [Executed unplanned Change Orders] = ($6,705,613 - $0) = $6,705,613<br>• The Remaining Construction Contract Value (MP) = [Construction Contract Amount + Executed unplanned Change Orders] – [Monthly Progress Payment Estimates] = ($132,494,387- $0) = $132,494,387. |
| **Cost** | **Cost Performance Index (CPI):** Earned Value (EV) ÷ Actual Cost (AC) |
| Description | • The goal is to achieve CPI ≥ 1, which is same as ≥ 100% when expressed in percent.<br>• Benchmark: As per guidelines by PMI (Project Management Institute, World Wide) the CPI should be ≥ 1 or 100%. At a value of 100% the value earned is same as planned, and the project is right on cost.<br>• EV = Percent Complete x BAC (Budget at Completion) - <u>$ 86,055,821</u><br>• AC = Actual Costs to Date - <u>$ 89,055,608</u><br>• Project Cost Performance Index = <u>0.97</u><br>• Support Cost, Construction Capital for EWP & MP and Right of Way Capital cost included in reporting. |
| **Schedule** | **Schedule Performance Index (SPI):** Earned Value (EV) ÷ Planned Value (PV) |
| Description | • The goal is to achieve SPI ≥ 1, which is same as ≥ 100% when expressed in percent.<br>• Benchmark: As per guidelines by PMI (Project Management Institute, World Wide) the SPI should be ≥ 1 or 100%.<br>• At a value of 100% the Project is forecasted to complete on-time.<br>• EV= Percent Complete x BAC (Budget at Completion) - <u>$ 86,055,821</u><br>• PV= Planned Value - <u>$ 104,766,647</u><br>• Planned Value in dollars to be spent to date is derived from the approved baseline established for the project using a linear burn rate for support.<br>• Project Schedule Performance Index = <u>0.82</u><br>• Support Cost, Construction Capital for EWP & MP and Right of Way Capital cost included in reporting. |

| **Quality** | **Non-Conformance Report (NCR) Resolution:** [Total Non-Conformance Reports Resolved to Date] ÷ [Total Non-Conformance Reports Issued to Date] |
|---|---|
| Description | • Measures the effective resolution of NCRs based on percentage of NCR corrective actions approved.<br>• The goal is to identify and approve resolution of the NCR as soon as practical.<br>• The target rate is to stay above 85% closed.<br>• This metric is a measure of the resolution rate of non-conforming work issues identified on the project, based on the KPI Standard organization's Heavy and Civil Engineering Construction definition.<br>• The target rate identified is preliminary and is derived from the professional judgment of multiple construction professionals and NCR data to date. This metric will be measured and trended for refinement throughout the life of the project and across multiple High Speed Rail construction packages to develop a performance standard for the High Speed Rail.<br>• Total Non-Conformance Reports Issued to Date: 8.0<br>• Total Non-Conformance Reports Resolved to Date: 8.0 |
| **Economic Benefits** | **Disadvantaged/Small/Disabled Veteran/Micro Business Enterprise:** [Total SB/DVBE/DBE/MB payments to Date] ÷ [Total Subcontract payments to Date] |
| Description | Benchmark: The Authority has established a Small and Disadvantaged Business Enterprise Program, inclusive of Small Businesses (SB), Disabled Veteran Business Enterprises (DVBE), Disadvantaged Business Enterprises (DBE) and Microbusinesses (MB) and has set an overall Small Business participation goal of ≥30%.<br><br>This project is utilizing an alternative procurement method called CMGC. As the project design is refined, the contractor will execute SB subcontracts for specific portions of work. The Project Team set an intermediate goal of 10% for all sub contracts in the Pre-construction phase. The project will achieve the 30% goal by project completion.<br><br>The work performed estimate is developed by the relative proportion of SB involved in each item of work. The number will be adjusted as actual payments are made.<br><br>Total SB work performed amount = $ 7,377,037<br>Total Sub Contract payments = $ 23,760,867<br><br>The project has achieved a 31.0 % participation to date. |