NOTES:
1. PHYSICAL SINGLE-MODE FIBER OPTIC RING RISER AND DISTRIBUTION SWITCH LOCATIONS
2. MUTE RUN CABLES DESCRIBE CABLE INTERFACES DISTRIBUTION CABLES AND EACH SUBSYSTEM DEVICE (STAR TOPOLOGY)
3. PRODUCT AVAILABILITY MAY ALLOW FIBER RING TOPOLOGY BETWEEN MULTIPLE SUBSYSTEM DEVICES FOR INCREASED NETWORK RELIABILITY (FUTURE)
4. TWO 1GB NETWORK SWITCHES ARE USED PER DISTRIBUTION CABINET FOR RELIABILITY
5. ACTUAL QUANTITY OF SUBSYSTEM DEVICES DEPENDS ON SPECIFIC STATION LOCATION AND DESIGN
6. SOME CALTRAIN STATIONS MAY STILL UTILIZE OUTSIDE STATION COMMUNICATIONS CABINETS (SSC) ALONG WITH INTERNAL INTERFACE CABINETS (IC). ALL SSCS/CABINETS WILL BE CHOPPED OUT AND REPLACED BY COPS IN THESE DRAWINGS. SSCS/CABINETS ARE OMITTED AND COPS USED INSTEAD
NOTES:
1. PHYSICAL SINGLE-MODE FIBER OPTIC RING RING ALTERNATE NETWORK AND DISTRIBUTION SWITCH LOCATIONS
2. MORE RUN CAT 6 COPPER CABLE BETWEEN DISTRIBUTION SWITCH AND EACH SUBSYSTEM DEVICE (STAR TOPOLOGY)
3. PRODUCT AVAILABILITY MAY ALLOW FIBER RING TOPOLOGY BETWEEN MULTIPLE SUBSYSTEM DEVICES FOR IMPROVED NETWORK RELIABILITY (FUTURE)
4. TWO 1 Ub NETWORK SWITCHES ARE USED PER DISTRIBUTION CABINET FOR REDUNDANCY
5. ACTUAL QUANTITY OF SUBSYSTEM DEVICES DEPENDING ON SPECIFIC STATION LOCATION AND DESIGN
6. SOME CALTRAIN STATIONS MAY STILL UTILIZE OUTDOOR STATION COMMUNICATIONS CABINETS (SCC); ALSO REFERRED TO AS COMMUNICATIONS INTERFACE CABINETS (CIC). ALL CIC/SCC'S WILL BE PARADES OUT AND REPLACED BY CCM'S. IN THESE DRAWINGS, CIC/SCC'S ARE OMITTED AND CCM'S USED INSTEAD.
NOTES:

1. PHYSICAL SINGLE MODE FIBER OPTIC NETWORK. USE MAIN AND DISTRIBUTION SWITCH AND EACH CID DEVICE (STAR TOPOLOGY)

2. ACTUAL QUANTITY OF CID EQUIPMENT DEPEND ON SPECIFIC STATION LOCATION AND DESIGN

3. CLIPPER TO PROVIDE THE CID ROUTER, CID MAIN AND DISTRIBUTION SWITCHES, AND CID DEVICES.
   CLIPPER TO INSTALL MAIN ROUTER, AND TERMINATE CID DEVICES ON PUCKS FOR CID NETWORK.
   CALTRAIN TO PROVIDE CID PUCKS. CONTRACTOR TO PROVIDE AND INSTALL CID PH 4 PH 0 CID POWER
   SUPPLIED IN DISTRIBUTION CABINET, CONDUIT AND COMMUNICATION POWER WIRING, AND OTHER
   REMAINING MISCELLANEOUS EQUIPMENT TO COMPLETE FULLY FUNCTIONAL CID SUBSYSTEM
NOTES:
1. PHYSICAL SINGLE MODE FIBER OPTIC NETWORK USES MAIN AND DISTRIBUTION SWITCH AND EACH CID DEVICE (STAR TOPOLOGY)
2. ACTUAL QUANTITY OF CID EQUIPMENT DEPENDS ON SPECIFIC STATION LOCATION AND DESIGN
3. CLIPPER TO PROVIDE CID ROUTER, CID MAIN AND DISTRIBUTION SWITCHES, AND CID DEVICES. ClIPPER TO EXTEND PHONE SERVICE AND TERMINATE CID DEVICES ON PILES FOR CID NETWORK. CALTRAIN TO PROVIDE CID PILES. CONTRACTOR TO PROVIDE AND INSTALL CID MAIN / CID DISTRIBUTION CABINETS, CABLES AND COMMUNICATION POWER SUPPLIES, AND OTHER REQUIRED MISC EQUIPMENT TO COMPLETE FULLY FUNCTIONAL CID SUBSYSTEM
NOTES:
1. PHYSICAL SINGLE MODE FIBER OPTIC NETWORK FOR MAIN AND DISTRIBUTION
   SWITCH LOCATIONS (2 STRANDS OF FIBER PER LINK).
2. HOME RUN COMMUNICATIONS CABLE AND 24V DC POWER CABLES BETWEEN
   DISTRIBUTION SWITCH AND EACH ASSOCIATED CID DEVICE.
3. ACTUAL QUANTITY OF SHOWN DEVICES DEPENDS ON SPECIFIC STATION LOCATION
   AND DESIGN.
4. FOR CLARITY, INTERMEDIATE CROSS-CONNECT PATCH-PANEL EQUIPMENT AND
   CABLES ARE NOT SHOWN.
NOTES:
1. PHYSICAL SINGLE MODE FIBER OPTIC NETWORK TIES MAIN AND DISTRIBUTION SWITCH LOCATIONS (2 STRANDS OF FIBER PER LINK)
2. HOME RUN COMMUNICATIONS CABLAGE AND DUAL DC POWER CABLES BETWEEN DISTRIBUTION SWITCH AND EACH ASSOCIATED CID DEVICE
3. ACTUAL QUANTITY OF SHOWN DEVICES DEPENDS ON SPECIFIC STATION LOCATION AND DESIGN
4. FOR CLARITY, INTERMEDIATE CROSS-CONNECT PATCH-PANEL EQUIPMENT AND CORDS ARE NOT SHOWN
COMMUNICATIONS
EQUIPMENT ROOM (CER)

REFER TO SD-4904 FOR EQUIPMENT PROFILE

STATION SUBSYSTEM
REFER TO SD-4301

DISTRIBUTION CABINET

REFER TO SD-4903 FOR EQUIPMENT PROFILE

NOTES:
1. NETWORK TRANSPORT MEDIUM TO CCF TO BE DETERMINED (TBD).
2. REFER TO STANDARD DRAWINGS FOR BACKBONE CABLE RUN LISTS.
3. SPECIFIC STATION DESIGN WILL DETERMINE THE QUANTITY OF DISTRIBUTION CABINETS. THE BACKBONE FIBER OPTIC CABLE SHALL BE A PHYSICALLY DIVERSIFIED TOPOLOGY.
4. SEPARATE VIRTUAL LAYERS OF AT LEAST 10% SHALL NOT BE PARTITIONED FOR EACH TYPE OF SUBSYSTEM.
5. VIDEO RECORDING (SERVERS) SHALL RESIDE AT STATION CER, WITH REMOTE ACCESS FROM CALTRAIN CCTV HEAD END IN SAN FRANCISCO.
6. ACTUAL QUANTITY OF SUBSYSTEM DEVICES SHALL BE BASED ON SPECIFIC STATION DESIGN.

DC DISTRIBUTION CABINET

NUMBER OF SINGLE-MODE OPTICAL FIBERS

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STANDARD DRAWINGS
STATION COMMUNICATIONS
OVERALL SYSTEM DESCRIPTIONS
CCTV SYSTEM
PHYSICAL DISTRIBUTION TOPOLOGY

PENINSULA CORRIDOR JOINT POWERS BOARD
NOTES:
1. REFER TO ANSI/TIA/EIA 568-B.3 COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING STANDARD
2. WA (WORK AREA) CAN BE ANY NETWORK DEVICE SUCH AS: PHONE, PCs, terminals, DC or DATA OUTLET
3. EACH UTP CABLE SHALL BE PROTECTED AT THE EXTREME OF THE DC OR CER BY USE OF APPROPRIATE SURGE / LIGHTNING PROTECTOR

MAX DISTANCE
SM FOC = 9840 FT

TIA/EIA MAIN CROSS-CONNECT (MC) ———— TIA/EIA WORK AREA DEVICE
INTERMEDIATE CROSS-CONNECT (MC)

COMMUNICATIONS EQUIPMENT ROOM (CER)
COMMUNICATIONS INTERFACE CABINET (CIC)
FIBER OPTIC CABLE (FOC) OR COPPER (UTP) CABLE
STAR TOPOLOGY

CALTRAIN SINGLE-MODE FIBER OPTIC CABLE (FOC)
RING TOPOLOGY OR CDD SINGLE-MODE FOR STAR TOPOLOGY

MAX 200 FEET HORIZONTAL CABLE LENGTH FROM DC TERMINATION TO WA TERMINATION
MAX 10 FEET CABLE LENGTH AT WA
MAX 25 FEET CROSS-CONNECT AND PATCH CABLE AT DC
300 FEET MAXIMUM CABLE DISTANCE
NOTES:
1. INSTALL CONDUIT WITH PULL BOX LOCATIONS AT INTERVALS PER TA/EN 5088 STANDARDS
2. GROUND AND BOND EQUIPMENT AND CABINETS PER TA/EN 5088-607A
3. REFER TO CISG SD-4503 FOR NETWORK CABLING LIMITS FOR EMBEDDING SERVICE
4. FOR NON-ETHERNET NETWORK PROTOCOLS, PROVIDE PROTOCOL MEDIA CONVERTER AT VMS NO
5. FOR FUTURE NETWORK ROUTE MARKERS AND NETWORK SERVICE, PROVIDE ONE CONDUIT TO NEXT DISTRIBUTION  OR VMS
6. PROVIDE MOVE-RUN CONDUIT AND NETWORK CABLE PER SUBSYSTEM DEVICE

PARTS LIST

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<th>ITEM</th>
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<tr>
<td>1</td>
<td>CAT 6, UTP, 24 AWG</td>
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<td>2</td>
<td>OMNITRONIC DC-DC SINGLE MODE FIBER OPTIC CABLE</td>
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<td>3</td>
<td>CAT 6, UTP, 24 AWG, R-400-RAD PATH CABLE</td>
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<td>4</td>
<td>CAT 6, UTP, 24 AWG, R-400-RAD PROTECTION</td>
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<td>5</td>
<td>VMS DEVICE WITH EMBEDDING SERVICE</td>
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<td>6</td>
<td>6&quot; CONDUIT</td>
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<tr>
<td>7</td>
<td>OMNITRONIC ULTRA-FLEXIBLE PULL BOX (6.5&quot; x 12.25&quot;)</td>
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COMMUNICATIONS DISTRIBUTION CABINET
REFER TO DRAWING SD-4804

VISUAL MESSAGE SIGN

TO NEXT DISTRIBUTION CABINET OR VMS. See Note 8

DETAIL A

24V DC OD POWER SUPPLY

#6 AWG TO GROUND SYSTEM

30A, 120V, UPS
20A, 120VAC
NOTES:
1. INSTALL CONDUIT WITH FULL-BORE LOCATIONS AT INTERVALS PER TIA/EIA 568B
   STANDARDS
2. GROUND AND BOND EQUIPMENT AND CABINETS PER TIA/EIA-49-5674
3. WIRE ODD NUMBER SPEAKERS TO AMP CHANNEL "A" AND EVEN NUMBER
   SPEAKERS TO AMP CHANNEL "B"
4. FOR FUTURE ROUTE DEPLOYMENT, PROVIDE ENTRANCE CONDUIT TO NEXT SPEAKER
5. PROVIDE ONE-BUS CONDUIT AND CABLE PER AMBIENT NOISE SENSOR AND
   CHAIN LINKING PER SPEAKERS
6. PLACE AMBIENT NOISE SENSOR TO POINT AWAY FROM SPEAKERS

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CLOSED CIRCUIT TELEVISION (CCTV) DESCRIPTION:

1. TCP/IP LOCAL NETWORK BASED SUBSYSTEM USING DIRECT ATTACHED STORAGE, LATER EXPANDING TO DETACHED STORAGE CAPABILITY AS OCC CARRIER CAPACITY EXPANDS

2. LOCAL VIDEO RECORDING UTILIZING EXISTING DUAL BASE DX SYSTEMS USING 10/100 MEGABITS ETHERNET ATTACHMENT STANDARD, HOURS FOR 14 DAYS OF STORAGE

3. CAMERA SUBSYSTEM TOPOLOGY IS REDUNDANT RING USING SM FIBER BETWEEN THE AGGREGATE DISTRIBUTION SWITCHES AND THE STATION CCTV
NOTES:
1. UPS includes rear maintenance bypass switch
2. UPS includes ethernet hub for remote configuration and monitoring
3. All UPS receptacles are NEMA L5-20
4. Add battery stacks to increase reserve capacity
5. Battery reserve based on 6 hours run time under maximum 12,000W load
6. Each DC will include a 120V AC / 24V DC power supply for powering adjacent DE devices
7. Shown power loads and UPS/battery ratings indicate typical station mandatory minimum requirements. If the actual projects station devices require larger power loads, increase UPS equipment ratings according to the project's needs.
PLATE 1: PLATFORM ENCASED PULL-BOX (SIDE VIEW)

4" CONDUIT TO DISTRIBUTION CABLE BACKYARD AS REQUIRED

ELEVATED PLATFORM PULL-BOX
REAR MOUNT (FRONT VIEW)

4" CONDUIT TO DISTRIBUTION CABLE BACKYARD AS REQUIRED

NOTES:
1. PLACE PULL-BOX LOCATIONS AT INTERVALS PER TIA/EIA 568B
   STANDARDS
2. CONDUITS USED FOR SINGLE-MODE FOC WILL BE COLORED YELLOW TO
   MATCH CABLE SHEATH
3. DISTRIBUTION CABINETS WILL BE PROVIDED WITH DUAL SERVICE
   ENTRANCES EACH WITH TWO (2) 4" CONDUITS ONE (1) 4" CONDUIT FOR
   FOC AND ONE (1) 4" CONDUIT SPARE REFER TO STATION CONDUIT SHEET
   PLANS

4" CONDUIT #1
w/ 4-1" INNERDUCTS

1 2
3 4

(#1) 1-24 STRAND SW FOC
(#2) 1-24 STRAND SW FOC (SPARE)
(#3) SPARE
(#4) SPARE

4" CONDUIT #2
w/ 4-1" INNERDUCTS

1 2
3 4

(#1) 1-24 STRAND SW FOC
(#2) 1-24 STRAND SW FOC (SPARE)
(#3) SPARE
(#4) SPARE

4" CONDUIT #3
w/ 4-1" INNERDUCTS

1 2
3 4

FUTURE DSP SPARES

4" CONDUIT #4
w/ 4-1" INNERDUCTS

1 2
3 4

FUTURE DSP SPARES

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STATION COMMUNICATIONS SUPPORTING SYSTEM AND OTHERS
CONDUIT ASSIGNMENTS SUBSYSTEM CABLE PLAN

CONTRACT NO. 15-0832

DATE OF ISSUE: 01/11/2011

STATION COMMUNICATIONS SUPPORTING SYSTEM AND OTHERS
CONDUIT ASSIGNMENTS SUBSYSTEM CABLE PLAN

CONTRACT NO. 15-0832

SIGNATURES:

Caltrain
Station Communications Support Systems
Conduit Assignments - Subsystem Cable Plan

INITIALS:

Prepared by:
Checked by:
Approved by:
NOTES:
1. NETWORK TRANSPORT MEDIUM TO CCF TO BE DETERMINED (TEC).
2. SPECIFIC STATION DESIGN WILL DETERMINE THE QUANTITY OF DISTRIBUTION CABINETS. WHEN LESS THAN FOUR CABINETS ARE USED, CIRCLE RIBBON OPTIC WIRING.
3. SEPARATE VERTICAL LINES OF AT LEAST 100" WILL BE PARTITIONED FOR EACH TYPE OF SUBSYSTEM.
NOTES:

1. PLACE JUNCTION BOX LOCATIONS AT INTERVALS PER TIA/EIA 568B STANDARDS.

2. EACH 1" CONDUIT CREATE A DEDICATED PATHWAY BETWEEN DEVICES OF THE SAME SUBSYSTEM. REPEAT THIS SCHEME FOR EACH INDIVIDUAL SUBSYSTEM. THE GUARDIAN NETWORK WILL ALLOW NETWORK REDUNDANCY FOR THOSE DEVICES WITH INTEGRATED NETWORK SHARING CAPABILITIES.

3. DEVICE QUANTITIES WILL VARY WITH STATION SIZE AND SUBSYSTEM TYPE.

4. REFER TO STATION CONDUIT Riser PLANS.
TYPE 1 POLE MOUNT VMS BOARD
ON OUTBOARD PLATFORM

TYPE 2 POLE MOUNT VMS BOARD
ON CENTER ISLAND PLATFORM

NOTES:
1. SEE SD-4905 FOR FOUNDATION DETAILS.
2. SEE SD-4904 FOR ARM CONNECTION DETAILS.
3. ALL STEEL, WELDING AND ACCESSORIES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION WITH HEAVY DUTY EXTERIOR PAINT FINISH.

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STANDARD DRAWINGS

STATION COMMUNICATIONS
COMMUNICATION EQUIPMENT
VISUAL MESSAGE SIGN BOARD
POLE MOUNT

DRAWN BY: [Signature]
CHECKED BY: [Signature]
APPROVED BY: [Signature]