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Reportable Condition Description
General Reportable Conditions - throughout CA/T and boat sections
TS2: Overhead concrete delaminations and debonded patches on concrete roof slabs. This condition occurs primarily at construction joints. See Appendix A plan views for locations.
TS3: Leakage and deterioration at construction joints. This condition is related to TS2; however, it represents locations where the condition has not yet progressed to a delamination and possible overhead hazard. See Appendix A plan views for locations.
TS4: Debris in upper plenums. General observation in the CA/T system.
TS5: Pattern cracking and delaminations in roadway topping slab at various locations throughout the tunnel and boat structures.
TS6: Standing water and active leaks through wall/base slab construction joints or air vents in the lower plenum. See Appendix A plan views for locations with significant standing water.
TS7: Delaminations on cast-in-place concrete wall surfaces in boat sections, thin debonded patches. See Appendix A plan views for locations.
Cut and Cover Tunnels - no slurry wall, no side ducts (portions of I-90 Connector east of Fort Point Channel, Bird Island Flats, Logan Interchange, I-93/I-90 Interchange, some I-93 Ramps)
TS9: Active water leakage and ponding water in Ted Williams Tunnel utility rooms.
TS10: Significant cracking and delamination in tunnel structural elements at one location that traverses Ramp HOV-EB (at its Station 44+60) and Ramp L (at its Station 96+00) at Superplug location.
TS11: Cracking in tunnel walls and curb/barriers due to misaligned expansion joints in roadway slab and tunnel roof in Ramp D, I-90 EB and I-90 WB at Station 43+90 at Superplug location.
Cut and Cover - no slurry walls, with side ducts not including jacked tunnel or ITT (portions of I-90 Connector west of Fort Point Channel)
TS17: Cracked manhole cover on Ramp DN at Station 19+50.
Cut and Cover - steel soldier pile supported slurry walls (I-93 Mainline and most I-93 ramps except Dewey Square tunnel section)
TS19: Water breach at Panel E045 in I-93 (I-93 NB, Station 104+50). Unsuitable materials found at approximately 188 locations associated with bentonite seams in the concrete lagging per CA/T personnel surveys.
TS20: Leaks through SPTC walls, especially at roof to wall junction. Associated corrosion of roof girders. Orange colored stains may actually be algae.
TS22: Steel soldier pile flanges exposed at areas of missing fireproofing.
Jacked Tunnels with side ducts (I-90 Connector under South Station tracks Station 22+00 to 25+10)
TS24: 5 ft. wide section between construction joints with active leakage and unsound concrete or patches at Stations 23+10 and 24+00 in I-90 EB; similar conditions at Stations 24+50 and 25+20 in I-90 WB and at Station 26+40 in Ramp D. Also, a 6 ft. by 1.5 ft. area of unsound concrete at the slab soffit elevation change in tunnel roof at Station 21+60 in I-90 EB consists of weak grout and a skim coat patch.
ITT - Steel with Concrete Liner (I-90 Ted Williams under Inner Harbor)
TS27: Large sections of overhead concrete delaminations/overpour at Stations 102+43 and 105+71.
Cut and Cover - concrete-encased steel bent (Dewey Square Tunnel, I-93 SB)
TS29: Steel girder bottom flanges exposed at areas of missing fireproofing.
TS30: Impact damage at bottom flange of steel girder at I-93 SB Station 84+60.
TS31: Efflorescence and water staining on soffit sub-ceiling.
Reportable Condition Description
Suspended Ceilings in I-90 Connector Tunnels
TF1: Excessive hanger spacing or cantilever span, noted at 176 locations.
TF2: Uneven load distribution - excessively tight or loose hangers, noted at 81 locations including shored ceiling at I-90 EB Sta. 46+95 to 38+07. Loose hangers west of Sta. 44+25 attributed to shoring and not specifically noted.

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TF3: Unsound epoxy anchors, noted at 36 locations.
TF4: Concrete spalling around channel inserts, noted at 15 locations.
TF5: Channel insert set too high in concrete, channel lips deformed due to overtightened bolts or lack of contact with bracket plates, observed at 7 locations.
TF6: Hairline crack in ceiling panel at I-90 EB Sta. 50+75; spalled corner at vent port in ceiling panel in Ramp D, Sta. 55+25.
TF7: Surface corrosion on connection bolts, noted at 9 specific locations and as general observation in 11 areas.
Suspended Ceilings in Ted Williams Tunnel
TF8: Spalled concrete around epoxy anchors, noted at 29 locations.
TF9: Crack in concrete through epoxy anchor embedment zone, noted at 68 locations.
TF10: Epoxy anchors in unsound concrete, TWT EB Sta. 112+05 and Sta. 131+60.
TF11: Loose nuts or partial thread engagement on anchor bolts, noted at 9 locations.
TF12: Gap between yoke and concrete, noted at 49 locations.
TF13: Dry-packed grout spalled or missing, noted at 18 specific locations as general observation in two areas.
TF14: Offset between stringers at expansion joint, missing splice and long cantilever, TWT EB Sta. 84+88, 96+17, 143+15, TWT WB Sta. 147+80.
TF15: Excessive bolt tightness at stringer expansion joint connections, noted at 9 locations where torque was checked.
TF16: Movement at direct attached ceiling panel, TWT EB Sta. 95+00.
Suspended Ceilings in Central Artery (I-93) Tunnels
TF17: Loose vertical hanger, noted at 35 locations.
TF18: Missing diagonal braces, missing clevis pins at diagonal brace connections, CANB Sta. 154+30 to 154+50 CANB Sta. 156+20 to 162+00 CASB Sta. 147+00.
TF19: Loose or missing cotter pins or lock nuts, noted at 44 locations.
TF20: Hairline cracks in precast concrete ceiling panels, CANB Sta. 86+05 to 86+40.
Suspended & Wall-Mounted Equipment and Fixtures - I-90 Connector, Ted Williams Tunnel, Central Artery
TF21: Pullout of epoxy anchors for light fixtures direct connected to concrete roof slab. Fixture at Ramp L-CS Sta. 81+00 moved under hand pressure; anchors at Ramp L, Sta. 76+75 pulled out up to 1/2 in.; 2 missing anchors at Ramp L Sta. 76+25.
TF22: Jet fan support deficiencies, noted at 7 locations: Loose or missing bolts, partial thread engagement, improperly lapped bearing connections. Poor alignment at several other locations.
TF23: Loose and/or missing connection elements at wall or ceiling mounted cameras and equipment, noted at 21 locations
TF24: Missing fasteners at electrical box covers over traffic, noted at 12 locations
TF25: Missing or damaged base connection at walkway railing, noted at Ramp ST-CN Sta. 51+90 and Ramp D Sta. 51+00.
TF26: Impact damage to walkway railing, noted at I-90 EB Sta. 18+30, Ramp D Sta. 54+10, Ramp ST-CN Sta. 51+00.
TF27: Damaged exit signs at emergency exit doorways, noted at 9 locations.
Tunnel Signs and Supports - I-90 Connector, Ted Williams Tunnel, Central Artery
TF28: Impact-damaged sign with bent framing and/or missing bolts, noted at 13 locations.
TF29: Loose or missing fasteners at sign support to roof connection, noted at 12 locations.
TF30: Corrosion on sign support elements, noted at 55 locations in TWT.
TF31: Loose U-bolt connections at sign supports, noted at 13 locations.
TF33: Atypical sign anchored to roof with epoxy anchors, noted at I-90 EB Sta. 26+25 and 39+68; Ramp L Sta. 78+50.
Wall Panels and Finishes - I-90 Connector, Ted Williams Tunnel, Central Artery
TF34: Lower panel connections missing or anchored into unsound concrete, noted at 5 locations in I-90 EB and Ramp L side plenums.
TF35: Standing water on walkway surrounding base of panel, noted at CANB Sta. 111+80.

TF36: Corrosion of lateral panel support connection elements, noted as a general observation in 23 areas in side plenums.
TF37: Water staining, cracking, and delamination of direct applied tiles due to cracking or movement of concrete substrate, noted at 63 locations throughout I-90 Connector and TWT.
Viaduct Superstructure Elements
CV1: Mortar patches were observed on the underside of the viaduct structures in the I-90/I-93 Interchange and at I-93 North of the Charles River. Typically the patches were on the side and bottom of precast boxes, immediately adjacent to the epoxied joints and usually in the 1-2 sq. ft. size. Potential overhead hazard.
CV2: Mortar patches on the underside of the box girder top flange/slab (wing) of the viaduct structures in the I-90/I-93 Interchange and at I-93 North of the Charles River. Typically, these patches were much larger than patches at epoxied joints. Certain locations were estimated to be approximately 3 in. deep. Potential overhead hazard.
CV3: Large spall observed at the underside the box girder wing (I-93NB) near Bent NB8. Located at interface of wing tip and barrier wall.
CV4: Large spall and delamination noted at epoxied joint of Ramp CT near abutment at end of ramp.
CV6: Leaking on interior of box girder segment observed around joint of various closure pours
CV7: Cracking and moisture staining noted at a sign support haunch near Bent CT11.
CV11: Poorly installed electrical junction box cover in span SN17.
CV15: Water leaking from joints between box sections was noted near the northeast corner of the Summer St. Bridge over C St.
CV16: Core holes in box girder webs had not been patched.
Viaduct Substructure Elements
CV19: Excessive bearing deformation observed at some locations. The edge of an elastomeric bearing at Bent NS14 is beginning to separate from the concrete void slab drop panel.
CV22: Anchors in precast curtain wall panels are loosening due to traffic vibrations.
CV23: Above-grade EPS (expanded polystyrene) "embankments," located primarily in the 190/93 interchange area, are clad with thin stucco material that can be easily damaged by minor impacts (e.g. from landscaping and maintenance equipment, or vandals).
Viaduct Superstructures-Box Girder Elements
SV1: Loose nut, various locations, see Appendix B.
SV2: Missing nut, various locations, see Appendix B.
SV3: Missing bolt, various locations, see Appendix B.
SV4: Saw cut notch in top flange due to stay-in-place form modification, various locations, see Appendix B.
SV5: Unpainted backer bar still in place. East end of North Cross Girder. I-93 Northbound on elevated steel structure (C19B1).
SV6: Spall in underside of deck concrete. Ramps North of Gilmore Bridge. East girder within Span CL8-CL9 (C19B8).
SV7: Spall in underside of deck concrete. Ramps North of Gilmore Bridge. West girder within Span CL8-CL9 (C19B8).
SV8: Epoxy injected cracks - Ramp K between box girders and Pier 16 and 17 (C12A3).
SV9: Missing access hole hinge bolt - Ramp L-CN, Girder 2, south of Cross Girder 2 (C19E6).
SV10: Flame cut conduit web penetration - Ramps North of Gilmore Bridge. Girder SN2 near Pier SN-2 (C19B8).
SV11: Flame cut conduit web penetration. Ramp SN, outside girder, near Pier SN5 (C19E6).
SV12: 5/8" long crack through weld throat at top of diaphragm attachment to girder web. Ramp LC-N, outside girder near Cross Girder LCN3 (C19E6).
SV13: Cracked weld at top of web stiffener. Ramp LC-N within Cross Girder LCN3 (C19E6).
SV14: Corrosion and leakage on stay in place forms, various locations, see Appendix B.
Viaduct Substructure Elements
SV18: Elastomeric bearing pads distorted on south end of bus ramps (C09F1).
Viaduct Superstructures - Plate Girder Elements

SV19: Four "C" clamps over roadway connect conduit to bottom flange near middle pier of Albany Street overpass (C09C2).
SV20: Plywood form left in place at north abutment of Albany Street overpass (C09C2).
SV21: Failed expansion joint insert (typical) (C08A1).
General Conditions
ZB1: Main span and back spans have open electrical junction boxes and conduits. Some conduits are filled with water.
ZB3: Main span and back spans have few working lights.
ZB5: Back span cracking in the transverse diaphragm walls, longitudinal diaphragm walls, and the trapezoidal box girder top and bottom flange soffits.
Tower Elements
ZB6: Cracking, delamination, and deterioration of previous concrete patches.
ZB12: Honeycombing of concrete adjacent to top stay anchors.
ZB13: Loose anchor bolt and bent anchor bolt in south tower anchor box.
ZB14: Flooding and/or excessive standing water at grade adjacent to the south tower foundation.
Main Span Elements
ZB15: Missing nut at cantilever floor beam (CF8S) top connection to longitudinal box edge girder (EG3S).
ZB16: Missing bolt and loose bolt at a floor beam supporting the grating on the east side of FB15S (north elevation).
ZB17: Leaking drain on the east side of FB1N (north elevation).
ZB18: Loose closure panel on the east side of FB1N (south elevation).
ZB19: Cracking, delamination, and deterioration of precast panels.
South Back Span Elements
ZB20: High concentration of hairline cracks at the soffit near Bent 1 and Bent 2.
ZB21: Electrical tape on external tendon splices.
ZB23: Missing precast panel connections and bolts in the closure area adjacent to Bent 1.
Stay Cable Elements
ZB24: Missing or improperly installed bolts at hood on bottom stay anchor connection. Back span anchors C10S, C15ES, C2N, and 32EN.
ZB26: Wax leakage from seal at end cap. Bottom stay anchors C26ES, C28ES, C17WS, C13ES, C22EN, C21EN, and C17WN.
ZB27: Failed sealant at transition from anti-vandalism tube to HDPE pipe at numerous bottom stay anchors.
ZB28: Tie wire used in place of cotter pin at south back span cable tie adjacent to bottom stay anchor C10S.
ZB30: Longitudinal cracking in the top flange of the concrete trapezoidal box girder adjacent to numerous back span anchors.
ZB31: Missing and/or damaged wax injection and vent ports. Bottom stay anchors C6S and C13WS. Top stay anchor C6N.
ZB32: Damaged end caps. Bottom stay anchors C6S and C13WN.
Bents
ZB34: Cracking and localized spalling of concrete at Bent 6.
Bridge Superstructure Elements
LB1: Backing bar used for fabrication remains at bottom flange attachment of floor beam to floor beam segment adjacent box girder web plate. Typical at all floor beams.
LB2: Missing bolts at floor beam connection at Floor Beam 8.
LB3: Debris and dirt accumulation inside box girder.
LB4: Light fixtures, rigid conduits, and wiring installed but not operational.
Large Building Elements
B3: Exterior Walls: Missing anchor at louver-support column in the northeast supply fan room on Level 3 of VB1.
Medium-Sized Building Elements
B4: Exterior Walls: Loose bolt at spandrel beam near the east end of the south elevation (Central Maintenance).

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Small Structure Elements
B6: Concrete Deterioration: Ceiling delamination (TE-12-W).
All Buildings and Structures - Non-Structural Conditions
B8: HVAC, Plumbing, Electrical, Ceiling Supports: Lack of lateral bracing at hanger supports; lack of equipment anchors.
B9: Water Leakage: Leakage through cracks and joints in walls, ceilings, and slabs; stains, mineral deposits, and peeling paint on ceilings and walls; standing water; rusted electrical conduits and boxes; plumbing leaks; some injection work; efflorescence on brick walls.
B10: Concrete Deterioration: Slab scaling and delamination (VB4); delaminated patches (VB1); window sill delamination (OCC); wall delaminations (Summer, Essex St. fan chambers); and crumbling concrete (TE-606, TE-617).
B11: Concrete Surface Blemishes: Ceiling cracks with mineral deposits under interior spaces; exterior wall cracks, some with mineral deposits or stains; cracks in slabs; splotchy surface appearance; patches; exposed reinforcing steel and soldier piles.
B12: Steel Deterioration: Minor corrosion of base plate (ERS 4/ESS); peeling paint and corrosion on window trim (Parcel 7 Garage) and roof trim (Central Maintenance); corrosion on stair risers, treads, and supporting members (small structures); corrosion of embedded steel plates (tunnel egress stairs).
B13: Masonry and Stone Deterioration and Distress: Cracked and spalled bricks (ERS 7/ESS); vertical cracks in brick masonry walls near corners, loose joint mortar (Essex St. fan chamber); open coping joints (Summer, Beach St. fan chambers); cracked stone cladding, open joints (Summer, Essex St. fan chambers); CMU blocks removed from interior walls (VB4, TE-526); and loose CMU wall connection plates that are not tight (TE-405).
B14: Local Hazard: Trip (VB8, Parcel 7 Garage, I-90 Toll Plaza Tunnel), drive (Parcel 7 Garage), and overhead (VB4, TE-505) hazards.
B15: Maintenance: Worn traffic coating (Parcel 7 Garage); broken glass pane and open interior joints at window frames (Air Intake); clogged roof drain and wire sticking out of brick wall (VB5); damaged roof flashing (VB7); duct tape on stair treads (TE-12-W, TE-13-E); and door that does not latch (TE-12-W).
General Conditions (See Appendix B for exact locations)
SL1: Structure base connection contains loose or untightened leveling nut(s) / anchor nut(s) resulting in gap between base plate and nut(s). Various locations. (See Appendix B).
SL2: Base connection is loose and exhibits displacement when subjected to lateral loads. Base connection obscured by architectural decoration. Various locations. (See Appendix B).
SL3: Impact damage on sign. Various locations (See Appendix B).
Sign Support Structures
SL4: "HOV" sign on west leg missing bottom bolt at truss sign N-03 south of Mass Ave overpass.
SL5: Monotube overhead sign structure with missing anchor bolt nut on west leg. I-93 NB (South of city) near mile marker XX/0.4.
SL6: Single post sign has anchor nuts with only half of thread depth engaged. North side of intersection of Mass. Ave. and Frontage Rd.
SL7: Monotube overhead sign structure with missing bolts and one loose bolt in midspan splice of large tube. I-90 EB east of Albany Street Bridge.
SL8: Mile marker sign 19 missing nut. Other anchor nuts are loose. I-93 Northbound on Zakim Bridge.
SL9: Mile marker sign 18.9 with fractured pole to base plate weld due to impact damage. I-93 northbound on Zakim Bridge.
SL10: Rectangular tube overhead sign structure with missing nut on east base plate. Near tunnel entrance north of Summer Street.
SL11: Single post sign has failed anchor bolt and loose anchor nuts. Ramp SN at mile marker 0.9.
SL12: Single post sign has impact damage at base connection. Fractured weld. Ramp NS at mile marker 0.6.
SL13: Roadway sign connection with loose clips fastening it to the steel posts. Service Road and Porter at airport.

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SL14: Monotube overhead sign with loose clip anchors resting within sign flutes. I-90 just east of D Street.
Luminaire Support Structures
SL15: Square aluminum light pole with impact damage. Mass. Ave. connector eastbound side near beginning of ramp to 93-SB.
SL16: Square aluminum light pole with impact damage. Intersection of South Boston Bypass Rd. and Boston Wharf.
SL17: Square aluminum light pole with foundation damage. Foundation displacement occurs with minimal horizontal force applied to pole. Intersection of South Boston Bypass Rd. just north of Boston Wharf on south side of road.
SL18: Prestressed concrete light pole with major impact damage at base. Summer St. just east of D St. on median.
SL19: Prestressed concrete light pole with cracked base. Summer St. just east of D St. on median.
SL20: Prestressed concrete light pole with cracked grout covering over base connection. Summer St. just west of Drydock St. on south side of road.
SL21: Light pole with unstable foundation. In public park area on D street and electric bus ramp.
SL22: Light post with loose globe fixture. Intersection of Congress and Boston Wharf Road.
SL23: Precast concrete light pole with several vertical cracks. Intersection of Martha and Storrow Dr.
SL24: Precast concrete light pole not installed plumb. Storrow Drive center median near tunnel entrance
SL25: Precast concrete light pole not installed plumb. Storrow Drive center median near tunnel entrance.
SL26: Precast concrete light pole with spall at base. Storrow Drive center median near tunnel entrance.
SL27: Light post with loose globe fixture. Intersection of Martha and Whittier Place.
SL28: Light pole with decorative base cover damage. Intersection of Kingston and Surface
SL29: Concrete light pole with vertical crack. Intersection of Essex and Surface
SL30: Precast concrete light pole with short crack at base. Frontage Road across from South Bay Mall and Bank of America.
SL31: Precast concrete light pole with short crack at base. West end of shopping center, east of Railroad bridge.
SL32: Light pole and concrete support with impact damage. Between I-93 SB and frontage road on central barrier.
SL33: Light pole with flame cut hole for anchor bolts on barrier between I-93 S.B. and frontage road on central barrier.
SL34: Light fixture is full of water. North end of north toll booth at airport.
SL35: Five cast iron posts with loose base connection about 2 ft above base. Some of these connections were previously welded and the short length welds cracked. Summer just east of Dorchester.
SL36: Light pole with broken breakaway connector. Harborside and Porter at airport.
SL37: Light pole with significant corrosion with major section loss at pole base. Harborside south of Jefferies at airport.
SL38: All light poles on Spectacle island do not contain anchor bolts.
SL39: Light poles on Spectacle Island were reported to have problems of disengaging globe fixtures.
Traffic Signal Support Structures
SL40: 2 Cracked cast aluminum traffic post bases. East side of intersection of Mass. Ave. and Frontage Rd.
SL41: Traffic signal post with impact damage. D Street just north of Summer St. in median.
SL42: Traffic signal with missing nut and a partially engaged nut. D Street just north of Summer St. on east side of St.
SL43: Traffic signal to mast arm connection with misaligned light fixture. Intersection of Pearl and Surface.
SL44: Traffic signal base connection with missing nut. Northwest corner of Broad and Surface.
SL45: Traffic signal post with nuts not fully engaged at base plate at northeast corner of Sudbury and Surface.
SL46: Rectangular steel tube overhead traffic signal with missing anchor bolt at base connection. Ramp SA-ST.
SL47: Traffic signal post with base problem. Intersection of Traverse and Washington in median.
SL48: Questionable base connection - traffic signal post. Intersection of Causeway and Washington.
SL49: Impact damage on traffic signal post base. Intersection of Cross and Sudbury.
SL50: Traffic signal with missing anchor bolt and nut Intersection of Nashua and Minot.
SL51: Traffic signal with impact damage on main pole structure. Ramp CL near mile marker 0.2.

SL52: Traffic signal with 4 in long base crack that fractured during basic lateral load test. South Bay Shopping center entrance.
SL53: Cantilevered traffic signal mast arm connection that exhibits corrosion and crack-like condition at connection to pole. Various locations. (See Appendix B).
SL54: Cantilevered traffic signal mast arm with broken U-bolt connection on center light. Intersection of Pumphouse and Summer.
SL55: Cantilevered traffic signal mast arm with 2 loose connection bolts on the lower side of the connection. Southwest corner of D Street and Congress.
SL56: Cantilevered traffic signal mast arm with loose connection bolt. Gap between connection plate and head of bolt. Southeast corner of Congress and East Service
FIRE DETECTION & ALARM SYSTEMS
LS4: Spacing of some manual fire alarm boxes are not be in compliance with basis of design and NFPA 502 (I-93, I-90 Connector).
LS5: Assumptions used in evaluation to remove linear heat detection systems are not presently valid based on key systems not being fully installed and available for OCC use.
LS6: Basis of design fire-detection time.
TRAFFIC CONTROL SYSTEMS
LS7: Emergency strobe light (ESL) system is poorly defined to motorists and may be ineffective in directing them to safe egress in the event of a tunnel evacuation.
LS8: Corrosion of the exposed conduit raceway and strobes in the Ted Williams Tunnel.
LS9: Emergency strobe light (ESL) circuits are not supervised for circuit failure.
LS10: Highway advisory radio (HAR) and variable message sign (VMS) systems are not fully integrated into IPCS nor reliable for OCC use.
STANDPIPE SYSTEM & WATER SUPPLIES
LS11: Section of standpipe system is disconnected from rest of system (I-90 EB near utility room UR -117).
LS12: Connection of two sections of standpipe piping is not secure (near access to VB5).
LS13: Inoperable hose cabinet handles prevent access to hose connections (I-93 NB/SB tunnels and ramps).
LS14: Oxidation on bronze hose valves in hose connection cabinets could inhibit operability (I-90 EB/WB in at least three whole standpipe sections).
LS15: Elbows for hose connections show signs of corrosion (TWT).
LS16: Corrosion of some sections of tunnel standpipe piping (TWT, I-93 NB, I-93 SB ramps).
LS17: Support for piping is damaged or does not comply with code (standpipe sec. 213 of I-93 NB Ramp ST-CN).
LS18: Incorrect or missing identification signage for drain valves and fire department hose connections (I-93, I-90, TWT).
LS19: Standpipe piping system not protected against potential vehicle impact (I-93 SB Ramp R-R, last hose connection and associated 4-inch piping at the south end of ramp).
LS20: Rusted chain wheels for sectional valves over tunnel walkways, control chains not locked against unauthorized closure, and lack of electronic monitoring of valves for closure.
LS21: Insulation becoming detached from wet pipe (TWT utility room UR45).
LS22: Standpipe sectional control valve above tunnel walkway has its control chain out of reach from walkway (standpipe sec. 408 between HC 4 and HC 5 in I-90 EB).
LS23: Standpipe sectional control valve chain is missing (near HC 3 on I-93 SB Ramp R-R).
LS24: Standpipe sectional valve is partially closed and chain operator is missing (Sec. 408, between HC 1 and HC 2 in I-90 EB tunnel).
LS25: Wet standpipe riser control valve for TWT is closed (VB6).
LS26: Valves at wet standpipe hose connections are closed (TWT).
LS27: Fireproofing material present on air vacuum/relief valve (I-93 SB Ramp R-R).
LS28: Valve hand wheel not attached to hose connection (I-90 WB Ramp D cabinet Section 416, HC 8).
LS29: Missing hose connection caps (I-93 NB/SB Fire Dept. Connections located at the surface of Tunnel Egress 526H).
PORTABLE FIRE EXTINGUISHERS

LS30: Fire extinguishers exhibiting rust near bottom of extinguishers (I-90/I-93 Connector EB).
LS31: Maintenance of fire extinguishers per Code is not evident.
EMERGENCY RESPONSE PLANS & CONTROL OF HAZARDOUS MATERIALS
LS32: Inter-agency training on incident response procedures is not occurring as planned (all tunnels).
EMERGENCY EGRESS FEATURES
LS33: Emergency response procedures for tunnel egress are not consistent with the project Design Criteria or with NFPA 502.
LS34: Project design basis does not address accessible egress from the tunnels.
LS35: Obstruction present on TWT egress walkway (west end of tunnel).
LS36: Many of the sliding 1-1/2 hour fire doors do not close properly (all tunnels) and have door gaskets that are bent and/or partially torn (TWT only).
LS37: Broken exit signs at some cross passages/tunnel exits (all tunnels) and within vent bldgs (VB3,4,5,6,7,8).
LS38: Exit signage not visible (lower portion of TWT; large fan rooms of VB1,3,4,6).
LS39: Heavily soiled exit signs (all tunnels).
LS40: Non-working or insufficient lighting in tunnel exits/cross passages (I-90 and I-93 only).
LS41: Temporary laminated placards used for exit and wayfinding signage (TWT and I-90 only).
LS42: Stair interrupter gates are broken and left open at some locations (TWT and I-90 only).
LS43: Opening force for sliding fire doors exceed Project Design Criteria (all tunnels).
LS44: Guardrails not provided for passenger-side egress walkways in tunnels (all tunnels).
LS45: Some of the sliding doors for cross passageways do not have fire-rating label (all tunnels).
LS46: Fire-rated doors do not close properly (some mechanical and electrical rooms of VB1,2,3,4,5,6,7)
OPERATIONS & CONTROL SYSTEMS (OCC, BOCC, IPCS)
LS47: Total IPCS systems integration not complete (OCC).
LS48: Personal emergency response equipment for operators and critical information access.
LS49: Extent of training to handle OCC power failure. Response to OCC power failure was inefficient and took too long to get back in service.
LS50: Deteriorated condition of CCVE equipment (all tunnels).
LS51: Possible single point of failure - insufficient cooling for critical data and equipment storage rooms.
LS52: Unique/proprietary IPCS software system and hardware obsolescence.
LS53: At times OCC staffing does not appear to be adequate to monitor the number of cameras within the CA/T system.
POWER SYSTEMS (ELECTRICAL SYSTEMS & SUPPORT SPACES)
LS56: Water is leaking into the main electrical rooms and other critical areas (VB 2, 4, 7, 8; OCC, substations, various tunnel utility rooms).
LS58: Access within the fire pump room is restricted (VB5) and flammable fluids and other items are stored in fire pump room (VB7).
LS59: Grounding busses and some batteries are corroded and leaking acid (all vent bldgs).
LS60: Generally inadequate emergency signage, inadequate clearances, improper liquidtight conduit length and supports, exposed cable and missing miscellaneous accessories (all vent bldgs, OCC, and substations).
LS61: Multiple spaces have cooling capacity concerns (all vent bldgs and substations).
LS62: A space originally designed to be a clerical support storage room has been converted to a computer room (OCC).
LS63: Inoperative building supply and exhaust fans (all vent bldgs, OCC, and substations).
LS64: The supply fan for the electrical room is cycling on and off (VB5).
LS65: The supply fan and exhaust fan rooms have visible standing water (VB7).
LS66: The outdoor air dampers do not seal (VB6).
LS67: There is no make-up or supply air to the battery room that has a continuously operating exhaust fan for H2 ventilation (VB6).
LS70: Exhaust fans in Tunnel Jet Fan Control Room do not have vibration isolation (VB8).
LS71: Damper indicator lights are not functional (VB1,3,4,8).
LS72: Damper actuator hydraulic oil tanks show visible signs of leaking (all vent bldgs).

LS73: Combustible debris and materials in the fan room (VB6).
LS74: Fire stop in the fan control room (B3M02) is not complete (VB5).
LS75: Construction filter remains installed on the supply grille of B106 (VB4).
LS76: Fan damper controls are in the direct path of the louvers and fan inlets (VB7).
LS78: Flexible connection exceeds allowable length and no supports or grounding jumper visible (VB 3,5).
LS79: Failure in controlled power outage, generator and UPS test (VB2).

CENTRAL ARTERY/TUNNEL

R2-1: Three wing patches on Ramp ST, contract C19B1, north of Charles River, recommend patches be replaced.
R2-2: Brownish wing patches on Ramps XX and XXE in South Bay Interchange that exhibited varying degrees of unbonded areas, recommend MTA or CA/T investigate these patches further (located over 4th, Broadway, and HOV-EB) and repair unsound patches.

SUPPLEMENTAL WISS JANNEY LIST OF ISSUES

TS1: Diagonal cracks are present near ends of spans and vertical cracks near midspan on the sloped faces of portal roofs. This condition occurs at various locations in the CA/T system. See Appendix A plan views for locations.
TS8: Multiple horizontal or diagonal cracks at localized areas of the boat or portal walls. See Appendix A plan views for locations.
TS12: Cracking and bowing in lower plenum cast-in-place wall at Station 144+00 in Ted Williams Tunnel.
TS13: Bowing of precast panel at underside of roadway slab in lower plenum, south duct of Ted Williams Tunnel between 136+80 and 137+30.
TS14: Exposed steel I-beams with corrosion and scaling at east bulkheads of Ramp T-A/D supply plenums.
TS15: Scaling concrete surface at the tunnel roof in Ted Williams Tunnel westbound between Stations 88+96 to 89+20.
TS16: Pattern cracking in roof bottom surfaces in the I-90 Connector tunnels sometimes associated with unconsolidated concrete. Also occurs at one location in the ITT-concrete tunnel section. See Appendix A plan views for locations.
TS18: Various conditions at slurry wall construction joints in Ramp L between Stations 65+00 and 72+50, including leakage, exfoliation of shotcrete repairs, and unsound concrete. Leakage at the joints has also caused corrosion of steel hardware supporting the precast concrete walls located along the roadway.
TS21: Theoretical deformation/yielding at roof girder web connections to soldier piles.
TS23: Leakage and rust stains at several PT girder ends.
TS25: Pattern cracking in roof bottom surfaces similar to TS16 conditions but occurring specifically in the jacked tube sections, which could not be waterproofed with conventional sheet waterproofing due to tunnel installation method. See Appendix A plan views for locations.
TS26: Delaminations and cracking at shear keys in Ted Williams Tunnel supply plenums.
TS28: Overstress calculated in roof girders at section over interior column.
TF32: Crack in concrete through anchor embedment zone at sign support anchorage, noted at TWT EB Sta. 143+18, TWT WB Sta. 101+20.
CV5: Insufficient grout in tendon ducts.
CV8: Atypical traffic barrier expansion joint. (Typically a cover plate detail at expansion joints.)
CV9: Diagonal cracking of webs of precast segmental box girders observed in Frontage Road North. Affected area includes longer-than-specified closure pour. Similar, less severe cracking was noted in a few other locations.

CV10: Deterioration of concrete overlay on viaduct decks.
CV12: Repaired cracking in the base of an expansion joint segment was observed at Pier SN10.
CV13: Several spans of continuous box girder construction without any apparent means of accommodating volume change effects were observed in various ramps in the I-90/I-93 interchange.
CV14: Deficiency report (DR) #177 of Contract C19B1indicated transverse tendons were missing in a closure pour near Bent NB8.
CV17: Columns observed with potential interferences, with precast box girder segment wings, during a seismic event.
CV18: Map cracking of cast in place Bents.
CV20: Missing pintles noted at Bents NS11 and SN15.
CV21: Pintle at Ramp NS north abutment noted to be locked-up for any additional contraction movement.
CV24: Fire damage inside transition structure at the north abutment of I-93NB in the I-90/I-93 Interchange.
SV15: Diagonal cracks in double column pier (typical) (C13A1).
SV16: Diagonal hairline cracks in double column pier (typical) (C12A3).
SV17: Diagonal hairline cracks in single column pier (typical) (C12A3).
ZB1: Main span and back spans have open electrical junction boxes and conduits. Some conduits are filled with water.
ZB2: Grout voids in post tensioned tendon ducts at tower strut and strut cantilever, main span deck slab, and back span diaphragm walls and deck slab.
ZB4: Main span and back spans have cracking, delaminations, and deterioration of roadway wearing surface.
ZB7: Cracking between stay cable anchors on the north and south elevations of each tower.
ZB8: Longitudinal cracking in concrete at exterior faces of the north and south tower upper legs.
ZB9: Cracking in concrete at north tower strut.
ZB10: Cracking in concrete at north and south tower lower legs.
ZB11: Cracking in concrete at south tower stay cable anchor C19E.
ZB22: Cracking in wing wall of the south abutment expansion joint (southbound lanes, west side).
ZB25: Oil leakage from internal elastomeric damper observed at hood, connection, or anchor nut at numerous bottom stay anchors.

ZB29: Anchor plate deformation at bottom main span stay anchors C19ES, C20ES, C22ES, C18EN, C19EN, and C33EN.
ZB33: Bolts at bearings not properly installed.
LB5: Transverse and diagonal concrete cracking in north end pier cap beam.
LS1: Effect of hot gases from fire on epoxy anchors in exhaust plenum (TWT); Unprotected structural steel ceiling support elements located outside of exhaust plenum (I-90 Connector, I-93).
LS2: ASTM E119 fire curves for evaluating the response of tunnel elements subjected to fire may not be fully representative of a tunnel car fire.
LS3: Fire resistance ratings of the fireproofing assemblies, through-penetration assemblies, and opening protectives in tunnel exhaust plenums.
LS54: Non-diverse power for UPS systems (OCC, VB7).
LS55: Automatic capabilities for 15 kV automatic transfer switch disabled (all vent bldgs, OCC, and substations).
LS57: Conflicting drawings and installation of electrical equipment (all vent bldgs, OCC, and substations).
LS68: Settings of overcurrent protection devices inconsistent (all vent bldgs, substations, pumping stations, and OCC).
LS69: Emergency response procedures incomplete or unavailable (all vent bldgs, substations, pumping stations, and OCC).

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