

Quality Management Oversight - Final



Design Review Assessment DR_dsmith~33

Date Approved 7/28/2010

Project	Contract	Package	Milestone
I-225 Extension	I 225 PE Systems	I 225 PE Systems	65%

Scope System comments from the West Corridor lessons learned list

Lead Responder Organization RTD-Fastracks

Assessor Danielle Smith

Lead Assessor Danielle Smith

Lead Responder Jason Barber

This report contains 31 observations	
	Comment
31	
0	Conformance
0	NC-1
0	NC-2
0	NC-3

Part I - Design Review

<u>Item #</u>	<u>Reference</u>	<u>RequirementText</u>	<u>Result</u>	<u>ObjectiveEvidence</u>	<u>Response</u>	<u>Responder</u>	<u>ClosedReason</u>
1	General		-	Locate all IJ's and bonds outside the paved track way in the stations and crossings. We have experience a lot of deterioration to the bonding in the flange ways, causing them to separate from the rail.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
2	General		-	At locations where there is no alternative except to install an IJ in the paved track way, provide provisions to access the track bonding with removal rubber flange way/concrete panel. Additionally mark in the concrete the location of the leads. Currently RTD has terminated the track leads to the Impedance bonds in the vaults for easy access.	Need to discuss	Jason Barber	Addressed in Segment 1 design plans and specs
3	General		-	We are experiencing track failures where the bonds have been CadWeld in place. Suggest training and monitoring closely the CadWeld process. Or suggest to bond all cables to the rail utilizing	Need to discuss	Jason Barber	Addressed in Segment 1 design plans and specs

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4	General		-	Verify that signals are not located in the OCS overlaps. This will prevent a catastrophic failure to the OCS wire if an adjacent TPSS is offline and a train accelerates from a stop at a signal.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
5	General		-	Eliminate phone dialers at the grade crossing houses and utilize SCADA "Gate Down Alarm" to alert control when a crossing gate is down for more than 3 minutes.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
6	General		-	Confirm that the grade crossing "Gate Down Alarm" circuit is setup consistently to alarm when the crossing is activated, and when any gate is not up for more than three minutes. Including no train presence.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
7	General		-	Verify that all grade crossing cameras are mounted and pointing towards the north and not in the direction of the sun.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
8	General		-	During very windy days, the north grade crossing gate arm at east/west crossings (i.e.-5th Street Xing) hang up at times in the cantenary wire. The wind also positions the gate arm outside the wind	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs

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9	General		-	Tune all the TWC filter-V's with the RTD procedure and then pot the filter-V. We are experiencing failures due to water penetration into the weather proof boxes and where the board was not potted. This may be a nullified point if the new equipment no longer uses the filter in the track way at the loops (4wire cable w/auto tuning interrogator). RTD currently prefers a Vecom filter V's opposed to H&K filters.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
10	General		-	Consolidating our inventory for our camera equipment for all grade crossings. For us to be consistent, re-confirm the model number for the grade crossing cameras (24VDC), lens, and enclosure (120VAC) that meet the specifications. Confirm that the enclosure includes a heater that operates on 120VAC.	Will comply / camera shall be a JVC TK-C9200U or as approved	Jason Barber	Addressed in Segment 1 design plans and specs
11	General		-	FRA is recommending that we note on the drawings for the grade crossing approaches the suggested mph speed required to meet a 26 second approach time instead of the mph speed to attain the minimum 20 second time requirement.	Why? Need futher explanation. Is RTD under FRA?	Jason Barber	Addressed in Segment 1 design plans and specs, I-225 is not under FRA

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12	General		-	The power supply and/or wire size is not sufficient to meet the peak draw required to run all the equipment and not drop below the minimum power requirement in our relay cases. We have experienced signals dropping out intermittently on the alignment. We corrected the problem by increasing the wire size that supplies voltage to the EC5/E2 units.	Detailed design issue by Contractor	Jason Barber	Addressed in Segment 1 design plans and specs
13	General		-	Whenever a traction power feed splice is required in a vault because of a feeder pole nearby, make sure the splice is racked at the highest point to reduce the possibility of the splice being continuously submerged in water.	Will add requirement to 34.21.16.21	Jason Barber	Addressed in Segment 1 design plans and specs
14	General		-	Make sure all "Insulation Resistance Test Results" test documentation for the relay cases are included in the specifications to be submitted by the contractor before accepting any completion.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs

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15	General		-	We are experiencing numerous failures with switch heater temperature probes (RTD), concerning terminal corrosion. The sensor has been terminated inside the conduit. Verify that the switch heater sensor (RTD) is terminated in a sealed termination box.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
16	General		-	The switch heater temperature probe (RTD) requires a better (permanent) installation. The existing probes rattle and loose contact to the rail. This causes an overheat condition and reduces the life of the switch heater pads.	Will review spec and make changes as needed	Jason Barber	Addressed in Segment 1 design plans and specs
17	General		-	he switch heater pad installation must cover the area from the heel block to beyond the switch point to prevent ice build up. Additionally a heat sink grease must be applied between the pad and the rail. We had experience corrosion between the pad and rail that reduced the heat transfer.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs

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18	General		-	The switch heater on/off operation will need to be accessible and controlled through SCADA. A 24 hour activation time is recommended. Additionally the switch heater fault alarm must be identified on SCADA.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
19	General		-	All exposed cable terminated at the rail must have No-Ox grease applied to reduce cable deterioration.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
20	General		-	Secure the OCS feeder cable to the cantenary arms using stainless steel wire ties. A protective guard will be required between the cable and tie to prevent chaffing to the cable. The plastic wire ties do not hold up to the elements.	Agree. Will use stainless steel wire ties and protective guards as required by design.	Jason Barber	Addressed in Segment 1 design plans and specs

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21	General		-	Install all wire terminations in station hand holes with weather proof connections. Also make sure all conduit stubs up above concrete surface, where applicable. We are experiencing many lighting failures in the stations from bad connections/conduits filling up with water.	Termination in handholes will be water tight per specification 26 05 19 -2.4.C. There should not be any termination inside the handhole for new installations. Terminations should be at the canopy where they are protected by the canopy itself. Conduits on platform that are fed from handholes cannot be made water tight. Melted snow and rain will run into handholes allowing moisture to enter conduits through time. Since termination will be water tight, it should not cause failure of any light fixtures or other devices. Conduits will be flushed with the concrete surface to prevent from tripping hazard.	Jason Barber	Addressed in Segment 1 design plans and specs
22	General		-	Verify the TWC cable shield configuration is complete between the interrogator and loop. Currently the shield wire is missing between the termination board and wago terminal block .	Will review drawing and make revision where needed.	Jason Barber	Addressed in Segment 1 design plans and specs

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23	General		-	The lead lag HVAC controller continues to fail causing the A/C to not operate in the substation. RTD is currently replacing this expensive controller with two separate inexpensive manual controllers. The manual controllers are independent and have been more reliable.	Will specify BARD MC300 electronic controller, or approved equal, in 34 21 16 to match 4-Car TPSS	Jason Barber	Addressed in Segment 1 design plans and specs
24	General		-	RTD experienced several failures in the spring and fall at the substations with the economizer function on the HVAC units. The mechanical enthalpy is not reliable. We were informed that this sensor has a one year life span. RTD is currently installing electronic enthalpys.	Will specify Honeywell W7459 electronic sensor, or approved equal, in 34 21 16, to match 4-Car TPSS	Jason Barber	Addressed in Segment 1 design plans and specs
25	General		-	RTD-MOW has reconfigured several locations where the Cab Signaling loops have been installed incorrectly. The contractor failed to transpose the loops. The loops need to be installed in a figure eight configuration to provide a stronger signal and to isolate the signal from the rails.	Detailed design issue by Contractor	Jason Barber	Addressed in Segment 1 design plans and specs

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26	General		-	All peripheral equipment installed in a relay case must have a separate power supply. This equipment cannot share with the signal system power supply. RTD experienced ground fault alarms when the SCADA modem was sharing with the signal system power supply.	Will comply	Jason Barber	Addressed in Segment 1 design plans and specs
27	General		-	Review the switch locations to decide where it would be most advantageous for operations to have a trailable switch (ie. Junction). This will allow train movement under restrictions to continue whenever we have an outage or malfunction.	Not part of work as direction was to design for all power switches	Jason Barber	Addressed in Segment 1 design plans and specs
28	General		-	All OCS hardware is to be orientated in the "Down - IN & Opposite direction". This will allow the maintenance inspection to be performed more efficiently when the cotter pins and retaining nuts are all in the same position. The inspector will travel on the rail in the normal train direction to conduct this inspection.	Agree. Will incorporate necessary description in specification for OCS Hardware & Fittings, Spec 34 23 45.	Jason Barber	Addressed in Segment 1 design plans and specs
29	General		-	No roller assemblies will be installed to support the OCS messenger wire. The movement of the messenger wire over the rollers will fatigue the strands of wires and cause premature failure to the messenger wire.	Agree. Bridle Wire passed through rollers will support messenger wire.	Jason Barber	Addressed in Segment 1 design plans and specs

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30	General		-	No jumpers will be installed at the mid span anchor points on the OCS. The jumper that is secured to the mid-point tie off can possibly pull the contact wire up causing the train pantograph to pick a wire and resulting in a catastrophic failure.	Agree. No contact wire restraints will be installed at Mid-Span Anchors.	Jason Barber	Addressed in Segment 1 design plans and specs
31	General		-	No Section Isolator will be installed on main line track where there is high speed train movement. An insulated overlap will be used in place of the Section Isolator.	Agree except for Scissors Crossovers. No room for Overlap at Scissors Crossover.	Jason Barber	Addressed in Segment 1 design plans and specs

Part II - Attachments

<u>Item #</u>	<u>File Name</u>	<u>Description</u>	<u>Owner</u>
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