GUIDANCE DRAWINGS ARE FOR USE BY DESIGN TEAMS AS REPRESENTATIONS OF THE ARRANGEMENT OR CONFIGURATION OF SPECIFIC COMPONENTS OR THE WAY ACCEPTABLE SOLUTIONS TO CERTAIN DESIGN CHALLENGES HAVE BEEN ADDRESSED. THE GUIDANCE DRAWINGS ARE STARTING POINT OF DESIGN SOLUTIONS AND ARE INTENDED TO BE MODIFIED FOR APPLICATION TO PROJECT CONDITIONS.

THE DESIGNER OF RECORD SHALL REVIEW GUIDANCE DRAWINGS IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTS AND SELECT APPLICABLE GUIDANCE DRAWINGS TO DEVELOP, STAMP, SIGN AND FINALIZE AS PROJECT CONTRACT DOCUMENTS.

SOUND TRANSIT MAKES THE GUIDANCE DRAWINGS AVAILABLE ON AN AS-IS BASIS AND THEY SHALL NOT BE DEEMED TO BE “DESIGN FURNISHED” BY SOUND TRANSIT.

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SYSTEMS GUIDANCE DRAWINGS

APPLICABILITY OF CURRENT VERSION
SUPERSEDES AUGUST 2019 VERSION
FOR PROJECTS THAT ARE BASELINED AFTER MARCH 29, 2024
DISCLAIMER FOR
Design and Engineering Design Standards Documents

Sound Transit makes these documents available on an "as is" basis. By accepting receipt of the documents, the receiver agrees to the following:

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- The receiver will not utilize the documents in any way that violates or infringes on Sound Transit’s intellectual property rights in such documents;
- The provided documents should not be construed to represent formal design guidance and/or direction for any project;
- Sound Transit makes no representation or warranty that the provided data is complete, appropriate, or fit for any particular purpose, stated or otherwise;
- All documents provided by Sound Transit, including any revisions, shall remain the personal and intellectual property of Sound Transit; and
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APPLICABILITY FOR
Design and Engineering Design Standards Documents

Project teams shall refer to their executed project contracts for applicable document versions/revisions.
<table>
<thead>
<tr>
<th>CONTACT</th>
<th>STATE</th>
<th>EQUIPMENT</th>
<th>LOCATION</th>
<th>PLC SIDE</th>
<th>MODBUS ADDRESSING</th>
<th>I/O ADDRESSING</th>
<th>PROCESS DEVICE</th>
<th>ID OF THE FIELD CONTROLLER</th>
<th>FIELD UNIT MODBUS ADDRESSING</th>
<th>FIELD STATE</th>
<th>DIGITAL STATE</th>
<th>STATION</th>
<th>POINT DESCRIPTION</th>
<th>I/O TYPE</th>
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<td>%QXXXXX</td>
<td>0XXXXX</td>
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<td>START COMMAND CONVENTION PLACE STATION</td>
<td>NOTES 13</td>
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<td>OPEN COMMAND WESTLAKE STATION</td>
<td>NOTES 13</td>
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</tbody>
</table>

**GENERAL NOTES:**
- The tables shown are examples only. Design to Standard Specification 25 60 00.
- Provide blank SIDT template to be filled by contractor which contains all points called for in contract.
- Achieve and maintain MODBUS addressing.
- Configure all controllers providing I/O for BMS/EVS/TCS SCADA required I/O points shall be determined by final design EOR.
- Detailed and electrical design requirements for all PLCs or controllers providing I/O for BMS/EVS/TCS SCADA.
- All data to be exchanged with Link Data Center.
**EQUIPMENT TYPE** | **BDA I/O DESCRIPTION** | **POINT TYPE** | **PLC TAG TEMPLATE** | **LOCAL DDC** | **LOCAL MONITORING PANEL** | **FACP (SUPERVISORY SIGNAL)**
--- | --- | --- | --- | --- | --- | ---
**BDA POWER SUPPLY** | 1. LOSS OF NORMAL AC POWER SUPPLY | DI | BDA_XX_ACPWR_FAIL_DI | X | | |
| 2. SYSTEM BATTERY CHARGER(S) FAILURE | DI | BDA_XX_BATT_LOW_DP | X | | | |
**BDA OTHER SIGNALS (NEW)** | 3. MALFUNCTION OF THE COMMUNICATIONS LINK BETWEEN THE FIRE ALARM SYSTEM AND THE EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM. | DI | BDA_XX_FACP_LINK_FAIL_DI | X | | |

**NOTES:**
1. LOOP MONITORED CONNECTION
2. POWER AND ALARMS TO BDA
3. MALFUNCTION OF THE DONOR ANTENNA(S) DIBDA_XX_ANT_FAIL_DIN/AN/A
4. FAILURE OF ACTIVE RF-EMITTING DEVICE(S) DIBDA_XX_RF_FAIL_DIN/AN/A
6. ACTIVE SYSTEM COMPONENT MALFUNCTION DIBDA_XX_COMP_FAIL_DIN/AN/A
1. LOSS OF NORMAL AC POWER SUPPLY DIBDA_XX_ACPWR_FAIL_DIN/AN/A
2. SYSTEM BATTERY CHARGERS FAILURE DIBDA_XX_BATT_FAIL_DIN/AN/A
3. MALFUNCTION OF THE COMMUNICATIONS LINK BETWEEN THE FIRE ALARM SYSTEM AND THE EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM DIBDA_XX_FACP_LINK_FAIL_DIN/AN/A
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6. ACTIVE SYSTEM COMPONENT MALFUNCTION DIBDA_XX_COMP_FAIL_DIN/AN/A
7. MALFUNCTION OF THE COMMUNICATIONS LINK BETWEEN THE FIRE ALARM SYSTEM AND THE EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM DIBDA_XX_FACP_LINK_FAIL_DIN/AN/A
8. OSCILLATION OF ACTIVE RF-EMITTING DEVICE(S) DIBDA_XX_OSCILLATION_DIN/AN/A

**NOTE:** ADJUSTED TO MEET IFC 510-2022 4.2.5
LOW PROFILE TYPE ANTENNA
ADHESIVE OR NMO MOUNT SEE SPECIFICATIONS FOR SPECIFIC ANTENNA MODELS AND MOUNTING

ATLAS/SOUNDOLIER 81-8R TILE BRIDGE (OR APPROVED EQUAL) WITH 8" CIRCULAR CUTOUT
ANTENNA JUMPER CABLE WITH N MALE CONNECTOR
NEMA 1 BOX (8"X8"X6") MOUNTED TO METAL CEILING FRAMING STRUCTURE AND FLUSH WITH CEILING SURFACE
ALUMINUM GROUND PLATE 24" DIA 18 GAUGE PAINTED TO MATCH CEILING TILES
CABLE CLAMP
COAXIAL CABLE WITH N FEMALE CONNECTOR
MACHINE SCREWS
SUSPENDED ACOUSTICAL TILES CEILING
MOUNT STANDOFF AS CLOSE TO CONNECTOR AS POSSIBLE

CONCRETE CEILING: USE 3/16" SELF-TAPPING MASONRY SCREWS. (MINIMUM LENGTH 1 1/2"
COAXIAL CABLE WITH N FEMALE CONNECTOR
MOUNT STANDOFF AS CLOSE TO CONNECTOR AS POSSIBLE
CABLE CLAMP
ALUMINUM GROUND PLATE 24" DIA 18 GAUGE PAINTED TO MATCH CEILING TILES
SHEET METAL SCREWS
LOW PROFILE TYPE ANTENNA ADHESIVE OR NMO MOUNT SEE SPECIFICATIONS FOR SPECIFIC ANTENNA MODELS AND MOUNTING

WALLBOARD CEILING
ALUMINUM GROUND PLATE 24" DIA 18 GAUGE PAINTED TO MATCH CEILING TILES
SHEET METAL SCREWS
LOW PROFILE TYPE ANTENNA ADHESIVE OR NMO MOUNT SEE SPECIFICATIONS FOR SPECIFIC ANTENNA MODELS AND MOUNTING

AT SUSPENDED CEILING DETAIL
NEMA 1 BOX (8"X8"X6") MOUNTED TO METAL CEILING FRAMING STRUCTURE AND FLUSH WITH CEILING SURFACE
ANTENNA JUMPER CABLE WITH N MALE CONNECTOR
NEMA 1 BOX (8"X8"X6") MOUNTED TO CONCRETE CEILING STRUCTURE
ALUMINUM GROUND PLATE 24" DIA 18 GAUGE PAINTED TO MATCH CEILING TILES
COAXIAL CABLE WITH N FEMALE CONNECTOR
MOUNT STANDOFF AS CLOSE TO CONNECTOR AS POSSIBLE
CABLE CLAMP
MACHINE SCREWS
SUSPENDED ACOUSTICAL TILES CEILING
MOUNT STANDOFF AS CLOSE TO CONNECTOR AS POSSIBLE

AT SOLID WALL BOARD CEILING DETAIL
CONFIDENTIAL
CONFIDENTIAL
### CABLE SCHEDULE

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<th>No.</th>
<th>Discipline</th>
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<th>Source Room</th>
<th>Source Rack</th>
<th>Source Equipment</th>
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<td>M003</td>
<td>M004</td>
<td>CR02</td>
<td>FPP02A C</td>
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<td>Y300</td>
<td>YARD TPS5</td>
<td>CR01</td>
<td>FPP01-A</td>
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<td>M004</td>
<td>M004</td>
<td>CR02</td>
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<td>016F.SM.01 M004-M004-M004-M004-CR02-FPP02E-A01-TSS-CR01-FPP01-A</td>
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<td>YARD TPS5</td>
<td>CR01</td>
<td>FPP01-A</td>
</tr>
</tbody>
</table>

**GENERAL NOTES:**

1. THIS DRAWING IS AN EXAMPLE OF FIBER CABLE SCHEDULE.
2. DESIGNERS MUST APPLY DD-1007 BACKBONE FIBER TOPOLOGY.

**CONTRACT No.:**

**FILE NAME:**

**SYSTEMS:**

**FACILITY ID:**

**DESIGNED BY:**

**CHECKED BY:**

**APPROVED BY:**

**CHECKED BY:**

**SUBMITTED BY:**

**DATE:**

**REVIEWED BY:**

**DATE:**

**REVISION:**

**CHECKED BY:**

**DATE:**
CONFIDENTIAL
CONFIDENTIAL
CONFIDENTIAL
CONFIDENTIAL
GENERAL NOTES:

1. COORDINATE POWER AND SIGNAL CABLE AND CONDUIT TO THE NEAREST TIDS, COMMUNICATION CABINET, SIGNAL BUNGALOW, OR COMMUNICATION BUNGALOW.

2. TRACK INTRUSION DETECTION SYSTEM (TIDS) OPERATION:

   2.1. TIDS CAMERA DETECTS INTRUSION AND CLOSES A CONTACT THAT TERMINATES ON THE TIDS REMOTE I/O.

   2.2. LOGIC FROM THE TIDS REMOTE I/O STARTS THE STROBE AND THE SPEAKER.

   2.3. THE STROBE AND HORNS ARE ENABLED FOR SIX MINUTES.

   2.4. THE REMOTE I/O SHALL ALARM AT THE LCC TIDS SYSTEM.

   2.5. LOGIC AND GRAPHICS IS PROVIDED AT THE LCC TO BE ABLE TO MANUALLY RESET EACH STROBE AND HORN. ONE RESET FOR EACH LOCATION.

   2.6. VIDEO IMAGE IS RECORDED AT THE LCC.

3. FOR TUNNEL PORTAL ENTRANCE LOCATION TIDS CAMERAS SHALL BE INSTALLED ON TUNNEL FACE ABOVE THE PORTAL.

4. CONTRACTOR TO INSTALL AND CONNECT SOUND TRANSIT PROVIDED AND CONFIGURED TCN ACCESS SWITCH.

5. STEEL NEMA 4X ENCLOSURE. DIMENSIONS APPROXIMATE.

6. TUNNEL PORTAL OR PLATFORM ASSOCIATED FUNCTIONS WILL NOT HAVE AN ETEL.
CONFIDENTIAL
CONFIDENTIAL
CONFIDENTIAL
CONFIDENTIAL
GENERAL NOTES:

1. COORDINATE WITH ARCHITECTURAL DOOR SCHEDULE FOR REQUIRED FEATURES AND FUNCTIONALITY AT EACH DOOR / GATE. THIS INCLUDES CONFIGURATION OF ADJACENT EGRESS DOORS THAT DETERMINE NEED FOR ADDITIONAL CARD READERS OR EMERGENCY EXIT PUSH BUTTONS.

2. INTEGRATED IP ACCESS CARD READER / DOOR CONTROLLER POWER OVER ETHERNET (POE) COMPATIBLE. INTEGRATE ACCESS CARD READER / DOOR CONTROLLER TO ENABLE OPERATOR SWITCH FUNCTION.

3. INTEGRATE ACCESS CARD READER / CONTROLLER EQUIPMENT INCLUDING TERMINALS AND RELAYS TO ACHIEVE REQUIRED FUNCTIONALITY WITHIN ENCLOSURE. PROVIDE UL LISTING FOR ASSEMBLY.

4. CONTACTS SHALL CLOSE WHEN DOOR / GATE IS CLOSED. COORDINATE CONSULT AND CONTROL CONDUCTORS TO IMPLEMENT REQUIRED FUNCTIONALITY AT EACH DOOR / GATE.

5. CONTRACTOR SHALL PROVIDE LICENSES AND CONFIGURE THE HEADEND ACS AND BMS SOFTWARE FOR THE DOORS / GATES.

6. SEE JOC-4 FOR COMMUNICATIONS DEVICE POWER ARCHITECTURE.

NOTE:

1. COORDINATE WITH ARCHITECTURAL DOOR SCHEDULE FOR REQUIRED FEATURES AND FUNCTIONALITY AT EACH DOOR / GATE. THIS INCLUDES CONFIGURATION OF ADJACENT EGRESS DOORS THAT DETERMINE NEED FOR ADDITIONAL CARD READERS OR EMERGENCY EXIT PUSH BUTTONS.

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4. CONTACTS SHALL CLOSE WHEN DOOR / GATE IS CLOSED. COORDINATE CONSULT AND CONTROL CONDUCTORS TO IMPLEMENT REQUIRED FUNCTIONALITY AT EACH DOOR / GATE.

5. CONTRACTOR SHALL PROVIDE LICENSES AND CONFIGURE THE HEADEND ACS AND BMS SOFTWARE FOR THE DOORS / GATES.

6. SEE JOC-4 FOR COMMUNICATIONS DEVICE POWER ARCHITECTURE.
GENERAL NOTES:
1. CONTRACTOR SHALL PROVIDE LICENSES AND CONFIGURE THE HEADEND ACS AND BMS SOFTWARE FOR THE ADDED DOORS.
2. COORDINATE WITH ARCHITECTURAL DOOR SCHEDULE. INDIVIDUAL ELEMENTS ARE NOT APPLICABLE FOR ALL LOCATIONS.
3. SEE LJC604 FOR COMMUNICATIONS DEVICES POWER ISOLATION ARCHITECTURE.
4. VERIFIED CARD READER PREVENTS BUZZER FROM SOUNDING AND ALARM AT BMS.
5. BMS DESIGNER, DOOR CONTROL DESIGNER AND COMMUNICATION DESIGNER SHALL COORDINATE LOCATION AND SCOPE DEFINITION OF AUXILIARY POWER SUPPLY TO POWER ELECTRONIC LOCKS APPROPRIATELY. CONSTRUCTION SEQUENCING SHOULD BE CONSIDERED.
1. STRUCTURE SHOWN MAY NOT REPRESENT ACTUAL STATION STRUCTURE ELEMENTS. SEE STATION ARCHITECTURAL/STRUCTURAL DRAWINGS FOR APPLICABLE PLATFORM/STATION STRUCTURES FOR MOUNTS.

2. MAXIMUM WEIGHT PER VMS-CAMERA ASSEMBLY SHALL BE NO MORE THAN 300 LBS (INCLUDES TWO DISPLAYS AND TWO CAMERAS); PIPE HANGERS AND OTHER STRUCTURAL ELEMENTS SHALL SUPPORT FULL WEIGHT OF ASSEMBLY.

3. PIPE HANGER SHALL INCLUDE CONDUITS FOR POWER AND COMM AS SHOWN.

4. ADJUST PIPE HANGERS FOR VMS AND CAMERAS TO MEET REQUIRED HEIGHT ABOVE FINISHED FLOOR.

5. VMS SHALL BE 100% COMPATIBLE TO THE EXPECTED PAYMS SYSTEM UPGRADE TO PIMS SYSTEM.

6. MOUNT JUNCTION BOX IN OPTIMAL LOCATION TO PROVIDE TRANSITION FROM CANOPY CONDUIT INTO PIPE HANGER; COORDINATE WITH STRUCTURE TO PROVIDE ANY NECESSARY PENETRATIONS TO FEED CABLE THROUGH PIPE HANGER TO DISPLAY MOUNTS. SEE DRAWINGS E31-JCP401 AND E31-JCP402.

7. VERIFY MOUNTING BRACKET AND SHOE ASSEMBLY ARE COMPATIBLE WITH CAMERA MOUNT PRIOR TO INSTALLATION.

8. PROVIDE MOUNTING SHOE AND INSTALL PER MANUFACTURER RECOMMENDATIONS.

NOTE 1: STRUCTURE SHOWN MAY NOT REPRESENT ACTUAL STATION STRUCTURE ELEMENTS. SEE STATION ARCHITECTURAL/STRUCTURAL DRAWINGS FOR APPLICABLE PLATFORM/STATION STRUCTURES FOR MOUNTS.

NOTE 2: MAXIMUM WEIGHT PER VMS-CAMERA ASSEMBLY SHALL BE NO MORE THAN 300 LBS (INCLUDES TWO DISPLAYS AND TWO CAMERAS); PIPE HANGERS AND OTHER STRUCTURAL ELEMENTS SHALL SUPPORT FULL WEIGHT OF ASSEMBLY.

NOTE 3: PIPE HANGER SHALL INCLUDE CONDUITS FOR POWER AND COMM AS SHOWN.

NOTE 4: ADJUST PIPE HANGERS FOR VMS AND CAMERAS TO MEET REQUIRED HEIGHT ABOVE FINISHED FLOOR.

NOTE 5: VMS SHALL BE 100% COMPATIBLE TO THE EXPECTED PAYMS SYSTEM UPGRADE TO PIMS SYSTEM.

NOTE 6: MOUNT JUNCTION BOX IN OPTIMAL LOCATION TO PROVIDE TRANSITION FROM CANOPY CONDUIT INTO PIPE HANGER; COORDINATE WITH STRUCTURE TO PROVIDE ANY NECESSARY PENETRATIONS TO FEED CABLE THROUGH PIPE HANGER TO DISPLAY MOUNTS. SEE DRAWINGS E31-JCP401 AND E31-JCP402.

NOTE 7: VERIFY MOUNTING BRACKET AND SHOE ASSEMBLY ARE COMPATIBLE WITH CAMERA MOUNT PRIOR TO INSTALLATION.

NOTE 8: PROVIDE MOUNTING SHOE AND INSTALL PER MANUFACTURER RECOMMENDATIONS.
NOTES:
1. STRUCTURE SHOWN MAY NOT REPRESENT ACTUAL STATION STRUCTURE ELEMENTS. SEE STATION ARCHITECTURAL/STRUCTURAL DRAWINGS FOR APPLICABLE PLATFORM/STATION STRUCTURES FOR MOUNTS.
2. MAXIMUM WEIGHT PER VMS-CAMERA ASSEMBLY SHALL BE NO MORE THAN 300 LBS (INCLUDES TWO DISPLAYS AND TWO CAMERAS); PIPE HANGERS AND OTHER STRUCTURAL ELEMENTS SHALL SUPPORT FULL WEIGHT OF ASSEMBLY.
3. PIPE HANGER SHALL INCLUDE CONDUITS FOR POWER AND COMM AS SHOWN.
4. CUT PIPE TO LENGTH TO GET DISTANCE TO BOTTOM OF CAMERA SHOWN.
5. VMS SHALL BE 100% COMPATIBLE TO THE EXPECTED PAVMS SYSTEM UPGRADE TO PIMS SYSTEM.
6. MOUNT JUNCTION BOX IN OPTIMAL LOCATION TO PROVIDE TRANSITION FROM CANOPY CONDUIT INTO PIPE HANGER; COORDINATE WITH STRUCTURAL TO PROVIDE ANY NECESSARY PENETRATIONS TO FEED CABLE THROUGH PIPE HANGER TO DISPLAY MOUNTS.
GENERAL NOTES:
1. SUN SHIELD AND OR ANTI-GLARE COATINGS TO BE ADDED IF REQUIRED BY SITE CONDITIONS.
2. CONDUIT AND JB TO BE CONCEALED FROM PUBLIC VIEW, COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR SPECIFIC MOUNTING LOCATION.
3. COORDINATE WEIGHT AND MOUNTING DETAILS WITH ARCHITECTURAL AND STRUCTURAL.
4. MUST BE INSTALLED A MINIMUM OF 9'-0" AFF. TO BOTTOM OF SCREEN.
5. DIMENSIONS SHOWN ARE MAXIMUMS AND MAY VARY BASED UPON FINAL EQUIPMENT SELECTION.
6. CONFIGURATION TYPICALLY USED IN PLAZA CONFIGURATIONS, NOT TO BE USED FOR PLATFORM KIOSKS.
NOTES:

1. THIS DRAWING IS AN EXAMPLE OF ENCLOSURE DETAILS.
2. THE LIST OF BILL MATERIALS SHALL BE RELEVANT TO PROJECT SPECIFICATION.
3. THIS IS MINIMUM REQUIRED FOR DETAILS.
4. THIS IS AN EXAMPLE ONLY AND NOT AS-BUILT.
5. SEE MANUFACTURE INSTRUCTIONS FOR FIBER ROUTING.
6. THE SITE MATERIALS LIST IS BASED ON LEVITON HARDWARE. FINAL HARDWARE MUST BE BASED ON SPECIFICATION REQUIREMENTS AND MEET THE SAME INTENT.

SITE MATERIALS LIST

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<th>ITEM</th>
<th>QUANTITY</th>
<th>VENDOR</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
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<tr>
<td>1</td>
<td>2</td>
<td>LEVITON</td>
<td>S6K4-H/S12</td>
<td>4 RU FIBER ENCLOSURE, EMPTY, WITH SLIDING TRAY, OPT-X 2000 SERIES</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>LEVITON</td>
<td>SRC4M-KIT</td>
<td>UNIVERSAL CABLE CLAMP KIT, MULTI-CABLE GROMMET FOR UP TO 6 (SEE NOTE 6)</td>
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<td>3</td>
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<td>LEVITON</td>
<td>TSPL-24F</td>
<td>INJECTION MOLDED HIGH DENSITY SPLICE TRAY, 24 FIBER SPlicing</td>
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<td>4</td>
<td>2</td>
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<td>SPLMT-VKT</td>
<td>SPLICE TRAY MOUNTING HARDWARE KIT - NOT SHOWN</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>LEVITON</td>
<td>FSSSD-060</td>
<td>FUSION SPLICE SLEEVE, 60mm (BAG OF 50) - NOT SHOWN</td>
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<td>6</td>
<td>24</td>
<td>LEVITON</td>
<td>P0F-52MR/1200-0MM</td>
<td>INSTALL KIT, OS2 SINGLE MODE, PVC, 1200 MICRON, LC, TIA COLORS 1-12, 3 METERS</td>
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<td>7</td>
<td>24</td>
<td>LEVITON</td>
<td>SF110-4ML</td>
<td>PRECISION MOLDED PLATE (BLUE), 6MM (0.25IN), QUAD LC, 4 FIBER, ZIRCONIA CERAMIC SLEEVE</td>
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<td>8</td>
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<td>DPGRD-KIT</td>
<td>OP UNIVERSAL GROUNDING KIT - NOT SHOWN</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>LEVITON</td>
<td>SR150-14R</td>
<td>FIBER CABLE MANAGEMENT QUARTER-ROUND RING KIT (BAG OF 4) - NOT SHOWN</td>
</tr>
</tbody>
</table>

NOTES:

1. THIS DRAWING IS AN EXAMPLE OF ENCLOSURE DETAILS.
2. THE LIST OF BILL MATERIALS SHALL BE RELEVANT TO PROJECT SPECIFICATION.
3. THIS IS MINIMUM REQUIRED FOR DETAILS.
4. THIS IS AN EXAMPLE ONLY AND NOT AS-BUILT.
5. SEE MANUFACTURE INSTRUCTIONS FOR FIBER ROUTING.
6. THE SITE MATERIALS LIST IS BASED ON LEVITON HARDWARE. FINAL HARDWARE MUST BE BASED ON SPECIFICATION REQUIREMENTS AND MEET THE SAME INTENT.
GENERAL NOTES:
1. LED FLAT PANELS MAY BE EXISTING. COORDINATE FUTURE EXTENSION SCOPE TO UPDATE AND INCORPORATE GRAPHICS.
2. PROPOSED TRACK AND STATION ALIGNMENT DISPLAY IS CONCEPTUAL ONLY.
3. MONITORS ARE MOUNTED TO INTEGRATED VIDEO WALL FRAME.
4. DEVELOP SCOPE AND CONFIRM WITH ST TO INCORPORATE CCTV INTO VIDEO WALL.
5. PRIMARY SCADA WORKSTATIONS ARE SHOWN. ADDITIONAL WORKSTATIONS FOR CCTV/COMMUNICATIONS TO BE COORDINATED AND CONFIRMED WITH ST.
6. DRAWING INTENDED TO PROVIDE REFERENCE OF LCC FLAT PANEL DISPLAY AND TYPICAL WORKSTATION AT OMF, NOT SIZE AND QUANTITY OF CURRENT DISPLAY.
GENERAL NOTES:
1. BOND ALL TELECOM DEVICES, CABLE TRAY, AND CABINETS TO TMGB.
2. PROVIDE SEPARATE DEDICATED BREAKER PANEL FOR UPS-ONLY POWER.
3. XX-MDCP-XX TO BE FED VIA DISCONNECT SWITCH FROM 480-208/120V TRANSFORMER LOCATED OUTSIDE OF HOUSE.
4. FOLLOW MANUFACTURERS REQUIREMENTS FOR SEISMIC PLACEMENT AND BRACING EQUIPMENT.
5. NO SWING OUT RACK ALLOWED IN COMM. ROOMS WITHOUT PRIOR APPROVAL FROM SOUND TRANSIT.
6. MINIMUM 12-INCH CLEARANCE BETWEEN TOP OF THE RACK AND BOTTOM OF CABLE TRAY.
7. MINIMUM EQUIPMENT CLEARANCE NEC AND BICSI TDMM.
8. REFER TO SOUND TRANSIT REQUIREMENTS MANUAL SET 815 - TELECOMMUNICATION SPACES FOR MINIMUM COMMUNICATIONS ROOM SIZE.
GENERAL NOTES:

1. BOND ALL TELECOM DEVICES, CABLE TRAY, AND CABINETS TO TBGB.
2. PROVIDE SEPARATE DEDICATED BREAKER PANEL FOR UPS-ONLY POWER.
3. EXX-BRKR-XX TO BE FED VIA DISCONNECT SWITCH FROM 480-208/120V TRANSFORMER LOCATED OUTSIDE OF BUNGALOW.
4. BUNGALOW WALLS SHALL BE CONSTRUCTED TO ACCOMMODATE SEISMIC BRACING.
5. PROVIDE VERTICAL CABLE LADDER TO/FROM FLOOR CONDUIT PENETRATIONS TO OVERHEAD LADDER RACK.
6. NO SWING OUT RACK ALLOWED IN COMM. ROOMS WITHOUT PRIOR APPROVAL FROM SOUND TRANSIT.
7. MINIMUM EQUIPMENT CLEARANCE PER NEC AND BICSI TDMM.
8. REPRESENTS MINIMUM INTERNAL DIMENSIONS.

COMM BUNGALOW - TYPICAL LAYOUT

SCALE: 1" = 1'-0"
GENERAL NOTES:
1. Use PVC electrical conduit spacers to maintain a spacing of 3" clear between conduits.
2. Install interlocking module conduit spacers on 5'-0" centers.
3. Use red concrete for conduit ductbank installations carrying medium-voltage or traction power cables.
GENERAL NOTES:

1. INSTALL PRECAST CONCRETE UL RATED HANDHOLE WITH HANDHOLE COVER ON TOP BEFORE CONCRETE SLAB IS POURED. COORDINATE WITH ARCHITECTURAL DRAWINGS TO ALIGN WITH PLATFORM PAVING PATTERN.

2. BARRIER SHALL BE 1/4" STEEL PLATE, HOT DIPPED GALVANIZED CAN BE USED TO FIT IN CONCRETE HANDHOLE MOUNT TO CONCRETE HANDHOLE WITH FOUR 1/4" ANCHORS.

3. CONDUCTORS #4 OR LARGER SHALL ENTER LATERAL CONDUIT OPPOSITE END OF SIDE ENTRANCE.

4. MINIMUM BEND RADIUS IS SIX TIMES DIAMETER OF CONDUIT.

5. PROVIDE DRAIN HOLE WHEN THERE IS A CONCRETE BOTTOM FLOOR.

6. SEAL THE CONDUIT TO PREVENT WATER ENTRY INTO THE CONDUIT.

COMMUNICATIONS / POWER PRECAST CONCRETE HANDHOLE PLAN

COMMUNICATIONS / POWER CONDUIT PLAN

COMMUNICATIONS / POWER CONDUIT ENTRY SECTION

COMMUNICATIONS / POWER PRECAST CONCRETE HANDHOLE SECTION
GENERAL NOTES:
1. Cover, vault, and castings shall be designed to withstand AASHTO H20 wheel loadings.
2. Cover shall be slip-resistant, watertight, and bolted down with tamper-proof bolts.
3. See vault schedule for quantities and vault dimension schedule for dimensions.
4. Dimensions for height do not include risers, if used.
5. Provide appropriate inscription cast into cover.
   - SC/ELECTRICAL
   - TE/ELECTRICAL
   - MV/ELECTRICAL
6. Provide cable support channels and knockouts or Term-a-Ducts on ends and sides.

VAULT DIMENSION SCHEDULE

<table>
<thead>
<tr>
<th>VAULT TYPE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>4' 0&quot;</td>
<td>4' 0&quot;</td>
<td>6' 0&quot;</td>
<td>6' 0&quot;</td>
<td>7' 0&quot;</td>
<td>7' 0&quot;</td>
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</tbody>
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NOTE 3: In your project, use 3/4" diameter pulling irons on each corner.

NOTE 4: Each corner shall have ground rod knockouts opposite corners.

NOTE 5: Inscription shall be cast into cover.

NOTE 6: Provide drain holes in vault.
6" MIN DIAMETER PULLING IRONS ONE EACH CORNER

GROUT (TYP) DAMP PROOF ALL AROUND (SEE SPECIFICATION)

JOINT GASKET: CONCRETE SEALANTS 1"

MEETS AASHTO M-198 FRAMING CHANNEL INSERTS

NOTE 7

RISER EXTENSION, NOTE 6

NOTE 3

INSULATE GROUNDING BUSHING FOR GRS CONDUIT OR PLASTIC BELL END OR TERM-A-DUCTS FOR NON-METALLIC DUCTS

CONCRETE ENCASED CONDUITS NOTES 1, 2 & 5

GROUT AROUND GROUND ROD

A3/4" X 10' CU CLAD GROUND ROD NOTE 3

COMPACTION 3/4" MINUS 12" DEEP MIN CRUSHED ROCK

GENERAL NOTES:

1. CONDUITS SHALL ENTER VAULT WALLS AT 90° TO WALL.

2. GRADE PERMITTING, CONDUITS SHALL SLOPE CONTINUALLY DOWN AT A MINIMUM OF 3" PER 100'-0" TO PROVIDE POSITIVE DRAINAGE TO MANHOLES.

3. VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF GROUND RODS.

4. GROUND EMBEDDED CHANNEL METAL LID COVER AND CONDUIT GROUNDING BUSHINGS TO GROUND ROD WITH #6 AWG CU.

5. SEE LAYOUT PLANS FOR NUMBERS AND TYPES OF DUCTS. DIMENSIONS VARY (TYPICAL)

6. USE ROUND ACCESS RISERS IF NECESSARY TO ACHIEVE FINAL ELEVATION.

7. FOR VAULT INSTALLED IN UNPAVED AREAS, INSTALL MANHOLE COVER 2 INCHES ABOVE SURROUNDING GRADE AND MAKE SURE THAT POSITIVE DRAINAGE IS AWAY FROM MANHOLE.

8. FOR VAULT INSTALLED IN PAVED OR CONCRETE AREAS, INSTALL MANHOLE COVER IN PLANE OF ASPHALT OR CONCRETE.
NOTES:
1. SEE CIVIL DETAILS STD-CSD101 THROUGH STD-CSD113 FOR TYPICAL FENCE LAYOUT. DETAILS AND NOTES ON THIS DRAWING MUST APPLY TO ALL FENCE TYPES. CONNECTORS AND COMPONENTS MUST BE ADJUSTED ACCORDINGLY TO ENSURE COMPATIBILITY IN ACCORDANCE TO THE MANUFACTURER RECOMMENDATIONS AND SPECIFIC APPLICATION. SEE NOTE 7.
2. GROUNDING APPLICABLE FOR ALL CONDUCTIVE FENCES THAT ARE AT RISK OF BEING ENERGIZED PER ST'S REQUIREMENTS AND IN ACCORDANCE WITH NATIONAL AND LOCAL CODES AND STANDARDS, SUCH AS BUT NOT LIMITED TO THE BELOW:
   - SURROUNDING A SUBSTATION. SEE THE TRACTION POWER SECTION OF THE REQUIREMENTS MANUAL FOR ADDITIONAL REQUIREMENTS AND DETAILS.
   - WITHIN 15 FEET OF CENTERLINE OF TRACK OR IN PROXIMITY OF OCS OR UNDER OCS CROSSING.
   - NATIONAL ELECTRICAL CODE (NEC) ARTICLE 250
3. ALL CONNECTIONS BETWEEN GROUND CABLE AND GROUND RODS AND BETWEEN GROUND CABLE AND FENCE POSTS MUST BE EXOTHERMIC WELD TYPE.
4. BONDING TYPE CONNECTIONS BETWEEN FENCE POSTS AND GATES MAY USE MECHANICAL CONNECTIONS. CONNECTORS AT GROUNDING TEST WELLS MUST BE BOLTED TYPE (REMOVABLE).
5. ALL EXPOSED BONDING AND GROUNDING MUST BE ON THE SECURED SIDE OF THE FENCE.
6. BOTH SIDES OF THE GATE TO BE BONDED TO EACH OTHER.
7. PRODUCT DATA AND SPECIFICATIONS OF ALL MATERIALS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT. DETAILS TO BE SUBMITTED FOR ST REVIEW AND APPROVAL FOR FENCES THAT HAVE DIFFERENT CONFIGURATION THAN SHOWN ON THIS DRAWING.
8. THEFT DETERRENT WIRE SHALL BE USED FOR ALL EXPOSED GROUNDING APPLICATIONS. MATERIALS TO BE CORROSION RESISTANT AND COMPATIBLE WITH INTERFACING COMPONENTS. SEE SPECIFICATION 24 23 26 FOR ADDITIONAL DETAILS.
9. SEE DR-GS103 FOR TYPICAL GROUNDING CONNECTION TYPES. ALL GROUNDING CONNECTIONS FOR THE THEFT DETERRENT CABLE MUST FOLLOW MANUFACTURER RECOMMENDATIONS.
10. PARTS TO BE INSTALLED TO PREVENT CORROSION, INCLUDING INTERFACES WITH EXISTING COMPONENTS. ALUMINUM MUST NOT COME IN DIRECT CONTACT WITH ANY BARE STEEL PARTS, INCLUDING STAINLESS STEEL.
11. EXISTING COATING SYSTEMS TO BE REMOVED WHERE THE CONNECTIONS ARE MADE ON THE FENCING.
A LONGITUDINAL REINFORCEMENT, TRANSVERSE BONDING BARS AT 500'-INTERVALS AND EXPANSION JOINTS AT THE EDGE OF TRACK SLAB.

NOTES:
1. ALL TOP LAYER REINFORCING STEEL SHALL BE WELDED TO PROVIDE ELECTRICAL CONTINUITY.
2. LOCATION OF STRAY CURRENT MITIGATION COMPONENTS SHALL BE IDENTIFIED BEFORE COMPLETION OF THE STRUCTURAL BRIDGE DESIGN.

GENERAL NOTES:
1. ALL CORROSION CONTROL/CATHODIC PROTECTION WORK SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A REGISTERED CORROSION ENGINEER OR A NACE INTERNATIONAL CATHODIC PROTECTION SPECIALIST.
2. EXACT LOCATIONS OF ALL STRUCTURES SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD. CONTRACTOR SHALL FIELD ADJUST CATHODIC PROTECTION TO AVOID DAMAGE TO ANY AND ALL EXISTING STRUCTURES. ALL FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER.
3. ALL CORROSION CONTROL/CATHODIC PROTECTION INSTALLATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
4. CORROSION CONTROL/CATHODIC PROTECTION FACILITIES SHALL BE PLACED TO AVOID CONFLICTS WITH TRAFFIC LANES AND OTHER NON ACCESSIBLE LOCATIONS.
5. CORROSION CONTROL WORK TYPICALLY INCLUDES DIELECTRIC COATING AND CATHODIC PROTECTION OF UNDERGROUND FERROUS PIPELINES, REMOTE MONITORING SYSTEMS AT TRACTION POWER SUBSTATIONS, ELECTRICAL ISOLATION OF THE RUNNING RAILS.
6. ANY PROPOSED MODIFICATIONS TO THE CORROSION CONTROL/CATHODIC PROTECTION SYSTEMS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR APPROVAL.
7. ALL TEST FACILITIES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS, OUT OF TRAFFIC LANES.
8. PROVIDE A MINIMUM OF 12 INCHES OF SLACK IN TEST STATION WIRES TO EXTEND TEST STATION PANEL ABOVE GRADE.

GENERAL NOTES:
1. ALL CORROSION CONTROL/CATHODIC PROTECTION WORK SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A REGISTERED CORROSION ENGINEER OR A NACE INTERNATIONAL CATHODIC PROTECTION SPECIALIST.
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7. ALL TEST FACILITIES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS, OUT OF TRAFFIC LANES.
8. PROVIDE A MINIMUM OF 12 INCHES OF SLACK IN TEST STATION WIRES TO EXTEND TEST STATION PANEL ABOVE GRADE.
GENERAL NOTES:
1. PROVIDE BLOCKOUT IN TRACK SLAB FOR TEST CABLE CONNECTIONS.
2. CUT BOOT IN EXOTHERMIC WELD AREA AS NECESSARY, LEAVE MINIMUM 1" OF BOOT TO EDGE OF BLOCKOUT.
3. ALL WIRING XHHW EXCEPT AS NOTED.
4. PROVIDE MINIMUM 6" OF CONCRETE COVER OVER CONDUIT AND PULL BOXES.
5. MAINTAIN 6" MINIMUM DISTANCE BETWEEN CONDUIT AND RAIL.
6. PROVIDE CONTINUOUS CABLE FROM POINT OF RAIL CONNECTION TO WATERPROOF JUNCTION BOX.
7. PROVIDE WATER TIGHT SEAL WITH SINGLE COMPONENT SILICONE ELASTOMER.
8. PATCH BLOCKOUT FOR REFERENCE ELECTRODE WITH CONCRETE MIX USED FOR TRACK SLAB.
9. IDENTIFY AND TAG ALL CABLES, PROVIDE A MINIMUM OF 48" OF EXCESS CABLE NEATLY COILED AND BUNDLED IN JUNCTION BOX.
10. EXOTHERMICALLY WELD CABLES TO RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPoxy.
11. AFTER TEST OF EXOTHERMIC WELD AND CABLE, FILL THE BLOCKOUT WITH ELASTOMERIC GROUT AND FINISH TO MATCH SURROUNDING GRADE.
12. MOUNT J-BOX WITH LID 1/2" ABOVE TOP OF RAIL, CONCRETE FINISH AROUND J-BOX TO MATCH DRAINAGE FLOW GRADIENT OF TRACK SLAB.

NOTE 1: PROVIDE BLOCKOUT IN TRACK SLAB FOR TEST CABLE CONNECTIONS.
NOTE 2: CUT BOOT IN EXOTHERMIC WELD AREA AS NECESSARY, LEAVE MINIMUM 1" OF BOOT TO EDGE OF BLOCKOUT.
NOTE 3: ALL WIRING XHHW EXCEPT AS NOTED.
NOTE 4: PROVIDE MINIMUM 6" OF CONCRETE COVER OVER CONDUIT AND PULL BOXES.
NOTE 5: MAINTAIN 6" MINIMUM DISTANCE BETWEEN CONDUIT AND RAIL.
NOTE 6: PROVIDE CONTINUOUS CABLE FROM POINT OF RAIL CONNECTION TO WATERPROOF JUNCTION BOX.
NOTE 7: PROVIDE WATER TIGHT SEAL WITH SINGLE COMPONENT SILICONE ELASTOMER.
NOTE 8: PATCH BLOCKOUT FOR REFERENCE ELECTRODE WITH CONCRETE MIX USED FOR TRACK SLAB.
NOTE 9: IDENTIFY AND TAG ALL CABLES, PROVIDE A MINIMUM OF 48" OF EXCESS CABLE NEATLY COILED AND BUNDLED IN JUNCTION BOX.
NOTE 10: EXOTHERMICALLY WELD CABLES TO RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPoxy.
NOTE 11: AFTER TEST OF EXOTHERMIC WELD AND CABLE, FILL THE BLOCKOUT WITH ELASTOMERIC GROUT AND FINISH TO MATCH SURROUNDING GRADE.
NOTE 12: MOUNT J-BOX WITH LID 1/2" ABOVE TOP OF RAIL, CONCRETE FINISH AROUND J-BOX TO MATCH DRAINAGE FLOW GRADIENT OF TRACK SLAB.
GENERAL NOTES:
1. PROVIDE SINGLE CONDUCTOR STRANDED COPPER TEST CABLE.
2. ALL WIRING XHHW EXCEPT AS NOTED.
3. PROVIDE MINIMUM 6" OF BALLAST COVER OVER CONDUIT AND PULL BOXES.
4. MAINTAIN 4" MINIMUM DISTANCE BETWEEN CONDUIT AND RAIL.
5. PROVIDE CONTINUOUS CABLE WITH MINIMUM 2" OF SLACK FROM POINT OF RAIL CONNECTION TO MONITORING JUNCTION BOX.
6. PROVIDE WATER TIGHT SEAL WITH SINGLE COMPONENT SILICONE ELASTOMER.
7. FULL EXCAVATION FOR REFERENCE ELECTRODE WITH SOIL.
8. IDENTIFY AND TAG ALL CABLES. PROVIDE A MINIMUM OF 4" OF EXCESS CABLE INSIDE OF BOX.
9. NETLY Coil and Bundle EXCESS IN JUNCTION BOX.
10. EXOTHERMICALLY WELD CABLES TO RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPOXY.
11. PLACE BOX IN BALLAST WITH NO 2" +/- 1/2" ABOVE TOP ELEVATION OF CROSS TIE.
12. PLACE BALLAST AND COMPACT IN A MANNER TO PREVENT DAMAGE TO CONNECTIONS, CABLE, CONDUIT AND BOXES.

ROUTE CONDUIT AND CABLE TO PULL BOX
#14 AWG (RED)
ZINC-ZINC SULFATE REFERENCE ELECTRODE 1 1/2" x 6"
NOTE 7
PLASTIC BUSHING
NOTE 6
1" CONDUIT
ROUTE CONDUIT BENEATH RAIL WITH A MINIMUM OF 4" COVERS TO COMMUNICATIONS VAULT WITH FULL ROPES IN PLACE.
NOTE 4

ROUTE CONDUIT BENEATH RAIL WITH A MINIMUM OF 4" COVERS TO COMMUNICATIONS VAULT WITH FULL ROPES IN PLACE.
TYPICAL AERIAL GUIDEWAY - ELEVATION

SCALE: 1/4" = 1'-0"

GUARDRAIL STANCHION
HOLE FOR 3/8" DIA CABLE
EMBEDDED PLATE 3/8"
TOP OF RAIL
TRANSVERSE BONDING REBAR

4-REINFORCING BAR (MIN)
SECURE TO BONDING BAR WITH STEEL TIE WIRE MIN TWO PLACES PER EMBED PLATE, NOTE 1

GENERAL NOTE:
1. THIS GROUND CONNECTION IS TO BE MADE AT EVERY GUARDRAIL STANCHION.
GENERAL NOTES:
1. EXOTHERMICALLY WELD CABLES TO NEUTRAL AXIS OF RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPOXY.
2. BUNDLE CABLES AT 30" MINIMUM SPACING WITH APPROVED HEAT SHRINK SLEEVES AND ROUTE TO GROUNDING TEST BOX.
3. ALL CABLES TO HAVE XHHW INSULATION.
4. GROUNDING TEST BOXES TO BE LOCATED AT COLUMN SUPPORTS AT 1500' (±) INTERVALS.
5. PROVIDE APPROVED RESTRAINING DEVICE WITH ANCHOR TO GUIDEWAY.
6. PATCH BLOCKOUT WITH APPROVED CEMENTITIOUS GROUT.
7. ROUTE (2) #6 AWG CABLES TO TEST BOX.
8. DEVELOP DIMENSIONS FOR BLOCKOUT BASED ON GIRDER REINFORCING CONFIGURATION.
9. SEAL CONDUIT WITH SINGLE COMPONENT SILICONE ELASTOMER.
10. ROUTE CABLES IN CONDUIT TO GROUNDING TEST BOX.
GENERAL NOTES:
1. STRAY CURRENT MONITORING WIRES ROUTED TO GROUNDING TEST BOX. SEE DWG JGD110 FOR WIRING DETAILS.
2. GROUND ELECTRODE ARRAY TO BE BASED ON SOIL RESISTIVITY AT SITE TO BE A MAXIMUM OF 25 OHMS TO REMOTE EARTH. ARRAY ARRANGEMENTS TO CONFORM TO LIMITS OF RIGHT-OF-WAY. STEEL SHAFTS AT COLUMN FOUNDATIONS MAY BE USED FOR GROUND ELECTRODE AT DESIGNATED BENTS.
3. GRS CONDUIT SIZE TO BE MINIMUM 1 1/4 INCH OR AS REQUIRED BY NATIONAL ELECTRIC CODE.
4. CONDUIT TO BE SEALED WITH SINGLE COMPONENT SILICONE ELASTOMER AND PROVIDED WITH A PLASTIC BUSHING.
5. CONDUIT TO BE SURFACE MOUNTED AND SUPPORTED WITHIN 3 FEET OF TERMINATION AND AT MAXIMUM INTERVALS OF 10 FEET. MINIMUM 1/4 INCH SPACER TO BE USED BETWEEN GRS CONDUIT AND CONCRETE SURFACE. CONDUIT MAY BE EMBEDDED WITHIN CAST-IN-PLACE GIRDER AND COLUMNS.
6. GRS CONDUIT TO BE MINIMUM 1 1/2 INCH OR AS REQUIRED BY NATIONAL ELECTRIC CODE. EXTEND CONDUIT TO MINIMUM 18 INCHES BELOW GRADE.
7. #4 AWG XHHW GROUNDING ELECTRODE CABLE. DIRECT BURIAL A MINIMUM OF 24 INCHES.
8. PROVIDE 1/4" DIAMETER WEEP HOLE FOR MOISTURE DRAINAGE.
GENERAL NOTES:
1. THREE LONGITUDINAL REBARS FOR EACH TRACK TO BE MADE ELECTRICALLY CONTINUOUS BY WELDING AT LAP SPLICES.
2. PLACE A CONTINUOUS #5 TRANSVERSE BONDING REBAR, 6 FEET LONG, WITHIN 18" OF EACH EXPANSION JOINT AND WELD TO ALL LONGITUDINAL REBARS.
3. BOND CABLE TO HAVE ADEQUATE SLACK TO ACCOMMODATE EXPANSION AND CONTRACTION OF TRACK SLAB. TOTAL LENGTH AS REQUIRED.
4. BOND CABLES 10' OR LESS IN TOTAL LENGTH TO BE MINIMUM #2 AWG, CABLE INSULATION TO BE XHHW.
5. TWO BOND CABLES TO BE INSTALLED FOR EACH TRACK. BOND CABLE CONNECTIONS TO BE SPACED AT CENTERLINE OF EACH RAIL +/- 6".
6. REINFORCING STEEL PATTERN MAY VARY FOR SPECIFIC CONTRACT LOCATIONS. CONTRACTOR TO CONFORM TO CONTRACT DRAWINGS FOR SPECIFIC LAYOUTS.
7. WELDED REBAR TO CONFORM TO ASTM A706 AND AWS D1.4.
8. PROVIDE BOND CABLES ACROSS EMBEDDED SPECIAL TRACKWORK AS FOR EXPANSION JOINTS.
GENERAL NOTES:
1. PROVIDE STANDARD WATER METER BOX AND LID AS APPROVED BY SEATTLE PUBLIC UTILITIES OR APPROVED EQUAL.
2. BUNDLE WIRES WITH NYLON CABLE TIES AT CONDUIT AND AT 6" INTERVALS TO TEST BOX.
3. ROUTE TO TEST STATION (SEE DETAIL 1 THIS SHEET).
4. MAGNESIUM ALLOY ANODE, ASTM B843, 32D5 WITH A FACTORY ATTACHED WIRE OF #12 TW INSULATED SOLID COPPER SILVER SOLDERED (45% SILVER) TO THE GALVANIZED STEEL CORE. MINIMUM WIRE LENGTH OF 10 FEET. FILL THE CORE CAVITY WITH ELECTRICAL SEALING COMPOUND TO INSURE FULLY INSULATED AND PROTECTED CONNECTION. CENTER ANODE INGOT IN A COTTON BAG AND SURROUND WITH A BACKFILL MIXTURE CONSISTING OF 7% HYDRATED GYPSUM, 2% BENTONITE, AND 5% SODIUM BICarbonate. TOTAL Packaged weight to be 72 pounds +/- 5%. PROVIDE PACKAGED ANODES IN MULTIPLE LAYER PAPER SACKS, PALLETIZED, AND FILM WRAPPED FOR SHIPPING.
5. PLACE WITHIN PIPELINE TRENCH EXCAVATION AT 6" +/- 2" HORIZONTAL FROM PIPELINE AT DEPTHS INDICATED ON DETAIL.
6. PROVIDE STRANDED COPPER WIRING WITH XHHW TYPE INSULATION UNLESS SPECIFICALLY DESIGNATED OTHERWISE.
7. BEFORE BACKFILL IS PLACED, PROVIDE ELECTRICAL CONTINUITY TESTING OF ALL EXOTHERMIC WELD CONNECTIONS.
8. PROVIDE ELECTRICAL CONTINUITY TESTING OF ALL CABLES BEFORE AND AFTER BACKFILL IS PLACED IN ACCORDANCE WITH SPECIFICATIONS.
9. PROVIDE VERIFICATION TESTING OF ALL WIRING AFTER TERMINATION TO PANEL BOARD IN ACCORDANCE WITH APPROVED TESTING PLAN.

NOTES 1, 2, 3, 4 & 5

1. PROVIDE STANDARD WATER METER BOX AND LID AS APPROVED BY SEATTLE PUBLIC UTILITIES OR APPROVED EQUAL.
2. BUNDLE WIRES WITH NYLON CABLE TIES AT CONDUIT AND AT 6" INTERVALS TO TEST BOX.
3. ROUTE TO TEST STATION (SEE DETAIL 1 THIS SHEET).
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9. PROVIDE VERIFICATION TESTING OF ALL WIRING AFTER TERMINATION TO PANEL BOARD IN ACCORDANCE WITH APPROVED TESTING PLAN.
NOTES:
1. ALL MOUNTING HARDWARE TO BE STAINLESS STEEL AND SIZED TO
   ACCEPT THE WIRE LUG MOUNTING HOLE.
2. PROVIDE ADEQUATE CABLE LENGTH TO ALLOW FOR A MINIMUM OF 1
   FOOT OF SLACK ABOVE FINISHED GRADE.
3. INSTALL TEST STATION IN TRAFFIC BOX AT AN ACCESSIBLE LOCATION.

REINFORCEMENT TEST STATION (TRACK SLAB)

NOTES:
1. LEAVE SUFFICIENT SLACK IN BOND CABLES TO ALLOW FOR
   BRIDGE MOVEMENT.
2. EMBEDDED WELD PLATES SHALL BE ATTACHED TO THE
   ELECTRICALLY CONTINUOUS REINFORCEMENT LAYER BY THE
   USE OF BEND CABLES OR DIRECT WELD TO REINFORCEMENT.

CATHODIC PROTECTION/STRAY CURRENT TEST STATION

NOTES:
1. ALL MOUNTING HARDWARE TO BE STAINLESS STEEL AND SIZED TO
   ACCEPT THE WIRE LUG MOUNTING HOLE.
2. PROVIDE ADEQUATE CABLE LENGTH TO ALLOW FOR A MINIMUM OF 1
   FOOT OF SLACK ABOVE FINISHED GRADE.
3. INSTALL TEST STATION IN TRAFFIC BOX AT AN ACCESSIBLE LOCATION.

INSULATING JOINT TEST STATION

NOTES:
1. LEAVE SUFFICIENT SLACK IN BOND CABLES TO ALLOW FOR
   BRIDGE MOVEMENT.
2. EMBEDDED WELD PLATES SHALL BE ATTACHED TO THE
   ELECTRICALLY CONTINUOUS REINFORCEMENT LAYER BY THE
   USE OF BEND CABLES OR DIRECT WELD TO REINFORCEMENT.

BONDING AT EXPANSION JOINT
NOTES:
1. PLACE DIELECTRIC MEMBRANE BETWEEN PIPELINES IN BOTTOM PIPELINE TRENCH, CENTERED OVER FOREIGN PIPELINE CROSSING.
2. LENGTH OF DIELECTRIC MEMBRANE SHALL BE 5 TIMES THE DIAMETER OF THE FOREIGN PIPELINE.
3. MINIMIZE DIRECT CONTACT BETWEEN PIPELINES AND DIELECTRIC MEMBRANE BY THE USE OF A SUITABLE PIPE BEDDING MATERIAL.

NOTES:
1. LOCATE TEST STATION OUT OF TRAFFIC LANES AND AT AN ACCESSIBLE LOCATION.
2. REFERENCE ELECTRODE TO BE PLACED UNDER THE CENTERLINE OF TRACK.
3. PROVIDE ADEQUATE CABLE LENGTHS TO ALLOW FOR A MINIMUM OF 1 FOOT OF SLACK ABOVE FINISHED GRADE.

NOTES:
1. PLACE DIELECTRIC MEMBRANE BETWEEN PIPELINES IN BOTTOM PIPELINE TRENCH, CENTERED OVER FOREIGN PIPELINE CROSSING.
2. LENGTH OF DIELECTRIC MEMBRANE SHALL BE 5 TIMES THE DIAMETER OF THE FOREIGN PIPELINE.
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NOTES:
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2. LENGTH OF DIELECTRIC MEMBRANE SHALL BE 5 TIMES THE DIAMETER OF THE FOREIGN PIPELINE.
3. MINIMIZE DIRECT CONTACT BETWEEN PIPELINES AND DIELECTRIC MEMBRANE BY THE USE OF A SUITABLE PIPE BEDDING MATERIAL.
NOTES:
1. SIZE OF FILLET WELD TO BE IN ACCORDANCE WITH THE FOLLOWING:
   - MATERIAL THICKNESS (IN):
     - 1/2 TO 3/8: .125
     - 3/8 TO 3/4: .1875
     - 3/4 TO 1: .3125

2. REINFORCEMENT SIZE DEPENDS ON STRUCTURAL DESIGN.

LONGITUDINAL REINFORCEMENT WELD

1. SPACING BETWEEN LONGITUDINAL REINFORCEMENT IN ACCORDANCE WITH STRUCTURAL DESIGN.
2. WELD ALL LONGITUDINAL REINFORCEMENTS TO A CONTINUOUS TRANSVERSE COLLECTOR BAR.
3. REINFORCEMENT SIZE DEPENDS ON STRUCTURAL DESIGN.
4. MINIMUM SIZE OF TRANSVERSE COLLECTOR BAR SHALL BE NO. 6 REINFORCEMENT.
5. FOR SIZE OF FILLET WELD REFER TO DETAIL 1

TRANSVERSE BONDING BAR REINFORCEMENT WELD

NOTES:
1. SPRING BETWEEN LONGITUDINAL REINFORCEMENT IN ACCORDANCE WITH STRUCTURAL DESIGN.
2. WELD ALL LONGITUDINAL REINFORCEMENTS TO A CONTINUOUS TRANSVERSE COLLECTOR BAR.
3. REINFORCEMENT SIZE DEPENDS ON STRUCTURAL DESIGN.
4. MINIMUM SIZE OF TRANSVERSE COLLECTOR BAR SHALL BE NO. 6 REINFORCEMENT.
5. FOR SIZE OF FILLET WELD REFER TO DETAIL 1

TRANSVERSE BONDING BAR REINFORCEMENT WELD

NOTES:
1. SPRING BETWEEN LONGITUDINAL REINFORCEMENT IN ACCORDANCE WITH STRUCTURAL DESIGN.
2. WELD ALL LONGITUDINAL REINFORCEMENTS TO A CONTINUOUS TRANSVERSE COLLECTOR BAR.
3. REINFORCEMENT SIZE DEPENDS ON STRUCTURAL DESIGN.
4. MINIMUM SIZE OF TRANSVERSE COLLECTOR BAR SHALL BE NO. 6 REINFORCEMENT.
5. FOR SIZE OF FILLET WELD REFER TO DETAIL 1

PIPING JOINT BONDING DETAIL

NOTES:
1. SEE DETAIL 6/STD-JND104 FOR THERMITE WELDING PROCEDURE.
2. COATING REQUIRED FOR ALL WELD LOCATIONS.
3. WIRE SIZE FOR BONDS DEPENDS ON ELECTRICAL RESISTANCE OF PIPE.
4. USE A MINIMUM OF TWO BONDS PER PIPE JOINT.

NOTES:
1. NUMBER AND SIZE OF ANODES, AS SHOWN ON PLAN SHEETS.
2. REMOVE OUTER PROTECTIVE WRAP (PAPER OR PLASTIC) FROM ANODES JUST PRIOR TO INSTALLATION. DO NOT DAMAGE CLOTH BACK FILL BAG.
3. BACK FILL ANODES IN NATIVE SOIL ONLY.
4. ALL TEST STATION HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

NOTES:
1. CLEAN SURFACE OF PIPE OR BONDING PLATE TO BRIGHT METAL.
2. STRIP INSULATION FROM END OF COPPER WIRE.
3. INSTALL ADAPTER SLEEVE ON WIRE.
4. HOLD THERMITE MOLD FIRMLY AGAINST PIPE OR BONDING PLATE, INSERT WIRE, IGNITE WELD METAL.
5. REMOVE SLAG FROM THERMITE WELD.
6. STRIKE WELD FIRMLY WITH HAMMER TO VERIFY CONNECTION.
7. COAT WELD AREA AND ALL EXPOSED COPPER.
8. FOR MORTAR COATED PIPE, COVER COATED WELD WITH A MORTAR COATING.
GENERAL NOTES:
1. EXOTHERMICALLY WELD CABLES TO NEUTRAL AXIS OF RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPOXY.
2. PROVIDE RAIL CABLE RETAINER CLIPS AT 18" MINIMUM SPACING. ROUTE CABLE TO AVOID CONFLICT WITH PANDROL CLIPS.
3. BUNDLE CABLES AT 30" MINIMUM SPACING WITH APPROVED HEAT SHRINK SLEEVES AND ROUTE TO CORROSION CONTROL TEST BOX.
4. ALL CABLES TO HAVE SHRINK INSTALLATION.
5. PROVIDE TEST WIRE CONNECTIONS FOR NORTHBOUND AND SOUTHBOUND TRACKS. TAG CABLES AND JUNCTION BOX "NB" OR "SB".
6. PLACE CABLES BETWEEN RAILS IN 1" GRS CONDUIT. SURFACE MOUNT CONDUIT WITH PLASTIC BUSHING AT EACH END.
7. PATCH BLOCKOUT WITH APPROVED CEMENTICIOUS GROUT.
8. ROUTE CABLES TO CORROSION CONTROL TEST BOX.
9. DEVELOP DIMENSIONS FOR BLOCKOUT BASED ON GIRDER REINFORCING CONFIGURATION.
10. SEAL CONDUIT WITH APPROVED SINGLE COMPONENT SILICONE ELASTOMER.
11. FASTEN JUNCTION BOX TO GIRDER BETWEEN NORTHBOUND AND SOUTHBOUND TRACKS AS DIRECTED BY THE RESIDENT ENGINEER.
12. IDENTIFY AND TAG ALL CABLES. PROVIDE A MINIMUM OF 48" OF EXCESS CABLE NEATLY COILED AND BUNDLED.
13. PRE-FABRICATED CONNECTIONS MAY BE SUBSTITUTED FOR EXOTHERMIC WELD. SEE DWG JS088 (REPLACE #2 AWG SHOWN WITH #8 AWG).
14. PLACE CABLES IN 1 1/4" GRS CONDUIT WITH PLASTIC BUSHING AT RAIL SURFACE MOUNT AND ROUTE TO CORROSION CONTROL JUNCTION BOX.

SOUND TRANSIT
GUIDANCE DRAWINGS
SYSTEMS
AERIAL GUIDEWAY CORROSION CONTROL
WIRING LAYOUT

GUI-JND109

SOUND TRANSIT
AERIAL GUIDEWAY CORROSION TEST BOX
WIRING LAYOUT

TEST CABLE CONFIGURATION

NOTE 1
#10 AWG (GREEN)
#6 AWG (GREEN)
NOTE 2
#6 AWG (BLUE)
#10 AWG (BLUE)
NOTE 3
#10 AWG (RED)
#6 AWG (RED)
NOTE 4
#6 AWG (WHITE)
#10 AWG (WHITE)
NOTE 5
#5 TRANSVERSE BONDING BAR

RAIL CONNECTION CABLES
1 1/4" CONDUIT
PLASTIC BUSHING
1" CONDUIT
NOTE 11
 SURFACE MOUNTED WATERPROOF J-BOX
18" x 12" x 12"
NOTE 12
ROUTE CONDUIT TO COMMUNICATIONS RACEWAY WITH PULLROPE IN PLACE

GRAFT CONDUIT
PLASTIC BUSHING (TYP)
9" x 4" BLOCKOUT
NOTES 7 & 9
EXOTHERMICALLY WELD CABLES TO REBAR
NOTE 13

#5 TRANSVERSE BONDING BAR
18" x 3" GRAPHITE REFERENCE ELECTRODE

#9 AWG CABLE (BLK)
#14 AWG (RED)
NOTE 6
NOTE 14

#9 AWG (RED)
#14 AWG (RED)
NOTE 1
NOTE 2
GENERAL NOTES:
1. DIMENSIONS ARE TYPICAL AND APPROXIMATE. YARD LAYOUT VARIES SITE-BY-SITE DUE TO CIVIL CONSTRAINTS. CLEARANCES TO FENCE ARE MINIMUMS.
2. HVAC UNITS WILL BE ON THIS WALL. EXACT LOCATION ALONG WALL TO BE DETERMINED BY TPSS MANUFACTURER.
3. HVAC UNITS ACOUSTIC ANALYSIS IS NEEDED FOR EACH SITE. ACOUSTIC CONTROL FIXTURES ARE NOT SHOWN.
4. TRAFFIC OF PUBLIC ROADWAY SHALL BE CONSIDERED WHEN DESIGNING ACCESS DRIVE AND/OR VEHICLE TURN-AROUND. IF A Drainage Ditch is Necessary to Pull Off Roadway to Operate Gate, It Must Consider the Maximum Length of Vehicle of 30 Feet. In High Traffic Area, a Turn-Around Shall Be Considered.
5. COORDINATION WITH ST OPERATIONS SHALL BE PERFORMED FOR ALL SITES.
6. WHEN PUBLIC HAVE ACCESS TO THE OUTSIDE OF THE YARD FENCE, TPSS YARD GROUND GRID EXTENDS 5 FEET BEYOND METALLIC FENCE IF PROVIDED PER DCM 13.3.18 E. SEE GROUND GRID SKETCH FOR DETAILS.
7. CONSULT SOUND TRANSIT FOR DETAILS OF SERVICE VEHICLES THAT ARE REQUIRED TO ACCESS TPSS SITE.
8. EXTERNAL UTILITY METERING ENCLOSURE MAY BE REQUIRED PER UTILITY SERVICE REQUIREMENTS. METERING ENCLOSURE SHALL BE EXTERNAL TO THE TPSS YARD SECURITY FENCE AND ACCESSIBLE FOR THE PUBLIC ROW.
9. MTS UNITS WILL BE ON THIS WALL. EXACT LOCATION ALONG WALL TO BE DETERMINED BY TPSS MANUFACTURER.
**TPSS SERVICE CONTROL POWER SCHEMATIC**

**DC PANEL CIRCUIT SCHEDULE**

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<th>BREAKER AMP</th>
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**GENERAL NOTES:**
1. PROVIDE (1) 125VDC CIRCUIT TO SUPPLY CONTROL POWER TO MV SWITCHGEAR IN TPSS, IF NEEDED.
2. PROVIDE CONDUITS FROM AC PANEL FOR BUILT IN PLACE TPSS.
3. BREAKERS SHOWN TYPICALLY PROVIDE NUMBER OF BREAKERS AND TRIP RATINGS AS NECESSARY.
4. COORDINATE GENERATOR NEED WITH ST.

**SYSTEMS TYPICAL TPSS SERVICE CONTROL POWER SCHEMATIC**

**SOUND TRANSIT GUIDANCE DRAWINGS**

**SOUND TRANSIT SYSTEMS**
CONFIDENTIAL
GENERAL NOTES:
1. TRANSFER TRIP: TRACTION POWER SYSTEM TRANSFER TRIP CABLE TIE-IN WORK FROM EXISTING ST TPSS'S SHALL BE FURNISHED AND INSTALLED.
2. SEE TRANSFER TRIP MATRIX BELOW.
3. FOR DC BREAKERS LOCKOUT REQUIREMENTS, COORDINATE WITH ST.

<table>
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<tr>
<th>TRANSFER TRIP INITIATED BY</th>
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NOTE 3: DC BREAKER LOCKOUT REQUIREMENTS COORDINATE WITH ST.

SEE TRANSFER TRIP MATRIX BELOW.
ANNUNCIATION

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<tr>
<th>AC BREAKER TRIP 52</th>
<th>LOCKOUT RELAY 56</th>
<th>AC MVV OVERVOLTAGE 59</th>
<th>AC MVV UNDervoltage 27</th>
<th>LOSS OF PHASE 47</th>
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<td>LOSS OF CONTROL VOLTAGE AC SWITCHGEAR 27A</td>
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<td>TRANSFORMER WINDING OVERTEMP ALARM 49T1</td>
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| TRANSFORMER WINDING OVERTEMP TRIP 49T2 |
| HEALTHY LOCKOUT RELAY COIL SUMMARY |
| RECTIFIER DIODE OVERTEMP ALARM 26R1 |
| RECTIFIER DIODE OVERTEMP ALARM 26R2 |
| RECTIFIER DIODE FAILURE TRIP 26R |

| LOSS OF CONTROL VOLTAGE RECTIFIER 27A |
| DC ENCLOSURE GROUNDED ALARM 64G |
| DC ENCLOSURE ALIVE TRIP 64H |
| RECTIFIER NEGATIVE DISCONNECT OPEN 64M |
| LOSS OF CONTROL VOLTAGE DC SWITCHGEAR 27B |
| REVERSE CURRENT 32 |

| FEEDER BREAKER TRIP SUMMARY |
| FEEDER BREAKER LOCKOUT 15B |
| FEEDER BREAKER RECLOSER TRIP SUMMARY |
| TRANSFORMER TRIP SUMMARY |
| LOCKOUT RELAY 15BX |

| GROUND RELAY 64V |
| ETS ACTIVATED |
| DSS ACTIVATED |
| SPARE |
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GENERAL NOTES:
1. 48 POINTS REQUIRED.
2. THE SIZE OF EACH WINDOW SHALL BE 2" X 1-1/2".
3. HMI VIEW DESIGNS ARE TYPICAL AND CONCEPTUAL. SUBMIT DETAILED DESIGN FOR APPROVAL.
4. CONSULT SOUND TRANSIT FOR LATEST HMI DESIGN STANDARDS.
### TPSS NAME

#### ANNUNCIATOR VIEW

#### EVENT MESSAGES

#### ALARM MESSAGES

#### LCMS MESSAGES

#### SECTIONING DIAGRAM

#### SINGLE LINE DIAGRAM

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### EVENT LIST

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### GENERAL NOTES:

1. EVENTS SHOWN ON THE LIST ARE FOR DEMONSTRATION PURPOSES ONLY.
2. HMI VIEW DESIGNS ARE TYPICAL AND CONCEPTUAL. SUBMIT DETAILED DESIGN FOR APPROVAL.
### UNACKNOWLEDGED ALARMS

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