

UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS

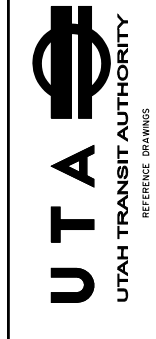
DWG. NO.	DESCRIPTION	DATE
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TRK-102	SPECIAL TRACKWORK PROCEDURE NO. 6 TURNOUT - BALLASTED TRACK	01-02-07
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DWG. NO.	DESCRIPTION	DATE
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OGS-113	WIDE FLANGE POLE DETAILS	01-02-07
OGS-114	WIDE FLANGE FEEDER POLE DETAILS	01-02-07
OGS-115	TAPERED TUBULAR STEEL POLES - DETAILS	01-02-07
OGS-116	STANDARD SMOOTH TAPERED TUBULAR STEEL POLES - TYPE PAI, PBI, PCI & PDI	01-02-07
OGS-117	TAPERED / NON-TAPERED TUBULAR STEEL POLE FOR BALANCE WEIGHT TYPE PWI	01-02-07
OGS-118	TANDEM TAPERED TUBULAR STEEL POLES - TYPE PF1, PF2, PFI, PFI & PPI	01-02-07
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SGC-126	CONTROL HOUSE GROUNDING AND GROUND RESISTANCE	01-02-07
SGC-127	HIGHWAY CROSSING SIGNAL FOUNDATION	01-02-07

MARKED BOXES INDICATE DRAWINGS APPLICABLE TO THIS PROJECT

RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE



Drawn By:	N/A
Checked By:	
Approved By:	
DATE	
DESCRIPTION	
STANDARD	STD_DWG

REFERENCE DRAWING
INDEX SHEET

LIGHT RAIL REFERENCE DRAWINGS

SYMBOLS LEGEND

	INDICATES SECTION NO.
	INDICATES DWG. NO.
	INDICATES DETAIL NO.
	INDICATES DWG. NO.
	REVISION NUMBER
	FINISHED WOOD
	BLOCKING
	CONTINUOUS WOOD
	DIMENSION TO FACE OF WALL, CONC. OR MASONRY
	DIMENSION TO CENTER LINE

CODE COMPLIANCE CRITERIA

LIGHT RAIL PLATFORM AND CANOPIES JURISDICTION:
 SALT LAKE COUNTY
 WASHINGTON COUNTY
 SANDY CITY
 UTAH COUNTY
 WASHINGTON COUNTY
 SANDY CITY
 SANDY CITY
 SANDY CITY

APPLICABLE CODE:
 International Building Code, Latest Edition
 III-N

OCCUPANCIES:
 TYPE OF CONSTRUCTION: NA
 ONE STORY - NON-ENCLOSED SPACE: NA
 OCCUPANCY SEPARATIONS: NA
 TOTAL BUILDING AREA: NA
 TOTAL BUILDING AREA: NA

REQUIRED RATINGS: NA
 EXTERIOR WALLS: (TABLE 6-A)
 INTERIOR WALLS: (TABLE 6-B)
 OPENINGS: (TABLE 6-A)

ACCESSIBILITY:
 MAX. SLOPE OF RAMPS WITH HANDRAILS: 1:20
 MAX. SLOPE OF RAMPS WITHOUT HANDRAILS: 1:50
 MAX. SLOPE OF RAMPS LESS THAN 6'-0" IN LENGTH WITHOUT HANDRAILS: 1:50
 AT LEAST ONE TELEPHONE PER PLATFORM SHALL BE HEARING IMPAIRED ACCESSIBLE

ABBREVIATIONS

Reference to materials or methods have been made on the drawings in accordance with the following abbreviations:

AB	Anchor Bolt
AC	Angle
ALUM	Aluminum
APPROX	Approximate
AI	As Fabricated
BD	Board
BM	Board Metal
BT	Brass
C	Control Joint
CG	Casting
CL	Clear
CLR	Clearance
CONC	Concrete
CONST	Construction
CONT	Continuous
CONTR	Contractor
CU	Copper
DDL	Dryer
DET	Detail
DM	Dimension
DM	Dimension
DIV	Division
DOWN	Down
DWG	Drawing
EA	Each
ELEV	Elevation (refer to drawings)
ELECTR	Electrical
ELEV	Elevation (refer to two-dim. dwg.)
ELEV	Elevation (refer to drawings)
EXIST	Existing
EXP	Expansion
EXT	External
EXT	External
FND	Foundation
FIN	Finish
FLUOR	Fluorescent
FT	Foot
FTG	Fastening
GALV	Galvanized
GEN	General
GEN	General
GEN	General
HW	Hardware
HDCP	Hot Dipped Galvanized
HDR	Header
HORIZ	Horizontal
JT	Joint
JST	Joint Sealant
MATL	Material
MAX	Maximum
MFG	Manufacturer
MFR	Manufacturer
MISC	Miscellaneous
MULL	Mullion
MULT	Multifunctional
MW	Manhole
NIC	Not in Contract
NO	Number
NTS	Not to Scale
NTS	Not to Scale
ON	On center
DC	On center
PL	Plate
PL	Plate
PREFAB	Prefabricated
PREFIN	Prefinished
REQ	Required
SECT	Section
SIM	Similar
SIM	Similar
SPEC	Specifications
SS	Stainless steel
SS	Stainless steel
STD	Standard
SUSP	Suspend
SUSP	Suspend
SYS	System
TYP	Typical
TYP	Typical
UNO.	Unless noted otherwise
VENO.	Vending
VERT	Vertical
W	Width
W/	Width
WWF	Welded wire fabric

CANOPI STRUCTURAL DESIGN CRITERIA

CANOPI STRUCTURAL DESIGN
 WILL MEET ASCE 7-05 STANDARDS

ARCHITECTURAL SYMBOLS & ABBREVIATIONS

LIGHT RAIL REFERENCE DRAWINGS

SCALE

CADD Sheets

Issued Date

Revis No.

ARC-100

UTA
 UTAH TRANSIT AUTHORITY
 REFERENCE DRAWINGS

RECOMMENDED FOR APPROVAL

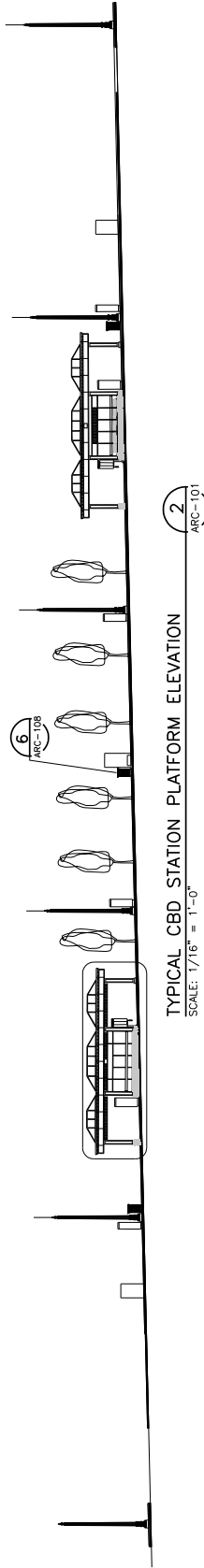
CIVIL STANDARDS

CAPITAL DEVELOPMENT DEPUTY CHIEF

DATE

DATE

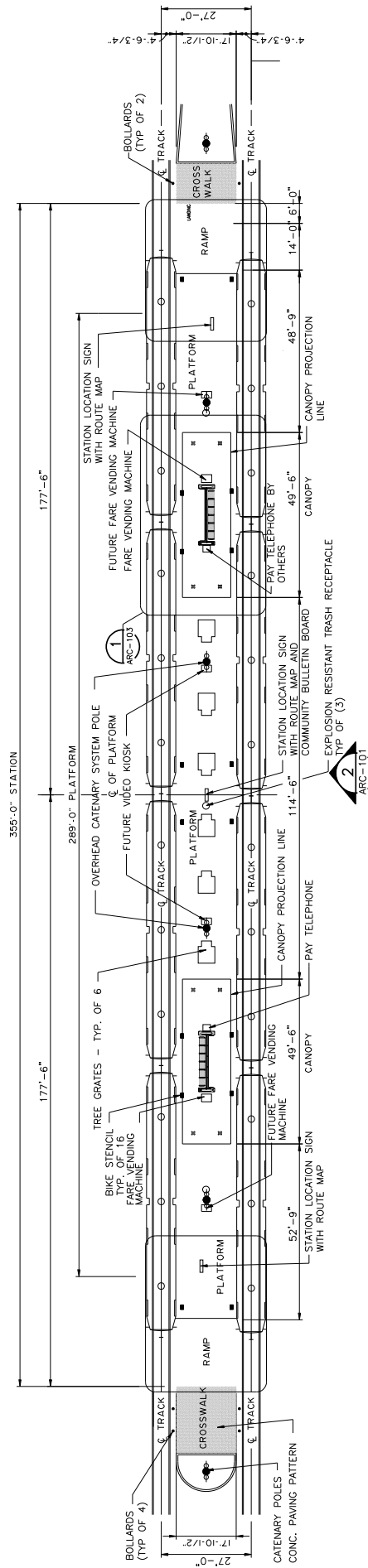
REV	DATE	Description



TYPICAL CBD STATION PLATFORM ELEVATION

SCALE: 1/16" = 1'-0"

2
ARC-101



TYPICAL CBD STATION PLATFORM PLAN

SCALE: 1/16" = 1'-0"

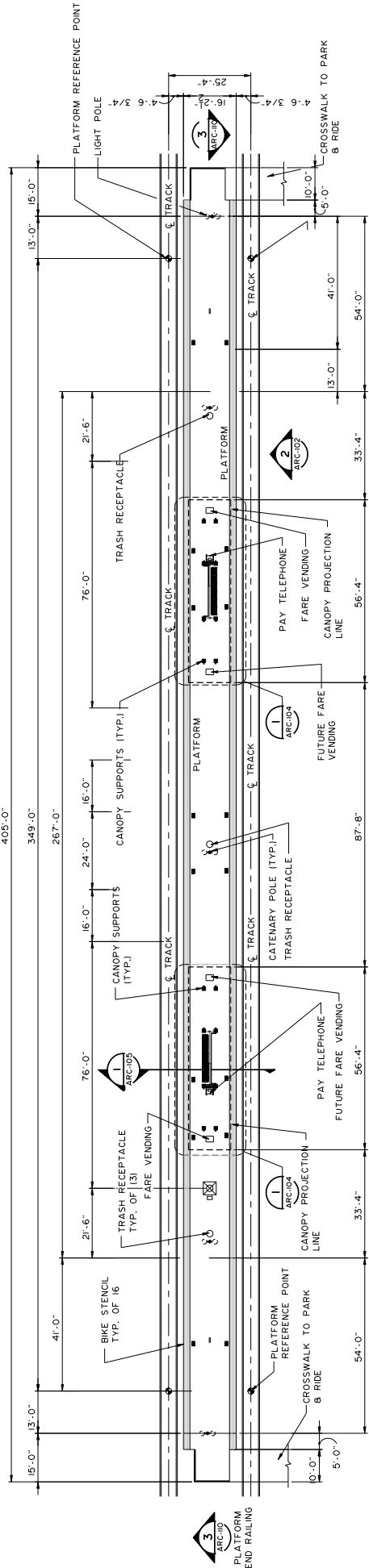
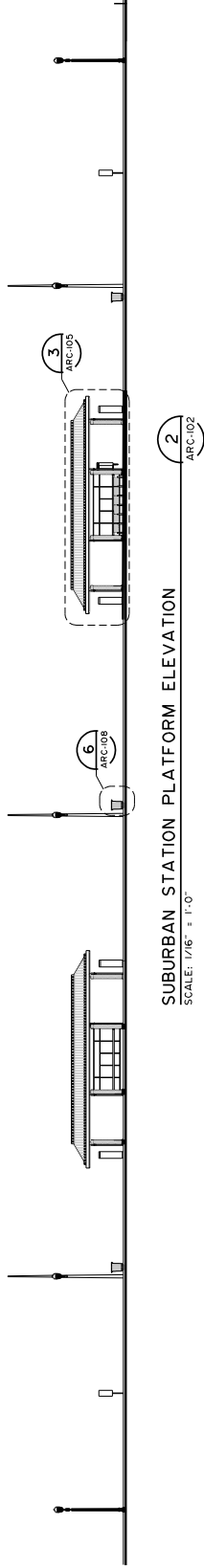
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ARC-101

NOTES:

1. CONCRETE SLAB PATTERN TO BE 4"x4" CONTROL JOINTS WITH EXPANSION JOINTS @ 25' MAX.
2. PLATFORM SLAB CONCRETE FINISH TO BE ROUGH FINISH.
3. PLATFORM EDGE CONCRETE FINISH TO BE RUBBED FINISH.

NOTE:
PROVIDE 20'-0" ACCESS RAMP AT LOW END OF PLATFORM - TYPICAL.

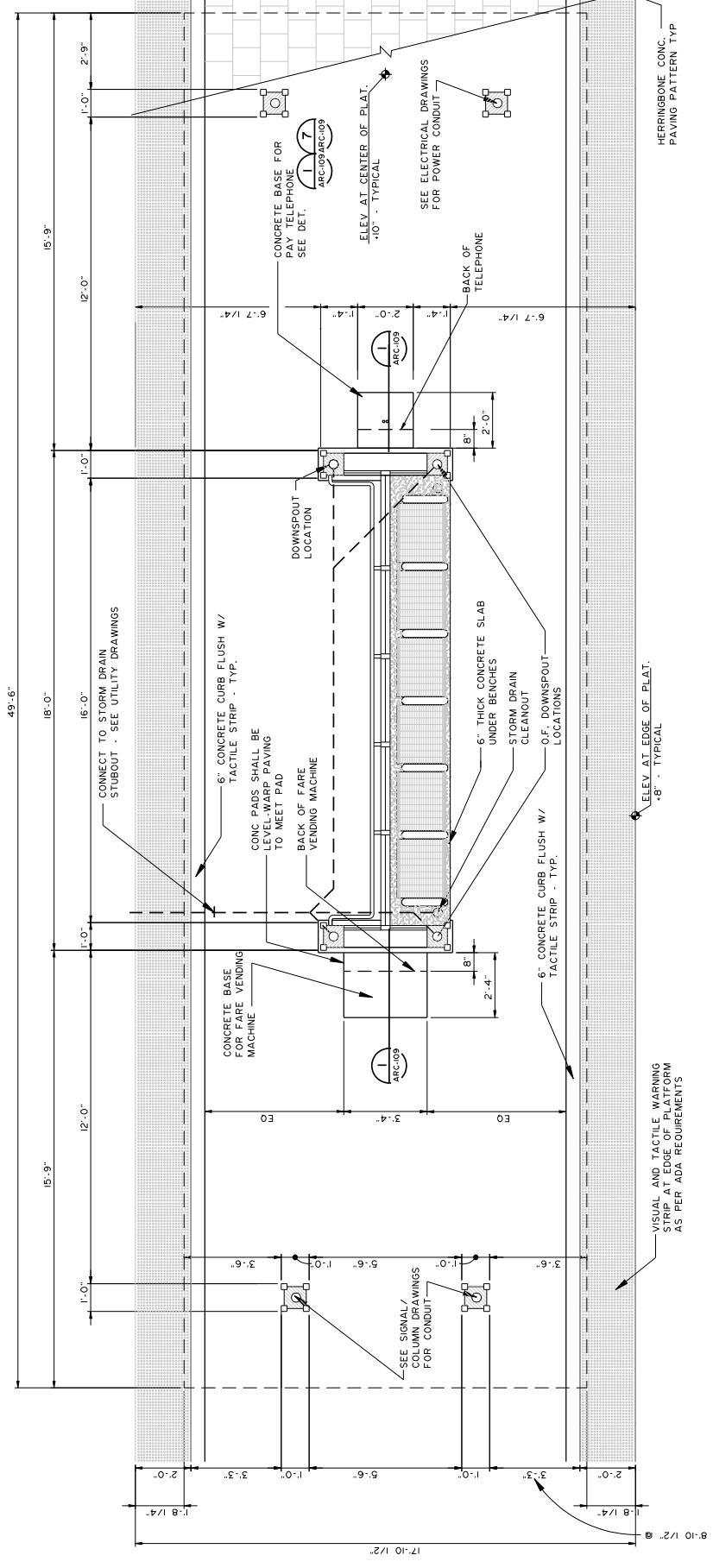
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	<p>DOWNTOWN STATION PLAN</p>			
<p>LIGHT RAIL REFERENCE DRAWINGS</p>				



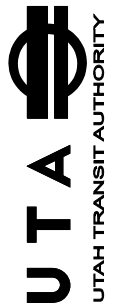
- CONCRETE SLAB FINISH:**
1. CONCRETE SLAB PATTERN TO BE 4'-0" x 4'-0" PATTERN CONTROL JOINTS WITH EXPANSION JOINTS @ 25'-0" O/C MAX.
 2. PLATFORM SLAB CONCRETE FINISH IS TO BE ROUGH BROOM.
 3. PLATFORM EDGE CONE FINISH IS TO BE RUBBED FINISH.

SUBURBAN STATION PLATFORM PLAN
SCALE: 1/16" = 1'-0"

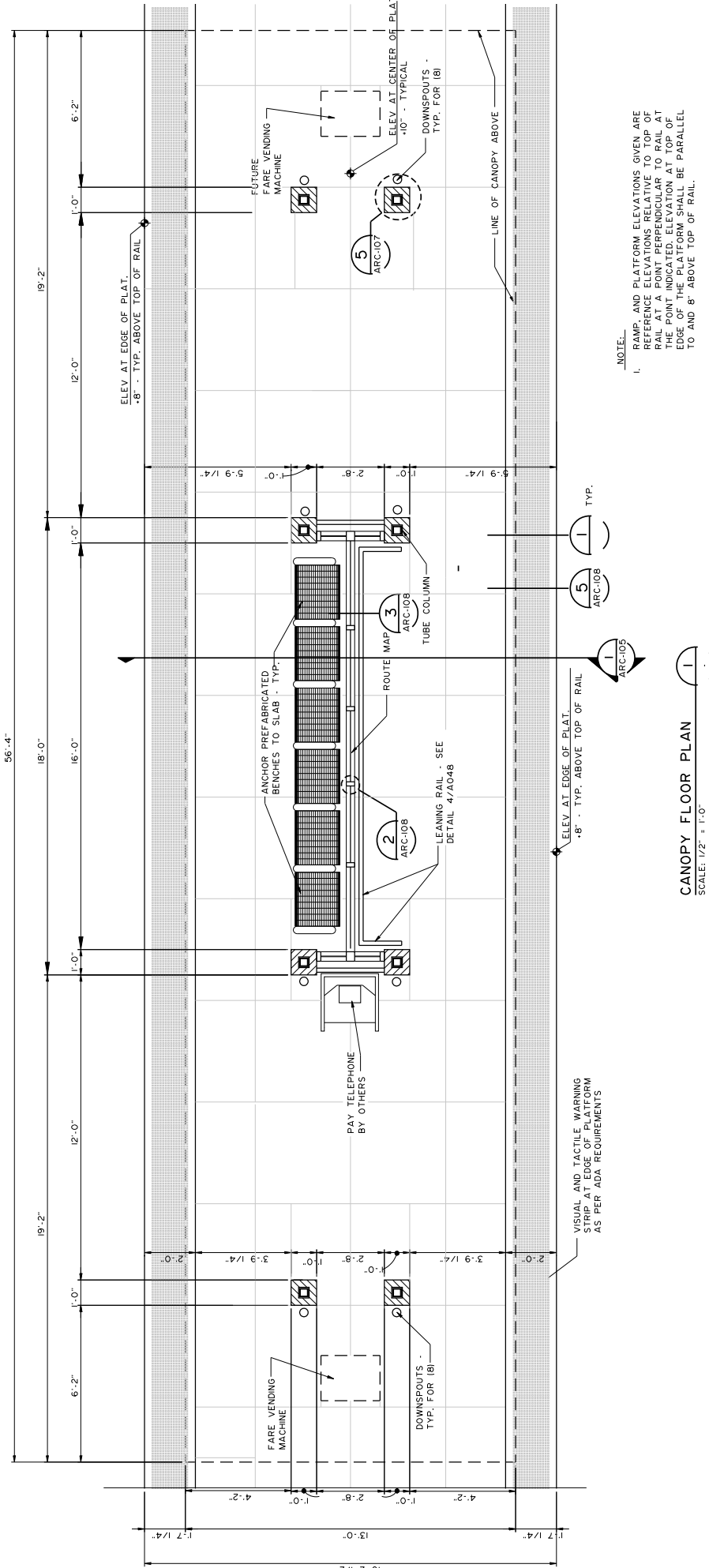
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	<p>1 / 16" = 1'-0"</p> <p>CAD: _____</p> <p>DATE: _____</p>	<p>SUBURBAN STATION PLAN</p> <p>LIGHT RAIL REFERENCE DRAWINGS</p>	<p>ARC-102</p>	<p>ARC-102</p>



CANOPY FLOOR PLAN
SCALE: 1/2" = 1'-0"
A02

RECOMMENDED FOR APPROVAL _____ CIVIL STANDARDS _____ CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE _____ DATE _____	 UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	Drawn By: _____ Checked By: _____ Approved By: _____	DOWNTOWN CANOPY PLAN LIGHT RAIL REFERENCE DRAWINGS	Sheet: AS SHOWN
					CAD: _____ Scheduling Date: _____ Drawing No.: ARC-103

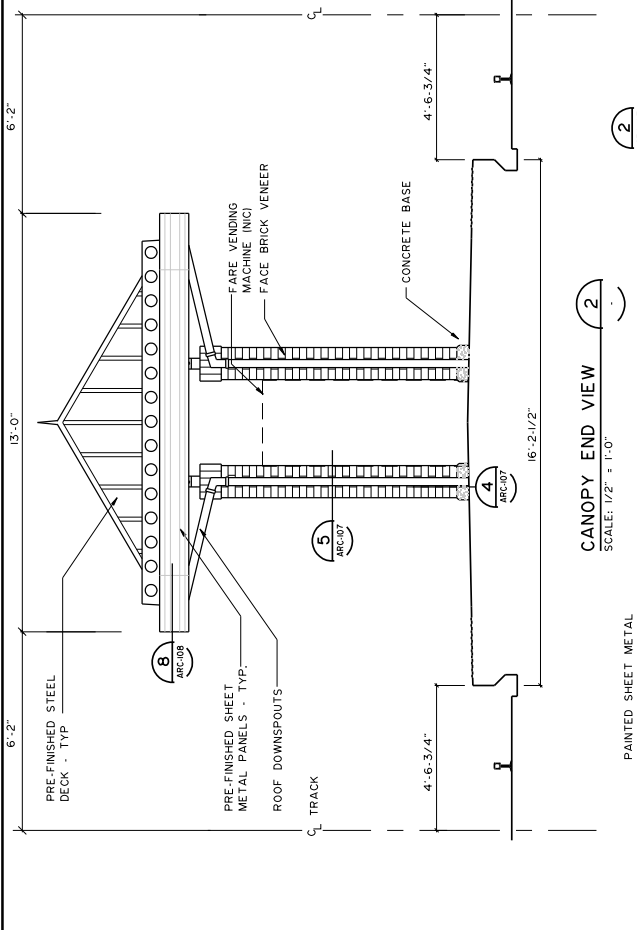
REV	DATE	Description



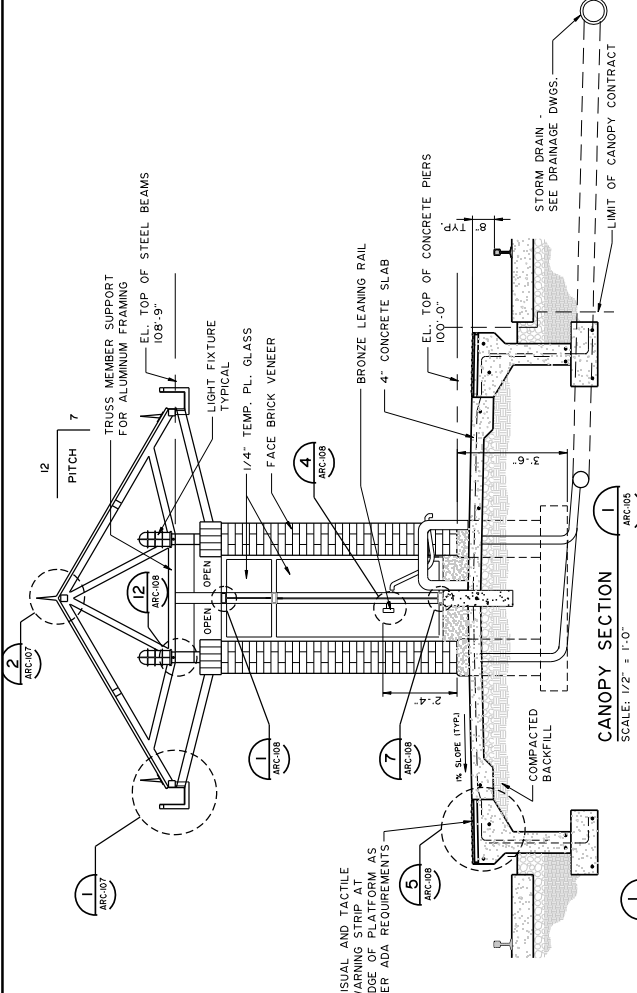
- NOTE:**
- RAMP AND PLATFORM ELEVATIONS GIVEN ARE REFERENCE ELEVATIONS RELATIVE TO TOP OF RAIL AT A POINT PERPENDICULAR TO RAIL AT THE POINT INDICATED. ELEVATION AT TOP OF EDGE OF THE PLATFORM SHALL BE PARALLEL TO AND 8" ABOVE TOP OF RAIL.
 - SEE STRUCTURAL DRAWINGS FOR CONCRETE FOUNDATION AND REINFORCEMENT

CANOPY FLOOR PLAN
SCALE: 1/2" = 1'-0"

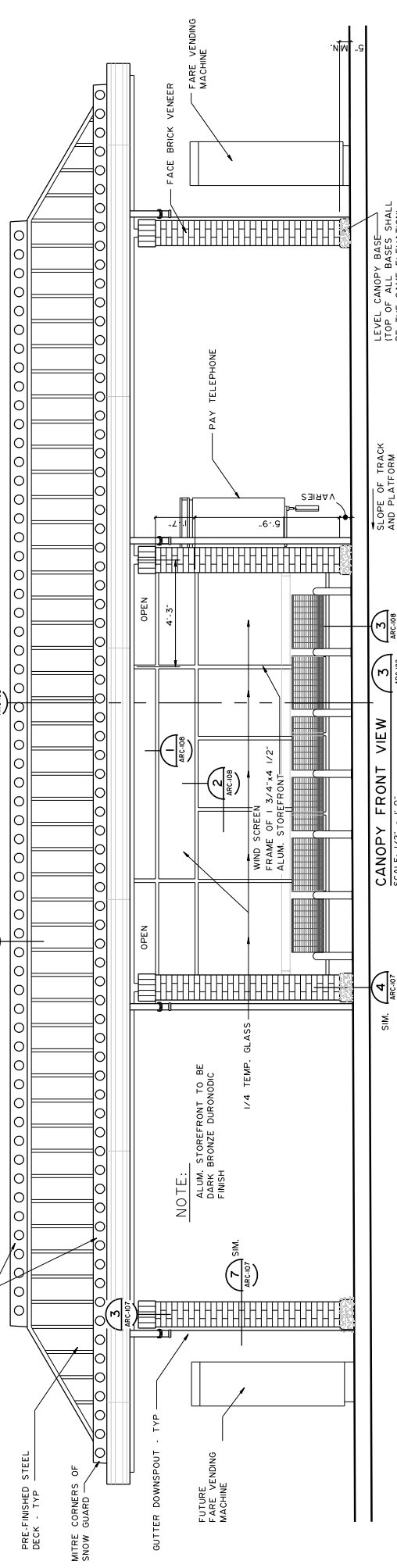
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REV: _____ DATE: _____ DESCRIPTION: _____			



CANOPY END VIEW
SCALE: 1/2" = 1'-0"

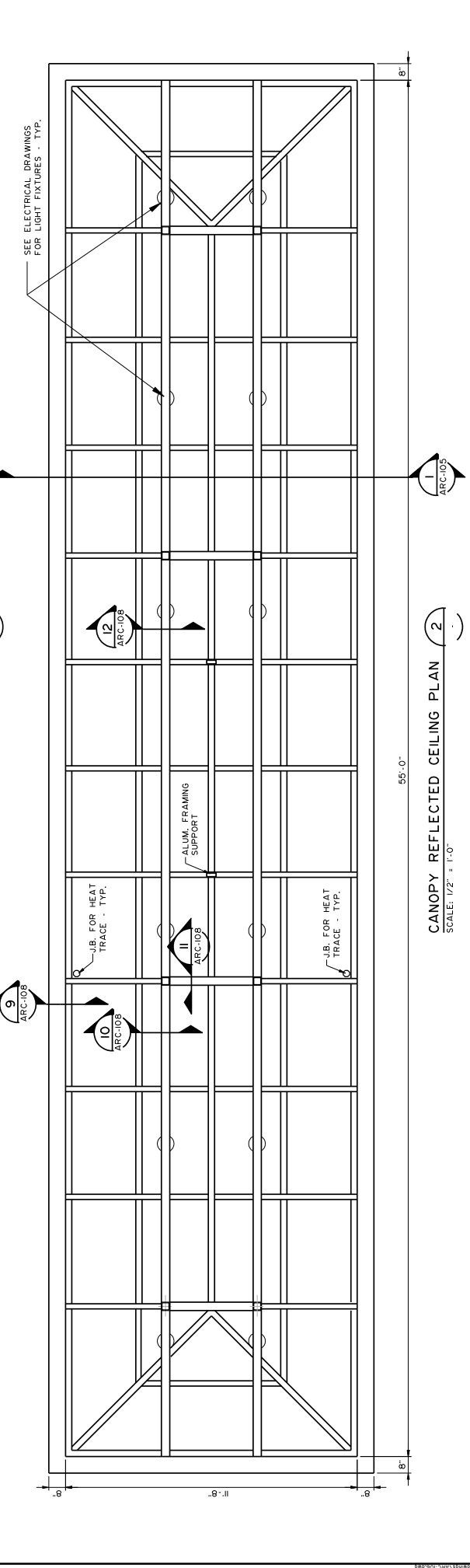
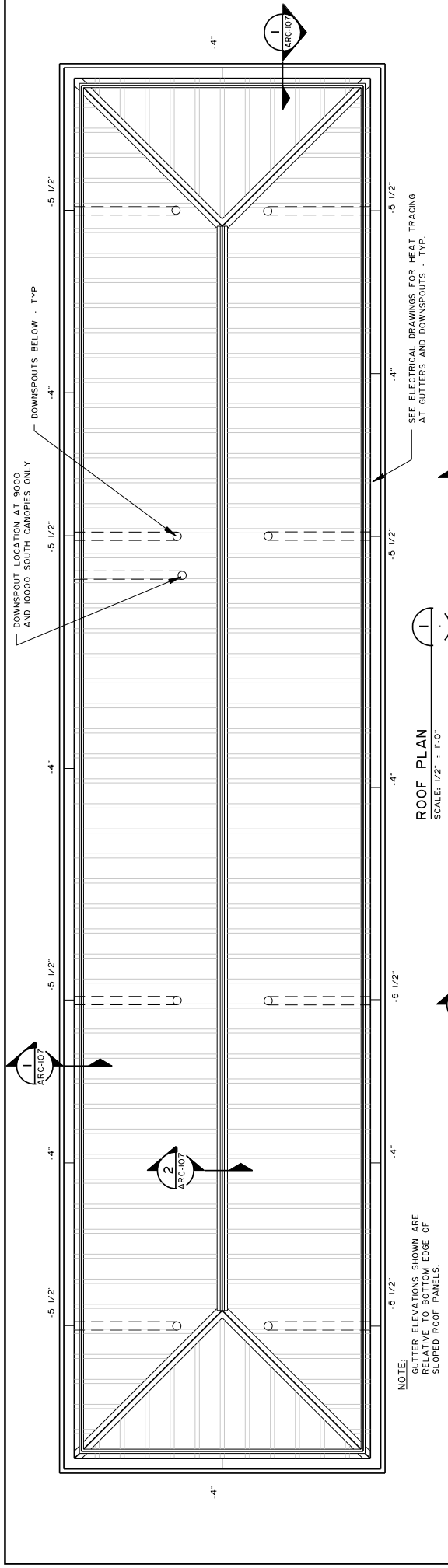


CANOPY SECTION
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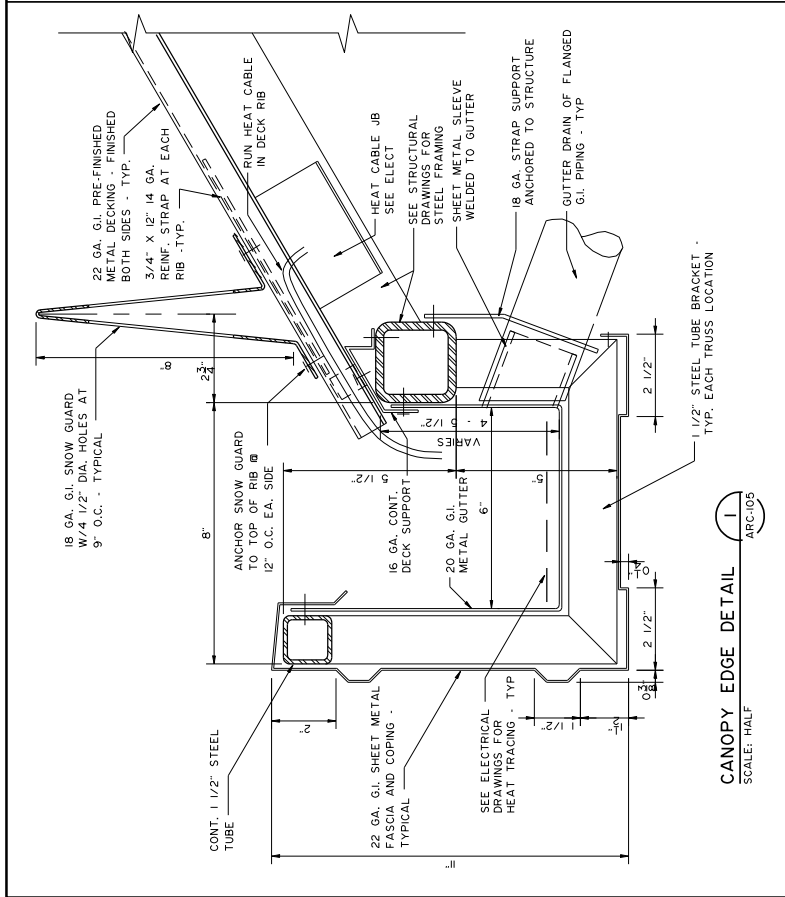


CANOPY FRONT VIEW
SCALE: 1/2" = 1'-0"

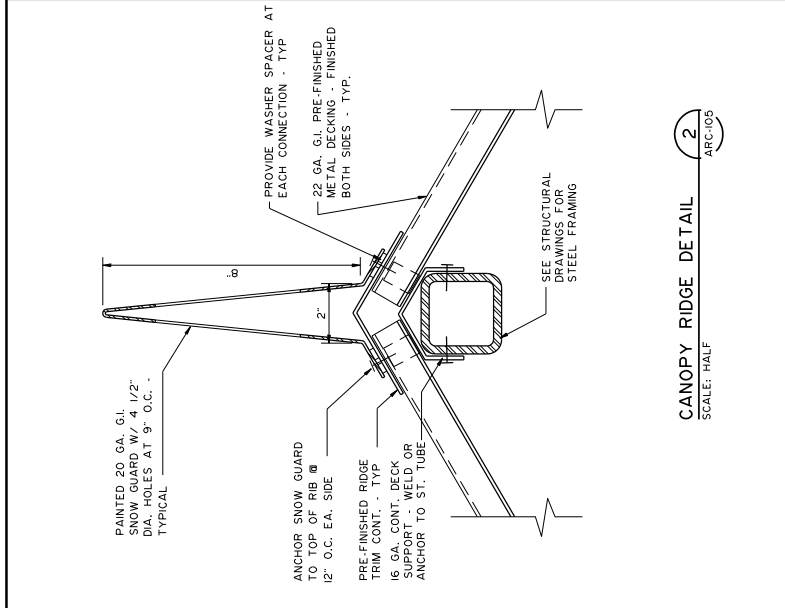
<p>UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS</p>	<p>DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____</p>	<p>DATE: _____ DATE: _____</p>	<p>RECOMMENDED FOR APPROVAL CIVIL STANDARDS CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>AS SHOWN CADD REVISIONS SUBMITAL DATE DRAWING NO. ARC-105</p>
<p>SUBURBAN & SECTION CANOPY ELEVATIONS & SECTION 1 OF 2</p>				<p>LIGHT RAIL REFERENCE DRAWINGS</p>



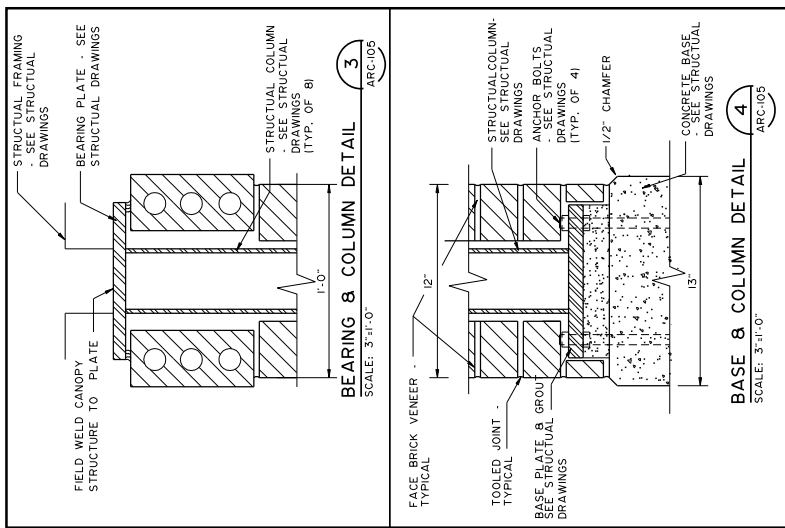
RECOMMENDED FOR APPROVAL _____ CIVIL STANDARDS	DATE _____ DATE _____	CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____	 UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	SUBURBAN CANOPY ELEVATIONS & SECTIONS 2 OF 2	DRAWING NO.: ARC-106 SHEET NO.: AS SHOWN
				SUBMITTED DATE: _____	LIGHT RAIL REFERENCE DRAWINGS	ARC-106



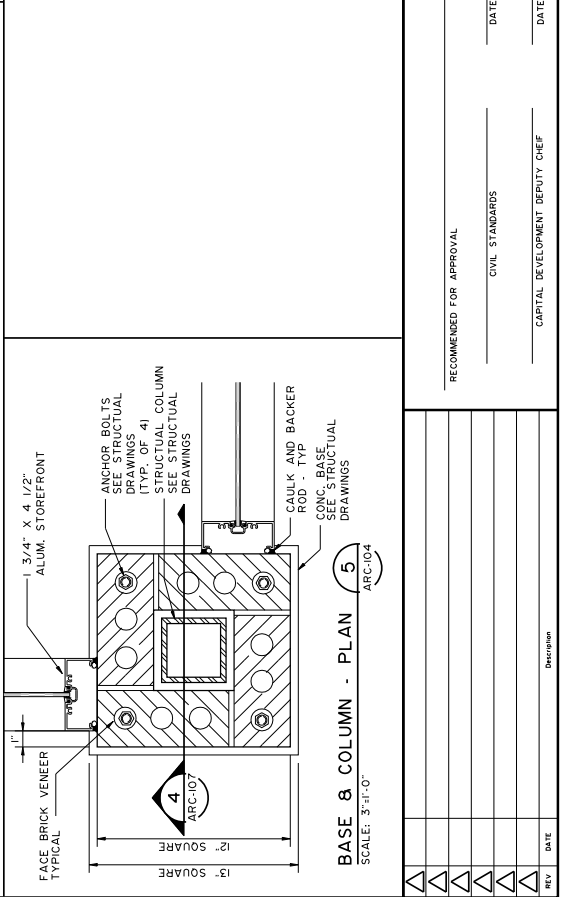
CANOPY EDGE DETAIL
SCALE: HALF
ARC-105



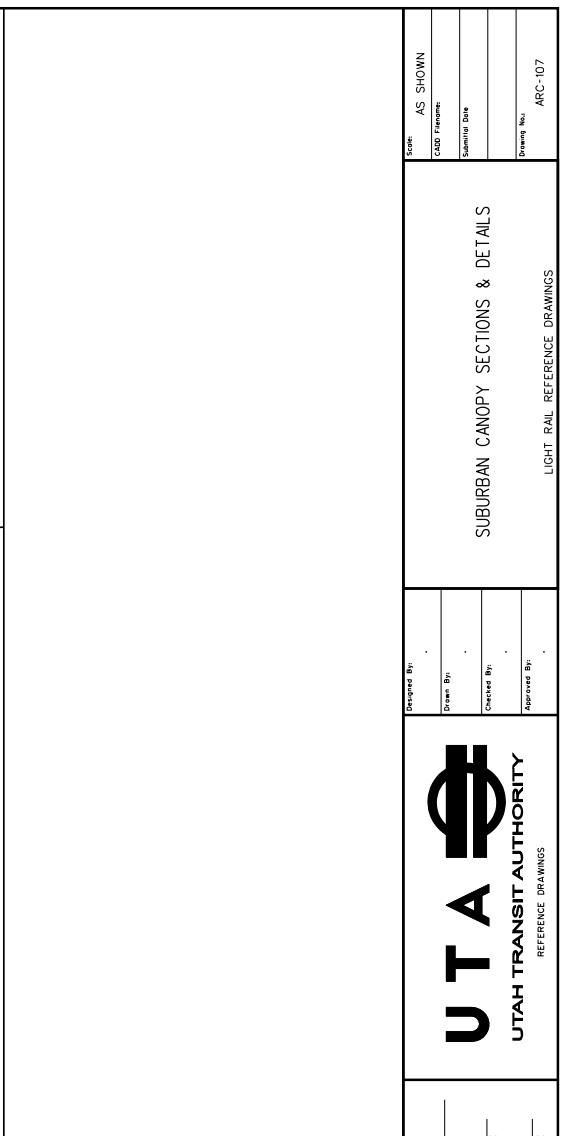
CANOPY RIDGE DETAIL
SCALE: HALF
ARC-105



BEARING & COLUMN DETAIL
SCALE: 3/4\"/>



BASE & COLUMN - PLAN
SCALE: 3/4\"/>



BASE & COLUMN DETAIL
SCALE: 3/4\"/>

REV	DATE	Description

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

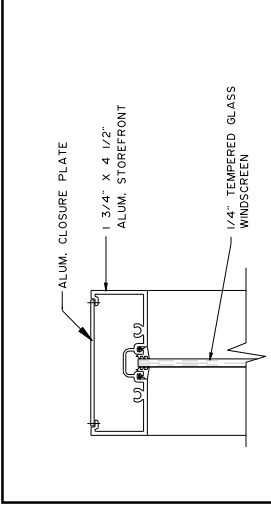
Designed By: _____
Drawn By: _____
Checked By: _____
Approved By: _____

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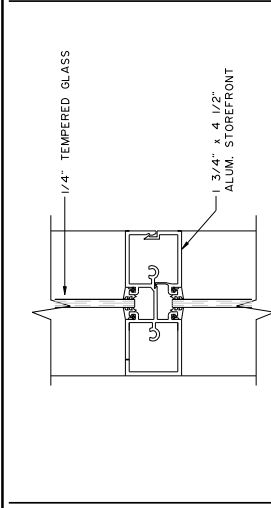
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Submitting Date: _____
Drawing No: _____

SUBURBAN CANOPY SECTIONS & DETAILS

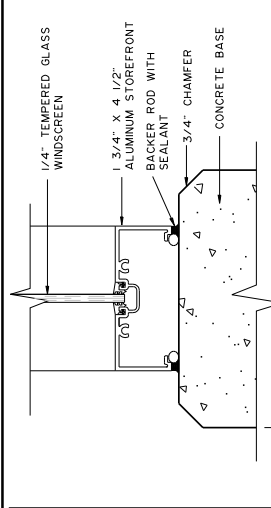
LIGHT RAIL REFERENCE DRAWINGS
ARC-107



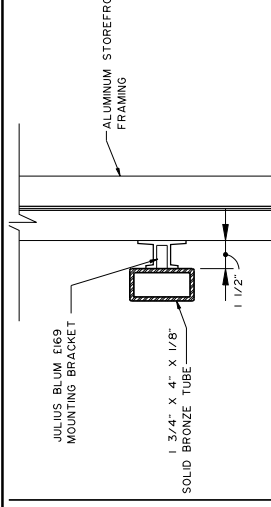
MULLION DETAIL 1
SCALE: 3" = 1'-0"
ARC-105



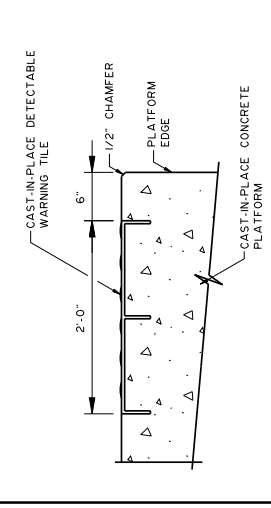
MULLION DETAIL 2
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ARC-105



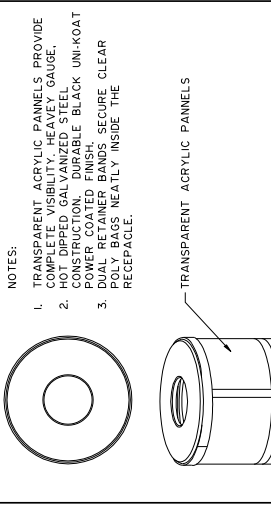
WINDSCREEN BASE DETAIL 3
SCALE: 3" = 1'-0"
ARC-105



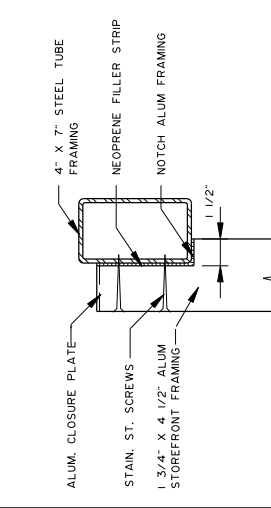
LEANING RAIL DETAIL 4
SCALE: 1 1/2" = 1'-0"
ARC-105



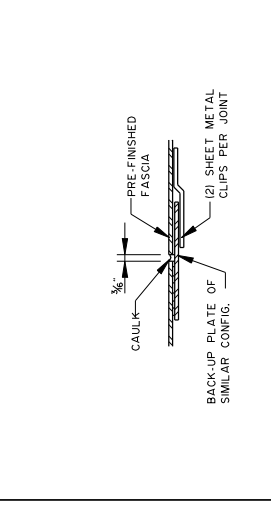
TACTILE TILE DETAIL 5
SCALE: 1 1/2" = 1'-0"
ARC-104/105



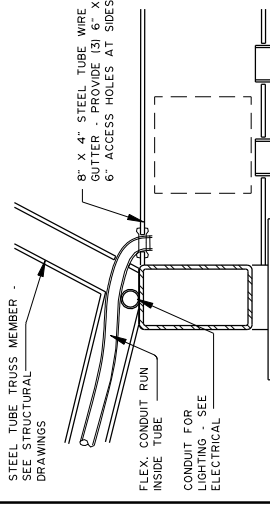
EXPLOSION RESISTANT TRASH RECEPTACLE 6
SCALE: NONE
ARC-101, ARC-102



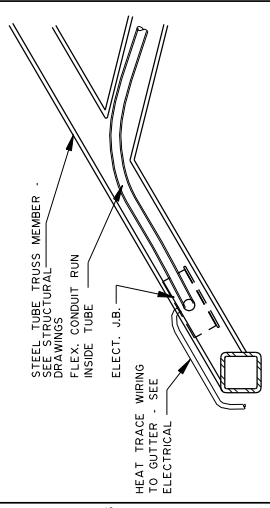
ALUMINUM SUPPORT DETAIL 7
SCALE: 3" = 1'-0"
ARC-105



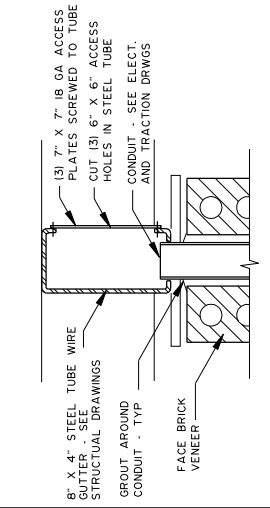
METAL JOINT DETAIL 8
SCALE: NONE
ARC-105



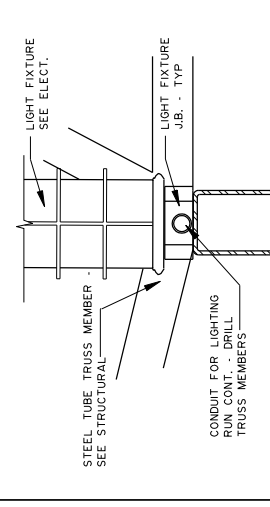
HEAT TRACE WIRING 9
SCALE: 3" = 1'-0"
ARC-106



HEAT TRACE WIRING 10
SCALE: 3" = 1'-0"
ARC-106



WIRE GUTTER DETAIL 11
SCALE: 1 1/2" = 1'-0"
ARC-106



LIGHTING DETAIL 12
SCALE: 1 1/2" = 1'-0"
ARC-105

REV	DATE	Description

RECOMMENDED FOR APPROVAL _____ DATE _____

CIVIL STANDARDS _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

UTAH
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

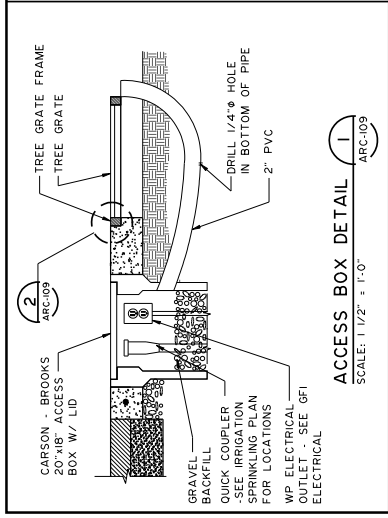
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Drawn By: _____
Checked By: _____
Approved By: _____

SUBURBAN CANOPY DETAILS

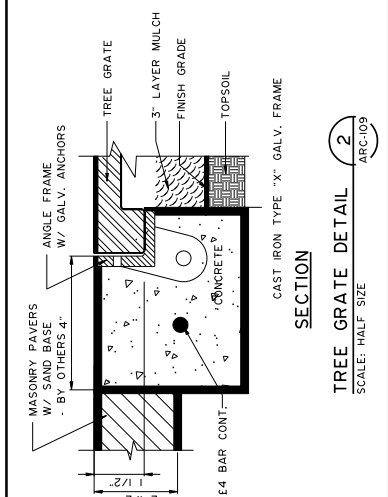
LIGHT RAIL REFERENCE DRAWINGS

AS SHOWN

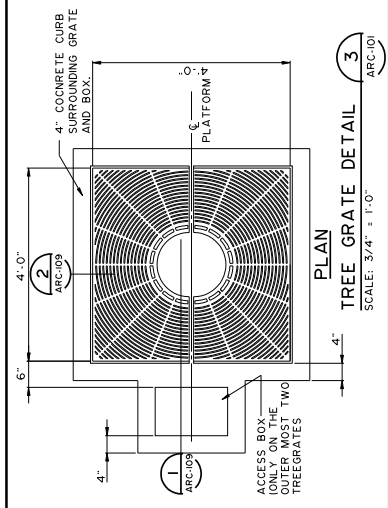
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ARC-108



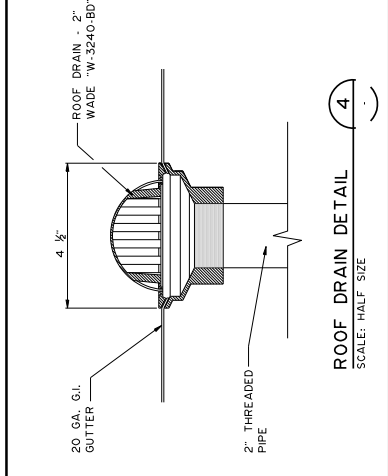
ACCESS BOX DETAIL (1)
SCALE: 1 1/2" = 1'-0"
ARC-109



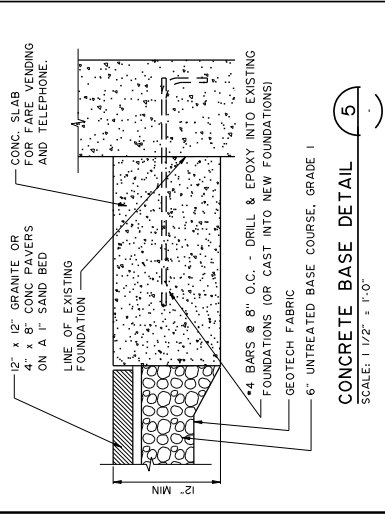
TREE GRATE DETAIL (2)
SCALE: HALF SIZE
ARC-109



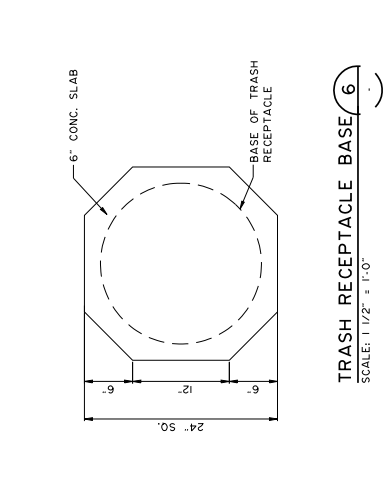
TREE GRATE DETAIL (3)
SCALE: 3/4" = 1'-0"
ARC-109



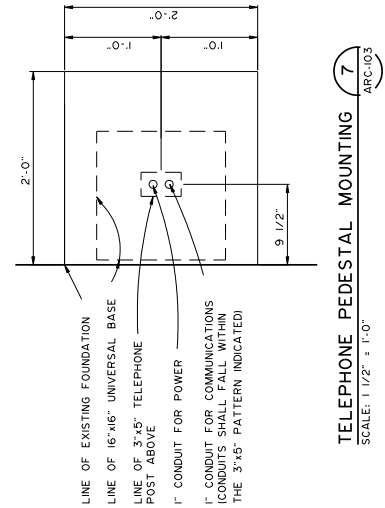
ROOF DRAIN DETAIL (4)
SCALE: HALF SIZE



CONCRETE BASE DETAIL (5)
SCALE: 1 1/2" = 1'-0"



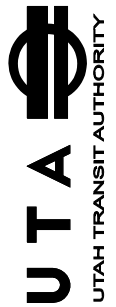
TRASH RECEPTACLE BASE (6)
SCALE: 1 1/2" = 1'-0"



TELEPHONE PEDESTAL MOUNTING (7)
SCALE: 1 1/2" = 1'-0"
ARC-103

REV	DATE	Description

RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

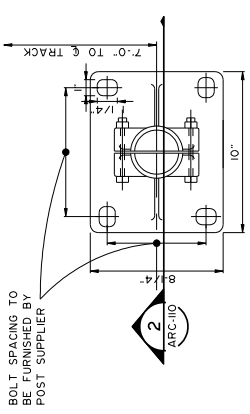


UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

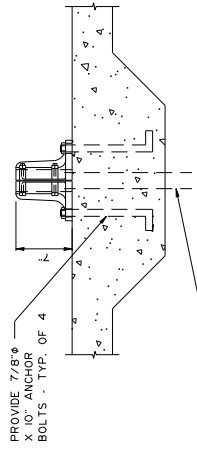
Designed By:	
Drawn By:	
Checked By:	
Approved By:	

MISCELLANEOUS PLATFORM DETAILS
1 OF 2

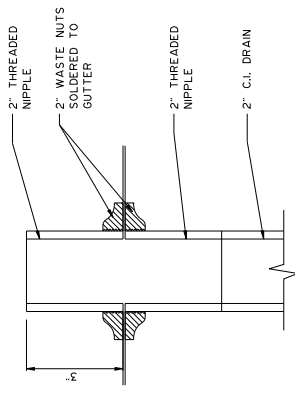
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Drawing No.:	ARC-109



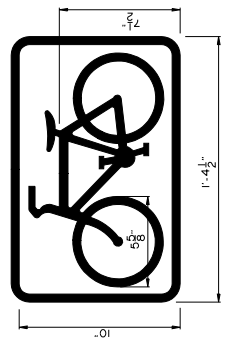
ROUTE SELECTOR BASE DETAIL 1
SCALE: 1 1/2" = 1'-0"



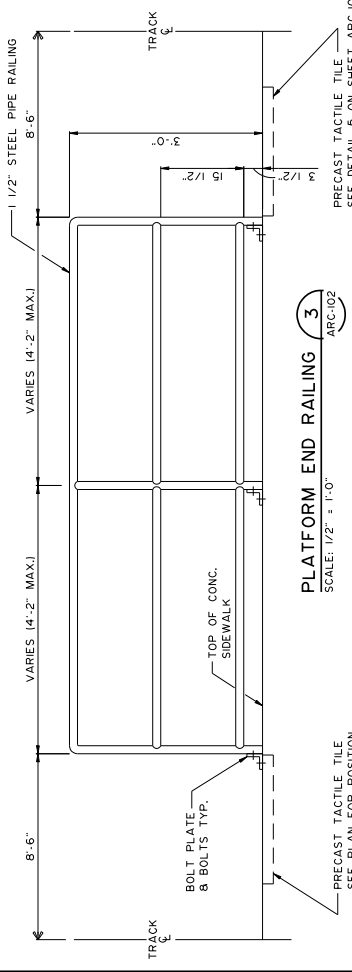
ROUTE SELECTOR BASE DETAIL 2
SCALE: 3/4" = 1'-0"



OVERFLOW DRAIN DETAIL 4
SCALE: 3" = 1'-0"



BIKE DETAIL 5
SCALE: 1 1/2" = 1'-0"



PLATFORM END RAILING 3
SCALE: 1/2" = 1'-0"

REV	DATE	Description

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



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Drawn By: _____

Checked By: _____

Approved By: _____

MISCELLANEOUS PLATFORM DETAILS
2 OF 2

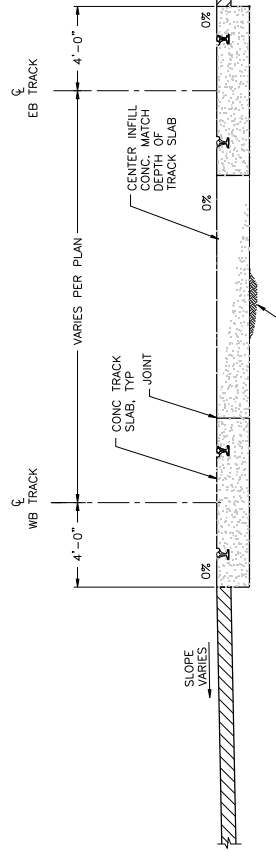
LIGHT RAIL REFERENCE DRAWINGS

Sheet: AS SHOWN

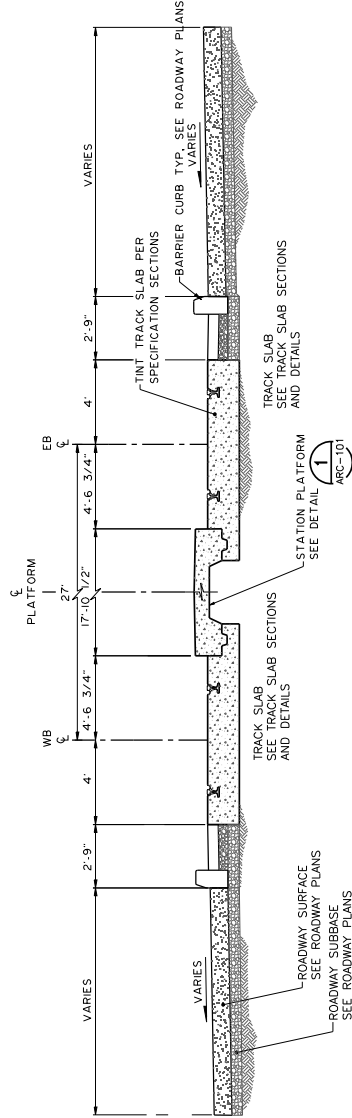
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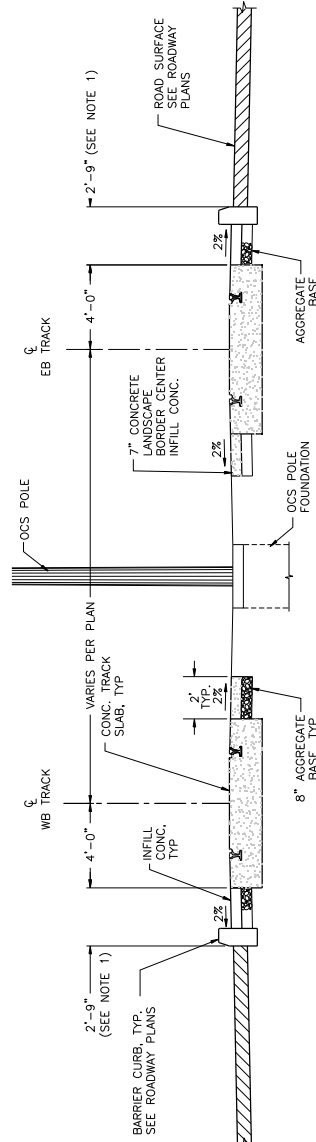
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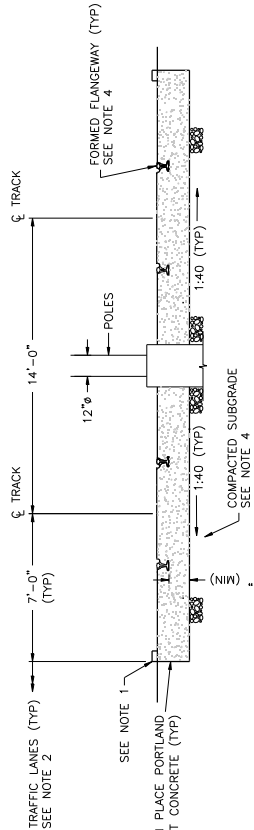
TYPICAL SLAB TRACK AT INTERSECTIONS, WIDE TRACK CENTERS



CORRIDOR TRACK AT EMBEDDED TRACK PLATFORM



TYPICAL SLAB TRACK, WIDE TRACK CENTERS



TYPICAL SECTION - STREET RUNNING LRT

1. CONCRETE CURB, PER JURISDICTIONAL ROADWAY REQUIREMENTS.
2. ASPHALTIC AND/OR PORTLAND CEMENT CONCRETE PAVEMENT MATERIAL TO BE PLACED AND COMPACTED CONSISTENT WITH LOCAL JURISDICTIONAL ROADWAY PAVEMENT REQUIREMENTS.
3. STANDARD RAIL SECTION SHALL BE 115RE NEW, OR RELAY-BASED ON THE LEAST INITIAL COST. ALL LRT REVENUE SERVICE RAIL SHALL BE CWR. YARD RAIL MAY BE JOINED.
4. FLANGEWAY TO BE FORMED IN CONCRETE.
5. SUBGRADE TO BE DESIGNED FOR CONCRETE SLAB STABILITY, CONTROL OF DIFFERENTIAL SETTLEMENT AND CONSISTENT WITH UTILITY PROTECTION REQUIREMENTS.
6. DRAINAGE REQUIREMENTS WILL BE PROVIDED FOR IN FINAL DESIGN.
7. NEED FOR UNDERDRAIN WILL BE ASSESSED AND PROVIDED FOR IN FINAL DESIGN.
8. JURISDICTIONAL RESTRICTION ON CONSTRUCTION SEQUENCING TO BE CONSIDERED IN FINAL DESIGN. LIMITS ON PERIODS OF DISRUPTION MAY NECESSITATE USE OF BLOCK CUTS FOR RAILS AND SECOND POUR CONCRETE OR OTHER COMPATIBLE MATERIAL.

NOTES:

1. DISTANCE FROM EDGE OF TRACK SLAB TO FACE OF CURB IS TYPICALLY 2'-9" ALONG AREAS OF TRACK BOUNDARIES. REFER TO ROADWAY PLANS FOR CURB LOCATION INFORMATION.
2. TYPICAL SECTIONS SHOW THE TRACK SLAB AND INFILL SURFACES IN THE NON-SUPERELEVATED CASE. SUPERELEVATION CHANGES THE CROSS SLOPES INDICATED.
3. PLATFORM CANOPIES AND AMENITIES NOT SHOWN. REFER TO ARCHITECTURAL DRAWINGS.
4. OCS POLE FOUNDATIONS ONLY EXIST AT POLE LOCATIONS, AND ARE SHOWN IN THESE TYPICAL SECTIONS FOR INFORMATION.

REV	DATE	DESCRIPTION

RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

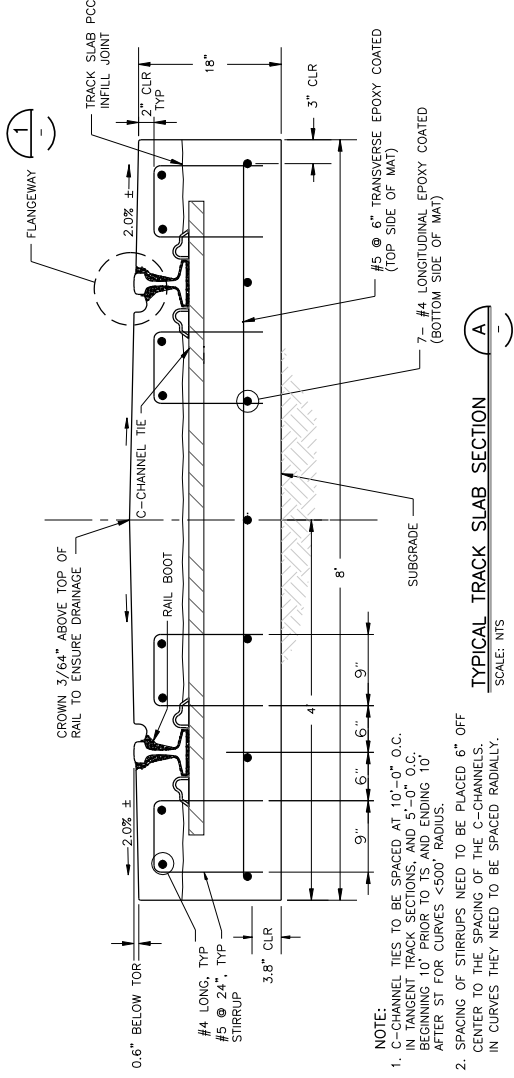


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Checked By:	
Approved By:	

TYPICAL TRACK SECTIONS
STREET RUNNING EMBEDDED TRACK

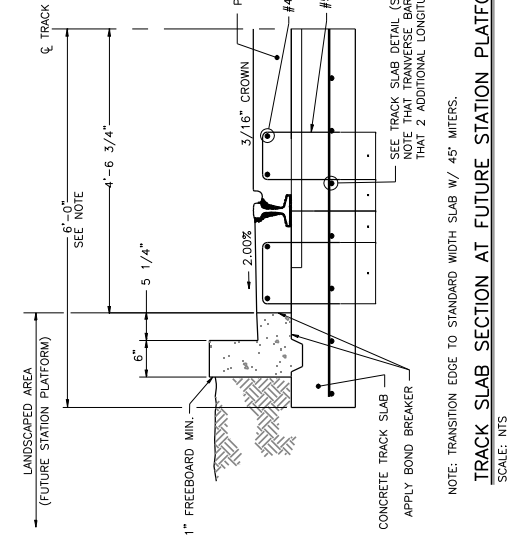
LIGHT RAIL REFERENCE DRAWINGS

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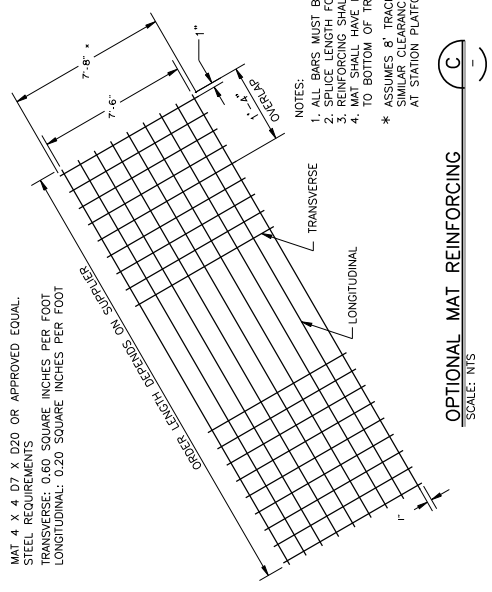
TYPICAL TRACK SLAB SECTION
SCALE: NTS

- NOTE:**
- C-CHANNEL TIES TO BE SPACED AT 10'-0" O.C. IN TANGENT TRACK SECTIONS, AND 5'-0" O.C. BEGINNING 10' PRIOR TO TS AND ENDING 10' AFTER ST FOR CURVES <500' RADIUS.
 - SPACING OF STIRRUPS NEED TO BE PLACED 6" OFF CENTER TO THE SPACING OF THE C-CHANNELS. IN CURVES THEY NEED TO BE SPACED RADIALLY.



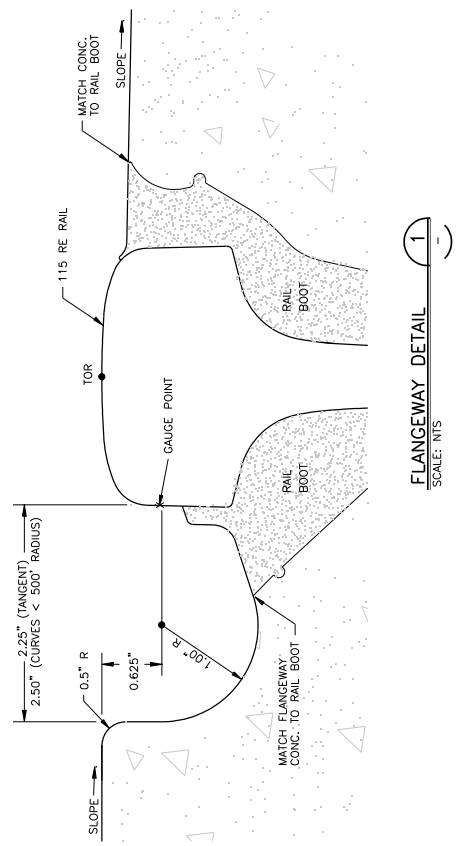
TRACK SLAB SECTION AT FUTURE STATION PLATFORM
SCALE: NTS

- NOTE:** TRANSITION EDGE TO STANDARD WIDTH SLAB W/ 45' MITERS.
- SEE TRACK SLAB DETAIL (SECTION A) FOR REBAR. NOTE THAT TRANSVERSE BARS ARE 2' LONGER AND THAT 2 ADDITIONAL LONGITUDINAL BARS ARE REQUIRED.



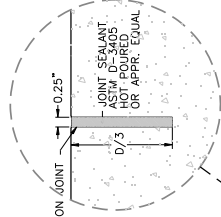
OPTIONAL MAT REINFORCING
SCALE: NTS

- NOTES:**
- ALL BARS MUST BE DEFORMED.
 - SPLICE LENGTH FOR MATS SHALL BE NO LESS THAN 1'-4".
 - REINFORCING SHALL BE GRADE 60, EPOXY COATED TO BOTTOM OF TRACK SLAB.
 - MAT SHALL HAVE LONGITUDINAL STEEL FACE DOWN, NEAREST TO BOTTOM OF TRACK SLAB.
- * ASSUMES 8" TRACK SLAB. ADJUST WITH SIMILAR CLEARANCES FOR WIDER SLAB AT STATION PLATFORMS



FLANGEWAY DETAIL
SCALE: NTS

	<p>UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS</p>	<p>PAVED TRACK DETAILS TRACK SLAB TYPICAL SECTION</p>	<p>Sheet: N/A CADD Version: Submitting Date: Drawing No.: CIV-102</p>															
<p>Designed By: _____ Drawn By: _____ Checked By: _____ Approved By: _____</p>	<p>RECOMMENDED FOR APPROVAL</p> <p>CIVIL STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____</p>																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>REV</th><th>DATE</th><th>Description</th></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>	REV	DATE	Description															
REV	DATE	Description																



MIN. SPACING
TO ADJACENT STEEL CHANNEL

1'-3"

EXPANSION JOINT

1'-3"

SAWED CONTRACTION JOINT

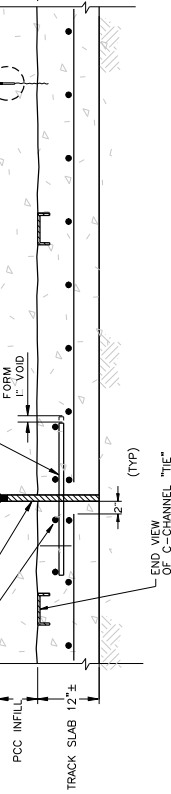
20' MAX TYP

1" ϕ SMOOTH DOVEL BARS 2'-0"
LONG CENTERED IN TRACK SLAB

2'-0" MAX O.C. BARS SHALL
CONFORM TO ASTM A36 AND
BE GALVANIZED PER ASTM A123.
GREASE ONE HALF OF BAR
BEFORE PLACING CONCRETE.
(EMBED EQUALLY EACH SIDE)

1" EXPANSION
JOINT MATERIAL
SEE (3)

4 #6 TYP.



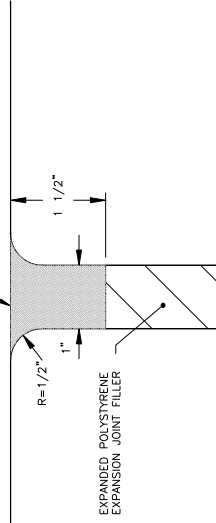
- NOTES:
1. EXPANSION JOINT SPACING 60' MAXIMUM
 2. CONTRACTION JOINTS TO BE SPACED EVENLY
ALONG TRACK SLAB. JOINTS TO BE FINISHED
WITH MORTAR JOINTS OF TEXTURED PATTERN
IN PCC INFILL AND SHALL BE NO FURTHER
APART THAN 20 FEET.
 3. CONTRACTOR SHALL SUBMIT AN EXPANSION AND
CONSTRUCTION JOINT LAYOUT TO THE ENGINEER
FOR APPROVAL PRIOR TO CONSTRUCTION.
 4. FOR TRACK SLAB DETAILS, SEE (A)
CV-102

EXPANSION JOINT DETAIL

SCALE: NTS



JOINT SEALANT HOT POURED
ASTM D-3405 OR APPROVED EQUAL.



JOINT SEALANT DETAIL

SCALE: NTS



REV	DATE	DESCRIPTION

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS

DATE

CAPITAL DEVELOPMENT DEPUTY CHIEF

DATE

Designed By: _____
Drawn By: _____
Checked By: _____
Approved By: _____



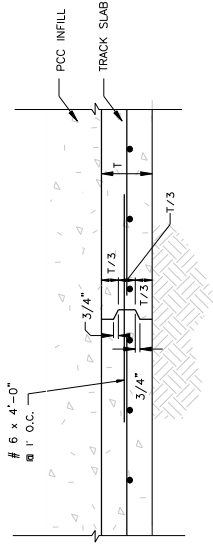
PAVED TRACK DETAILS
TRACK SLAB STRUCTURAL DETAILS

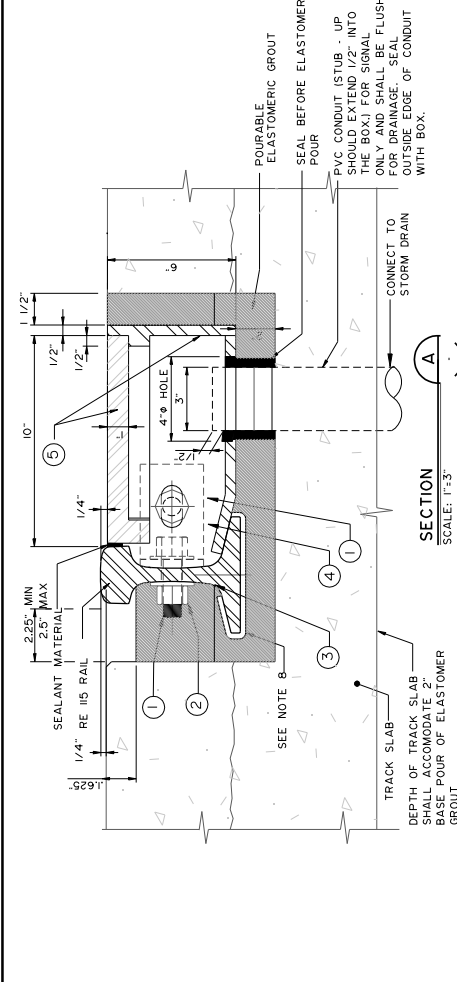
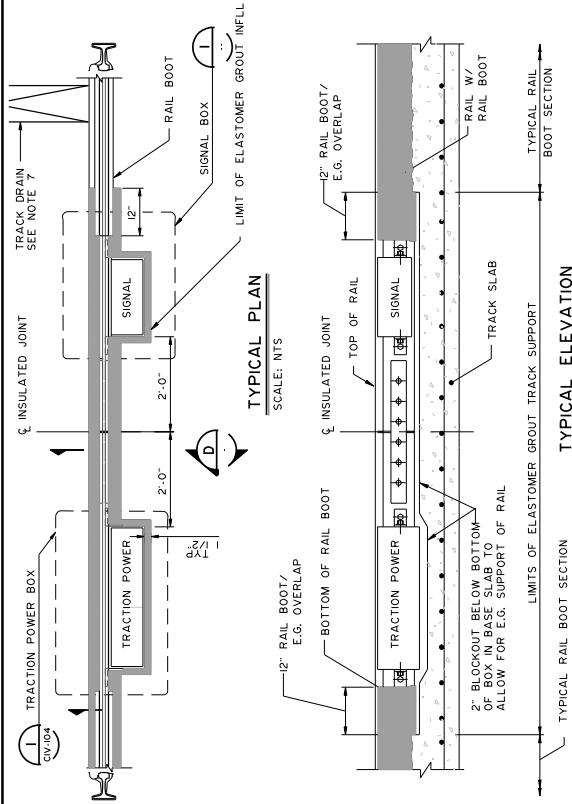
LIGHT RAIL REFERENCE DRAWINGS

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Scheduling Date: _____
Drawing No.: CV-103

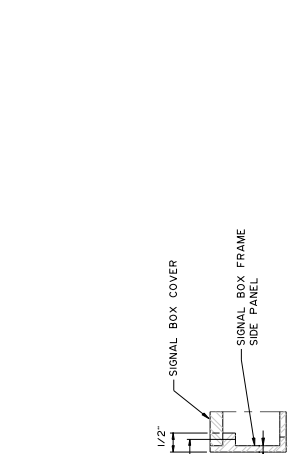
CONSTRUCTION JOINT DETAIL

SCALE: NTS

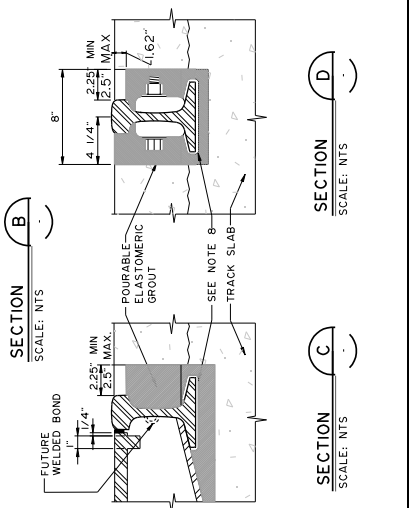




BILL OF MATERIAL PER BOX (FURNISHED BY CONTRACTOR)		
ITEM	DESCRIPTION	REMARKS
1	7/8" BOLT	4 PER BOX
2	HEX. NUT FOR 7/8" BOLT	4 PER BOX
3	2" O.D. SPRING WASHER FOR 7/8" BOLT	4 PER BOX
4	L 5x5x1/2 CLIP ANGLE	2 PER BOX-PROVIDE SLOTTED HOLES 1"x2" IN L'S
5	SIGNAL BOX FRAME AND COVER	
6	3/4" BOLT (COUNTERSUNK) NON RUSTING	4 PER BOX



- NOTES:**
- SEE SIGNAL AND TRACTION POWER DRAWINGS FOR TRACTION POWER TRACK CONNECTION BOX LOCATIONS.
 - SIGNAL TRACK CONNECTION BOX FRAME SIDE PANELS AND CLIP ANGLES SHALL BE PROVIDED WITH SLOTTED HOLES 1" x 2" WITH CENTERLINE CONCENTRIC WITH LOCATION OF 7/8" BOLT CENTERLINE.
 - SIGNAL TRACK CONNECTION BOX FRAME BOTTOM SHALL BE PROVIDED WITH 2-SLOTTED HOLES: 1.3 1/2" DRAINAGE AND 1.4" CONDUIT HOLE. 3" PVC DRAINAGE PIPE SHALL BE CONNECTED TO LOCAL TRACK DRAIN. ECCENTRIC FITTINGS FOR TRANSITION FROM 3" PVC TO 8" PVC ON THE HORIZONTAL MAKE SURE TO BE USED TO PREVENT ENTRAPMENT OF WATER. ANNOTATE ALL MAKE VARIOUS ACCORDING TO THE LOCATION OF BOX. SEE SYSTEMS PLANS FOR CONDUIT ENTRANCE REQUIREMENTS FOR EACH INDIVIDUAL BOX.
 - CONTRACTOR SHALL FIELD DRILL 1" Ø HOLE IN WEB OF RAIL FOR INSTALLATION OF SIGNAL BOXES.
 - FOR ADDITIONAL DETAILS SEE SYSTEMS, TRACK, AND DRAINAGE DRAWINGS.
 - TRACK DRAIN IS REQUIRED ON UP-HILL SIDE OF INSULATED JOINT
 - ELASTOMER POUR WHEN JOINT FALLS OUTSIDE OF BATHUBS.
 - FOR INSULATED JOINTS LOCATED WITHIN TURNOUT BATHUBS, TRACK SUPPORT SHALL BE AS SHOWN FOR BATHUB.
 - CARRY PARTIAL RAIL BOOT THROUGH ELASTOMER SUPPORT SECTION TO ALLOW DRAINAGE TO PASS UNDER RAIL IN VOIDS OF RAIL BOOT THROUGH TO TRACK DRAIN. SECURE TO RAIL WITH TAPE PRIOR TO ELASTOMER POUR.
 - CONNECT BOX DRAINS TO NEAREST GRATED INLET, TRACK DRAIN, OR CLEANOUT BOX. CONNECTION IS INCIDENTAL TO THE APPROPRIATE BID ITEM.
 - HOLD DOWN BOLTS FOR BOXES TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.



UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

DESIGNED BY: _____

DRAWN BY: _____

CHECKED BY: _____

APPROVED BY: _____

DATE: _____

DATE: _____

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS

CAPITAL DEVELOPMENT DEPUTY CHIEF

PAVED TRACK DETAILS

SIGNAL TRACK CONNECTION BOX

LIGHT RAIL REFERENCE DRAWINGS

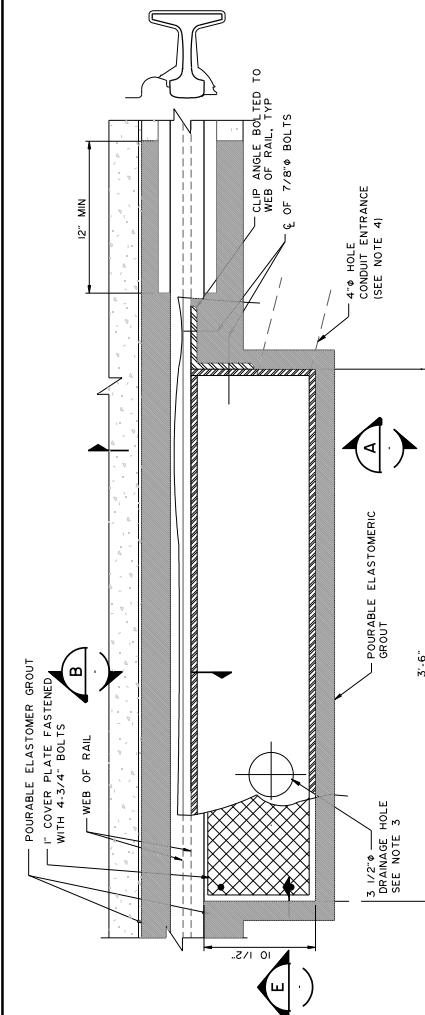
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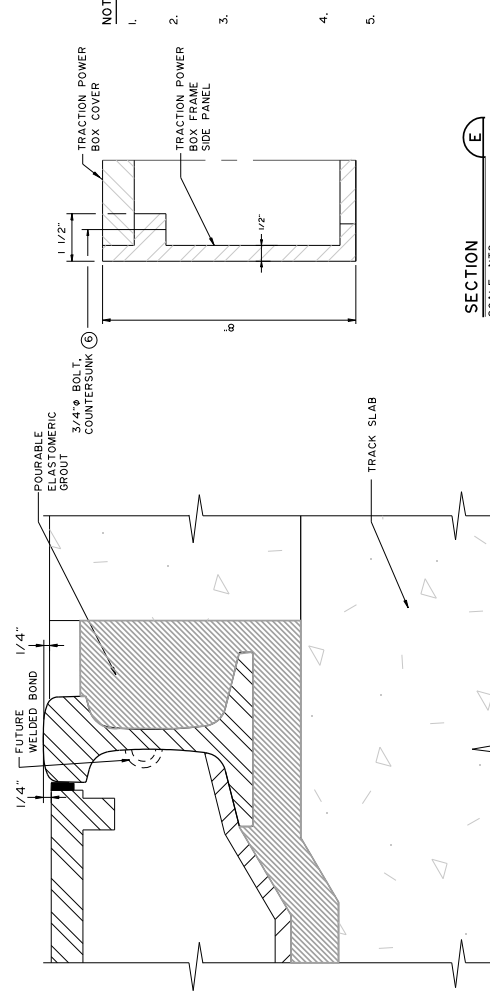
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Drawing No. CIV-104

REV	DATE	DESCRIPTION

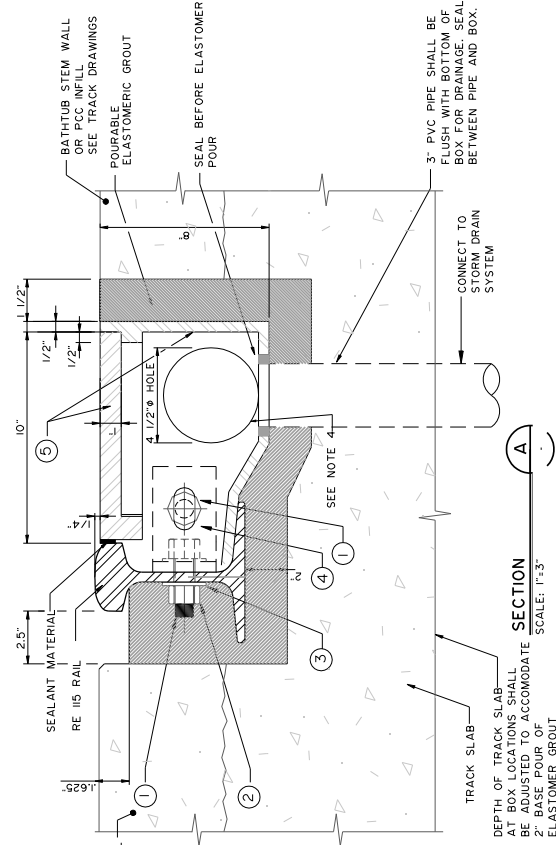


TRACTION POWER TRACK CONNECTION BOX (1)
SCALE: NTS



SECTION B
SCALE: NTS

SECTION E
SCALE: NTS




SECTION A
SCALE: 1/2" = 3'-3"

NOTES:

- SEE SIGNAL AND TRACTION POWER DRAWINGS FOR TRACTION POWER TRACK CONNECTION BOX LOCATIONS.
- TRACTION POWER BOX FRAME SIDE PANELS AND CLIP ANGLES SHALL BE PROVIDED WITH SLOTTED HOLES 1' x 2" WITH CENTERLINE CONCENTRIC WITH LOCATION OF 7/8" BOLT CENTERLINE.
- TRACTION POWER TRACK CONNECTION BOX SHALL BE PROVIDED WITH 2-SLOTTED HOLES, 1-3 1/2" DRAINAGE AND 1-4" CONDUIT HOLE. 3" PVC DRAINAGE PIPE SHALL BE CONNECTED TO LOCAL TRACK DRAIN. ECCENTRIC FITTINGS FOR TRANSITION FROM 3" PVC TO 8" PVC ON THE HORIZONTAL ARE ALLOWED. THE LOCATION OF THE HOLES SHALL BE DETERMINED BY THE ELECTRICAL ENGINEER AND SHALL BE SHOWN ON THE ELECTRICAL SYSTEMS PLANS FOR CONDUIT ENTRANCE REQUIREMENTS FOR EACH INDIVIDUAL BOX.
- TRACTION POWER BOX FRAME SHALL BE WITH 1-SLOTTED 4 1/2" CONDUIT HOLE IN THE SIDE COORDINATE WITH SYSTEMS DRAWINGS TO DETERMINE NUMBER OF BOXES WITH PENETRATIONS AT EACH END.
- CONTRACTOR SHALL FIELD DRILL 1" HOLE IN WEB OF RAIL FOR INSTALLATION OF TRACTION POWER BOXES.

TRACTION POWER BOX		REMARKS
BILL OF MATERIAL PER BOX (FURNISHED BY CONTRACTOR)		
ITEM	DESCRIPTION	
①	7/8" BOLT	4 PER BOX
②	HEX. NUT FOR 7/8" BOLT FOR 7/8" BOLT	4 PER BOX
③	2" O.D. SPRING WASHER FOR 7/8" BOLT	4 PER BOX
④	L 5x5x1/2 CLIP ANGLE SLOTTED HOLES 1"x2" IN L'S	2 PER BOX-PROVIDE AND COVER
⑤	SIGNAL BOX FRAME	4 PER BOX
⑥	3/4" BOLT (COUNTERSUNK)	4 PER BOX



UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

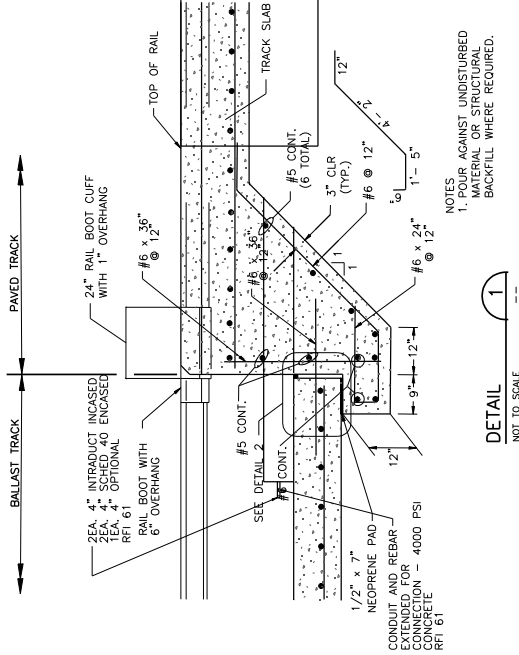
RECOMMENDED FOR APPROVAL _____ DATE _____
CIVIL STANDARDS _____ DATE _____
CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____

DATE _____

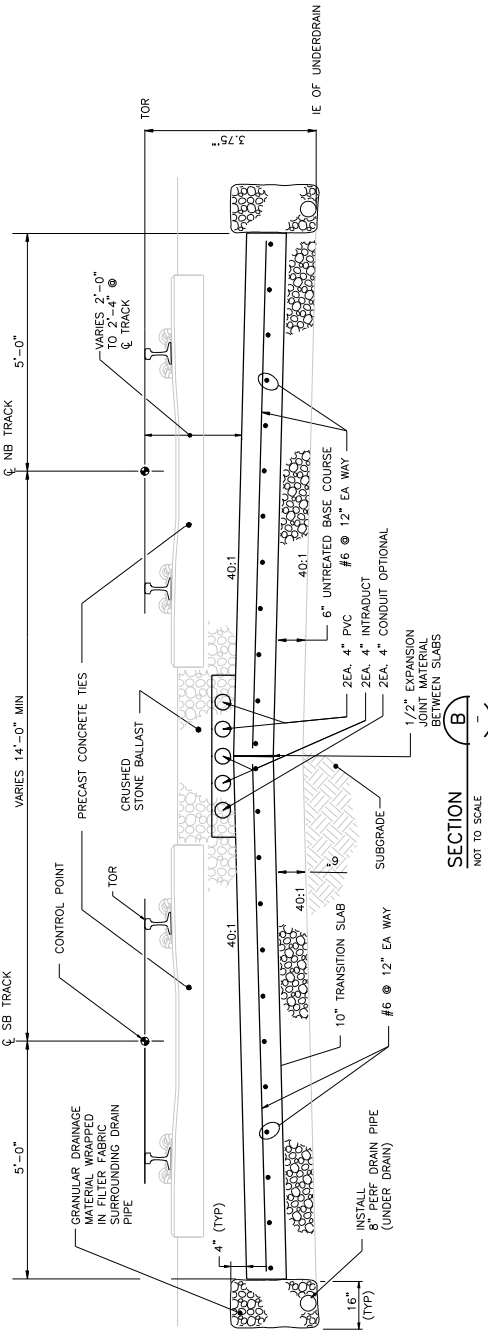
PAVED TRACK DETAILS
TRACTION POWER TRACK CONNECTION BOX

LIGHT RAIL REFERENCE DRAWINGS CIV-105



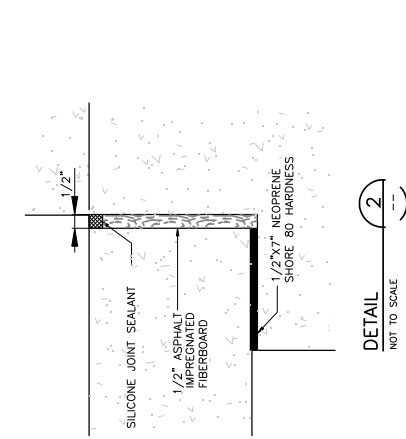
TRANSITION SLAB SECTION

NOT TO SCALE



SECTION

NOT TO SCALE



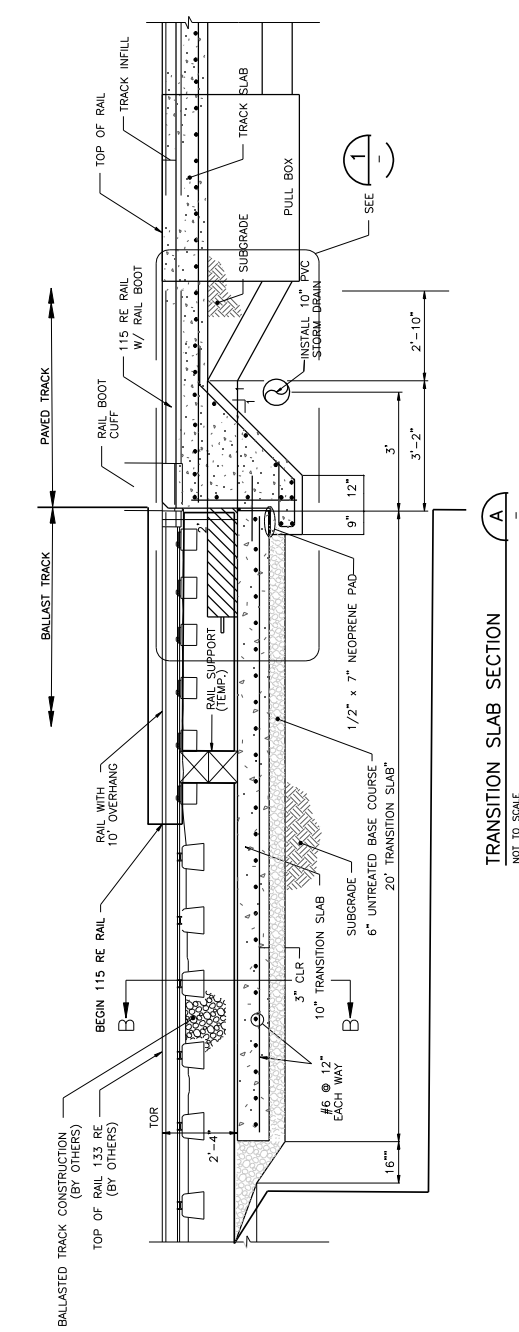
DETAIL

NOT TO SCALE

- NOTES
- POUR AGAINST UNDISTURBED MATERIAL OR STRUCTURAL BACKFILL WHERE REQUIRED.

DETAIL

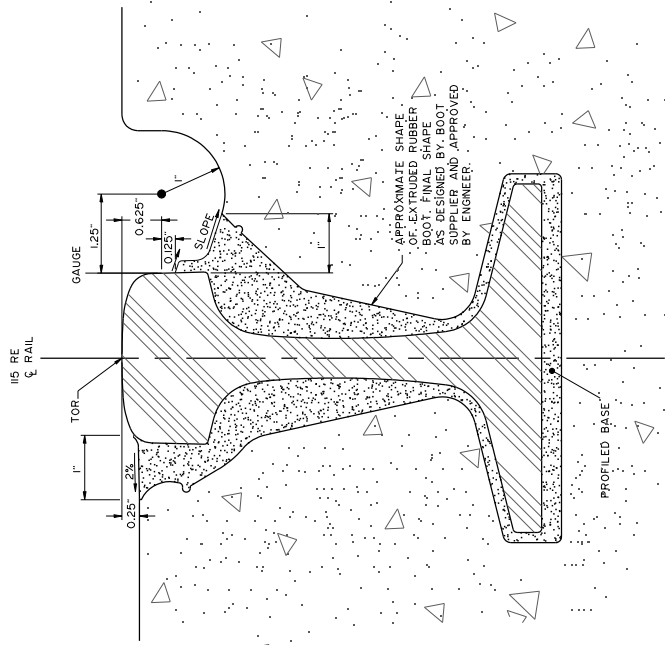
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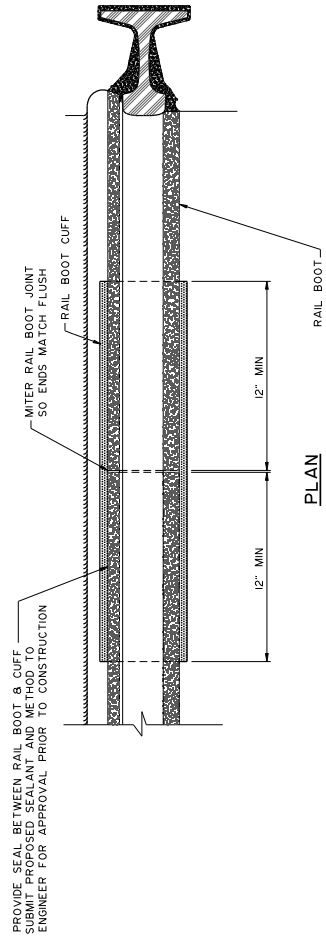
DETAIL

NOT TO SCALE

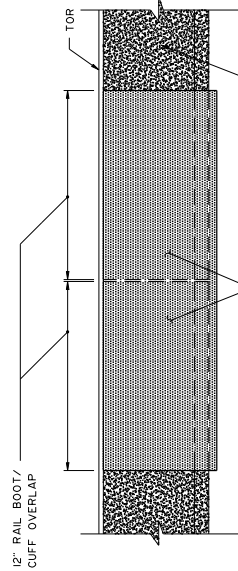
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	PAVED TRACK DETAILS TRANSITION SLAB DETAILS LIGHT RAIL REFERENCE DRAWINGS		



EXTRUDED RAIL BOOT
SCALE: FULL



PLAN

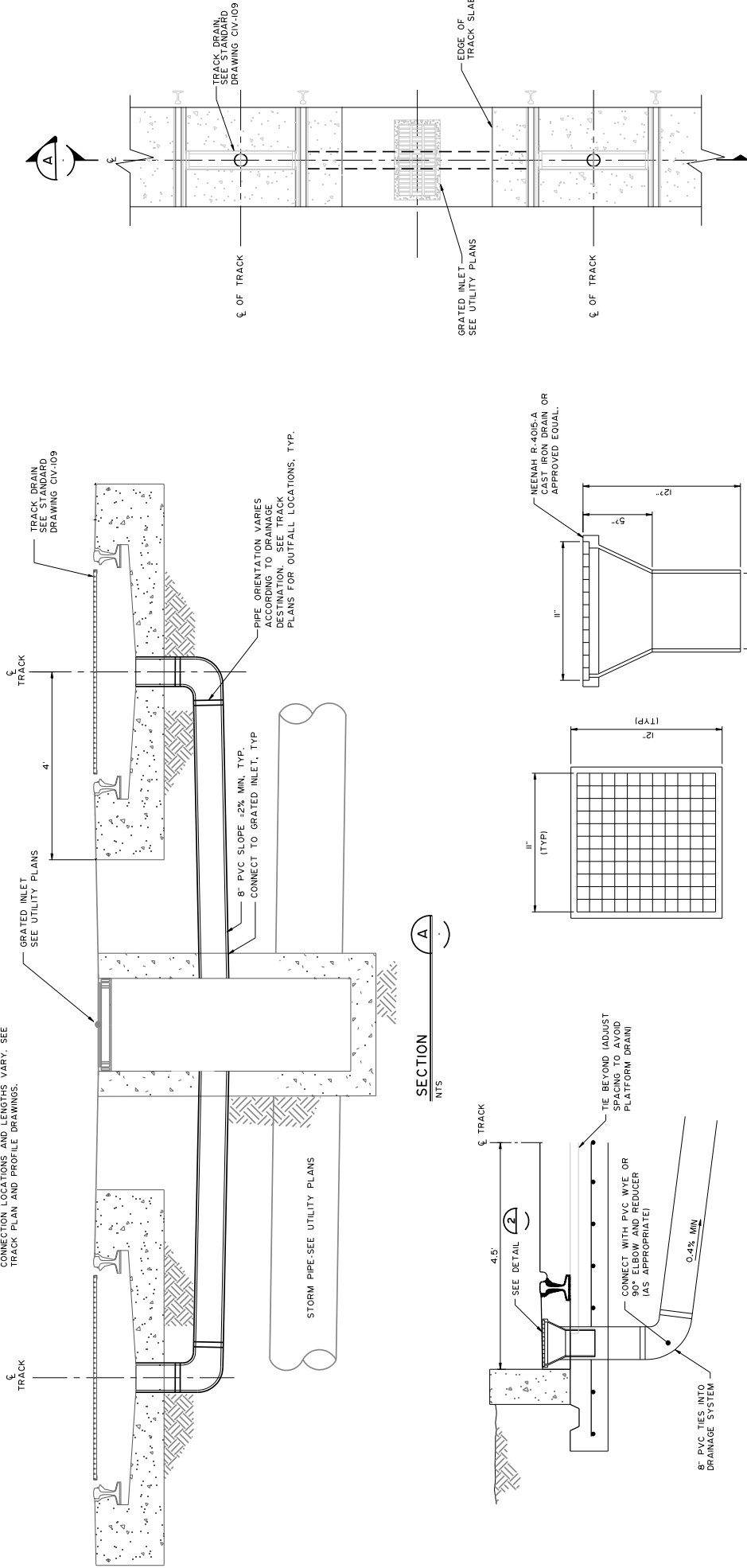


ELEVATION

TYPICAL RAIL BOOT CUFF
SCALE: NTS

DATE	DESCRIPTION	RECOMMENDED FOR APPROVAL	DATE	UTAH TRANSIT AUTHORITY	DESIGNED BY:	SCALE:
REV		CIVIL STANDARDS		REFERENCE DRAWINGS	DRAWN BY:	N/A
		CAPITAL DEVELOPMENT DEPUTY CHIEF		PAVED TRACK DETAILS RAIL BOOT	CHECKED BY:	CAD FILENAME
				LIGHT RAIL REFERENCE DRAWINGS	SUBMITTAL DATE	
					APPROVED BY:	DRAWING NO.
						CIV-107

NOTE:
CONNECTION LOCATIONS AND LENGTHS VARY. SEE
TRACK PLAN AND PROFILE DRAWINGS.



NOTE:
TOP OF DRAIN ALONG PLATFORMS SHALL BE SET AT A MIN. OF 1/2" BELOW TOP OF CURB. THE SURFACE SHALL BE GRADED LOCALLY AROUND DRAIN.

PLATFORM DRAIN DETAIL (1)
NTS

PLATFORM DRAIN DETAIL (2)
NTS

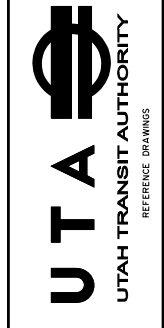
TYPICAL TRACK DRAIN PLAN
NTS

REV	DATE	DESCRIPTION

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

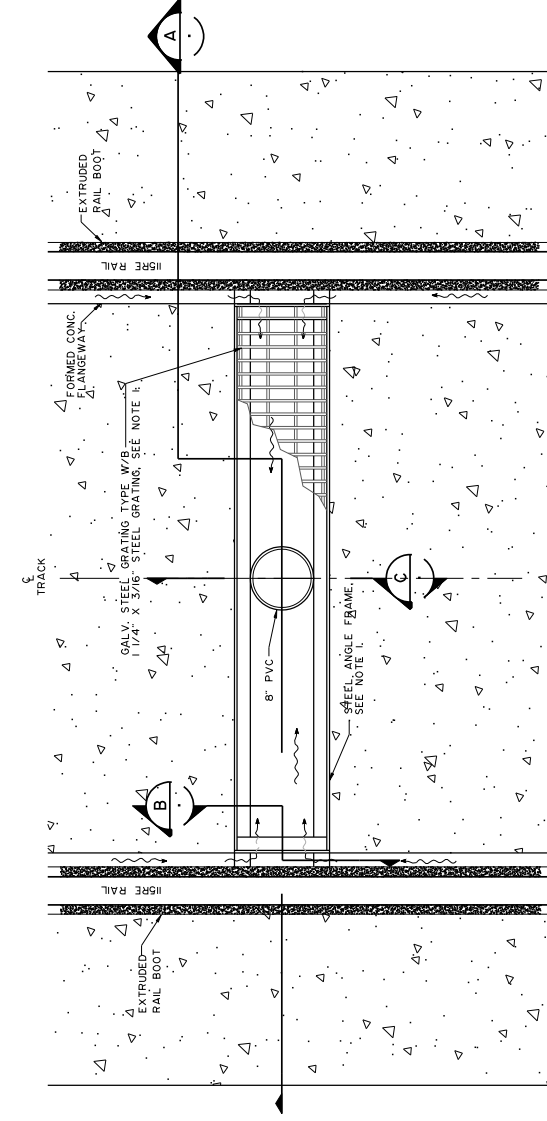


Designed By: _____
Drawn By: _____
Checked By: _____
Approved By: _____

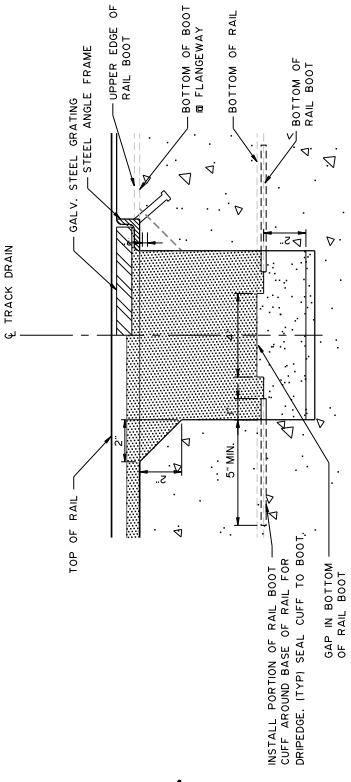
PAVED TRACK DETAILS
TRACK DRAIN CONNECTIONS & MISC. DETAILS

Light Rail Reference Drawings

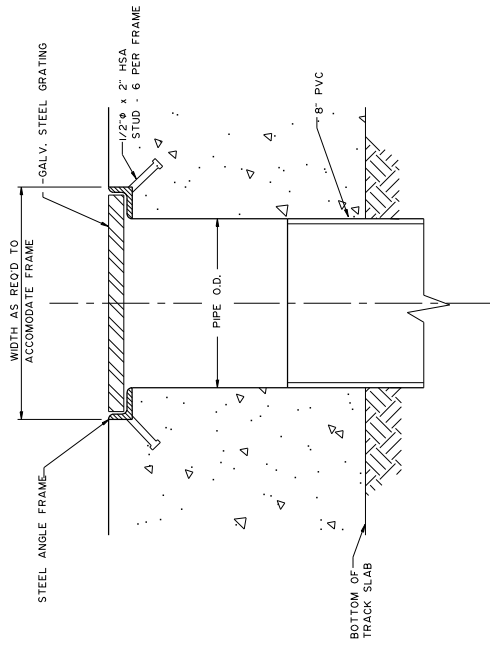
Sheet: N/A
CADD Template: _____
Submitting Date: _____
Drawing No.: CIV-108



TRACK DRAIN DETAIL
SCALE: 1"=0.5'

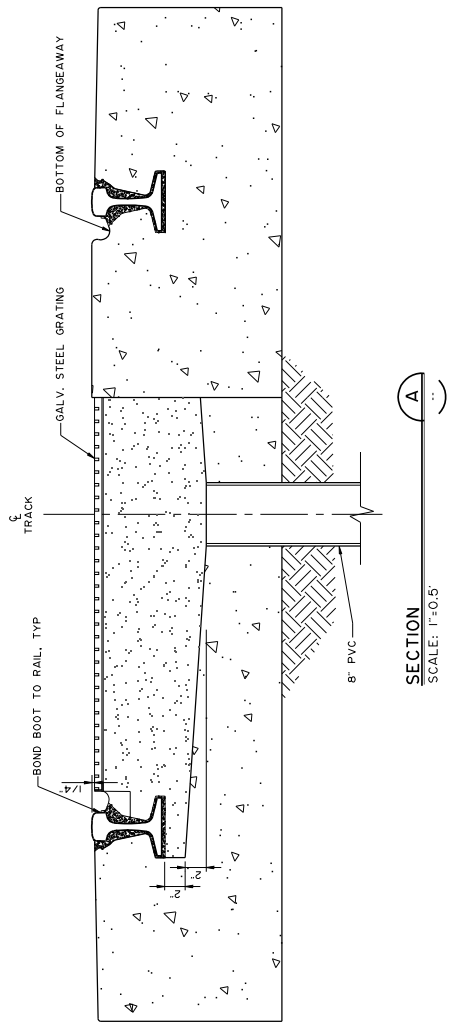


SECTION B-B
SCALE: 1"=0.25'



SECTION C-C
SCALE: 1"=0.25'

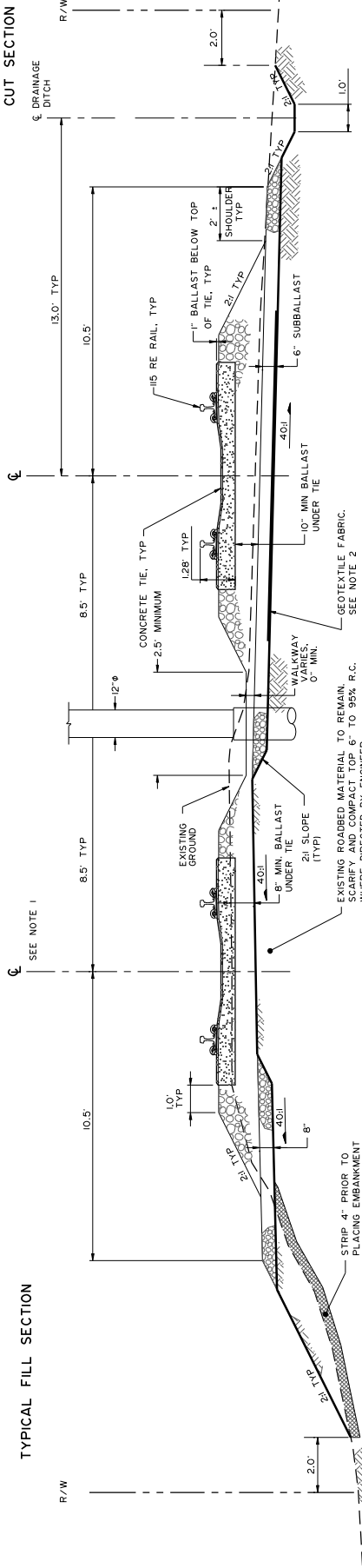
- NOTES:**
1. SUBMIT STEEL ANGLE FRAME AND GALVANIZED STEEL GRATING SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION. MATERIALS FOR STEEL ANGLE FRAME SHALL BE A36 (MIN) UNLESS OTHERWISE SPECIFIED. STEEL ANGLE FRAME SHALL BE HOT-DIPPED GALVANIZED.
 2. INFILL CONCRETE SURFACE SHALL BE GRADED LOCALLY TO MATCH TOP OF STEEL GRATING.



SECTION A-A
SCALE: 1"=0.5'

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REV	DATE																					
<p style="font-weight: bold; font-size: 18px; margin: 0;">UTA</p> <p style="font-weight: bold; font-size: 12px; margin: 0;">UTAH TRANSIT AUTHORITY</p> <p style="font-size: 10px; margin: 0;">REFERENCE DRAWINGS</p>																						
<p style="font-size: 12px; margin: 0;">PAVED TRACK DETAILS</p> <p style="font-size: 12px; margin: 0;">TRACK DRAIN DETAILS</p>																						
<p style="font-size: 10px; margin: 0;">LIGHT RAIL REFERENCE DRAWINGS</p>																						
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TYPICAL CUT SECTION



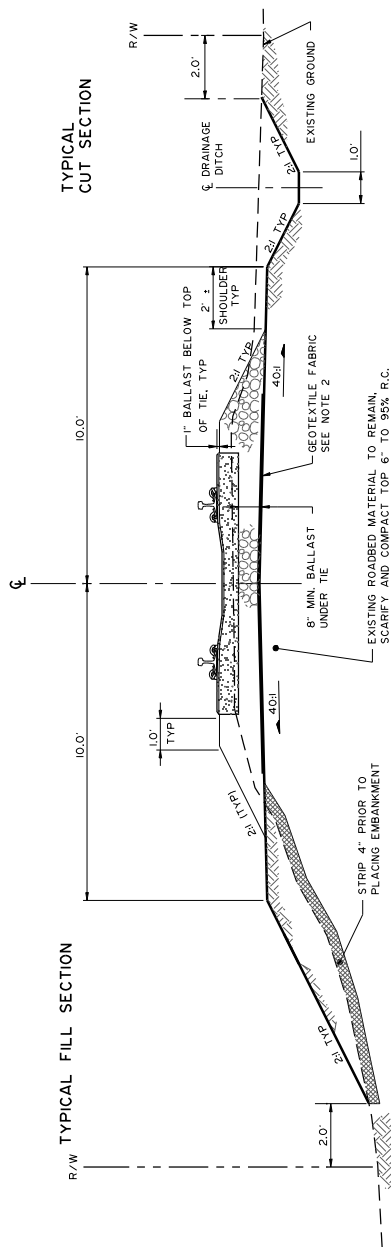
NOTES:

1. CONCRETE TIE STANDARD SPACING SHALL BE 25' O.C. (30 INCHES).
2. GEOTEXTILE FABRIC SHALL BE PLACED ACCORDING TO THE LOCATIONS REQUIRED.

BALLAST DOUBLE TRACK

NOT TO SCALE

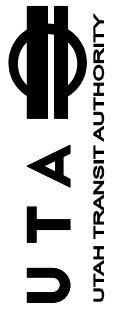
TYPICAL FILL SECTION



BALLAST SINGLE TRACK

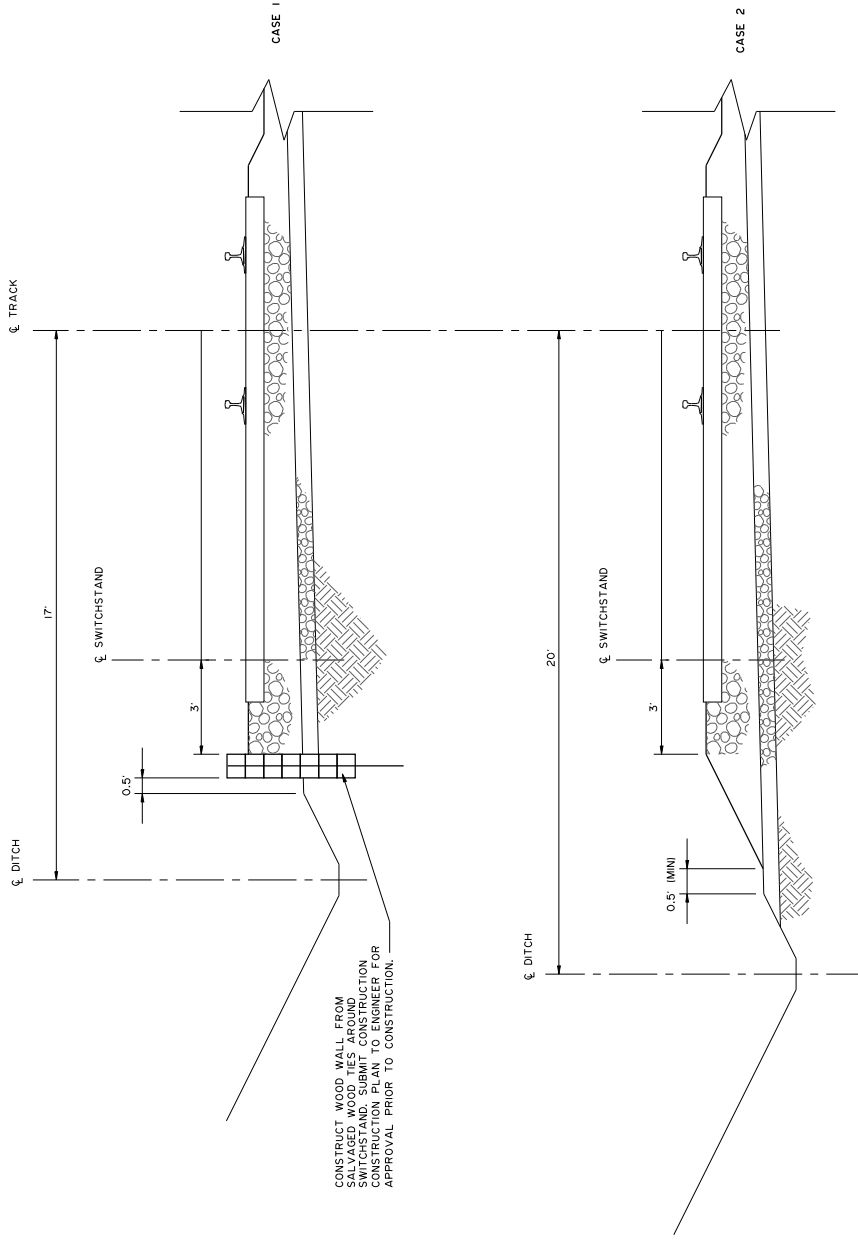
NOT TO SCALE

RECOMMENDED FOR APPROVAL _____ CIVIL STANDARDS	DATE _____	DRAWN BY _____	AS SHOWN
CAPITAL DEVELOPMENT DEPUTY CHIEF _____	DATE _____	CHECKED BY _____	SCHEDULING DATE
UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS		APPROVED BY _____	DRAWING NO. CIV-110
TYPICAL TRACK SECTIONS DOUBLE TRACK & SINGLE TRACK			
LIGHT RAIL REFERENCE DRAWINGS			




DRAWN BY	AS SHOWN
CHECKED BY	SCHEDULING DATE
APPROVED BY	DRAWING NO.

REV	DATE	DESCRIPTION

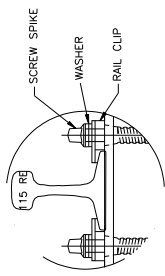
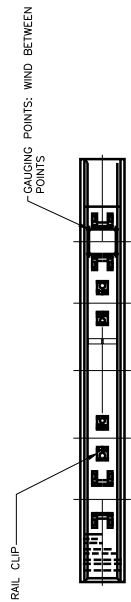
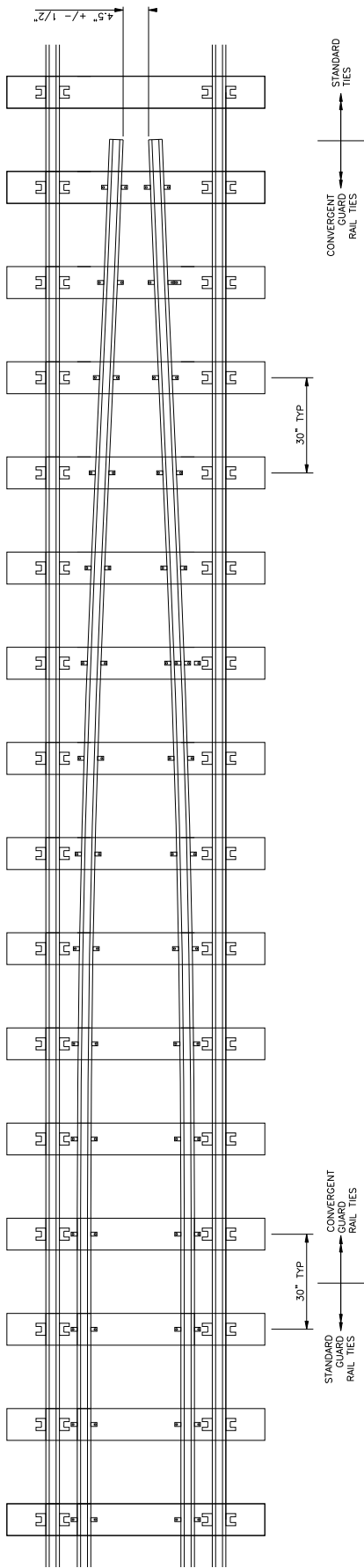


CONSTRUCT WOOD WALL FROM
 SWITCHSTAND. SUBMIT CONSTRUCTION
 PLAN TO ENGINEER FOR
 APPROVAL PRIOR TO CONSTRUCTION.

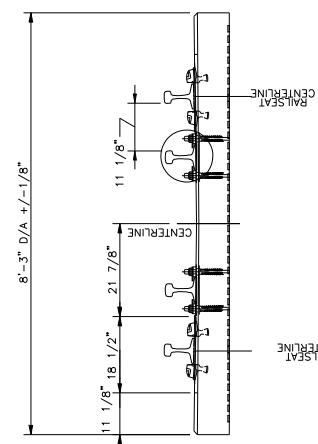
SWITCH STAND A

REV	DATE	DESCRIPTION	RECOMMENDED FOR APPROVAL		UTAH TRANSIT AUTHORITY		DESIGNED BY
			CIVIL STANDARDS	DATE	REFERENCE DRAWINGS		DRAWN BY
			CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE			CHECKED BY
							APPROVED BY
							<p style="text-align: center;">UTAH</p> <p style="text-align: center;">TRANSIT AUTHORITY</p>
							<p style="text-align: center;">LIGHT RAIL REFERENCE DRAWINGS</p>
							<p style="text-align: center;">CIV-112</p>

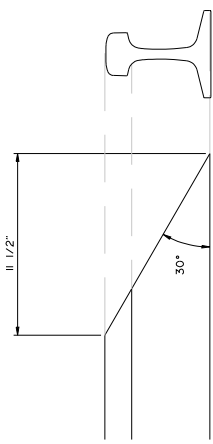
Scale:	NTS
CAD File:	
Submitting Date:	
Drawing No.:	CIV-112



PLAN VIEW



ELEVATION VIEW



NOTE: DOUBLE INNER EMERGENCY GUARD RAIL SHOWN.
SINGLE INNER EMERGENCY GUARD RAIL IS ONE
OF TWO RAILS SHOWN IN THIS DRAWING.
AS SHOWN ON PLAN AND PROFILE DRAWINGS.

ELEVATION - GUARD RAIL END

SCALE: 3" = 1'-0"

NOTES:

- ALL TIES SPACED AT 30" TYP

1. 115 RUNNING RAIL
2. 115 GUARD RAIL
3. RANDPOL OR EQUIVALENT RAIL FASTENINGS TO BE USED AS FOLLOWS:

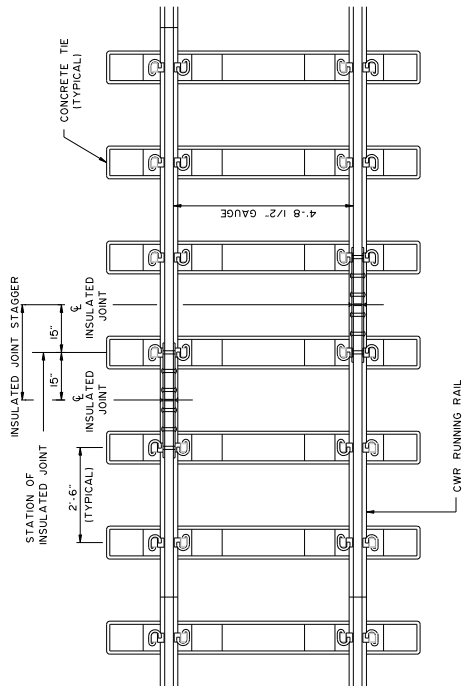
- CAST IRON SHOULDER SAFELOK™ RAIL CLIP
- CAST IRON SHOULDER SIDE POST INSULATOR
- RAIL PAD

- GUARD RAIL FASTENINGS: PLASTIC INSERTS, SPRING WASHERS, RAIL CLIPS
- SCREW SPIKES

4. THE OUT TO OUT SHOULDER SPACING DIMENSION FOR THIS TIE IS CALCULATED TO PROVIDE THE CAUSE INDICATED ASSUMING NOMINAL DIMENSIONS FOR RAIL PADS, SHOULDER SAFELOK™ RAIL CLIPS, SPRING WASHERS AND RAIL SEAT INCLINATION ARE THOSE FOUND SATISFACTORY IN PRACTICE.

5. TIES TO BE MANUFACTURED IN ACCORDANCE WITH "CUSTOMER SUPPLIED SPECIFICATIONS" AND/OR ACCEPTED PCI PRACTICE FOR PRESTRESSED CONCRETE.

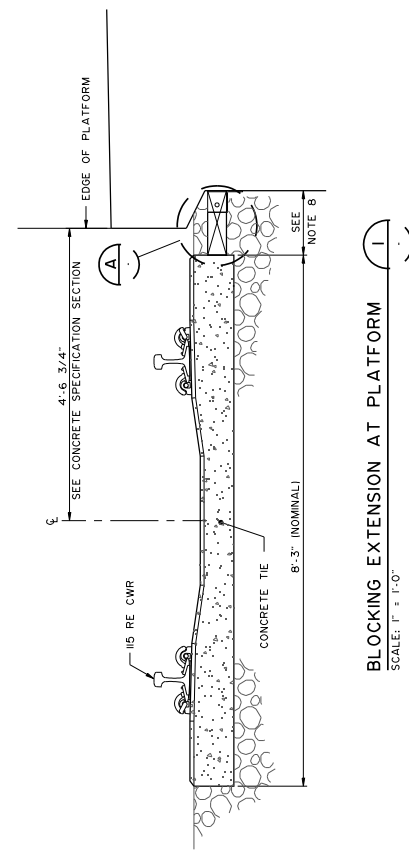
	REFERENCE DRAWINGS CIVIL STANDARDS CAPITAL DEVELOPMENT DEPUTY CHIEF	SPECIAL TRACKWORK DETAILS INNER EMERGENCY GUARD RAIL ON WOOD TIES	LIGHT RAIL REFERENCE DRAWINGS CIV-113
RECOMMENDED FOR APPROVAL _____ CIVIL STANDARDS _____ CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE _____ DATE _____	DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	SHEET: AS SHOWN CADD NUMBER: _____ SUBMITTAL DATE: _____ DRAWING NO.: _____



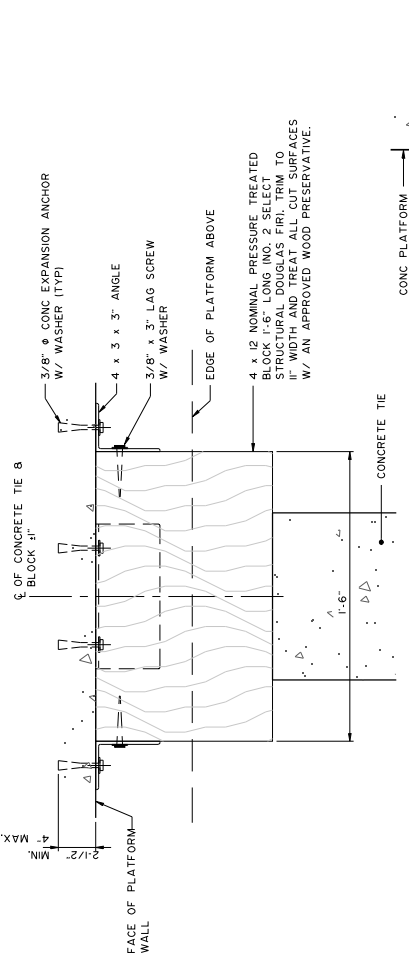
INSULATED JOINT (1)

DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	SPECIAL TRACKWORK DETAILS INSULATED JOINT LIGHT RAIL REFERENCE DRAWINGS	SCALE: AS SHOWN CADD: _____ SCHEDULED DATE: _____ DRAWING NO.: CIV-114
REV DATE DESCRIPTION		

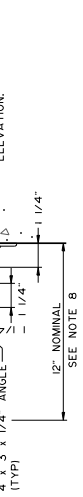




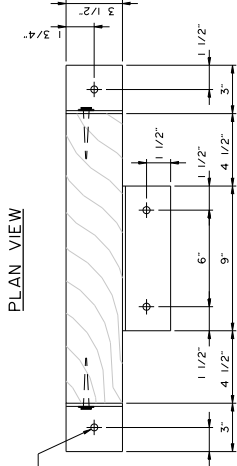
BLOCKING EXTENSION AT PLATFORM
SCALE: 1" = 1'-0"



PRESSURE TREATED BLOCK DETAIL
SCALE: 3" = 1'-0"



SIDE VIEW



FRONT VIEW

NOTES:

- BLOCKS TO BE INSTALLED EVERY THIRD TIE THROUGHOUT PLATFORM LIMITS AT EVERY STATION.
- ALL STEEL ANGLES SHALL CONFORM TO ASTM A36 AND BE HOT DIP GALVANIZED PER ASTM A123.
- EXPANSION ANCHORS SHALL BE STUD TYPE WITH A SINGLE PIECE THREE SECTION WEDGE AND ZINC PLATED IN ACCORDANCE WITH ASTM B633. THE ANCHORS MUST MEET THE DESCRIPTION IN FEDERAL SPECIFICATION FF-3-325, INCLUDING TYPE 4, CLASS 1 FOR CONCRETE EXPANSION ANCHORS.
- WASHERS SHALL BE HARDENED STEEL WASHERS CONFORMING TO ASTM F436 TYPE 1.
- LAG SCREWS SHALL BE ASTM A307 GRADE A AND BE HOT DIPPED GALVANIZED PER ASTM A123.
- PRESSURE TREATMENT OF WOOD BLOCKS TO BE IN ACCORDANCE WITH SPECIFICATIONS.
- CARE AND ATTENTION SHALL BE TAKEN TO ELIMINATE BALLAST VOIDS BENEATH THE WOOD BLOCKING.
- VERIFY PLATFORM WALL LOCATION AND CONCRETE TIE LENGTH PRIOR TO CUTTING WOOD BLOCKS. BLOCKS ARE TO BE SIZED TO FIT BETWEEN THE PLATFORM WALL AND CONCRETE TIE WITH THE TRACK 3/4 PLATFORM EDGE DISTANCE PER CONCRETE SPECIFICATION.
- VERTICAL PLACEMENT OF WOOD BLOCKING SHALL BE SUCH THAT IT CONTACTS THE MIDDLE PORTION OF THE ADJACENT TIE.

Designed By	
Drawn By	
Checked By	
Approved By	



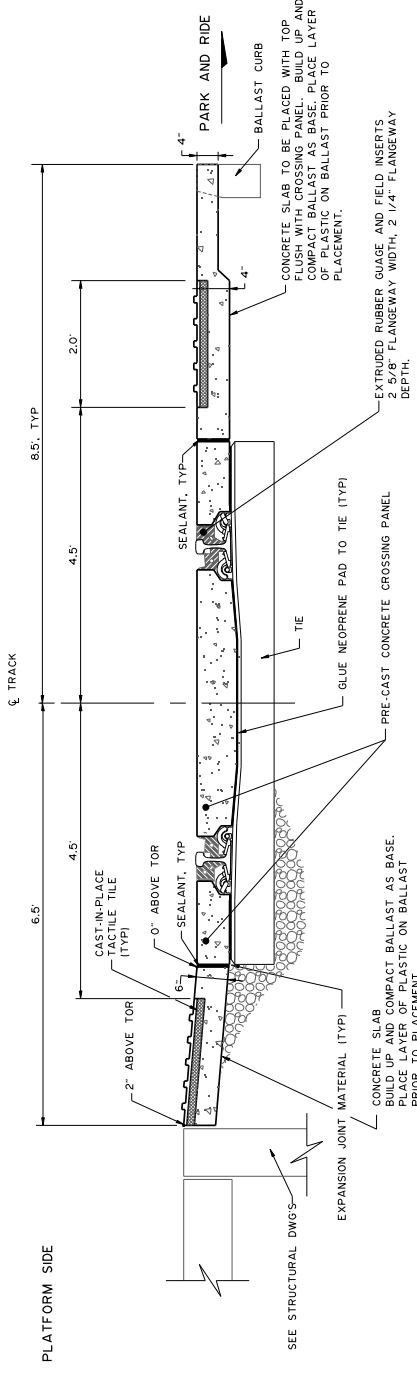
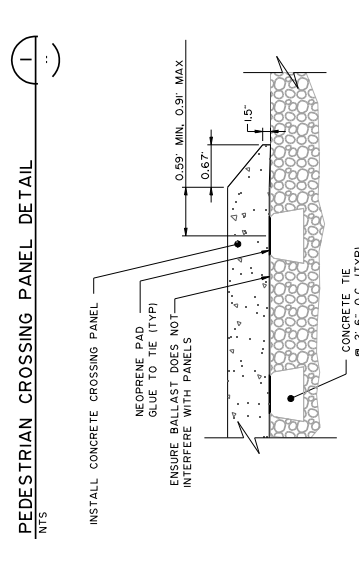
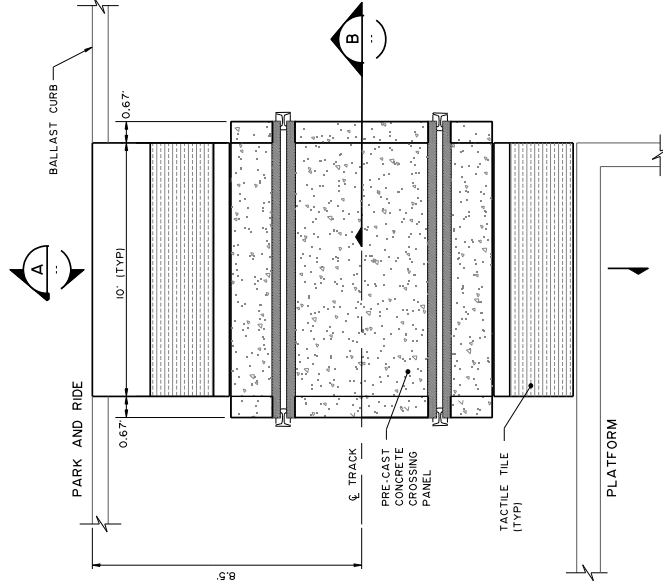
RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

REV	DATE	Description

Sheet	AS SHOWN
CD#	
Submitting Date	
Drawing No.	CIV-115

SPECIAL TRACKWORK DETAILS
PLATFORM AND CONCRETE TIE
WOOD BLOCKING DETAIL

LIGHT RAIL REFERENCE DRAWINGS



AS SHOWN	DATE	DESCRIPTION
CADD PREPARED	DATE	DESCRIPTION
DRAWN	DATE	DESCRIPTION
CHECKED	DATE	DESCRIPTION
APPROVED	DATE	DESCRIPTION



SPECIAL TRACKWORK DETAILS
PEDESTRIAN PANEL DETAILS

LIGHT RAIL REFERENCE DRAWINGS

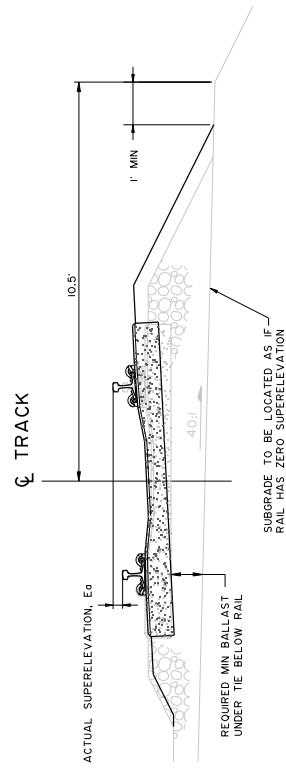
DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

REV	DATE	DESCRIPTION



SUPERELEVATION DETAIL (1)

REV	DATE	Description

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By: _____

Drawn By: _____

Checked By: _____

Approved By: _____

SPECIAL TRACKWORK DETAILS
SUPERELEVATION DETAIL

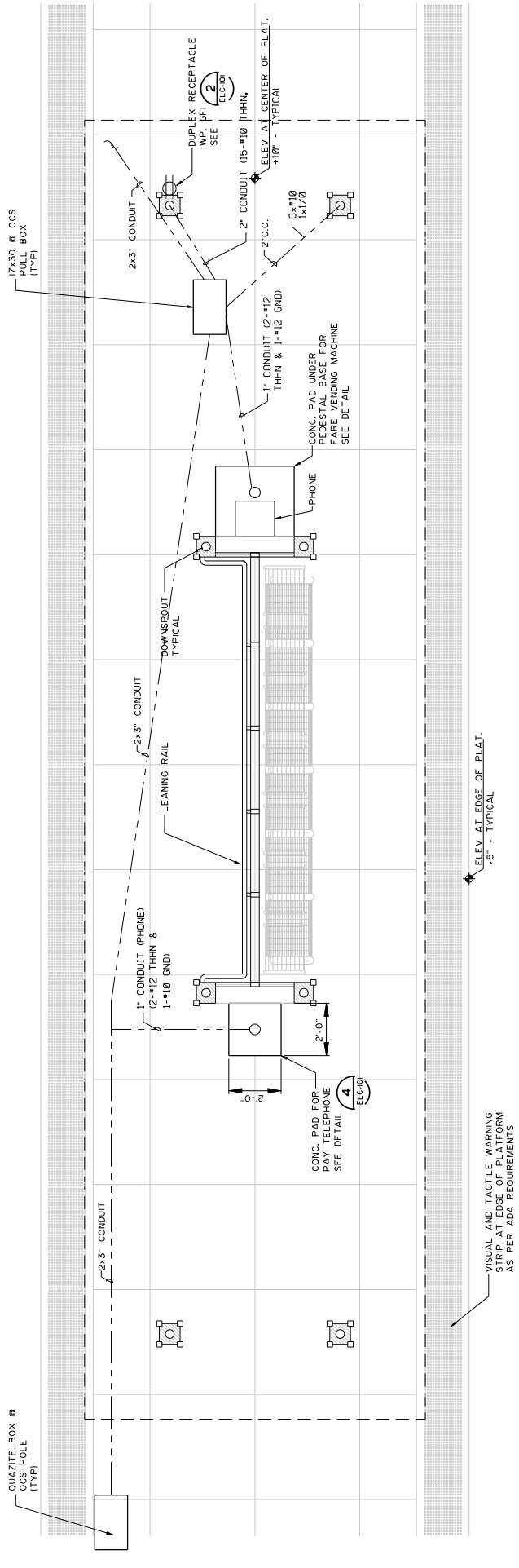
LIGHT RAIL REFERENCE DRAWINGS

Scale: AS SHOWN


CADD Filepath: _____

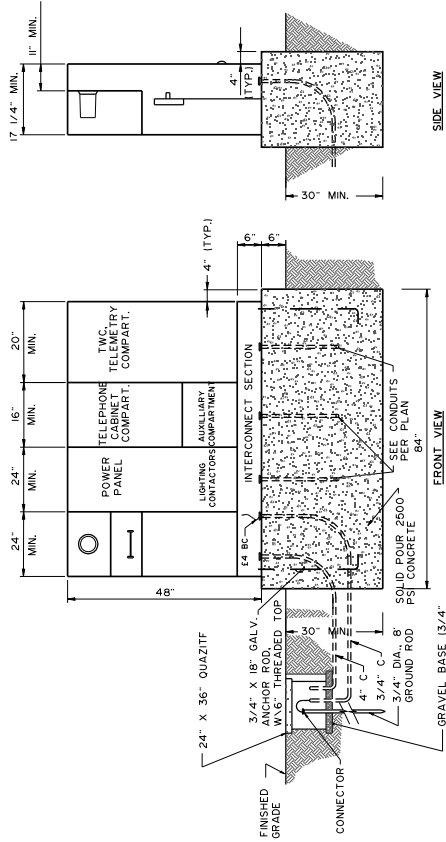
Submitting Date: _____

Drawing No.: CIV-117

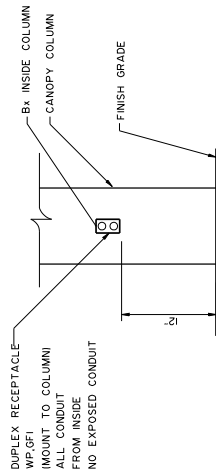


1. CANOPY FLOOR PLAN
 SCALE: 1/2" = 1'-0"

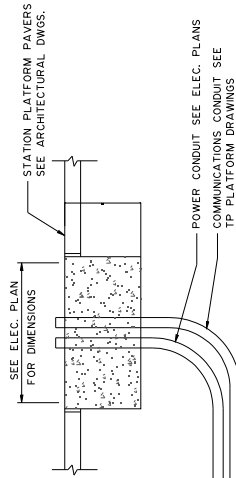
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	REV	DATE	Description																			
<p>TYPICAL CANOPY ELECTRICAL PLAN</p> <p>LIGHT RAIL REFERENCE DRAWINGS</p>																						



SERVICE PEDESTAL (1)

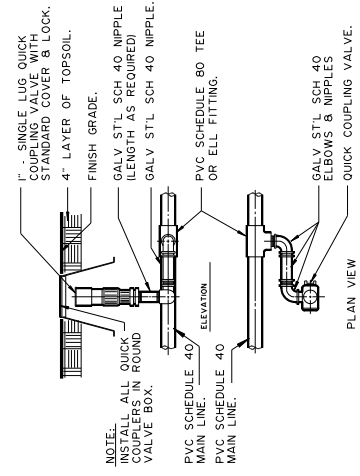


DUPLEX RECEPTACLE (2)
SCALE: NTS
ELC-100

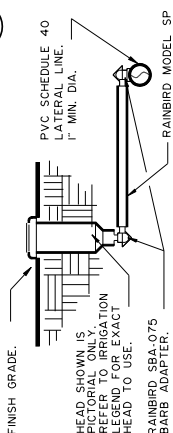


THICKENED CONCRETE BASE (4)
SCALE: NTS
ELC-100

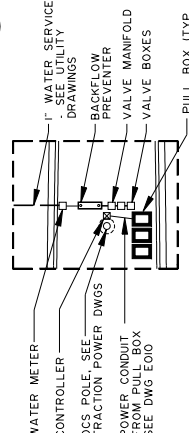
	STATION PLATFORM ELECTRICAL DETAILS LIGHT RAIL REFERENCE DRAWINGS	
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RECOMMENDED FOR APPROVAL _____ DATE _____ CIVIL STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____		
RCV _____ DATE _____ Description: _____		



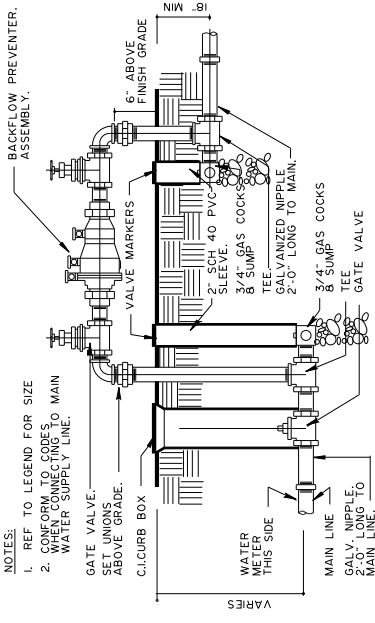
QUICK COUPLER
Not to Scale



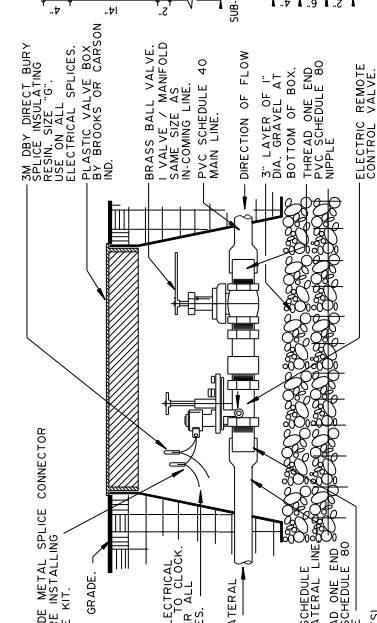
SWING JOINT
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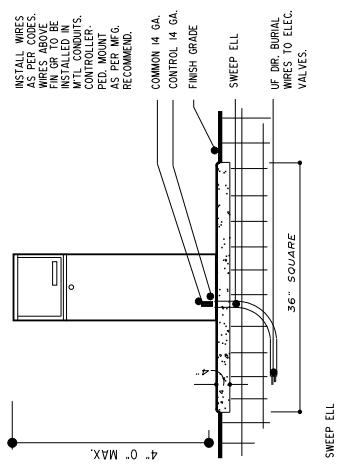
UTILITY DETAIL PLAN
Not to Scale



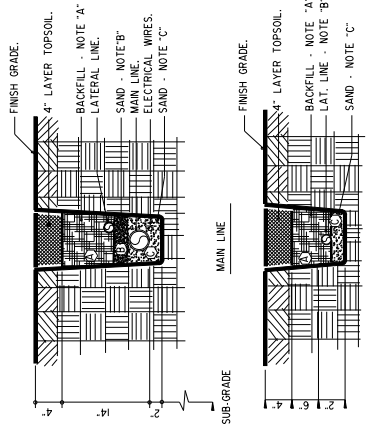
BACKFLOW PREVENTER
Not to Scale



VALVE MANIFOLD
Not to Scale



CONTROLLER
Not to Scale



TRENCH DETAIL
Not to Scale

IRRIGATION LEGEND

SYM.	DESCRIPTION
○	RAINBIRD T-4 PC T22-20
□	RAINBIRD 1804-PRS-E5T
○	RAINBIRD 1804-PRS-S5T
○	RAINBIRD 1804-PRS-5H
○	RAINBIRD EFB-CP SERIES ELEC. REMOTE CONTROL VALVE I71
—	LATERAL LINE - PVC SCH 40, S.A.S. 12\"/>
—	MAIN LINE - PVC SCH 40 PIPE - 1\"/>
—	14 GAGE U.F. DIRECT BURIAL WIRE.
—	RED-LAMINATE-SHRUBS-WHITE-GROUND.
—	CONNECT TO CONTROLLERS AS INDICATED ON THE DRAWINGS. AT ALL LOCATIONS WHERE THE WIRE IS TO BE BURIED, THE TRENCH SHALL BE 12\"/>
—	TRENCH INSTALL WIRES IN A 2\"/>
—	40 CONDUIT.
—	QUICK COUPLER-RAINBIRD 56C. INSTALL INSIDE VALVE BOX ON UPSTREAM SIDE OF MAINFOLD.
—	BACKFLOW PREVENTER - COMBRACO MODEL L-40-100 - SAME SIZE AS MAINLINE
—	HARDE IRRIGATION CO. CONTROLLER-RAIN DIAL BY HARDE IRRIGATION CO.
—	16 STATION CONTROLLER REQ'D.
—	CONNECT TO WATER METER AS SHOWN ON UTILITY DRAWINGS

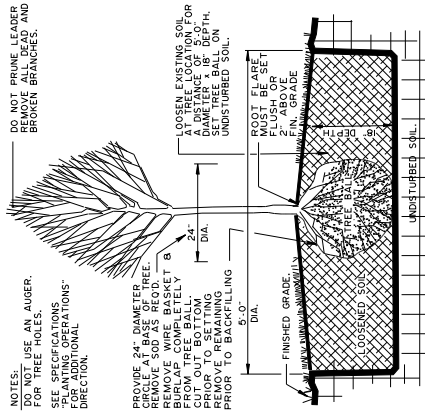
INSTALL WIRES AS PER WIRE SCHEDULES. WIRES ABOVE FIN GR TO BE 12\"/>

NOTES:
 (A) EX. TRENCH MTR. 2\"/>

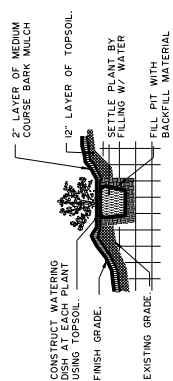
NOTES:
 (1) POINT OF CONNECTION.
 (2) LOCATE IN LANDSCAPED AREA

	<p>UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS</p>	<p>LANDSCAPING DETAILS 1 OF 3</p>
<p>RECOMMENDED FOR APPROVAL</p> <p>CIVIL STANDARDS</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>DATE</p> <p>DATE</p>	<p>DESIGNED BY: _____</p> <p>DRAWN BY: _____</p> <p>CHECKED BY: _____</p> <p>APPROVED BY: _____</p>
<p>DATE</p>	<p>DATE</p>	<p>SKETCH: N/A</p> <p>CADD: Revise: _____</p> <p>DATE: _____</p> <p>DRAWING NO.: LAN-100</p>

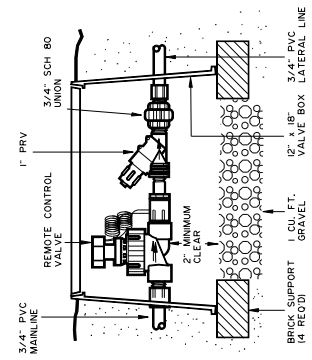
REV	DATE	DESCRIPTION



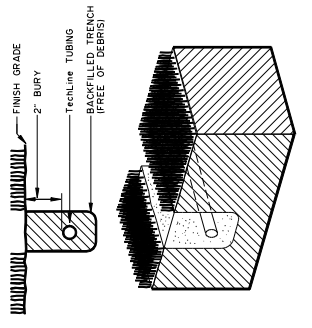
TREE PLANTING
NOT TO SCALE



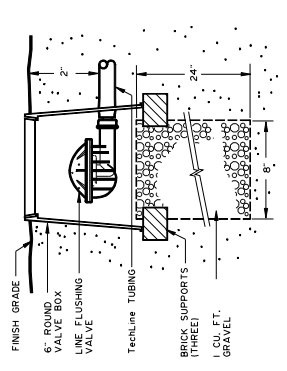
SHRUB PLANTING
NOT TO SCALE



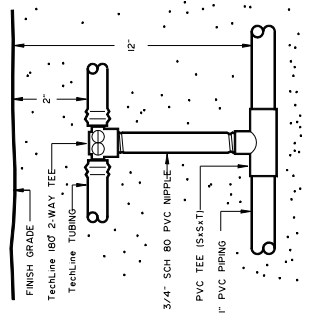
CONTROL VALVE W/ 1\"/>



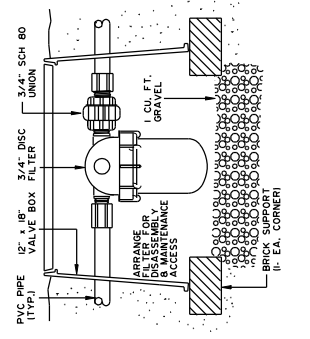
TRENCH
NOT TO SCALE



FLUSHING VALVE
NOT TO SCALE



CONNECTION
NOT TO SCALE



AIR RELIEF VALVE
NOT TO SCALE

REV	DATE	Description

RECOMMENDED FOR APPROVAL
 _____ DATE
 CIVIL STANDARDS
 _____ DATE
 CAPITAL DEVELOPMENT DEPUTY CHIEF
 _____ DATE

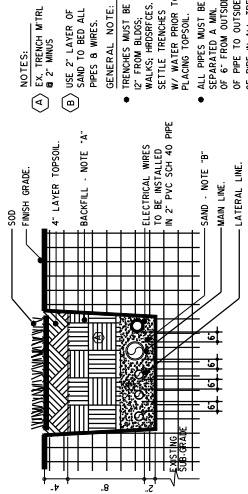


Designed By: _____
 Drawn By: _____
 Checked By: _____
 Approved By: _____

LANDSCAPING DETAILS
 2 OF 3

LIGHT RAIL REFERENCE DRAWINGS

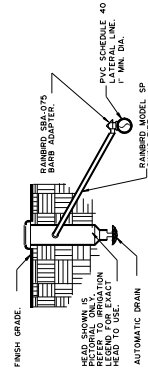
Sheet: AS SHOWN
 CADD File: _____
 Scheduling Date: _____
 Drawing No.: LAN-101



- NOTES:
- (A) 6" TRENCH MTRLS
 - (B) 4" TRENCH MTRLS
 - (C) 2" TRENCH MTRLS
- GENERAL NOTE: TRENCHES MUST BE 12" FROM BLDGS, WALLS, CURBS, SETBACKS, ETC. W/ WATER PRIOR TO PLACING TOPSOIL.
- ALL PIPES MUST BE 6" FROM OUTSIDE OF PIPE TO INSIDE OF PIPE IN ALL TRENCHES.



TRENCH DETAIL
NOT TO SCALE



SWING JOINT
Not to Scale



RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

REV	DATE	Description

DESIGNED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 APPROVED BY: _____

SCALE: AS SHOWN
 CADD: _____
 SCHEDULE DATE: _____
 DRAWING NO.: LAN-102

LANDSCAPING DETAILS
3 OF 3

LIGHT RAIL REFERENCE DRAWINGS

GOUDY BOLD

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890

FRUITIGER ROMAN

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890

NOTES:

1. THESE ARE THE FONTS TO BE USED EXCLUSIVELY IN ALL SIGNAGE APPLICATIONS.

COLOR SCHEDULE

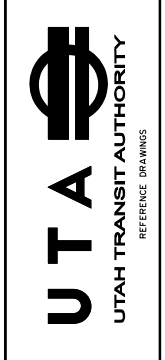
SIGN COLORS TO MATCH DESIGN.

REV	DATE	Description

RECOMMENDED FOR APPROVAL _____

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By: _____

Drewn By: _____

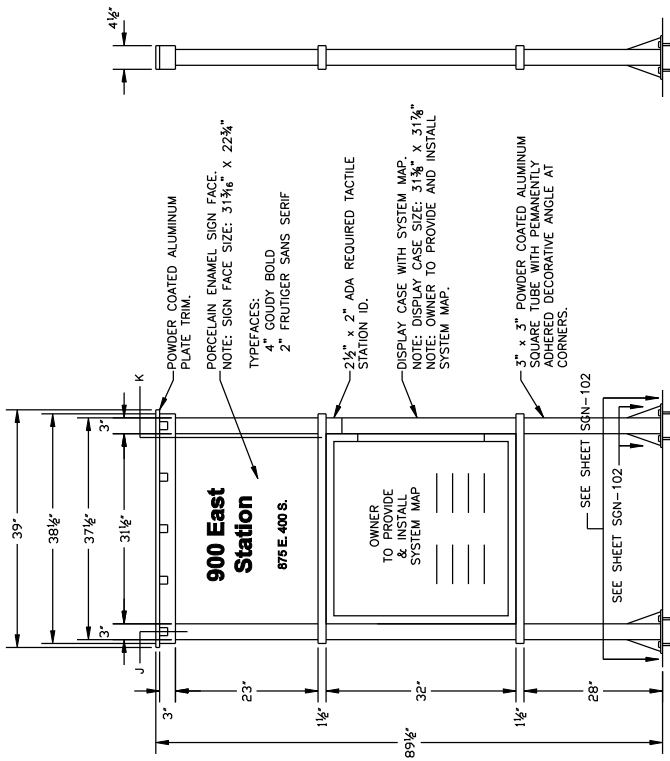
Checked By: _____

Approved By: _____

STANDARD FONTS

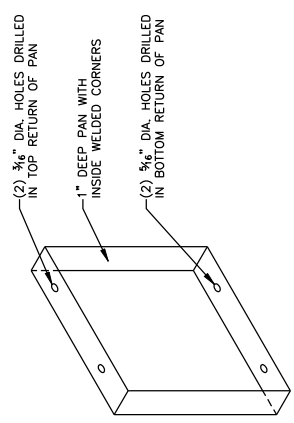
LIGHT RAIL REFERENCE DRAWINGS

Scale:	NTS
CAD Format:	
Sheeting Date:	
Drawing No.:	SGN-100

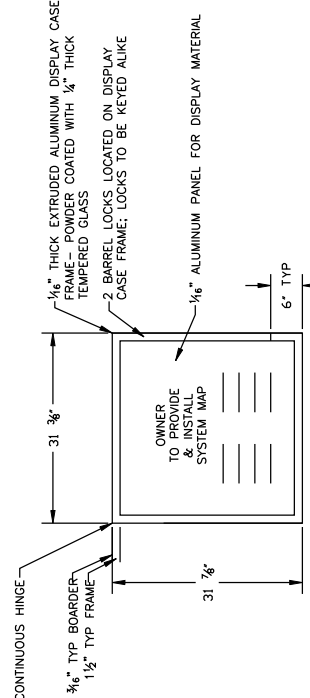


FRONT ELEVATION

SIDE ELEVATION



PERSPECTIVE VIEW



FRONT ELEVATION



PLAN VIEW

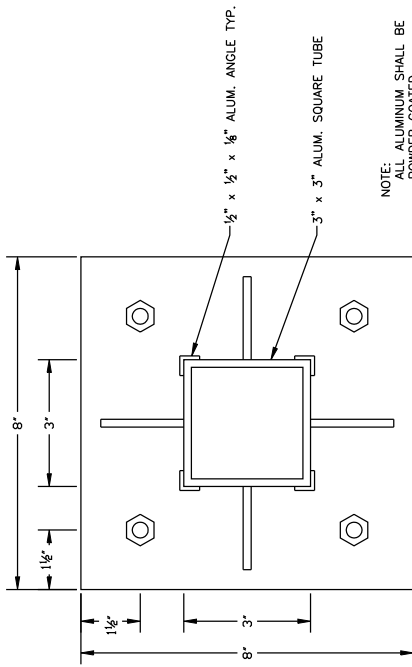
SIGN TYPE ST 2: STATION NAME SIGN WITH MAP
SCALE: NTS

PORCELAIN SIGN DETAIL
SCALE: NTS

- NOTES:
1. INSTALL SIGN TO THE FOUNDATION PROVIDED. FOUNDATION MARKERS PROVIDED.
 2. STATION NAME TO BE PROVIDED BY OWNER.
 3. THREE DISPLAY CASES PER PLATFORM
- DISPLAYS ON ONE SIDE ONLY WHERE ADJACENT TO PLATFORM.
 4. COORDINATE WITH OWNER FOR DISPLAY CASE LOCKS.

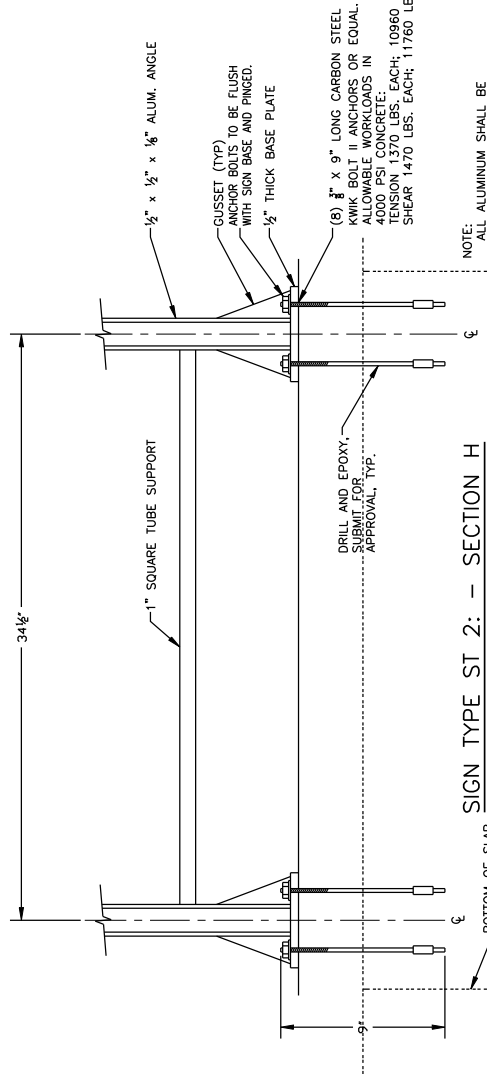
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Drawn By	NTS																										
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Approved By																											
UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS																											
RECOMMENDED FOR APPROVAL _____ DATE _____		CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____																									
ST 2: PLATFORM DISPLAY CASE																											
LIGHT RAIL REFERENCE DRAWINGS																											
SGN-101																											

REV	DATE	Description



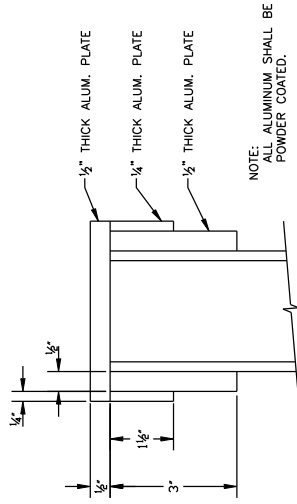
NOTE:
ALL ALUMINUM SHALL BE
POWDER COATED.
REFER TO STD. DWG.
SON-101

SIGN TYPE ST 2: - SECTION G
SCALE: NTS

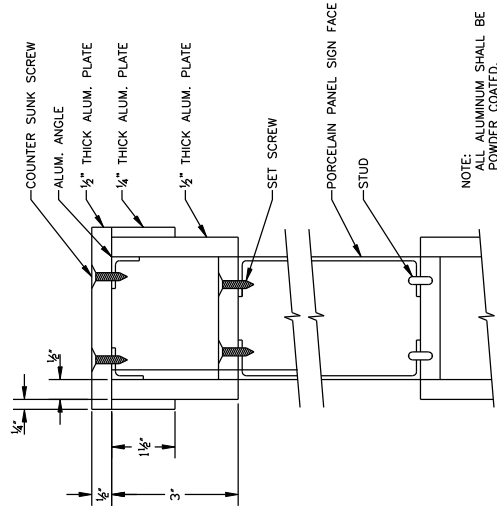


NOTE:
ALL ALUMINUM SHALL BE
POWDER COATED.

SIGN TYPE ST 2: - SECTION H
REFER TO STD. DWG-101
SCALE: NTS



SIGN TYPE ST 2: - SECTION J
SCALE: NTS

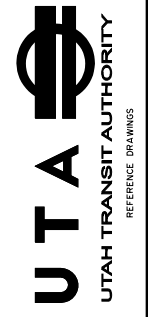


NOTE:
ALL ALUMINUM SHALL BE
POWDER COATED.

SIGN TYPE ST 2: - SECTION K
SCALE: NTS

REV	DATE	Description

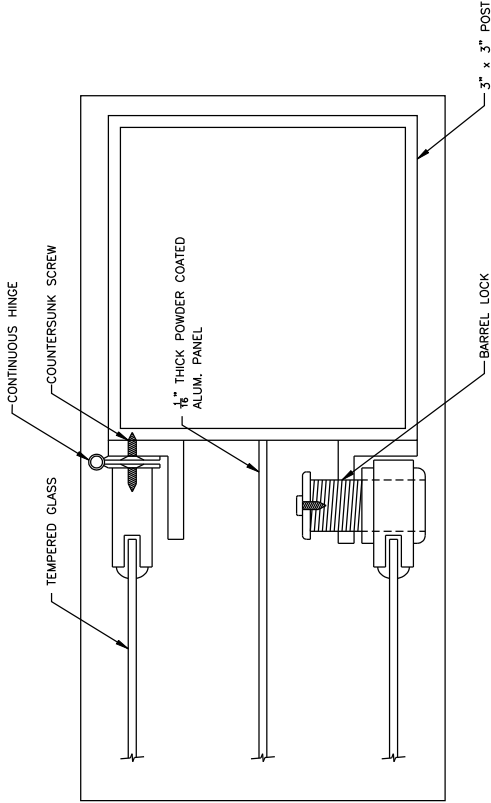
RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE



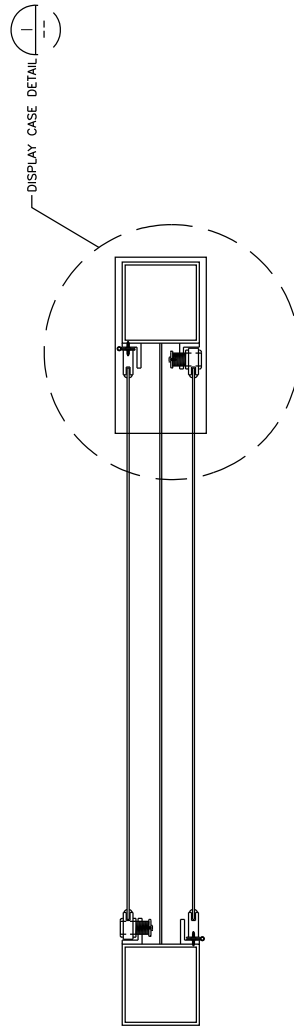
Drawn By:	
Checked By:	
Approved By:	

ST 2: PLATFORM DISPLAY CASE MOUNTING DETAILS
LIGHT RAIL REFERENCE DRAWINGS

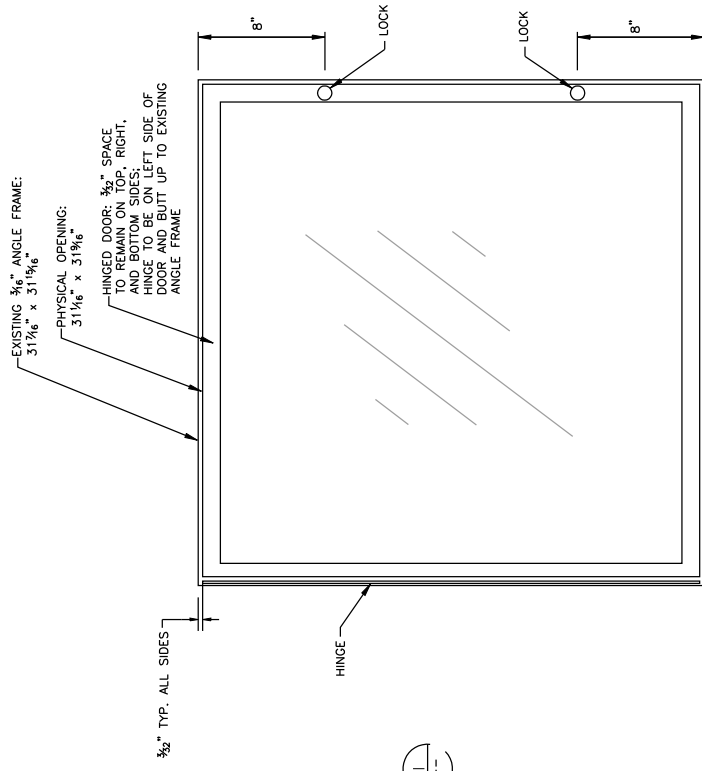
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CAD File Name
Submitting Date
Drawing No. SGN-102



SIGN TYPE ST 2: - DISPLAY CASE DETAIL 1
 SCALE: NTS



SIGN TYPE ST 2: - DISPLAY CASE DETAIL 1
 SCALE: NTS



SIGN TYPE ST 2: - DISPLAY CASE DOOR
 SCALE: NTS

REV	DATE	DESCRIPTION

RECOMMENDED FOR APPROVAL
 CIVIL STANDARDS
 CAPITAL DEVELOPMENT DEPUTY CHIEF

DATE
 DATE

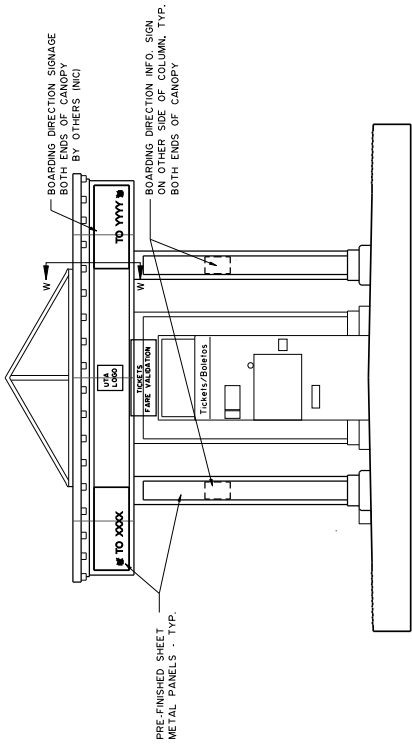


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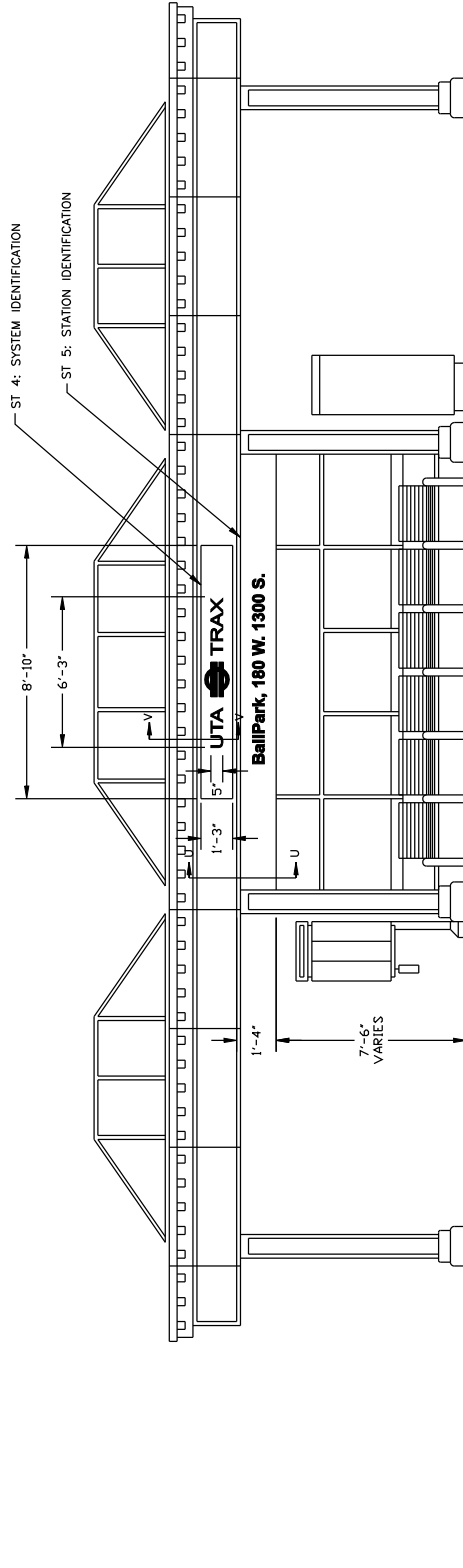
ST 2: PLATFORM DISPLAY CASE
 DETAILS

LIGHT RAIL REFERENCE DRAWINGS

SCALE
 CADD Filename: _____
 Submit Date: _____
 Drawing No.: SCN-103



CANOPY END VIEW
SCALE: NTS



FRONT ELEVATION

ST 4 & 5: SYSTEM AND STATION ID
SCALE: NTS

NOTE:
1. STATION NAME TO BE PROVIDED BY OWNER.

REV	DATE	Description

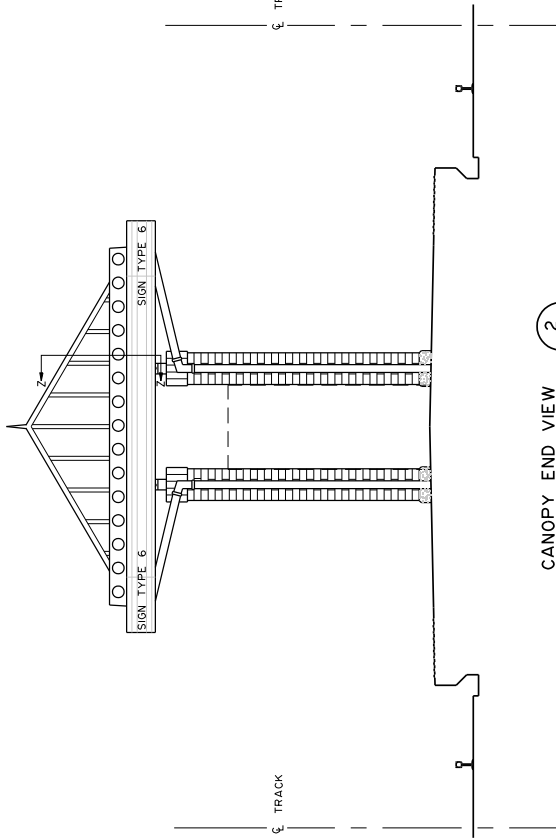
RECOMMENDED FOR APPROVAL
 _____ DATE _____
 CIVIL STANDARDS
 CAPITAL DEVELOPMENT DEPUTY CHIEF

Designed By: _____
 Drawn By: _____
 Checked By: _____
 Approved By: _____

ST 4 & 5:
SYSTEM AND STATION ID - DOWNTOWN

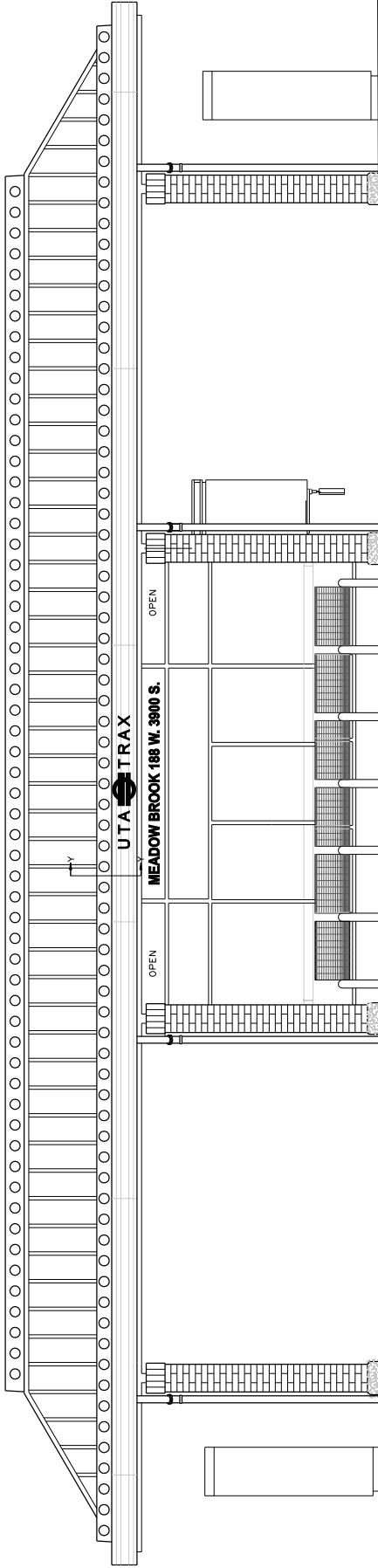
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CADD File:	
Submitting Date:	
Drawing No.:	SGN-104

LIGHT RAIL REFERENCE DRAWINGS



CANOPY END VIEW
SCALE: 1/2" = 1'-0"

2



CANOPY FRONT VIEW
SCALE: 1/2" = 1'-0"

3

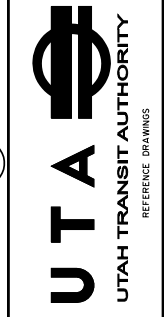
REV	DATE	Description

RECOMMENDED FOR APPROVAL

 CIVIL STANDARDS

 CAPITAL DEVELOPMENT DEPUTY CHIEF

 DATE _____
 DATE _____

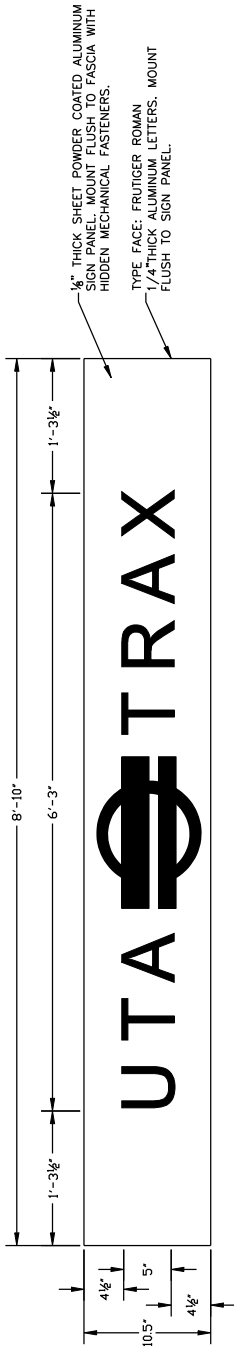


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 Checked By: _____
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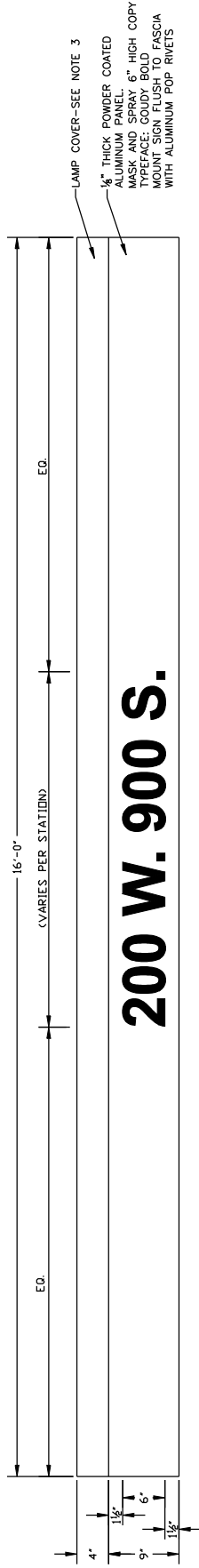
CANOPY ELEVATIONS 8 SECTION - SUBURBAN

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 Drawing No.: SON-105

LIGHT RAIL REFERENCE DRAWINGS



ST 4: DETAIL
SCALE: NTS

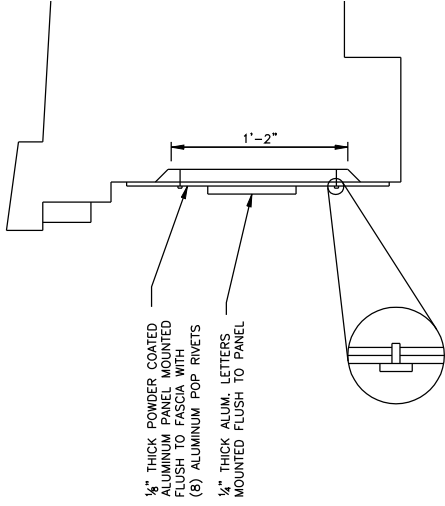


ST 5: DETAIL
SCALE: NTS

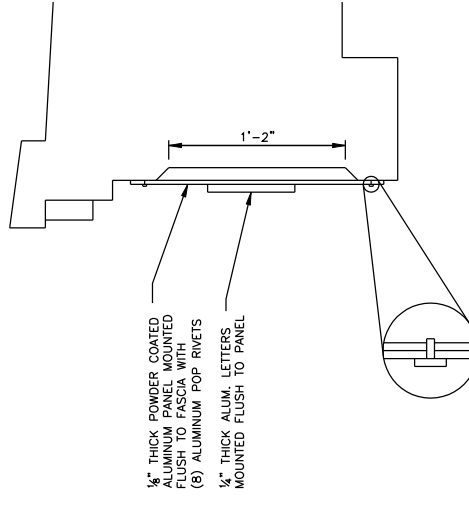
NOTES:

1. STATION NAME TO BE PROVIDED BY OWNER.
2. SEE SECTION U FOR ADDITIONAL DETAILS.
3. SEGMENT LIGHT FIXTURE IN ST 5 INTO 4 - 4' LIGHTS.

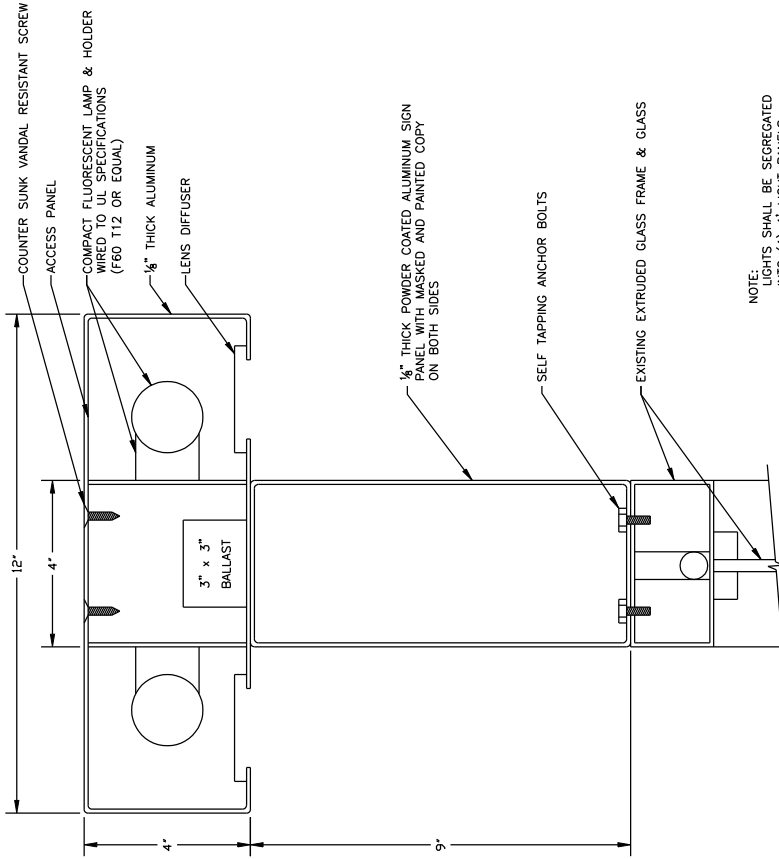
RECOMMENDED FOR APPROVAL _____ CIVIL STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____		Drawn By: _____ Checked By: _____ Approved By: _____	ST 4 & 5: DETAIL LIGHT RAIL REFERENCE DRAWINGS	Scale: NTS Date: _____ Drawing No.: 50N-106
		Description: _____ DATE: _____ REV: _____		



SIGN TYPE ST 4: -- SECTION V (DOWNTOWN)
 REFER TO STD. DWG. SGN-104
 SCALE: NTS



SIGN TYPE ST 6: -- SECTION W (DOWNTOWN)
 SCALE: NTS



SIGN TYPE ST 5: -- SECTION U
 REFER TO STD. DWG. SGN-104
 SCALE: NTS

REV	DATE	DESCRIPTION

RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

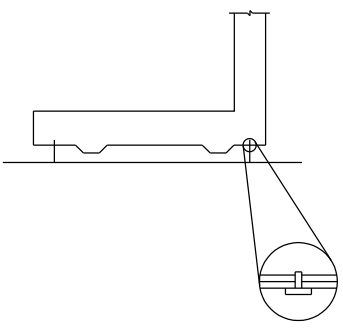
UTA
 UTA TRANSIT AUTHORITY
 REFERENCE DRAWINGS

Designed By:	
Drawn By:	
Checked By:	
Approved By:	

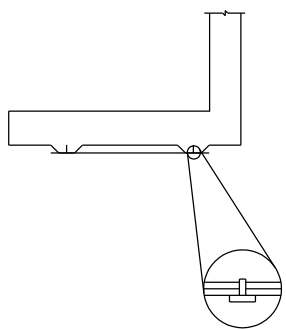
DOWNTOWN
 ST 4 & 5: STATION ID
 MOUNTING DETAILS

LIGHT RAIL REFERENCE DRAWINGS

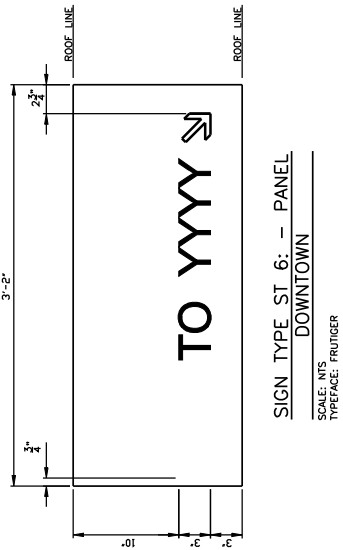
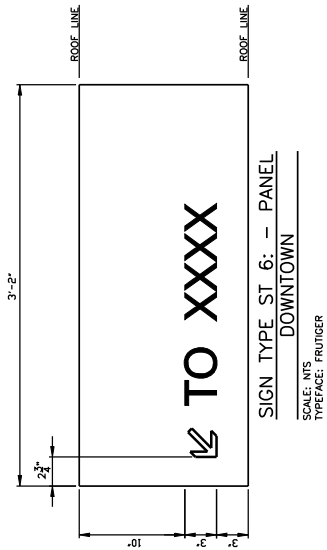
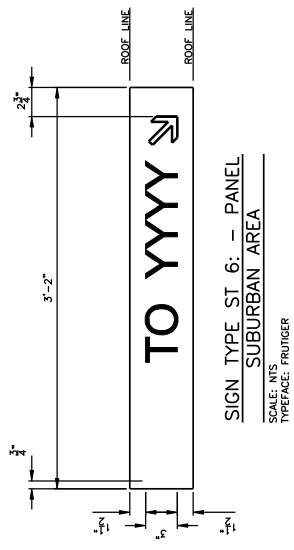
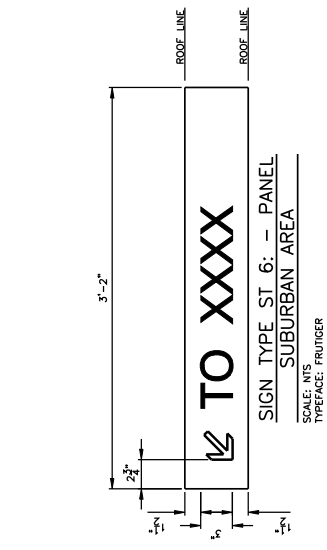
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CAD File:	
Submitting Date:	
Drawing No.:	SGN-107



SIGN TYPE ST 4: -- SECTION Y (SUBURBAN)
SCALE: NTS

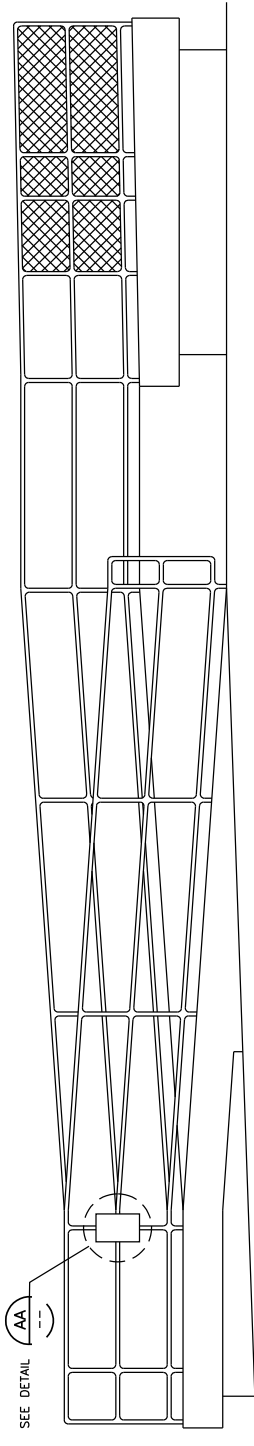


SIGN TYPE ST 6: -- SECTION Z (SUBURBAN)
SCALE: NTS

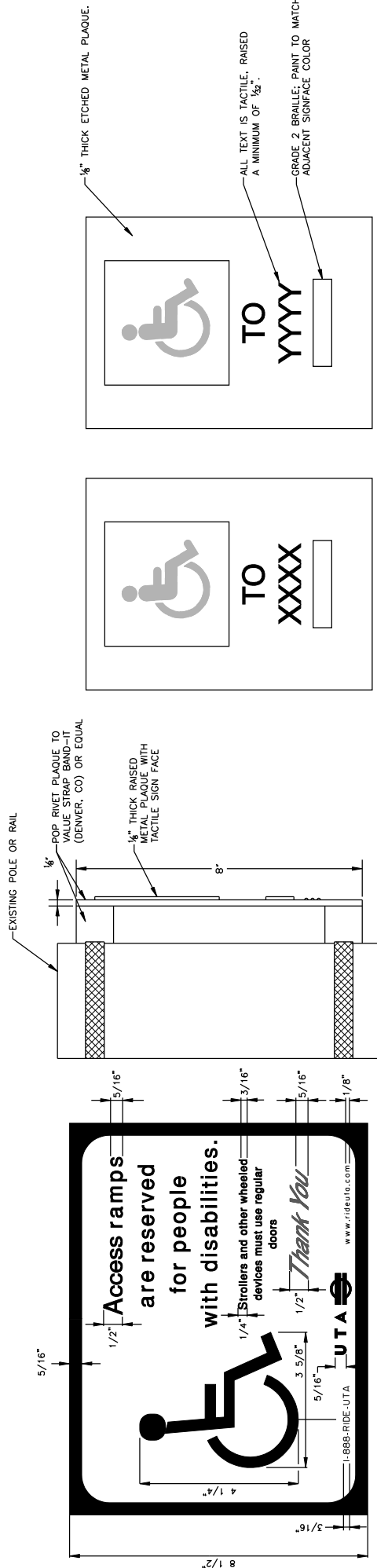


- NOTES:
1. 1/8" THICK POWDER COATED ALUMINUM PANEL.
 2. 3" HIGH X 1/4" THICK PAINTED ALUMINUM LETTERS AND ARROW.
 3. MOUNT LETTERS FLUSH TO PANEL. MOUNT SIGN FLUSH TO FASCIA WITH ALUMINUM POP RIVETS.
 4. 1'-4" DIMENSION MAY VARY DUE TO CANOPY CONSTRUCTION.
 5. EXACT TEXT TO BE DETERMINED BY OWNER.

<table border="1"> <tr> <td>Drawn By</td> <td>Checked By</td> <td>Approved By</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Drawn By	Checked By	Approved By					<p>RECOMMENDED FOR APPROVAL</p> <p>CIVIL STANDARDS</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>DATE</p>
Drawn By	Checked By	Approved By							
<p>DATE</p>	<p>DATE</p>								
<p>ST 6: BOARDING DIRECTIONS</p>		<p>LIGHT RAIL REFERENCE DRAWINGS</p>							
<p>Scale: NTS</p>		<p>Drawing No. SCN-108</p>							



TYPICAL PANEL LOCATION
SCALE: NTS



ST 10: ACCESSIBLE BOARDING SIGN
SCALE: NTS

MOUNTING DETAIL AA
SCALE: NTS

ST 10: ACCESSIBLE BOARDING SIGN
SCALE: NTS

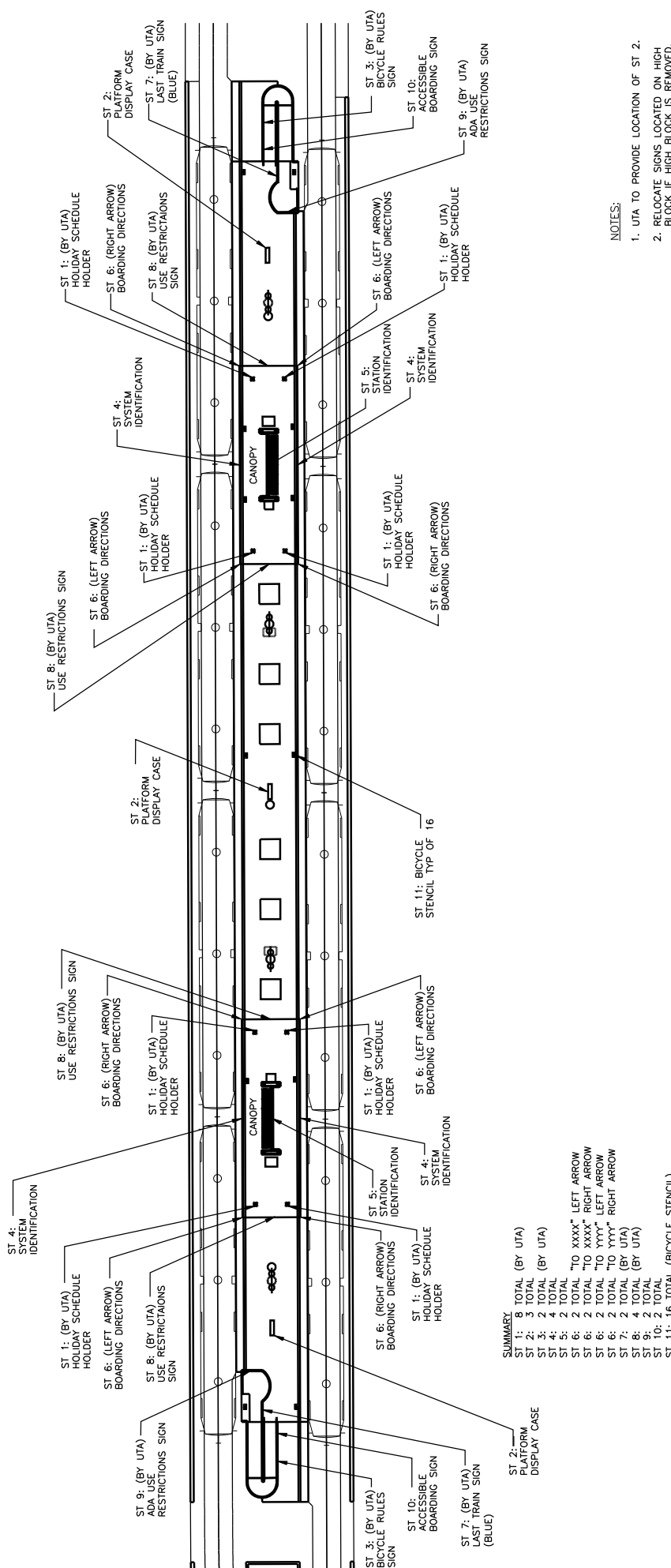
NOTE:
EXACT TEXT TO BE DETERMINED BY OWNER.

REV	DATE	Description

RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

 UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	Drawn By: _____ Checked By: _____ Approved By: _____
	ST 10: ACCESSIBLE BOARDING SIGN
	LIGHT RAIL REFERENCE DRAWINGS

Scale: NTS Date: _____ Drawing No.: SON-09
--


























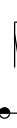
































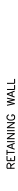
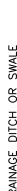

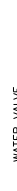
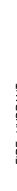
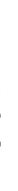


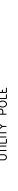





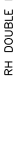









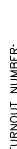




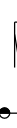



































NOTES:
 1. UTA TO PROVIDE LOCATION OF ST 2.
 2. RELOCATE SIGNS LOCATED ON HIGH BLOCK IF HIGH BLOCK IS REMOVED.

SUMMARY

ST 1:	8	TOTAL (BY UTA)
ST 2:	3	TOTAL
ST 3:	2	TOTAL (BY UTA)
ST 4:	4	TOTAL
ST 5:	2	TOTAL
ST 6:	2	TOTAL "TO XXXX" LEFT ARROW
ST 6:	2	TOTAL "TO XXXX" RIGHT ARROW
ST 6:	2	TOTAL "TO XXXX" LEFT ARROW
ST 6:	2	TOTAL "TO XXXX" RIGHT ARROW
ST 7:	2	TOTAL (BY UTA)
ST 8:	4	TOTAL (BY UTA)
ST 9:	2	TOTAL (BY UTA)
ST 10:	2	TOTAL
ST 11:	16	TOTAL (BICYCLE STENCIL)

STANDARD SYMBOLS

EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
RETAINING WALL DRAINAGE DITCH OR SWALE CULVERT WATER VALVE FIRE HYDRANT CATCH BASIN UNKNOWN MANHOLE UTILITY POLE GUY LIGHT POLE VAULT LABEL (TYPE) SIGN FLAG POLE MAIL BOX HAND HOLE UNIDENTIFIED RIGHT-OF-WAY LINE CITY BOUNDARY BUILDING LINE FENCE CURB AND GUTTER BARRIER	                    	         	                          		
INTERMEDIATE CONTOUR LINE INDEX CONTOUR LINE EDGE OF PAVEMENT TOP OF CUT TOE OF FILL BALLAST RETAINING CURB BUMPS POST HIGH POINT LOW POINT AERIAL CONTROL POINT TRAFFIC SIGNAL MAST ARM AND POLE TRAFFIC SIGNAL HEAD	           	            	         	                          	

 UTAH UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	STANDARD SYMBOLS LIGHT RAIL REFERENCE DRAWINGS
DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	SCALE: NONE CAD FILE NAME: _____ SCHEDULE DATE: _____ DRAWING NO.: STD-100
RECOMMENDED FOR APPROVAL CIVIL STANDARDS CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE: _____ DATE: _____
DATE: _____ REV: _____	DATE: _____ REV: _____

STANDARD ABBREVIATIONS

TRACK AND ROAD ALIGNMENT

HORIZONTAL
 POINT OF CHANGE FROM CIRCULAR CURVE TO SPIRAL
 DEGREE OF CURVATURE (CENTRAL ANGLE OF CIRCULAR CURVE)
 DIAMOND (CROSSOVER)
 EXTERNAL DISTANCE
 SUPERELEVATION, TOTAL
 SUPERELEVATION, UNBALANCED
 TOTAL INTERSECTION ANGLE or TOTAL CENTRAL ANGLE
 TOTAL LENGTH OF CHORD
 TOTAL LENGTH OF SPIRAL
 SPIRAL ON AN UNSYMETRICAL SPIRALIZED CURVE
 SUFFIX (Z) - SAME AS ABOVE, SECOND SPIRAL
 SUFFIX (N) AT THE SYMBOL DENOTES THE DATA FOR THE LEADING
 SUFFIX (OUT) AT THE SYMBOL DENOTES THE DATA FOR THE TRAILING
 SPIRALIZED CURVE
 LOW ANGLE
 POINT OF CURVATURE or POINT OF CHANGE FROM TANGENT TO
 CIRCULAR CURVE
 POINT OF INTERSECTION OF TWO TANGENTS
 POINT OF INTERSECTION, TURNOUT
 POINT ON CIRCULAR CURVE
 POINT ON SPIRAL
 POINT OF REVERSE CIRCULAR CURVE
 POINT OF TANGENCY or POINT OF CHANGE FROM CIRCULAR
 CURVE TO TANGENT
 POINT OF SWITCH
 CENTRAL ANGLE OF SPIRAL or SPIRAL ANGLE
 RADIUS OF CIRCULAR CURVE
 RADIUS OF SPIRAL
 POINT OF CHANGE FROM SPIRAL TO SPIRAL
 POINT OF CHANGE FROM SPIRAL TO TANGENT
 SHORT CURVE WITH TANGENT LENGTH OF COMPLETE CURVE
 TANGENT LENGTH FROM PC OR PT TO PI
 TURNOUT
 TURNOUT DISTANCE FROM TS or ST TO PI
 TOTAL LENGTH OF CURVE (SPIRAL & CIRCULAR PORTIONS)
 POINT OF CHANGE FROM TANGENT TO SPIRAL
 TOTAL TANGENT LENGTH (SPIRALS & CIRCULAR PORTIONS)
 TANGENT LENGTH AT SC or CS
 TANGENT OFFSET AT SC or CS

A
 AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
 AGGREGATE BASE COURSE
 ADJUSTED
 ABUTMENT
 AND-
 AMERICANS WITH DISABILITIES ACT
 AGGREGATE
 ALIGNMENT
 AMERICAN RAILWAY ENGINEERING & MAINTENANCE ASSOCIATION
 N/A
 AMERICAN SOCIETY OF CIVIL ENGINEERS
 AMERICAN SOCIETY OF MECHANICAL ENGINEERS
 ASPHALT
 AT
 AMERICAN SOCIETY FOR TESTING AND MATERIALS
 AUTOMATIC TRAIN CONTROL
 ADJUSTED TRAFFIC MANAGEMENT SYSTEM
 AMERICAN WIRE GAGE

B
 BEGIN OF BEGINNING
 BETWEEN
 BLOCK
 BL or B
 BASELINE
 BUILDING
 BURIED ROAD
 BENCHMARK
 BURLINGTON NORTHERN AND SANTA FE RAILWAY
 BRICK
 BURIED CABLE
 BACK OF WALL
 BEGIN CURVE RETURN

C
 CATCH BASIN
 CENTER TO CENTER
 CUBIC FEET PER SECOND
 CURB AND GUTTER
 CAST IRON PIPE
 CENTER LINE
 CLEARANCE or CLEAR
 CORRUGATED METAL PIPE
 CANAL
 COUNTY OF COMPANY
 CLEANOUT, COUNTY OR COMPANY
 COLUMN
 CONCRETE
 CONJECTURE
 CONNECT or CONNECTION
 CONSTRUCT or CONTINUOUS or CONTINUATION
 CONTINUED STEEL PIPE
 COORDINATE
 CORRUGATE or CORRUGATED
 COMMUNICATION/SIGNAL
 CASING
 CONCRETE SIDEWALK
 CONCRETE
 CULVERT
 CUBIC YARD
 CULVERT
 CONTINUOUS WELDED RAIL

D
 DEPTH
 DEFLECTION
 DEFL or DEF
 DEPARTMENT
 DEPT
 DIESEL GAS
 DRY GAS
 DUCTILE IRON PIPE
 HWY
 DIA. or Ø
 DIAGRAM or DIAGONAL

E
 EASTBOUND OR END OF BRIDGE
 EAST OF EAST RIGHT-OF-WAY LINE
 ELECTRIC or ELECTRICAL
 ELEVATION MANHOLE
 EXISTING ASPHALT
 EDGE OF PAVEMENT
 EQUATION
 EQUATION
 EQUATION
 EXTRA STRENGTH
 EXTERIOR JACK
 EXISTING
 EAST OF WEST RIGHT-OF-WAY LINE
 EXISTING
 EXTERIOR JOINT
 EXTERIOR

F
 FILL (WALL)
 FREEBOARD
 FINISHED SECTION
 FINISHED FLOOR or FAR FACE
 FINISHED FLOOR ELEVATION
 FLOOR PLATE
 FINISH
 FINISH
 FINISH
 FLOWLINE
 FLOOR
 FIBER OPTIC LINE
 FACE OF CURB
 FACE OF SECOND
 FREWAY
 FLY
 FLAGSTONE or FINISHED SURFACE
 FOUND BRASS CAP
 FOUND IRON PIN
 FOUND
 FOOT or FEET
 FEDERAL HIGHWAY ADMINISTRATION
 FEDERAL RAILROAD ADMINISTRATION
 FEDERAL TRANSIT ADMINISTRATION

G
 GAS
 GAUGE (GAGE)
 GALVANIZED
 GALVANIZED
 GAS METER
 GRADE or GROUND or GUARD RAIL PLATE
 GROUNDED SLOPING BOULDER
 GALVANIZED STEEL CONDUIT
 GALVANIZED RIGID STEEL CONDUIT

H
 HEIGHT
 HORIZONTAL CONTROL LINE
 HEAD DENSITY POLYETHYLENE
 HEEL OF FROG
 HEEL LENGTH
 HOBBLE
 HORSEPOWER
 HOLES
 HIGH STRENGTH STEEL
 HIGHWAY
 HYDRANT
 HYDRAULIC GRADE LINE
 HAND HOLE

I
 INSIDE DIAMETER
 INSIDE FACE
 INTERMEDIATE-HIGH PRESSURE
 INSULATED RAIL LEVEL
 INSULATED JOINT
 INCH or INCHES
 INCORPORATED
 INVERT
 IRON PIPE
 IRRIGATION DIVERSION
 IRRIGATION DIVERSION BOX

J
 JOINT
 JOINT

K
 KIP, 1000 POUNDS
 KIP-FOOT
 KIPTS PER SQUARE FOOT
 KILOVOLTS

L
 LINE or LENGTH
 LEFT
 LINEAR FOOT (FEET)
 LEFT HAND
 LIMITED LIABILITY CORPORATION
 LIGHT
 LOW PRESSURE or LIGHT POLE
 LOW POINT
 LIGHT RAIL TRANSIT
 LIGHT
 LIGHTING

M
 MAINTENANCE
 MAXIMUM
 MECHANICAL
 MINIMUM
 MINIMUM
 MISCELLANEOUS
 MATCH LINE JOINT
 MATCH LINE
 MONUMENT
 MEDIUM PRESSURE or MILE POST
 MECHANICALLY STABILIZED EARTH
 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

N
 NORTH
 NOT APPLICABLE
 NEAR FACE
 NOT IN CONTRACT
 NORTH OR NORTH-SOUTH
 NORTH OF NORTH RIGHT-OF-WAY LINE
 NUMBER
 NON-REINFORCED CONCRETE PIPE
 NOT TO SCALE

O
 ON CENTER or ON CENTERS
 OD
 OD
 OUTSIDE DIAMETER
 OUTSIDE FACE
 OVERHEAD
 OH
 OPPOSITE
 OPP

P
 PIPE
 PASSENGER
 PORTLAND CEMENT
 PORTLAND CEMENT CONCRETE
 PORTLAND CEMENT CONCRETE PAVEMENT
 PORTLAND CEMENT CONCRETE PAVEMENT
 PETRO
 PEDESTRIAN
 PE
 POINT OF FROG
 POINT OF GRADE LINE
 PARKING
 PKG

Q
 QUANTITY

R
 RATE OF VERTICAL CURVATURE
 RATE OF COMPOUND VERTICAL
 POINT OF VERTICAL INTERSECTION or POINT OF INTERSECTION
 RATE OF CHANGE IN CURVATURE
 POINT OF REVERSE VERTICAL CURVATURE
 POINT OF VERTICAL TANGENCY
 VERTICAL CURVE
 ELEVATION

S
 SHORT CURVE WITH TANGENT LENGTH OF COMPLETE CURVE
 TANGENT LENGTH FROM PC OR PT TO PI
 TURNOUT
 TURNOUT DISTANCE FROM TS or ST TO PI
 TOTAL LENGTH OF CURVE (SPIRAL & CIRCULAR PORTIONS)
 POINT OF CHANGE FROM TANGENT TO SPIRAL
 TOTAL TANGENT LENGTH (SPIRALS & CIRCULAR PORTIONS)
 TANGENT LENGTH AT SC or CS
 TANGENT OFFSET AT SC or CS

T
 TANGENT

U
 UNDER

V
 VERTICAL

W
 WATER

X
 X-RAY

Y
 YIELD

GENERAL ABBREVIATIONS

A
 AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
 AGGREGATE BASE COURSE
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 HEAD DENSITY POLYETHYLENE
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 HOBBLE
 HORSEPOWER
 HOLES
 HIGH STRENGTH STEEL
 HIGHWAY
 HYDRANT
 HYDRAULIC GRADE LINE
 HAND HOLE

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 INSIDE DIAMETER
 INSIDE FACE
 INTERMEDIATE-HIGH PRESSURE
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 INSULATED JOINT
 INCH or INCHES
 INCORPORATED
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 JOINT

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 OUTSIDE FACE
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 OPPOSITE
 OPP

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 PORTLAND CEMENT CONCRETE
 PORTLAND CEMENT CONCRETE PAVEMENT
 PORTLAND CEMENT CONCRETE PAVEMENT
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 PEDESTRIAN
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 RATE OF CHANGE IN CURVATURE
 POINT OF REVERSE VERTICAL CURVATURE
 POINT OF VERTICAL TANGENCY
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 TOTAL LENGTH OF CURVE (SPIRAL & CIRCULAR PORTIONS)
 POINT OF CHANGE FROM TANGENT TO SPIRAL
 TOTAL TANGENT LENGTH (SPIRALS & CIRCULAR PORTIONS)
 TANGENT LENGTH AT SC or CS
 TANGENT OFFSET AT SC or CS

T
 TANGENT

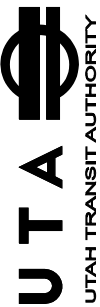
U
 UNDER

V
 VERTICAL

W
 WATER

X
 X-RAY

Y
 YIELD



UTAH TRANSIT AUTHORITY

REFERENCE DRAWINGS

DESIGNED BY:

DRAWN BY:

CHECKED BY:

APPROVED BY:

STANDARD ABBREVIATIONS

SHEET 1 OF 2

LIGHT RAIL REFERENCE DRAWINGS

SCALE:

DATE:

REVISIONS:

RECOMMENDED FOR APPROVAL _____ DATE _____

CIVIL STANDARDS

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

NO. _____

DATE _____

NO. _____

DATE _____

NO. _____

DATE _____

STANDARD ABBREVIATIONS

STANDARD ABBREVIATIONS

STANDARD ABBREVIATIONS

STANDARD ABBREVIATIONS

GENERAL ABBREVIATIONS

PL or P	PROPERTY LINE OR PLATE	TMH	TELEPHONE MANHOLE
POL	POINT ON LINE	TOD	TRANSIT ORIENTED DEVELOPMENT
PPR	POWER POLE	TOP	TOP OF PIPE
PROP	PROPOSED	TOS	TOE OF SLOPE
PEP	POLYETHYLENE PIPE	TOT	TOTAL
PCF	POUNDS PER CUBIC FOOT	TSK	TRAFFIC SIGNAL
PSF	POUNDS PER SQUARE FOOT	TS	TYPICAL SECTION
PSI	POUNDS PER SQUARE INCH	T.S.	TOP OF SUB-BALLAST
PVC	POLYVINYL CHLORIDE	TSB	TOP OF SIGNAL CONDUIT
PWT	PNEUMATIC	TV	TELEVISION CABLE
Q	QUANTITY	T/W	TOP OF WALL
QUAD	QUADRANT	TYP	TYPICAL
RCB	REINFORCED CONCRETE BOX CULVERT	U	UNDERDRAIN
RD	ROAD	UC	UNDERGROUND
REF	REFERENCE	UNO	UNLESS NOTED OTHERWISE
REFR	REINFORCE, REINFORCED or REINFORCEMENT	UPK	UTAH POWER AND LIGHT
RET	RETAINING	UPRR	UNION PACIFIC RAILROAD
RH	RIGHT HAND	URC	UNREINFORCED CONCRETE
RH/	REQUIRED or REVISION	UTA	UTAH TRANSIT AUTHORITY
REOD	REQUIRED or REQUIRE	V	VALVE or VELOCITY
RSC	RAILROAD SIGNAL	VAR	VARIES or VARIABLE
RT	RIGHT TURNING WALL	VC	VERTICAL CURVE
ROW or R/W	RIGHT OF WAY	VCL	VERTICAL CLAY PIPE
RVR	RIVER	VLT	VAULT
S	SOUTH or SLOPE	W	WEST or WATER or WIDTH
SB	SOUTHBOUND	WB	WITH BOUND
SDP	STORM DRAIN PIPE	WE	WEST
SDMH	STORM DRAIN MANHOLE	WE	WEST OF EAST RIGHT-OF-WAY LINE
SECT	SECTION	WIP	WROUGHT IRON PIPE
SHT	SHEET	WL	WATER LEVEL
SIG	SIGNAL	WO	WITHOUT or WEST OF
SI	SEWER	WS	WATER SERVICE
SIC	SEWER LATERAL	WSP	WATER STEEL PIPE
SIL	SALT LAKE CITY	WV	WATER VALVE
SIN	SOUTH	WW	WASTE WATER
S/N	SOUTH OF NORTH RIGHT-OF-WAY LINE	W/W	WEST OF WEST RIGHT-OF-WAY LINE
S/O	SOUTH OF SPACING or SIGNAL POLE or STATION POINT	WSE	WATER SURFACE ELEVATION
SPEC	SPECIFICATIONS	X	CROSS DRAIN
SO	SQUARE	X-	CROSSING
S/O	SOUTH OF SOUTH RIGHT-OF-WAY LINE	X-	CROSS SECTION
ST	STREET or STORM SEWER LINE		
STA	STATION		
STL	STIFF LOAD		
STM	STEAM		
STR	STRUCTURE		
SW	SWITCH or SIDEWALK		
SWR	SANITARY SEWER		
SYM	SYMMETRICAL		
T or TEL	TELEPHONE		
TBC	TOP BACK OF CURB		
TBD	TO BE DETERMINED		
TCB	TRAFFIC CONTROL BOX		
TEL	TELEPHONE		
TEMP	TEMPERATURE or TEMPORARY		
TF	TRACK FOOT		
TC	TOP OF GRADE or TOP OF GRATE		
TH	THICKNESS		
THK	THICK		
THRU	THROUGH		
TL	TRAFFIC LIGHT or TOE LENGTH		

RECOMMENDED FOR APPROVAL

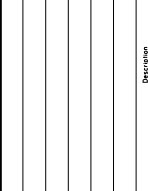
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CIVIL STANDARDS

_____ DATE

CAPITAL DEVELOPMENT DEPUTY CHIEF

_____ DATE



Drawn By	Checked By	Approved By

Scale	NONE
CAD Format	
Submitting Date	
Drawing No.	STD-102

STRUCTURAL ABBREVIATIONS

AT	ANCHOR BOLT	SYMM	SYMMETRICAL
AB	ABUTMENT	T&B	TOP & BOTTOM
AGG	AGGREGATE	TEMP	TEMPORARY
APPROX	APPROXIMATE	TOP	TOP OF CURB
BUDG	BUDGET	TOC	TOP OF CURB
BOT	BOTTOM	TOS	TOP OF STEEL
BRG	BEARING	TYP	TYPICAL
CB	CONTROL JOINT	UBC	UNIFORM BUILDING CODE
CJ	CLEAR LINE	VAR	VARIABLE
CLP	CLEAR LINE	VERT	VERTICAL
COL	COLUMN	W/	WITH
CONC	CONCRETE	WB	WESTBOUND
CONN	CONNECTION	WOF	WELDED WIRE FABRIC
CONSTR	CONSTRUCTION		
CONST	CONSTRUCTION JOINT		
CONT	CONTINUOUS		
CWR	CONTINUOUSLY WELDED RAIL		
CSG	CURB & GUTTER		
DET	DETAILED		
DR	DRAIN		
DWG	DRAWING		
EB	EAST BOUND		
EF	EXPANSION JOINT		
EL	ELEVATION		
EMB	EMBANKMENT		
EO	EQUAL		
EW	EASTWAY		
EXP	EXPANSION		
EXT	EXTERIOR		
FG	FINISH GRADE		
FL	FLOOR		
FS	FACE		
FT	FEET		
FTG	FOOTING		
GALV	GALVANIZED		
GND	GROUND		
HORIZ	HORIZONTAL		
ID	INSIDE DIAMETER		
IN	INCH		
INT	INTERIOR		
INT	INTERIOR JOINT		
LLH	LONG LEG HORIZONTAL		
LLV	LONG LEG VERTICAL		
LT	LEFT		
LT	LEFT		
MAX	MAXIMUM		
MISC	MISCELLANEOUS		
N/A	NOT APPLICABLE		
NB	NORTH BOUND		
NE	NORTH EAST		
NES	NORTH EAST SCALE		
OC	ON CENTER		
OD	OUTSIDE DIAMETER		
OPNG	OPENING		
OPP	OPPOSITE		
PLAT	PLATFORM		
PSF	POUNDS PER SQUARE FOOT		
PSI	POUNDS PER SQUARE INCH		
PVMT	PAVEMENT		
REQD	REQUIRED		
RET	RETAINING		
RR	RAILROAD		
RT	RIGHT		
RT	RIGHT SIDEWALK WALL		
SHT	SHEET		
SJ	SAWED JOINT		
SOG	SLAB ON GRADE		
STA	STATION		
STIFF	STIFFENER		
STL	STEEL		
STR	STRUCTURE		
SW	SIDEWALK		

GENERAL STRUCTURAL NOTES

- GENERAL:**
- ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND ALL OTHER DRAWINGS RELATING TO THE WORK.
 - EMBEDDED ITEMS SUCH AS PIPES, INSERTS, SLEEVES AND CONDUITS, AND ANY RECESSES OR OPENINGS REQUIRED FOR UTILITY, ARCHITECTURAL, MECHANICAL, AND ELECTRICAL INSTALLATIONS ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS. CONTRACTOR TO REFER TO THE UTILITY, MECHANICAL, AND ELECTRICAL DRAWINGS FOR THE LOCATIONS AND DETAILS OF THESE ITEMS.
 - THE VERTICAL CONTROL OF ALL TRACK STRUCTURES IS BASED ON ELEVATION OF TOP OF RAIL.
 - BEFORE FABRICATION AND/OR CONSTRUCTION ALL DIMENSIONS SHALL BE VERIFIED WITH ARCHITECTURAL DRAWINGS.
 - NO PIPES OR SLEEVES FOR MECHANICAL OR PLUMBING TRADES SHALL PASS THROUGH STRUCTURAL MEMBERS; UNLESS SHOWN ON STRUCTURAL DRAWINGS, WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER.
 - SEWER AND UTILITY LINES ARE NOT INDICATED ON STRUCTURAL DRAWINGS. REFER TO CIVIL, PLUMBING AND ELECTRICAL DRAWINGS FOR THEIR LOCATION, PROFILE AND DETAILS. THE CONTRACTOR MUST VERIFY ALL UTILITIES SHOWN ON STRUCTURAL DRAWINGS AGAINST THE UTILITY LINES AND THE STRUCTURE FOUNDATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE PROCEEDING WITH THE CONSTRUCTION.
- APPLICABLE CODES:**
- AS A MINIMUM, THE INTERNATIONAL BUILDING CODE (IBC), CURRENT EDITION AT TIME OF ADVERTISEMENT FOR BIDS, WILL GOVERN THE DESIGN, MATERIALS AND CONSTRUCTION ON THIS PROJECT. ANY OTHER APPLICABLE CODES ARE NOTED ON THE APPLICABLE DRAWINGS OR IN THE APPLICABLE SPECIFICATION SECTION.
 - IN THE CASE OF SPECIAL TYPES OF CONSTRUCTION, ADDITIONAL TRANSFER STATION SPECIFICATIONS FOR HIGHWAY BRIDGES AND THE A.R.E.M.A. MANUAL FOR RAILWAY ENGINEERING SHALL ALSO APPLY.
- FOUNDATION:**
- THE FOUNDATION DESIGN IS BASED ON THE PROJECT SOILS REPORT.
 - ALL EXCAVATIONS SHALL BE INSPECTED; ALL COMPACTIONS OF FILL SHALL BE INSPECTED AND TESTED BY THE SOILS ENGINEER OR APPROVED TESTING AGENCY.

- CONCRETE:**
- UNLESS NOTED OTHERWISE ON THE DRAWINGS OR SPECIFIED, ALL STRUCTURAL CONCRETE SHALL BE 4000 PSI.
 - CONCRETE FOR FOOTINGS AND FOUNDATIONS SHALL BE 3000 PSI UNLESS OTHERWISE NOTED.
 - MIXING AND PLACING OF ALL CONCRETE AND SELECTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE APPLICABLE CODE. FRESH CONCRETE SHALL BE TYPE II CONFORMING TO ASTM C595. WATER FOR MIXING AND CURING SHALL BE FRESH, CLEAN AND POTABLE.
 - WATER-CEMENT RATIO SHALL NOT EXCEED 0.5, OR AS SPECIFIED.
 - MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO USE.
 - UNLESS INDICATED OTHERWISE, CONCRETE SURFACES LEADING TO DOWN SLOPES SHALL BE FINISHED WITH A FINISH WHICH PROVIDES DRAIN AND THE ADJACENT SURFACES WARPED AS REQUIRED TO SATISFY AN ADEQUATE DRAINAGE FLOW.
 - ALL EXPOSED CONCRETE EDGES AND CORNERS SHALL BE CHAMFERED WITH A 3/4" INCH BY 45 DEGREE CHAMFER.
- REINFORCING STEEL:**
- REINFORCING STEEL SHALL BE DEFORMED STEEL CONFORMING TO THE REQUIREMENTS OF ASTM A615, GRADE 40 FOR #4 AND SMALLER BARS, GRADE 60 FOR #5 AND LARGER BARS.
 - WIRE MESH SHALL CONFORM TO ASTM A185.
 - WIRE MESH SHALL BE LAPPED 1/2" SPACES (9" MINIMUM).
 - REINFORCING BARS SHALL BE SPLICED AS SHOWN ON THE DRAWINGS, OR AS REQUIRED BY ACI.
 - REINFORCING STEEL EXCEPT FOR STIRRUPS AND TIES SHALL HAVE A MINIMUM PROTECTIVE COVERING OF CONCRETE AS FOLLOWS:
 - CONCRETE PLACED DIRECTLY AGAINST EARTH - 3"
 - CONCRETE PLACED AGAINST FORMS BUT EXPOSED TO EARTH OR WEATHER; REINFORCEMENT STIRRUPS, TIES, & SPIRALS - 1 1/2"
 - CONCRETE PLACED AGAINST FORMS BUT NOT EXPOSED DIRECTLY TO EARTH OR WEATHER; PRIMARY REINFORCEMENT STIRRUPS, TIES, & SPIRALS - 1"
 - ALL BARS SHALL BE CLEAN OF RUST, GREASE AND OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL BENDS SHALL BE MADE COLD.
 - ALL REINFORCING STEEL TO BE EPOXY COATED BY CRSI CERTIFIED APPLICATOR.
- WELDING:**
- WELD LENGTHS SHOWN ARE EFFECTIVE LENGTH PER CODE. WHERE LENGTHS ARE NOT SHOWN, THE WELD SHALL BE FULL LENGTH OF JOINT.
 - ALL WELDING REQUIREMENTS SHOWN OR INDICATED ON THE DRAWINGS MAY BE FIELD OR SHOP WELDED AS REQUIRED FOR EFFICIENT ERECTION, SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER.
 - ALL WELDING SHALL BE AS PER THE LATEST EDITION OF AWS D1. EXCEPT WELDING FOR BRIDGES SHALL BE PER A.R.E.M.A.
- SPECIAL INSPECTIONS:**
- SPECIAL INSPECTIONS, AS DEFINED BY UBC, SHALL BE REQUIRED DURING THE FOLLOWING TYPES OF CONSTRUCTION:
 - CONCRETE PLACEMENT AND TAKING TEST SPECIMENS
 - PLACEMENT OF REINFORCING STEEL
 - STRUCTURAL AND REINFORCING STEEL WELDING
 - HIGH STRENGTH BOLTED CONNECTIONS
- TOLERANCES:**
- FLOOR LEVEL SHALL NOT DEVIATE OVER 1/8" IN 10'-0" FROM THE THEORETICAL FLOOR LEVEL'S SHOWN ON THE DRAWINGS.
 - EDGE OF EXTERIOR WALL SHALL BE ON A STRAIGHT OR A CURVED LINE. FINISH SURFACE OF EXTERIOR WALL SHALL BE WITHIN A TOLERANCE OF 1/8" IN 10'-0" OR 1/2" TOTAL FROM THEORETICAL STRAIGHT OR CURVED LINES AS SHOWN ON DRAWINGS.
 - TOLERANCE LIMITS FOR CONCRETE CONSTRUCTION SHALL BE AS SPECIFIED IN THE LATEST EDITION OF ACI 117.
 - TOLERANCE LIMITS FOR STEEL CONSTRUCTION SHALL BE AS SPECIFIED IN THE LATEST EDITION OF THE CODE OF STANDARD PRACTICE BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.

STRUCTURAL SYMBOLS



- STRUCTURAL STEEL AND MISCELLANEOUS METAL**
- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A36, UNLESS NOTED OTHERWISE.
 - ALL STEEL PIPES SHALL BE STANDARD PIPE, SCHEDULE 40 UNLESS NOTED OTHERWISE, CONFORMING TO ASTM A53, GRADE B.
 - STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B. Fy=46 KSI.
 - MACHINE BOLTS SHALL CONFORM TO ASTM A307.
 - HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A325 (FRICTION TYPE).
 - ALL CONNECTIONS SHALL BE MADE WITH HIGH STRENGTH BOLTS UNLESS NOTED OTHERWISE ON THE DRAWINGS.
 - ALL ANCHOR BOLTS SHALL CONFORM TO ASTM A307. UNLESS NOTED OTHERWISE.
 - ALL STEEL SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST APPLICABLE STANDARDS BY A CERTIFIED FABRICATOR.
 - WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS.
 - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.
 - ALL STRUCTURAL STEEL EXCEPT THAT EMBEDDED IN CONCRETE OR GROUT SHALL HAVE A SHOP COAT OF APPROVED PAINT.
 - ALL WELDING AT THE MOMENT CONNECTION OF MOMENT FRAMES SHALL BE TESTED BY NON-DESTRUCTIVE TEST METHODS (ULTRASONIC OR RADIOGRAPHIC).
 - CONTRACTOR SHALL PROVIDE SHIMS WHERE REQUIRED.

Drawn By:	
Drawn By:	
Checked By:	
Approved By:	

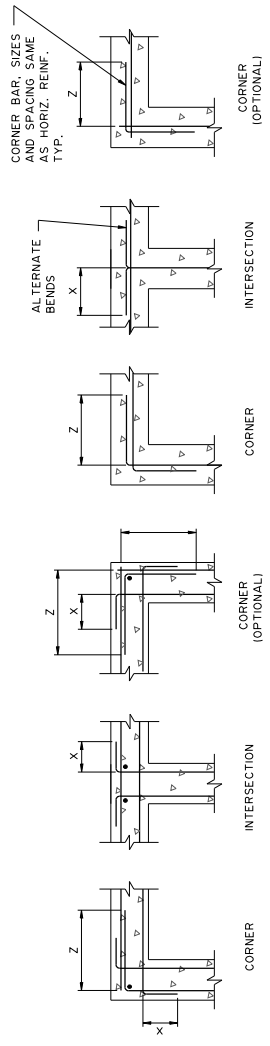
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

REV	DATE	DESCRIPTION

STRUCTURAL SYMBOLS ABBREVIATIONS & NOTES

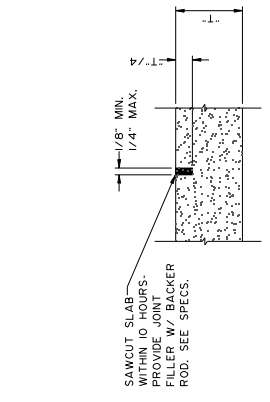
LIGHT RAIL REFERENCE DRAWINGS



X = STD. HOOK PER ACI 315
 Z = BAR LAP SPLICE = 36 BAR DIA. (18" MIN.)

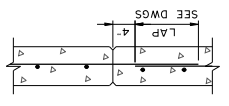
TYPICAL REINFORCING STEEL AT WALL INTERSECTIONS
 DETAIL
 NTS

1



CONTROL JOINT DETAIL
 SCALE: 3'-11"=1'
 NTS

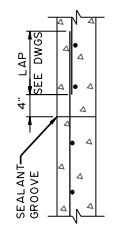
2



NOTE:
 TO BE LOCATED AS REQUIRED AT CONTROL JOINT LOCATIONS AS SHOWN ON PLANS.

WALL CONSTRUCTION JOINTS
 DETAIL
 NTS

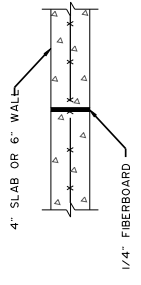
4



NOTE:
 TO BE LOCATED AS SHOWN ON PLANS.

SLAB ON GRADE CONSTRUCTION JOINTS
 DETAIL
 NTS

3



NOTE:
 EXPANSION JOINTS TO BE SPACED AT 25' O.C. MAXIMUM SPACING & TO BE LOCATED AT CONTROL JOINT LOCATIONS AS SHOWN ON PLANS. EXPANSION JOINTS IN WALL & SLAB TO BE IN LINE.

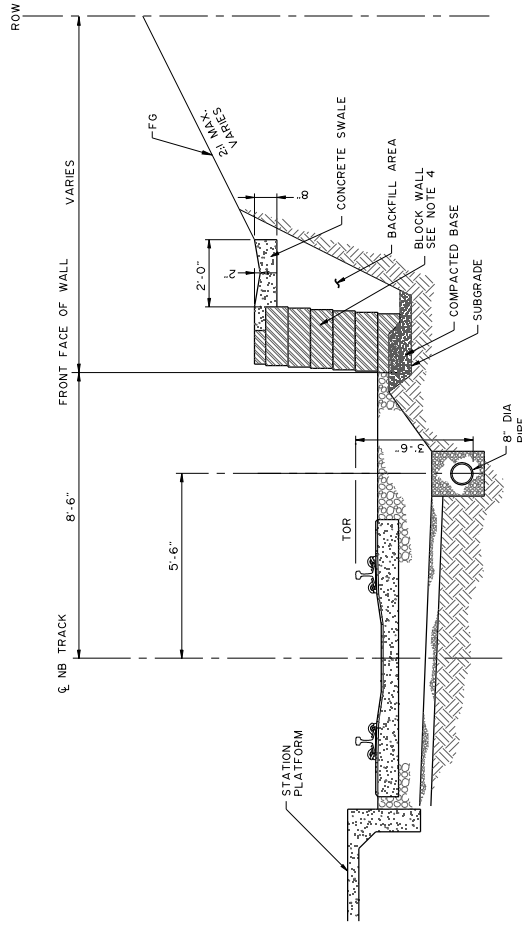
EXPANSION JOINT DETAIL
 NTS

5

<p>UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS</p>	DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	AS SHOWN CADD REVISIONS SUBMIT DATE DRAWING NO. STR-101
RECOMMENDED FOR APPROVAL _____ DATE _____ CIVIL STANDARDS CAPITAL DEVELOPMENT DEPUTY CHIEF	STATION PLATFORMS ENLARGED HIGH BLOCK STRUCTURAL DETAILS LIGHT RAIL REFERENCE DRAWINGS	
REV DATE DESCRIPTION		

NOTES:

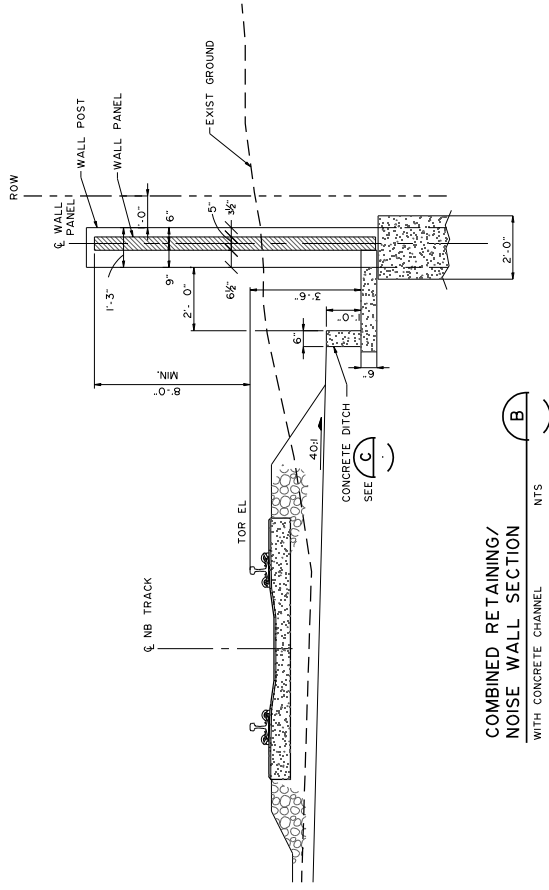
1. CONSTRUCT WALL IN ACCORDANCE WITH SECTION AND NOTES ON THIS DRAWING.
2. ALL CONSTRUCTION ACTIVITIES SHALL REMAIN WITHIN THE CORRIDOR RIGHT-OF-WAY. NO EASEMENT FOR ACCESS, EXCAVATION, OR OTHER ACTIVITIES OUTSIDE OF THE RIGHT-OF-WAY IS PROVIDED.
3. PERFORM FINISH GRADING BEHIND THE WALL TO PROVIDE A 2:1 OR FLATTER SLOPE FROM THE DRAINAGE DITCH AT THE BACK OF WALL TO THE RIGHT-OF-WAY LINE.
4. FOLLOW MANUFACTURERS INSTALLATION DETAIL FOR RETAINING WALL.
5. THE BOTTOM OF WALL ELEVATION MAY BE LOWER AS REQ'D TO ACCOMMODATE THE INCREMENTAL WALL HEIGHTS.



TYPICAL SECTION
SCALE 1/2" = 1'-0"

<p>UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS</p>	<p>RECOMMENDED FOR APPROVAL</p> <p>_____ CIVIL STANDARDS</p> <p>_____ CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>DATE _____</p> <p>DATE _____</p>	<p>Drawn By: _____</p> <p>Checked By: _____</p> <p>Approved By: _____</p>	<p>RETAINING WALL</p>	<p>AS NOTED</p> <p>_____ SCHEDULE DATE</p> <p>_____ DRAWING NO.</p>
<p>UTAH TRANSIT AUTHORITY</p>			<p>STR-102</p>		

REV	DATE	DESCRIPTION

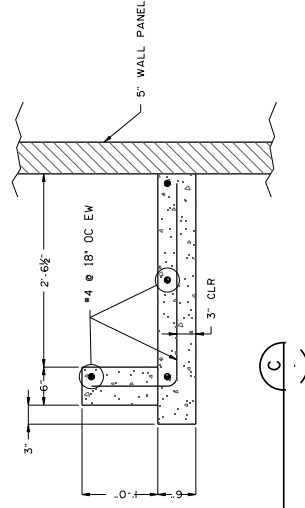


COMBINED RETAINING/
NOISE WALL SECTION
WITH CONCRETE CHANNEL

RETAINING WALL SECTION
WITH CONCRETE CHANNEL

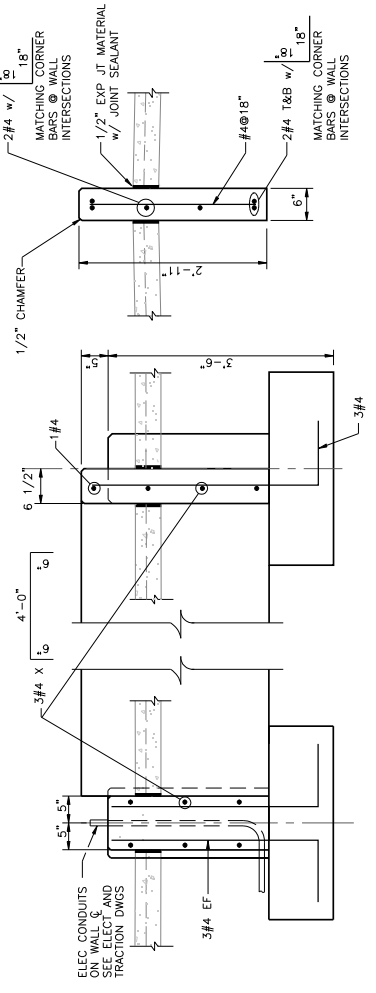
- NOTES
1. NOTES 1, AND 3 OF DETAIL A/STR-103 APPLY.
 2. STEP TOP OF WALL PANELS TO MAINTAIN 8'-0" MINIMUM WALL HEIGHT ABOVE TOR ELEVATION. LAYOUT STEPS IN WALL PANEL TO PROVIDE A UNIFORM TRANSITION AND NEAT APPEARANCE.

- NOTES
1. SEE PLAN DRAWINGS FOR WALL LAYOUT.
 2. STEP TOP OF WALL PANELS TO MAINTAIN 6" MIN. ABOVE EXISTING GROUND TO PROVIDE 6" OF WALL HEIGHT ABOVE TOR ELEVATION. LAYOUT STEPS IN WALL PANEL TO PROVIDE A UNIFORM TRANSITION AND NEAT APPEARANCE.
 3. BOTTOM ELEVATION OF WALL PANEL SHALL BE A MINIMUM OF 3'-6" BELOW TOR ELEVATION, BUT MAY BE GREATER TO ACCOMMODATE INCREMENTAL PANEL HEIGHTS.

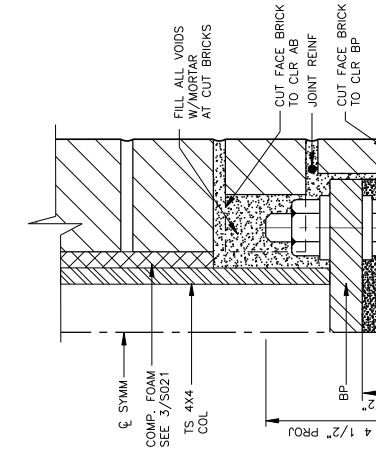


DETAIL

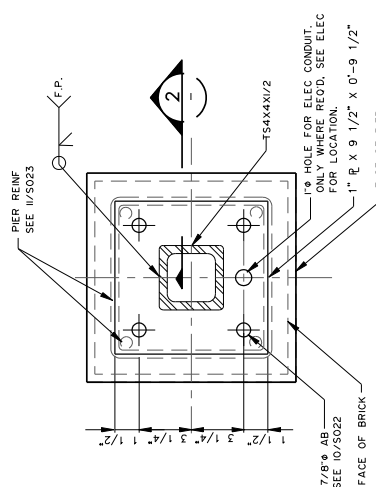
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	Recommended for Approval: _____ CIVIL STANDARDS DATE: _____	CAPITAL DEVELOPMENT DEPUTY CHIEF DATE: _____



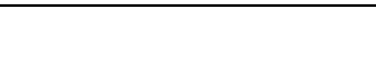
SECTION 1
SCALE: 1" = 1'-0"



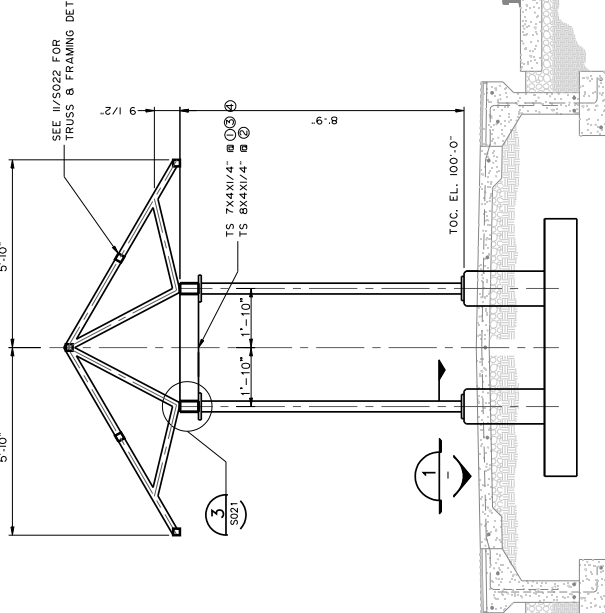
SECTION 2
SCALE: 1/2" = 1'-0"



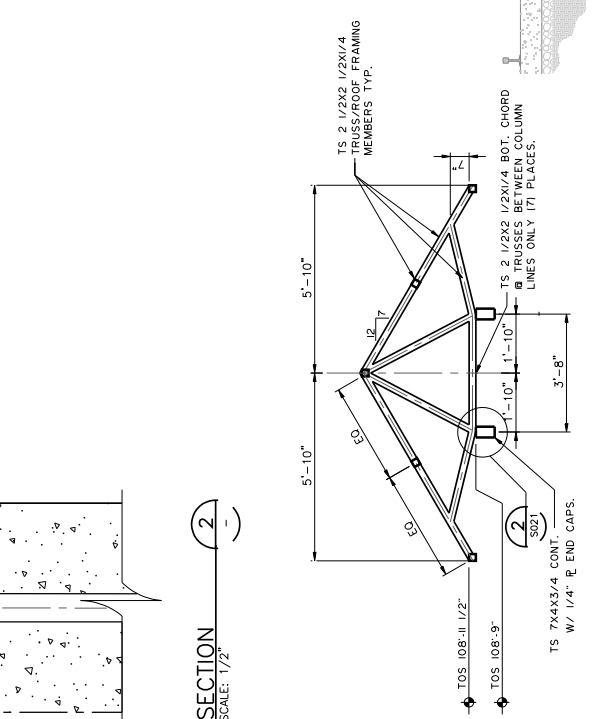
SECTION 3
SCALE: 1" = 1'-0"



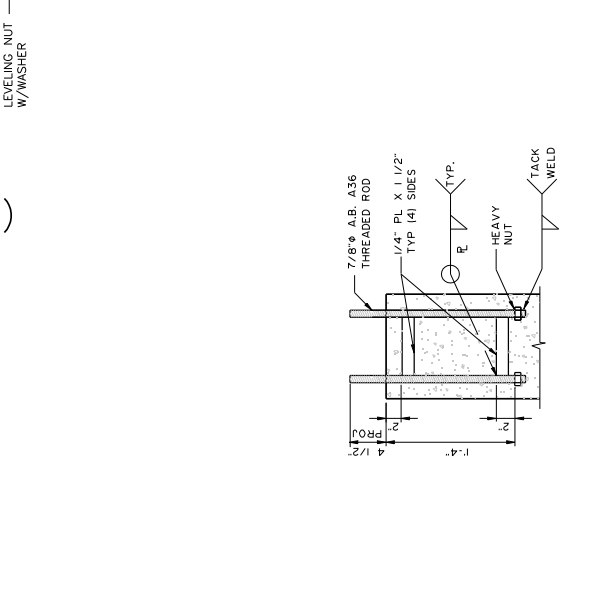
SECTION 4
SCALE: 1" = 1'-0"



CANOPY SECTION @ COLUMNS
SCALE: 1/2" = 1'-0"



CANOPY SECTION BETWEEN COLUMNS
SCALE: 1/2" = 1'-0"



A.B. DETAIL
SCALE: 1" = 1'-0"

AS SHOWN	DESIGNED BY	RECOMMENDED FOR APPROVAL	DATE
CAD PREPARED	DRAWN BY	CIVIL STANDARDS	DATE
SUBMITTAL DATE	CHECKED BY	CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE
DRAWING NO.	APPROVED BY		
STR-104			

STATION AND CANOPY SECTIONS AND DETAILS

UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

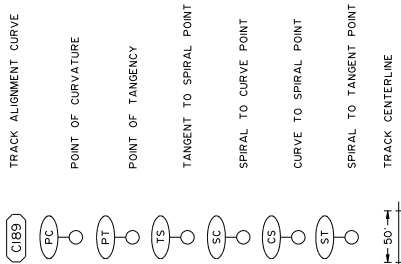
LIGHT RAIL REFERENCE DRAWINGS

REV	DATE	DESCRIPTION

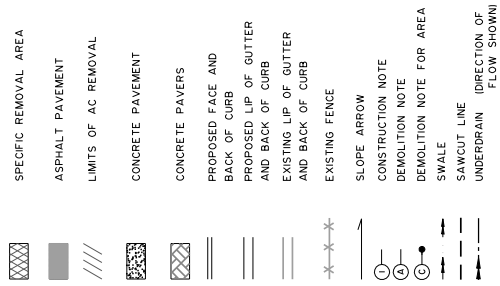
TRACK AND ROADWAY ABBREVIATIONS

- AC ASPHALT CONCRETE
- AP ANGLE POINT
- BC BEGIN CURVE
- CL CENTERLINE
- EC END CURVE
- EL ELEVATION
- GB GRADE BREAK
- IL INSULATED JOINT
- IJ INTERSECTION
- INTXN INTERSECTION
- LT LEFT
- MAX MAXIMUM
- MIN MINIMUM
- MON MONUMENT
- NB NORTHBOUND
- NC NOT IN CONTRACT
- NTS NOT TO SCALE
- O.C. ON CENTER
- DCS OVERHEAD CONTACT SYSTEM
- PC POINT OF CURVATURE
- PCC PORTLAND CEMENT CONCRETE
- POC POINT OF COMPOUND CURVATURE
- PITD POINT OF INTERSECTION OF TURNOUT
- PS POINT OF SWITCH
- PT POINT OF TANGENCY
- PRC POINT OF REVERSE CURVATURE
- PRVC POINT OF REVERSE VERTICAL CURVE
- PVC POINT OF VERTICAL CURVATURE
- PVC POLYVINYL CHLORIDE
- PVCC POINT OF VERTICAL COMPOUND CURVATURE
- PVI POINT OF VERTICAL INTERSECTION
- PVT POINT OF VERTICAL TANGENCY
- R RADIUS
- RP REFERENCE POINT
- RT RIGHT
- SB SOUTHBOUND
- SLC SALT LAKE CITY
- STA STATION
- TOA TOP OF ASPHALT
- TOR TOP OF RAIL
- OR T/R
- TYP TYPICAL
- V.C. VERTICAL CURVE
- W/ WITH
- XO CROSSOVER

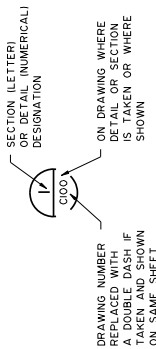
TRACK LEGEND



ROADWAY LEGEND



SECTION AND DETAIL DESIGNATION



REV	DATE	Description

RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By: _____

Drawn By: _____

Checked By: _____

Approved By: _____

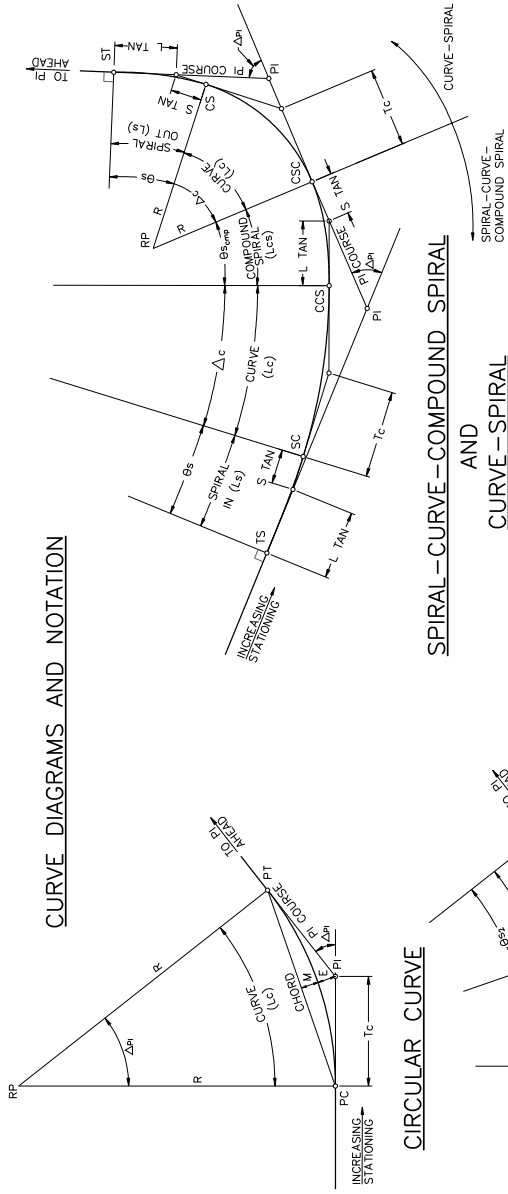
TRACK ABBREVIATIONS & SYMBOLS

Sheet	N/A
CADD Filepaths	
Schedule Date	
Drawing No.	TRK-100

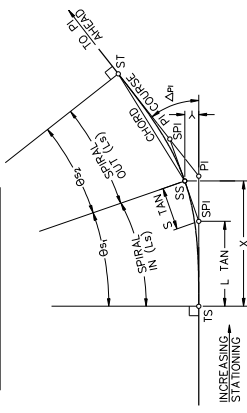
GENERAL TRACKWORK NOTES

1. FOR PROJECT COORDINATE SYSTEM AND ELEVATION DATUM INFORMATION, REFER TO THE SURVEY CONTROL DRAWINGS.
2. WITH THE EXCEPTION OF WB TRACK ALIGNMENT POINTS, STATIONING WITHOUT A LINE DESIGNATION REFERS TO THE EASTBOUND TRACK CENTERLINE.
3. CURVES AND STATIONING ARE BASED ON ARC DEFINITION.
4. STATIONING FOR TURNOUTS PASS THROUGH THE PI, NOT ALONG THE CENTERLINE OF THE TURNOUT CURVES.
5. COORDINATE INFORMATION SHALL TAKE PRECEDENCE OVER BEARING AND DISTANCES, WHERE DISCREPANCIES EXIST.
6. TRACK PLAN AND PROFILE DRAWINGS SHALL TAKE PRECEDENCE OVER TRACK CHARTS, WHERE DISCREPANCIES EXIST.

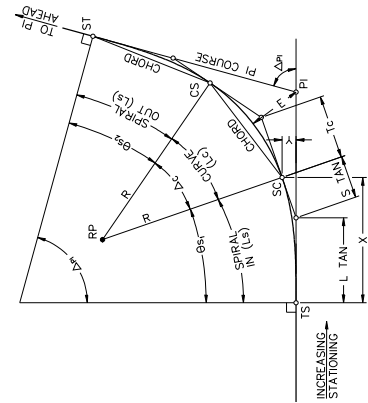
CURVE DIAGRAMS AND NOTATION



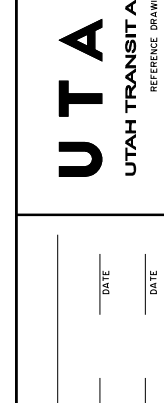
CIRCULAR CURVE



SPIRAL-CURVE



SPIRAL-CURVE-SPIRAL



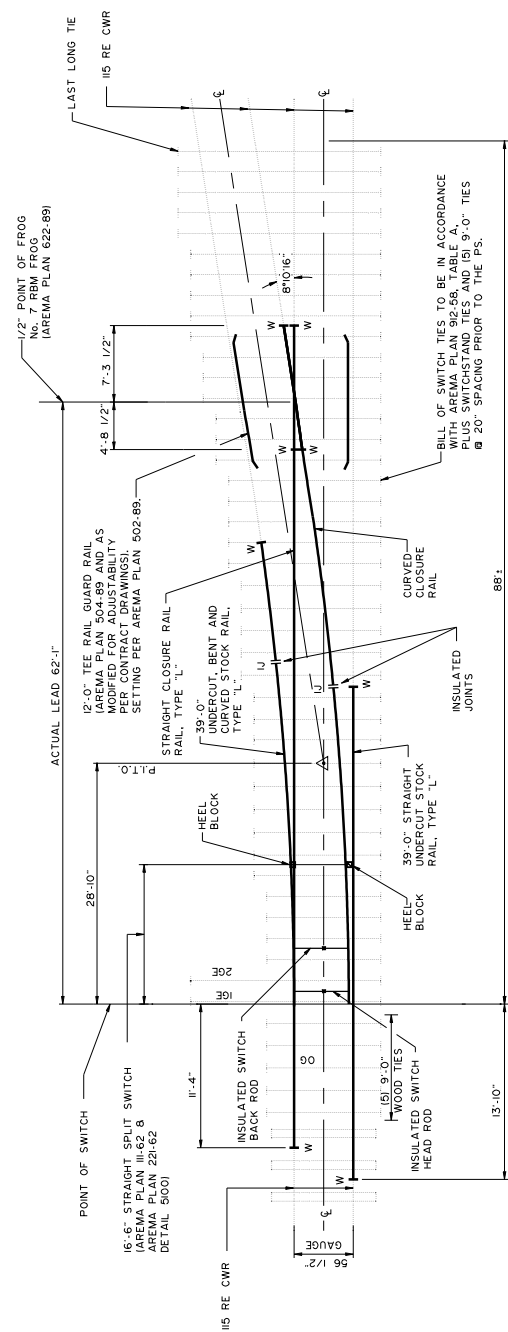
NOTES:

1. COURSE OF A CURVE OR SPIRAL IS THE BEARING OF ITS CHORD. COURSE OF A PI IS THE BEARING AHEAD TO THE NEXT PI.

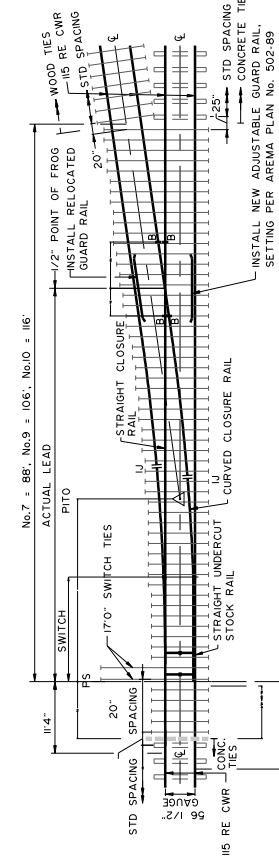
CURVE NOTATION:

- Lc LENGTH OF CIRCULAR CURVE
- Ls LENGTH OF SPIRAL CURVE
- Lcs LENGTH OF COMPOUND SPIRAL CURVE
- θs THETA DEFLECTION ANGLE OF SPIRAL CURVE
- Δc DELTA DEFLECTION ANGLE OF CIRCULAR CURVE
- Δs DELTA DEFLECTION ANGLE OF PI
- Δcs DELTA DEFLECTION ANGLE OF CIRCULAR CURVE
- L TAN SPIRAL LONG TANGENT LENGTH
- S TAN SPIRAL SHORT TANGENT LENGTH
- R RADIUS
- PP RADIAL POINT OF CIRCULAR CURVE
- E EXTERNAL DISTANCE
- M MID-ORDINATE
- DOC DEGREE OF CURVATURE = 5729.58/R (ARC DEFINITION)
- PI POINT OF INTERSECTION OF OVERALL CURVE
- PC POINT OF CHANGE FROM TANGENT TO CIRCULAR CURVE
- PT POINT OF CHANGE FROM CIRCULAR CURVE TO TANGENT
- ST POINT OF CHANGE FROM TANGENT TO SPIRAL
- SS POINT OF CHANGE FROM SPIRAL TO TANGENT
- SSS POINT OF CHANGE FROM SPIRAL TO ANOTHER SPIRAL, ON TANGENT
- PRS POINT OF REVERSING SPIRALS
- CCS POINT OF CHANGE FROM CURVE TO COMPOUND SPIRAL
- CSC POINT OF CHANGE FROM COMPOUND SPIRAL TO CURVE
- POT POINT ON TANGENT
- POC POINT ON CIRCULAR CURVE
- POS POINT ON SPIRAL

RECOMMENDED FOR APPROVAL _____ CIVIL STANDARDS _____ DATE	CAPTION _____ DATE	UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	TRACKWORK GENERAL NOTES CURVE DIAGRAMS AND NOTATION	AS-SHOWN CADD Template Submitting Date Drawing No. TRK-101



No. 7 TURNOUT (INFORMATION ONLY)



TYPICAL RELOCATED TURNOUT (ON MAINLINE)

SCHEDULE OF TIES (7"x9")

TURNOUT DESIGNATION	QUANTITY OF TIES	RELOCATED
1	17-0	2
2	9-0	7
3	10-6	4
4	10-6	3
5	11-6	3
6	12-0	2
7	12-6	2
8	13-0	2
9	13-6	2
10	14-0	2
11	14-6	2
12	15-0	2
13	15-6	3
14	16-0	3
15	16-6	2
16	16-6	2
17	16-6	2
18	16-6	2
19	16-6	2
20	16-6	2
21	16-6	2
22	16-6	2
23	16-6	2
24	16-6	2
25	16-6	2
26	16-6	2
27	16-6	2
28	16-6	2
29	16-6	2
30	16-6	2
31	16-6	2
32	16-6	2

NOTES

1. INFORMATION SHOWN IS SCHEMATIC ONLY. DRAWINGS ARE NOT TO SCALE.
2. NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAP IN COMPUTING LENGTHS OF RAIL SHOWN.
3. ALL RAIL JOINTS WITHIN TURNOUT UNIT TO BE WELDED (CWR) EXCEPT WHERE SHOWN OTHERWISE.
4. ALL SWITCH RODS AND GAUGE PLATES SHALL BE INSULATED.
5. RIGHT HAND TURNOUT SHALL BE OPPOSITE TO THOSE SHOWN HEREON.
6. PREDRILL RAIL ENDS FOR JOINT BAR CONNECTIONS TO RUNNING RAIL FOR ALL BOLTED AND INSULATED JOINTS. ALL RAIL ENDS AT FUTURE WELDED JOINTS SHALL BE LEFT BLIND.
7. IIS RE PREMIUM RAIL FOR TURNOUTS.
8. SUPPLY ALL SPECIAL PLATES PER AREMA PLAN III-62 FOR No. 7 EXCEPT AS SPECIFIED FOR SWITCH GAUGE PLATES 05, I6, AND 26. INCLUDE SCHEDULE OF HOOK TWIN TIE PLATES REQUIRED FOR FROG ON SHOP DRAWINGS.
9. TURNOUT DATA SHALL BE PER AREMA PLANS 910-41 AND 911-41 FOR No. 7 TURNOUT.
10. INSULATED JOINT LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR IS TO PROVIDE SHOP DRAWINGS DEPICTING ACTUAL LOCATIONS TO THE ENGINEER FOR APPROVAL. TURNOUTS FOR WHICH THIS DRAWING IS TO BE STAGGERED ONE TIE SPACE AND GENERALLY CONFORM TO AREMA PLANS 911-41 AND 921-52.
11. FROG TOE AND HEEL LENGTHS SHALL BE OF SUFFICIENT LENGTH TO ACCOMMODATE STANDARD 36" 6-HOLE JOINT BARS.
12. ALL RAIL JOINTS WITHIN TURNOUT UNITS TO BE WELDED EXCEPT WHERE SHOWN OTHERWISE.
13. RIGHT HAND TURNOUT SHALL BE OPPOSITE TO THOSE SHOWN HEREON.
14. TIE SPACING TO BE IN ACCORDANCE WITH SHOP DRAWINGS.
15. BILL OF SWITCH TIES TO BE IN ACCORDANCE WITH AREMA PLAN No. 912-58 PLUS FIVE ADDITIONAL WOOD TIES PRIOR TO P5 AS SHOWN HEREON.
16. EXACT LOCATION OF INSULATED, WELDED, AND BOLTED JOINTS MAY VARY. REFER TO SHOP DRAWINGS FOR EXACT LOCATIONS.
17. FURNISH AND INSTALL NEW WOOD TIES FOR ALL RELOCATED TURNOUTS.
18. INSTALL 9'-0" WOOD TIES BETWEEN TURNOUT UNITS AS REQUIRED TO ACHIEVE 20" MAX. SPACING.

ABBREVIATIONS

- B : BOLTED JOINT
- I : INSULATED JOINT
- W : WELDED JOINT

UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

SPECIAL TRACKWORK PROCUREMENT
No. 7 TURNOUT - BALLASTED TRACK

Drawn By: _____

Checked By: _____

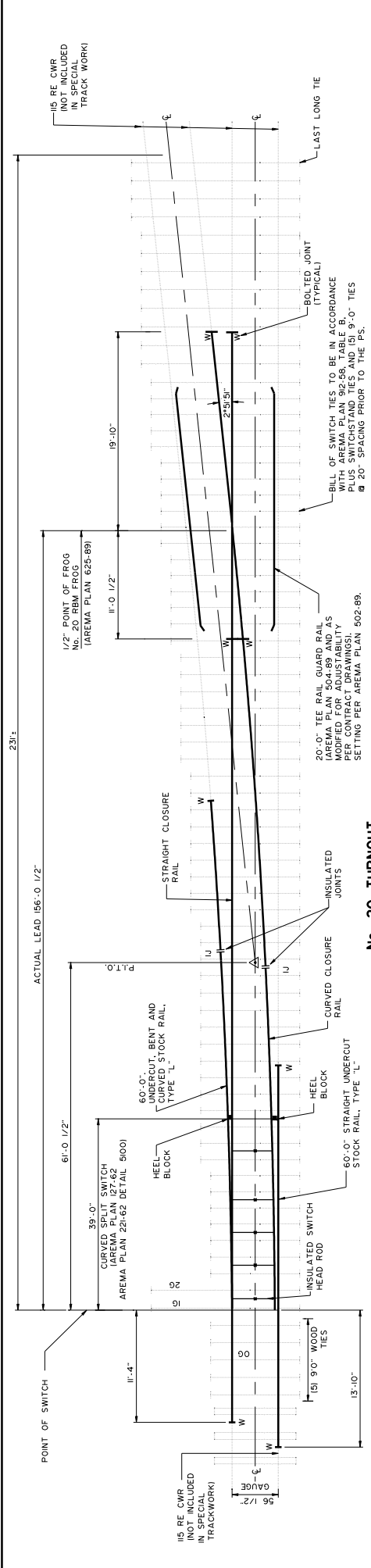
Approved By: _____

Scale: NTS

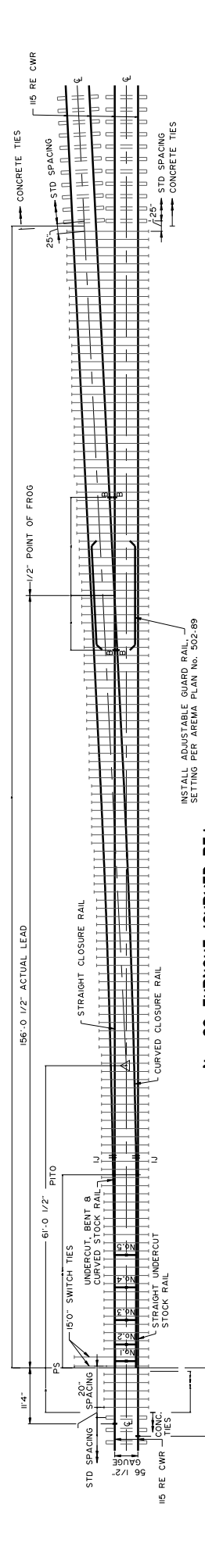
CADD: _____

Submitting Date: _____

Drawing No.: TRK-103



No. 20 TURNOUT



No. 20 TURNOUT (CURVED PT.)

NOTES

1. INFORMATION SHOWN IS SCHEMATIC ONLY. DRAWINGS ARE NOT TO SCALE.
2. NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAP IN COMPUTING LENGTHS OF RAIL SHOWN.
3. ALL RAIL JOINTS WITHIN TURNOUT UNIT TO BE WELDED (CWRI) EXCEPT WHERE SHOWN OTHERWISE.
4. ALL SWITCH RODS AND GAUGE PLATES SHALL BE INSULATED.
5. RIGHT HAND TURNOUT SHALL BE OPPOSITE TO THOSE SHOWN HEREON.
6. PREDRILL RAIL ENDS FOR JOINT BAR CONNECTIONS TO RUNNING RAIL SHALL BE WELDED TO THE TURNOUT RAIL ENDS AT FUTURE WELDED JOINTS SHALL BE LEFT BLIND.
7. #15 RE PREMIUM RAIL FOR TURNOUTS.
8. SUPPLY ALL SPECIAL PLATES PER AREMA PLAN 92-63 FOR No. 20 TURNOUTS EXCEPT AS SPECIFIED FOR SWITCH GAUGE PLATES 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. INCLUDE SCHEDULE OF HOOK TWIN TIE PLATES REQUIRED FOR FROG ON SHOP DRAWINGS.
9. TURNOUT DATA SHALL BE PER AREMA PLANS 920-51 AND 921-52 FOR No. 20 TURNOUT.
10. INSULATED JOINT LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR IS TO PROVIDE SHOP DRAWINGS DEPICTING ACTUAL LOCATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. JOINTS ARE TO BE LOCATED TO MAINTAIN THE SPACE AND GENERALLY CONFORM TO AREMA PLANS 91-41 AND 92-52.
11. FROG TOE AND HEEL LENGTHS SHALL BE OF SUFFICIENT LENGTH TO ACCOMMODATE STANDARD 36" 6-HOLE JOINT BARS.
12. ALL RAIL JOINTS WITHIN TURNOUT UNITS TO BE WELDED EXCEPT WHERE SHOWN OTHERWISE.
13. RIGHT HAND TURNOUT SHALL BE OPPOSITE TO THOSE SHOWN HEREON.
14. TIE SPACING TO BE IN ACCORDANCE WITH SHOP DRAWINGS.
15. BILL OF SWITCH TIES TO BE IN ACCORDANCE WITH AREMA PLAN No. 912-59 PLUS FIVE ADDITIONAL WOOD TIES PRIOR TO PS AS SHOWN HEREON.
16. EXACT LOCATION OF INSULATED, WELDED, AND BOLTED JOINTS MAY VARY. REFER TO SHOP DRAWINGS FOR EXACT LOCATIONS.
17. FURNISH AND INSTALL NEW WOOD TIES FOR ALL RELOCATED TURNOUTS.
18. INSTALL 90" WOOD TIES BETWEEN TURNOUT UNITS AS REQUIRED TO ACHIEVE 20" MAX. SPACING.

ABBREVIATIONS

- B : BOLTED JOINT
- I : INSULATED JOINT
- W : FUTURE WELDED JOINT

SCHEDULE OF TIES (7"x9")

TURNOUT DESIGNATION	QUANTITY	13B	15B	16-5"	16-0"	16-6"	15-0"	14-6"	14-0"	13-6"	13-0"	12-6"	12-0"	11-6"	11-0"	10-6"	10-0"	9-6"	9-0"	8-0"	7-0"	6-0"	5-0"	4-0"	3-0"	2-0"	1-0"	0-0"	
NEW																													



SPECIAL TRACKWORK PROCUREMENT
No. 20 TURNOUTS - BALLASTED TRACK

Drawn By	Checked By	Approved By

UTAH RAIL REPAIR/MAINTENANCE DRAWINGS

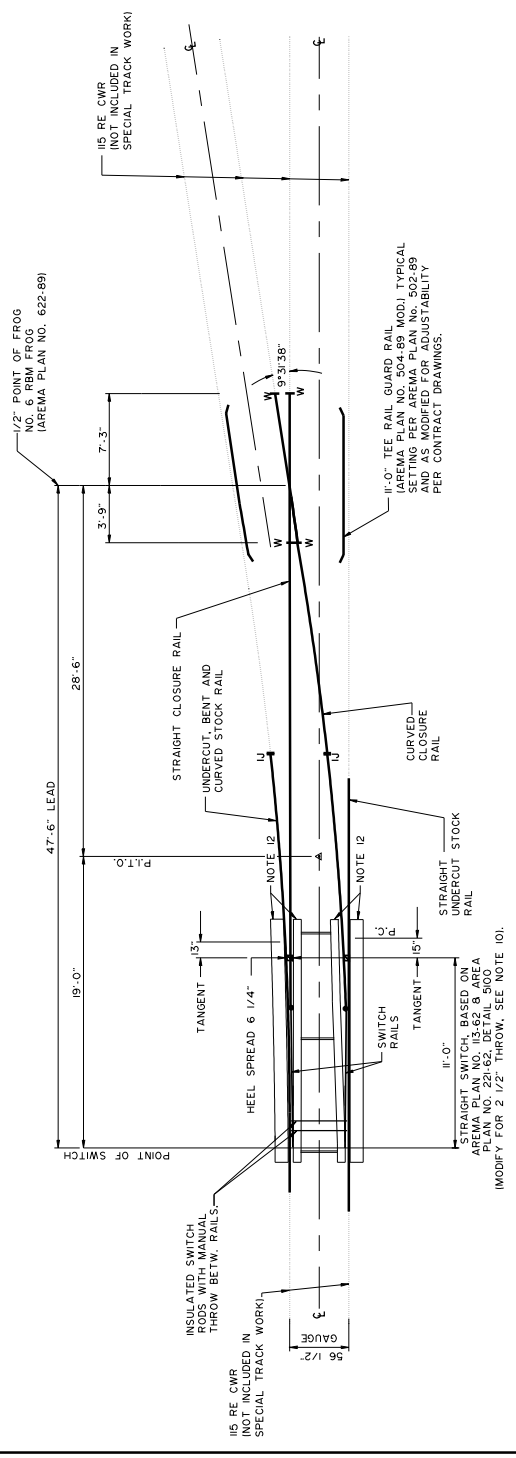
TRK-105

NOTES

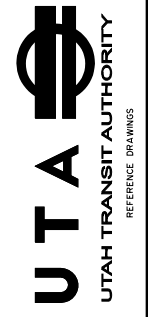
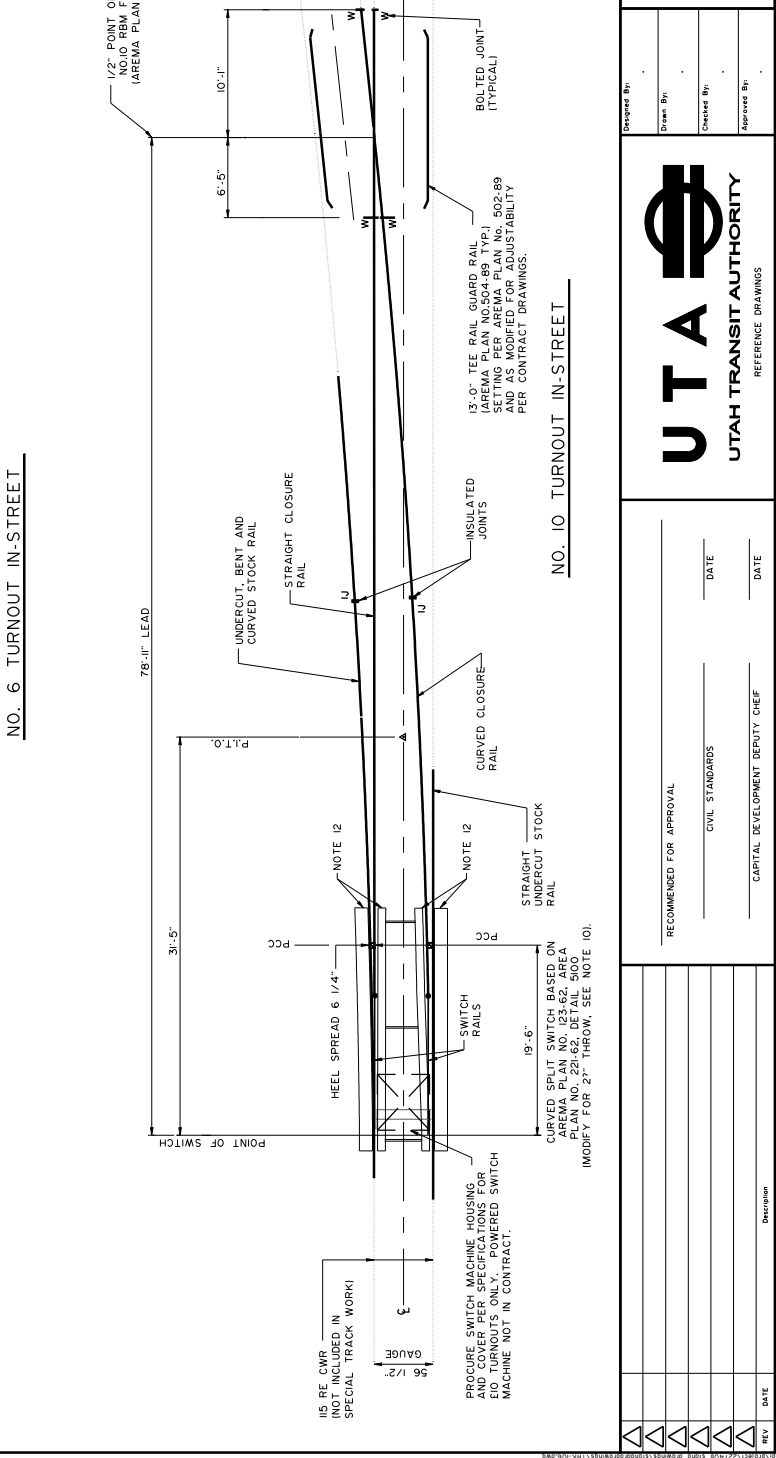
- NO ALLOWANCE HAS BEEN MADE FOR EXPANSION GAP IN COMPUTING LENGTHS OF RAIL SHOWN.
- ALL RAIL JOINTS WITHIN TURNOUT UNITS TO BE WELDED (CWR) EXCEPT WHERE SHOWN OTHERWISE.
- ALL SWITCH RODS AND GAUGE BARS SHALL BE INSULATED TYPES.
- RIGHT HAND TURNOUT SHALL BE OPPOSITE TO THOSE SHOWN HEREON.
- IIS RE RAIL FOR TURNOUTS.
- TURNOUT AND CROSSOVER SHALL BE APPLIED FOR IN-STREET CONSTRUCTION AND BASED ON AREA PLAN 920-51 AND 921-52 FOR NO. 10 STRAIGHT SPLIT SWITCH. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF PROPOSED TURNOUT FOR ENGINEER APPROVAL. ACTUAL TURNOUT DATA AND DIMENSIONS MAY VARY ON MANUFACTURER'S SHOP DRAWINGS.
- IN-STREET TURNOUTS WILL BE ANCHORED WITH STANDARD DF PLATES AND 7/8" BOLTS SUPPLIED IN THE GENERAL INSTALLATION CONTRACT.
- SUPPLY ALL SPECIAL PLATES FOR TURNOUT FROGS AND GUARD RAIL BASED ON AREA PLAN 123-62 FOR NO. 10 AND PLAN 133-62 FOR NO. 6. MODIFIED FOR IN-STREET CONSTRUCTION. CONTRACTOR SHALL PROVIDE ON TURNOUT SHOP DRAWINGS, A SCHEDULE OF SPECIAL PLATES WITH PROPOSED SPACING. PLATES TO BE ANCHORED WITH 7/8" BOLTS.
- CONTRACTOR SHALL PROVIDE ON SHOP DRAWINGS INFORMATION REGARDING TURNOUT SWITCH POINTS MODIFIED FOR 2 1/2" THROW.
- GUARD RAILS TO BE LEVEL WITH THE TOP OF RUNNING RAIL, AND SHALL BE ADJUSTABLE AS SHOWN ON TRK-105.
- FOR TURNOUT AND SWITCH MACHINE HOUSING DETAILS, SEE DRAWING TRK-109.
- SWITCHPOINTS SHALL BE OF HEAD HARDENED STEEL WITH A MINIMUM 365 BRINELL HARDNESS.
- INSULATED JOINT LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR IS TO PROVIDE SHOP DRAWINGS DEPICTING ACTUAL LOCATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. JOINTS ARE TO BE SPACED TO MAINTAIN THE SPACE AND GENERALLY CONFORM TO AREA PLANS 91-41 AND 92-52.

ABBREVIATIONS

- B . . . BOLTED JOINT
- I . . . INSULATED JOINT
- W . . . WELDED JOINT



NO. 6 TURNOUT IN-STREET

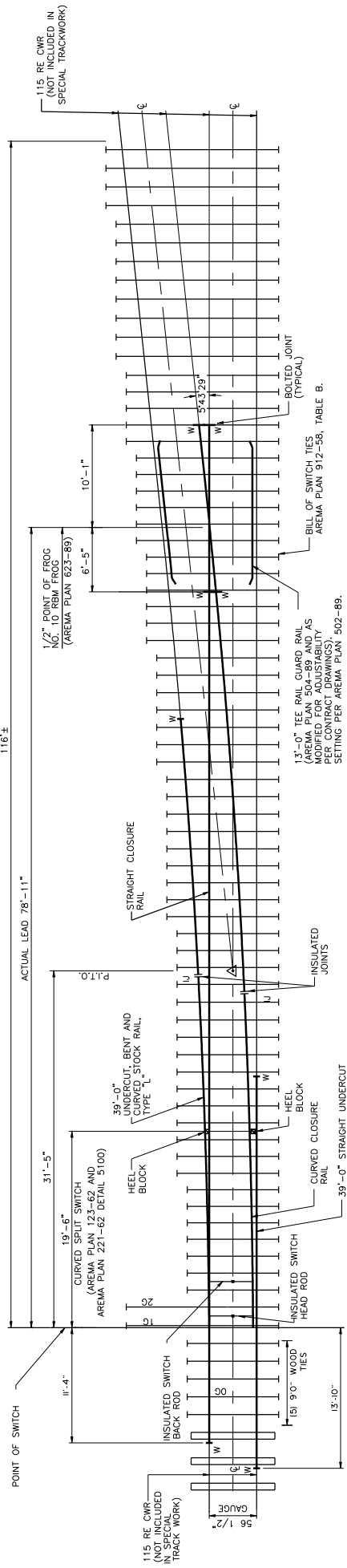


SPECIAL TRACKWORK PROCUREMENT
 No. 6 & No. 10 TURNOUT - PAVED TRACK

Drawn By	NTS
Checked By	
Submitted Date	
Drawing No.	TRK-106

Recommended for Approval	DATE
Civil Standards	DATE
Capital Development Deputy Chief	DATE

REV	DATE	Description



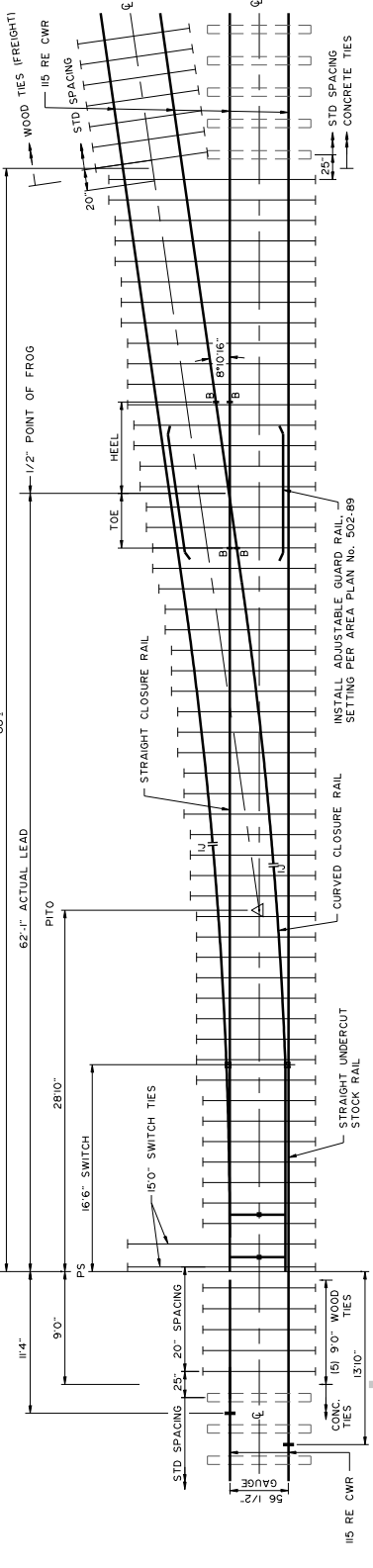
NO. 10 TURNOUT

NOTES

1. ALL RAIL JOINTS WITHIN TURNOUT UNITS TO BE WELDED EXCEPT WHERE SHOWN OTHERWISE.
2. RIGHT HAND TURNOUT SHALL BE OPPOSITE TO THOSE SHOWN HEREON.
3. TIE SPACING TO BE IN ACCORDANCE WITH SHOP DRAWINGS.
4. EXACT LOCATION OF INSULATED, WELDED, AND BOLTED JOINTS MAY VARY. REFER TO SHOP DRAWINGS FOR EXACT LOCATIONS.

SCHEDULE OF TIES (7' x 9')

PROG NO.	FROM	TO	PS	STAND	TIES	QUANTITY	16'-6"	15'-0"	14'-0"	13'-6"	13'-0"	12'-6"	12'-0"	11'-6"	11'-0"	10'-6"	10'-0"	9'-6"	9'-0"	8'-6"	8'-0"	7'-6"	7'-0"	
1	0	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
2	1	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	2	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	4	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6	5	6	6	6	6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
7	6	7	7	7	7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
8	7	8	8	8	8	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
9	8	9	9	9	9	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
10	9	10	10	10	10	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

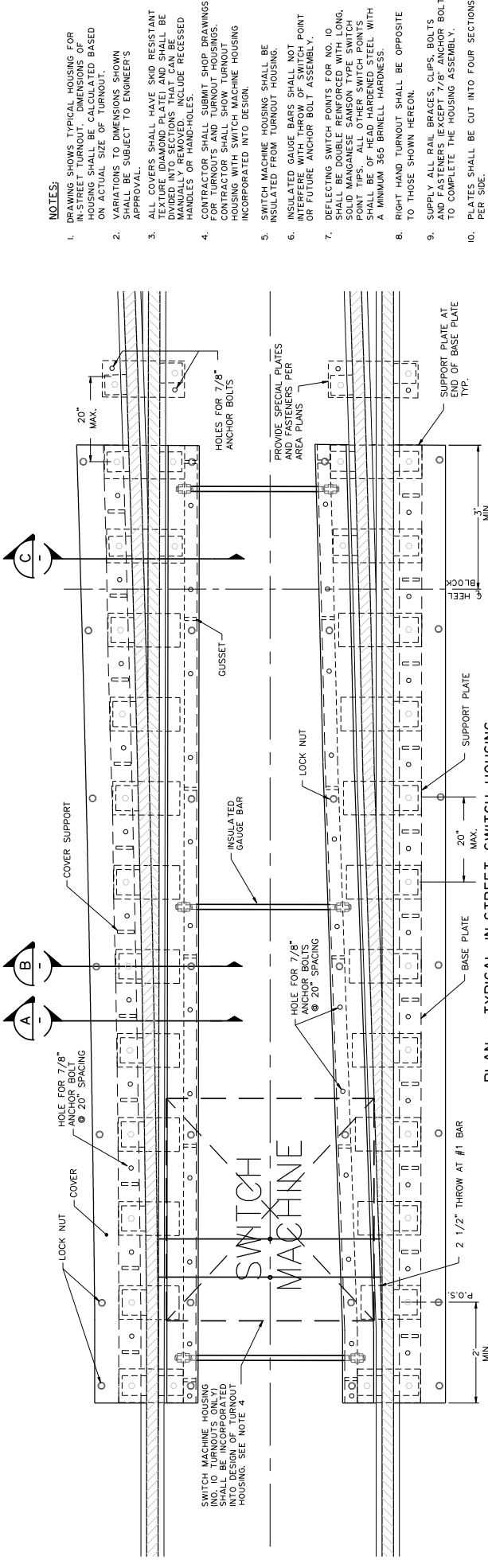


NO. 7 TURNOUT (STRAIGHT PT.)

ABBREVIATIONS

- B · BOLTED JOINT
- U · INSULATED JOINT
- · FIELD WELD

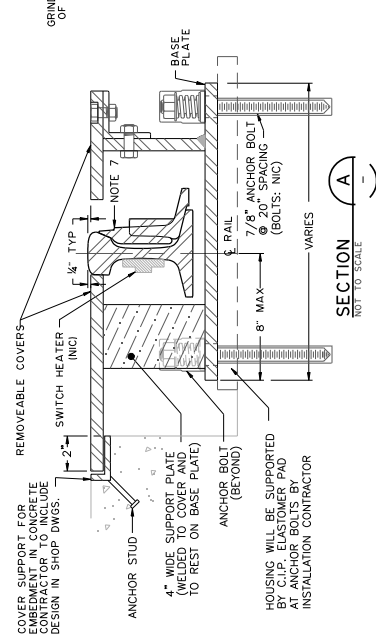
REVISIONS NO. DATE DESCRIPTION	UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	AS SHOWN CADD Sheets Submitting Date Drawing No. TRK-107
RECOMMENDED FOR APPROVAL CIVIL STANDARDS CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE DATE	No. 7 & No. 10 TURNOUT - BALLASTED TRACK LIGHT RAIL REFERENCE DRAWINGS
DESIGNED BY DRAWN BY CHECKED BY APPROVED BY		



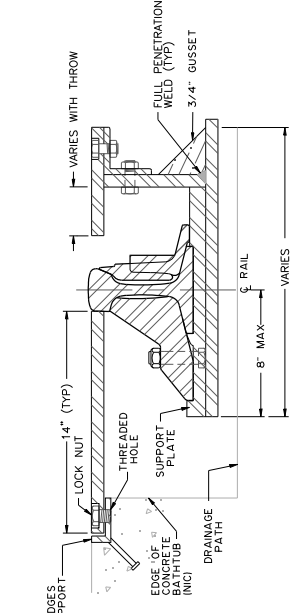
PLAN - TYPICAL IN-STREET SWITCH HOUSING
NOT TO SCALE

NOTES:

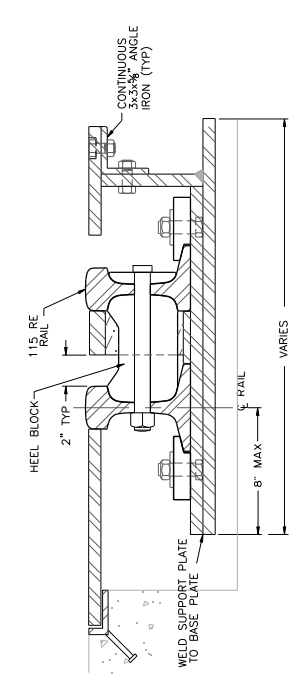
1. DRAWING SHOWS TYPICAL HOUSING FOR 115 RE RAIL. OTHER RAIL HOUSING SHALL BE CALCULATED BASED ON ACTUAL SIZE OF TURNOUT.
2. VARIATIONS TO DIMENSIONS SHOWN SHALL BE SUBJECT TO ENGINEER'S APPROVAL.
3. ALL COVERS SHALL HAVE SKID RESISTANT TEXTURE (DIAMOND PLATE) AND SHALL BE DIVIDED INTO SECTIONS THAT CAN BE ASSEMBLED BY HAND. INCLUDE NECESSARY HANDLES OR HAND-HOLES.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR TURNOUTS AND TURNOUT HOUSINGS. CONTRACTOR SHALL SHOW TURNOUT HOUSING WITH SWITCH MACHINE HOUSING INCORPORATED INTO DESIGN.
5. SWITCH MACHINE HOUSING SHALL BE INSULATED FROM TURNOUT HOUSING.
6. INSULATED GAUGE BARS SHALL NOT INTERFERE WITH THROW OF SWITCH POINT OR FUTURE ANCHOR BOLT ASSEMBLY.
7. DEFLECTING SWITCH POINTS FOR NO. 10 SHALL BE DOUBLE REINFORCED WITH LONG, SOLID MANGANESE SANSON TYPE SWITCH POINTS. ALL STEEL SHALL BE OF HEAD HARDENED STEEL WITH A MINIMUM 365 BRINELL HARDNESS.
8. RIGHT HAND TURNOUT SHALL BE OPPOSITE TO THOSE SHOWN HEREON.
9. SUPPLY ALL RAIL BRACES, CLIPS, BOLTS AND FASTENERS (EXCEPT 7/8" ANCHOR BOLTS) TO COMPLETE THE HOUSING ASSEMBLY.
10. PLATES SHALL BE CUT INTO FOUR SECTIONS PER SIDE.




SECTION A
NOT TO SCALE



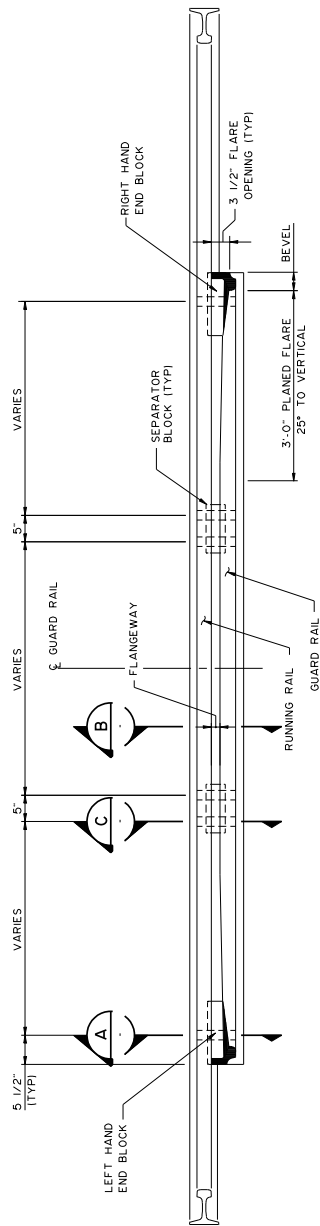
SECTION B
NOT TO SCALE



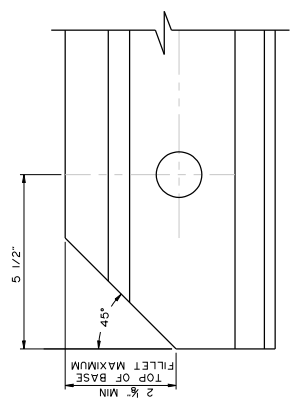
SECTION C
NOT TO SCALE

RECOMMENDED FOR APPROVAL _____ DATE _____ CIVIL STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF	 UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	SPECIAL TRACKWORK PROCUREMENT TURNOUT AND SWITCH MACHINE HOUSING DETAILS - PAVED TRACK	SHEET: NTS CAD: _____ SUBMIT DATE: _____ DRAWING NO.: TRK-108
		LIGHT RAIL REFERENCE DRAWINGS		
		DRAWING DATE: _____		
		SCALE: _____		

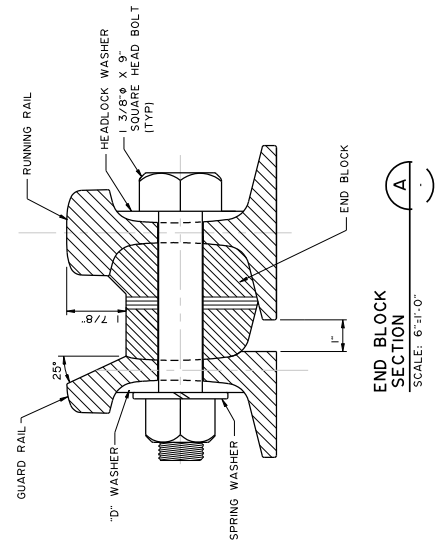
NO.	DATE	DESCRIPTION



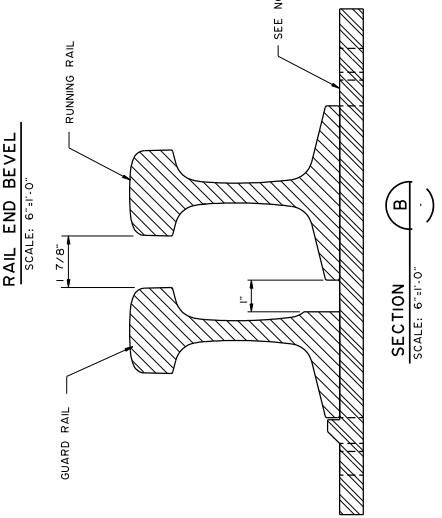
SCHMATIC GUARD RAIL
SCALE: 1"=1'-0"



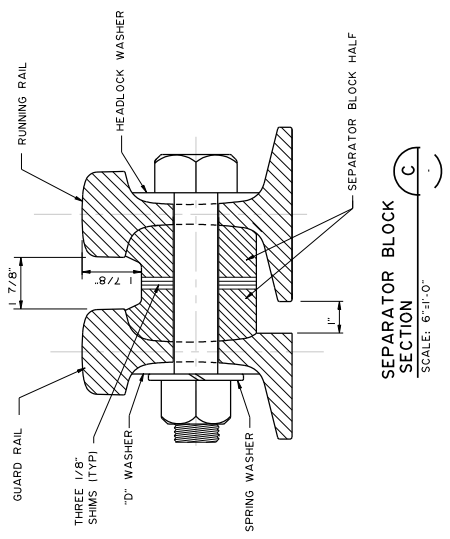
RAIL END BEVEL
SCALE: 6"=1'-0"



END BLOCK SECTION
SCALE: 6"=1'-0"



SECTION B
SCALE: 6"=1'-0"



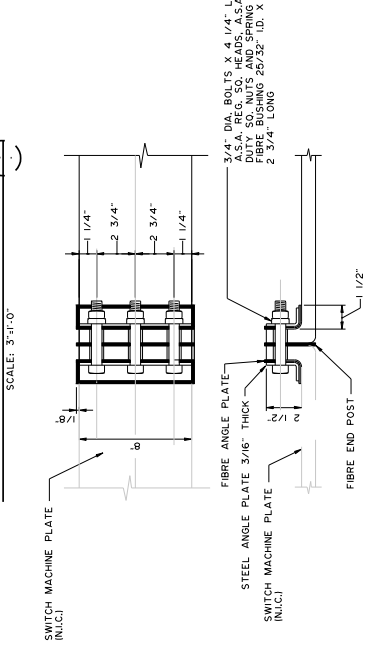
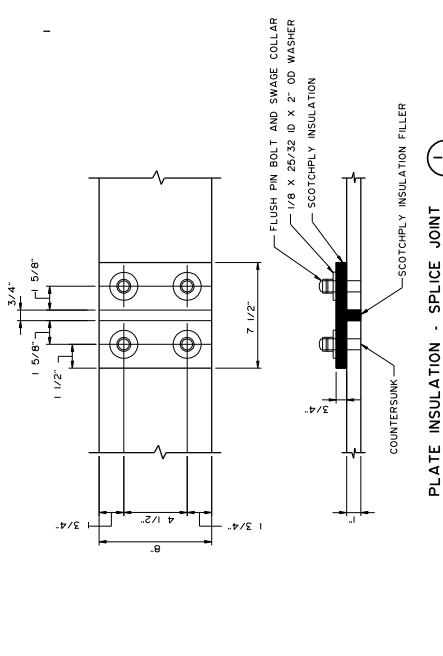
SEPARATOR BLOCK SECTION C
SCALE: 6"=1'-0"

BILL OF MATERIAL	
QUANTITY	DESCRIPTION
1	TEE GUARD RAIL, PREMIUM RAIL
1 EA	END BLOCKS, LEFT AND RIGHT HAND WITH SHIMS
AS REQ'D	ADJUSTABLE SEPARATOR BLOCK WITH SHIMS
AS REQ'D	BOLTS 1 3/8" DIA X 9" GRADE 8 WITH SQUARE HEAD, SQUARE NUTS, SPRING WASHERS, HEADLOCKS, AND "D" WASHERS
AS REQ'D	GUARD RAIL PLATES COMPLETE WITH ADJUSTABLE SPRING CLIP SHOULDERS

NOTES:

1. ENDS OF GUARD RAIL AND END OF BLOCKS SHALL BE BEVELLED AT A 45° ANGLE PER AREA PLAN 504-89.
2. END AND SEPARATOR BLOCKS MAY BE OF STEEL, CAST IRON OR DUCTILE IRON.
3. SEE TURNOUT DRAWINGS FOR LENGTHS OF GUARD RAIL PLATES. NUMBER OF SEPARATOR BLOCKS IS A FUNCTION OF LENGTH.
4. GUARD RAIL PLATE SHALL BE IN ACCORDANCE WITH AREMA PLAN 504-89.

RECOMMENDED FOR APPROVAL CIVIL STANDARDS CAPITAL DEVELOPMENT DEPUTY CHIEF	DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	SPECIAL TRACKWORK PROCUREMENT ADJUSTABLE GUARD RAIL & RESTRAINING RAIL DETAILS LIGHT RAIL REFERENCE DRAWINGS	SHEET: NTS CADD NUMBER: _____ SUBMITTAL DATE: _____ DRAWING NO.: TRK-109
	UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS		
	DATE: _____ DATE: _____		
	DATE: _____ DATE: _____		
	DATE: _____ DATE: _____		

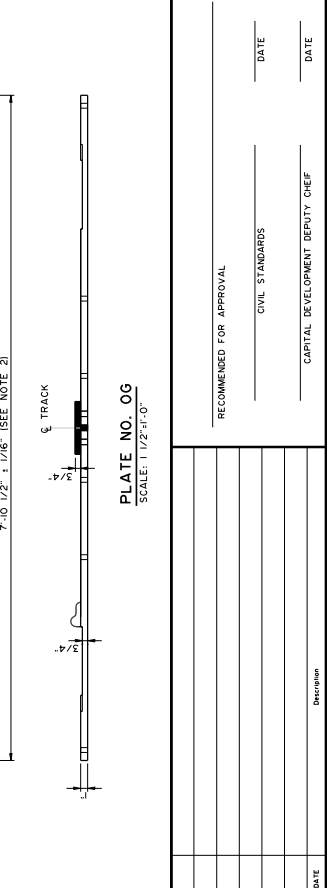
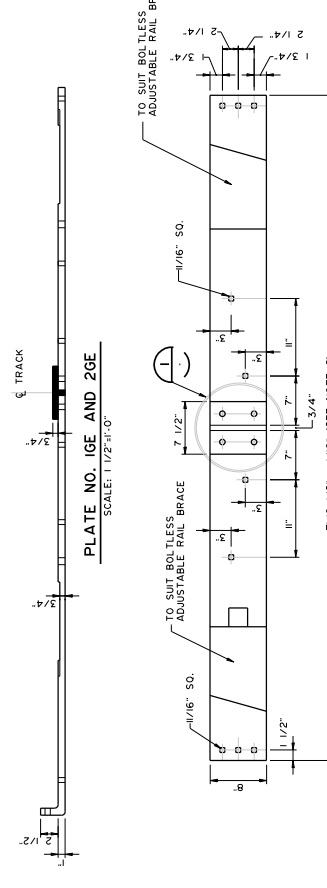
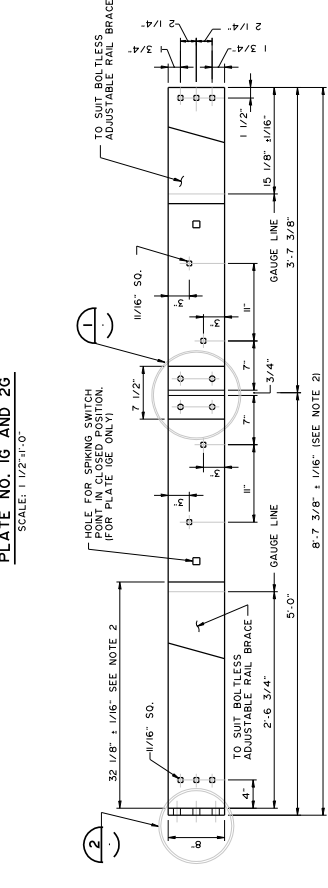
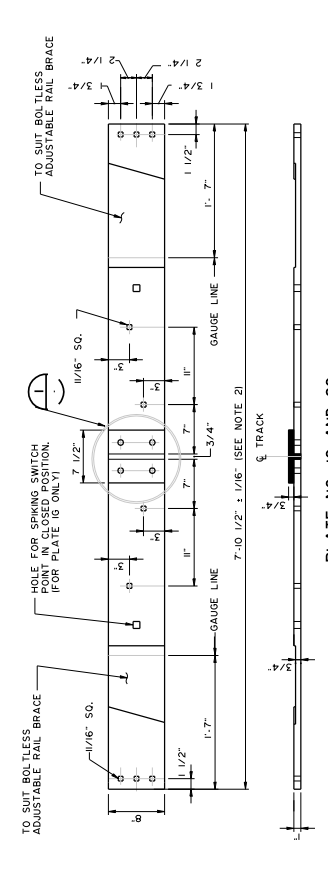


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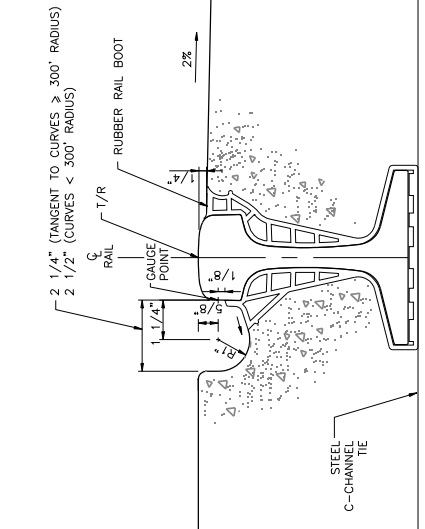
- RIGHT HAND INSULATED GAUGE PLATE NO. 1G, 2G, 1GE AND 2GE SHOWN, LEFT HAND PLATE IS OPPOSITE.
- GAUGE PLATES NO. 1GE AND NO. 2GE ARE TO BE PROVIDED IN LIEU OF GAUGE PLATES NO. 1G AND NO. 2G FOR THE FOLLOWING TURNOUTS:

TURNOUT	QUANTITY
NO. 10 RH	3
NO. 10 LH	2
NO. 20 RH	2
NO. 20 LH	1

3. GAUGE PLATES NO. 1GE AND NO. 2GE ARE DESIGNED TO ACCOMMODATE SWITCH MACHINE CONNECTION ON TURNOUT. SIDE AND DIMENSIONS OF SWITCH MACHINE CONNECTION ARE SHOWN IN THE SWAGE COLLAR HARDWARE. FOR CONNECTING TO THE SWITCH MACHINE PLATE AS SHOWN.

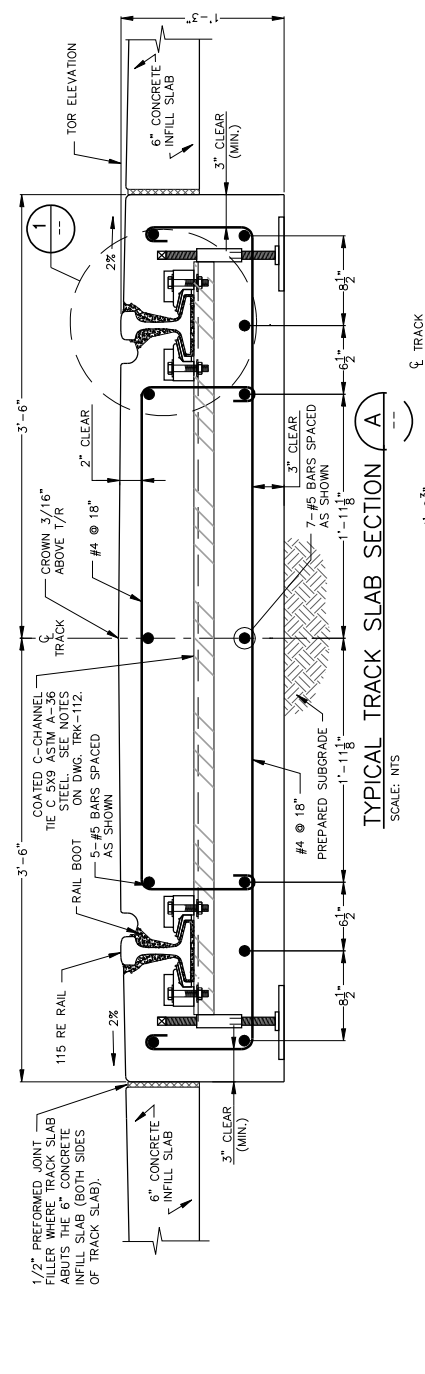


DATE	DESCRIPTION	RECOMMENDED FOR APPROVAL CIVIL STANDARDS DATE	CAPITAL DEVELOPMENT DEPUTY CHIEF DATE
REV			
UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS			
SPECIAL TRACKWORK PROCUREMENT INSULATED GAUGE PLATES - MAINLINE TRACK LIGHT RAIL STANDARD DRAWINGS		Drawn By	Checked By
		Approved By	
DATE	DESCRIPTION		
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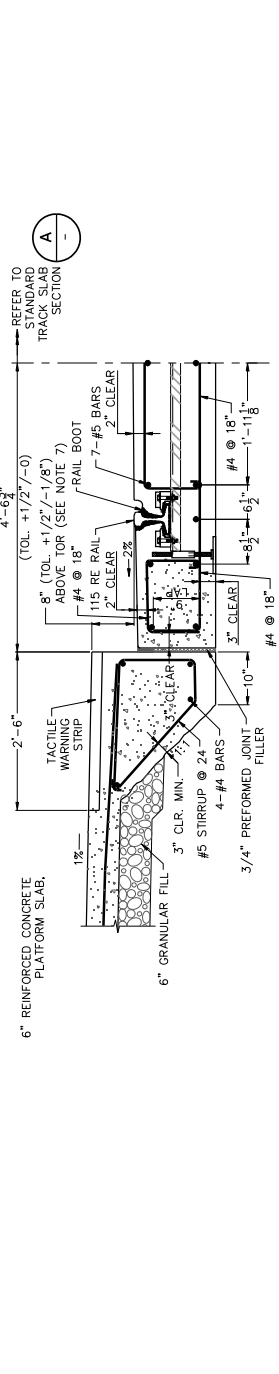


RAIL BOOT/FLANGEWAY 1
SCALE: NTS

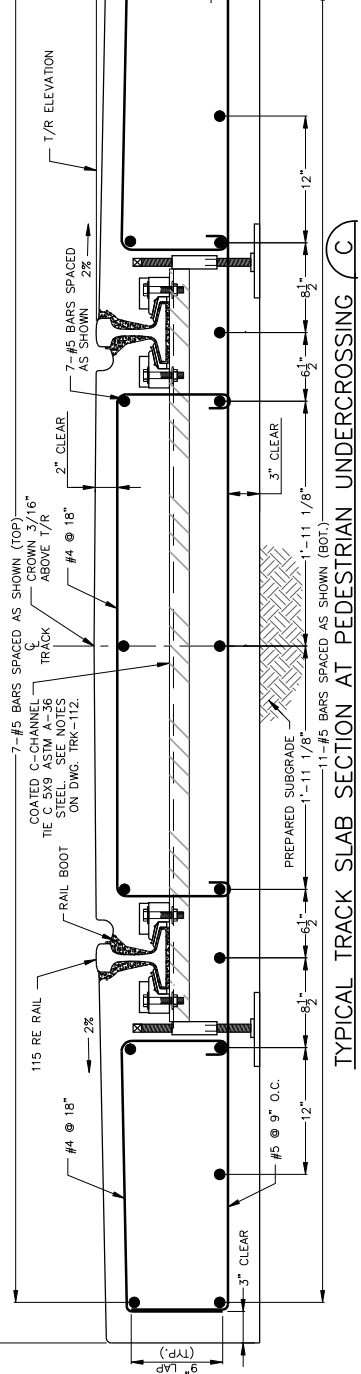
- NOTES:**
1. THE SHAPE OF THE TRACK SLAB SHALL BE MAINTAINED AS SHOWN, BUT ROTATED AS A UNIT IN AREAS OF SUPERELEVATION.
 2. ROUND ALL CORNERS ALONG THE TOP SURFACE OF SLAB TO 1/2" RADIUS.
 3. ALL REINFORCING STEEL IN TRACK SLAB SHALL BE EPOXY COATED.
 4. THE TRACK SLAB IS DESIGNED AS A RIGID PAVEMENT USING SUBGRADE MODULUS OF 150 PCL. SHOULD THE CONTRACTOR ENCOUNTER UNSUITABLE OR SOFT MATERIAL DURING TRACK SLAB EXCAVATION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE THAT PORTION OF THE EXCAVATION INSPECTED BY THE ENGINEER AND HAVE THE GEOTECHNICAL ENGINEER DEVELOP A METHOD OR PROCEDURE TO IMPROVE THE SUBGRADE OF NATIVE SOILS SUFFICIENT TO RAISE THE SUBGRADE MODULUS TO A MINIMUM 150 PCL.
 5. PLACE 1/2" PREFORMED JOINT FILLER BETWEEN CONCRETE TRACK SLAB AND ADJUTING 6" CONCRETE INFILL SLAB, TYPICAL.
 6. TOP OF PLATFORM AND TOP OF TACTILE STRIP SHALL BE PLACED 8" ABOVE TOP OF RAIL (TOR) EXCEPT WHERE CALLED OUT ON PLANS.



TYPICAL TRACK SLAB SECTION A
SCALE: NTS



TRACK SLAB SECTION AT STATION PLATFORM B
SCALE: NTS



TYPICAL TRACK SLAB SECTION AT PEDESTRIAN UNDERCROSSING C
SCALE: NTS

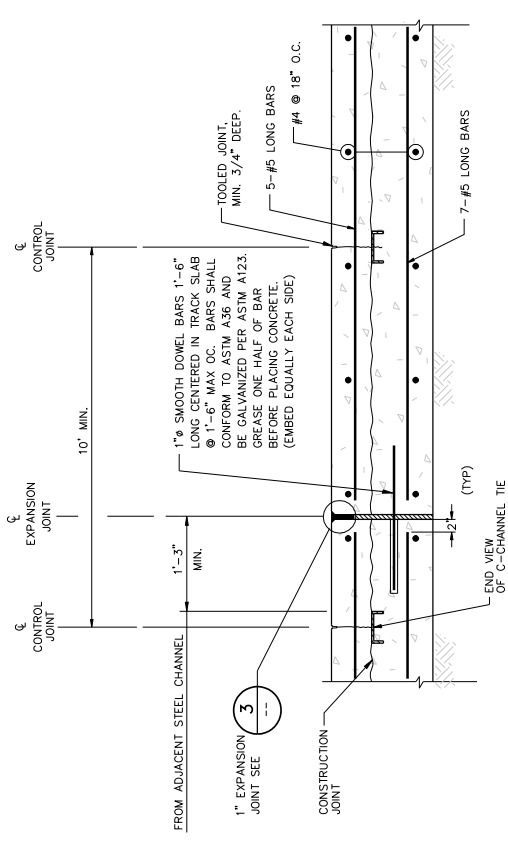
Drawn By:	AS-SHOWN
Checked By:	CAD Operator
Approved By:	Submitting Date
Revision:	Drawing No. TRK-111

TRACKWORK
CONCRETE TRACK SLAB
DETAILS

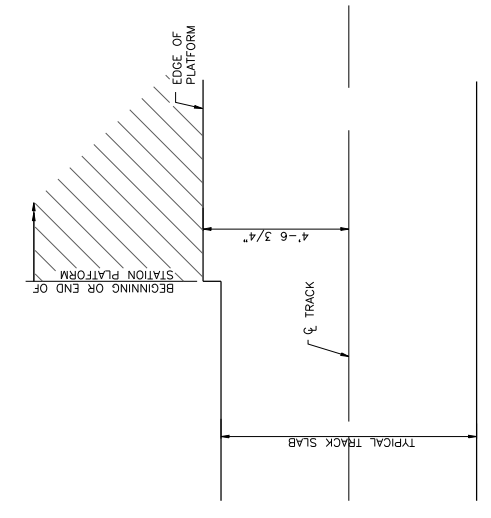
UTAH
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

RECOMMENDED FOR APPROVAL	DATE
CIVIL STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

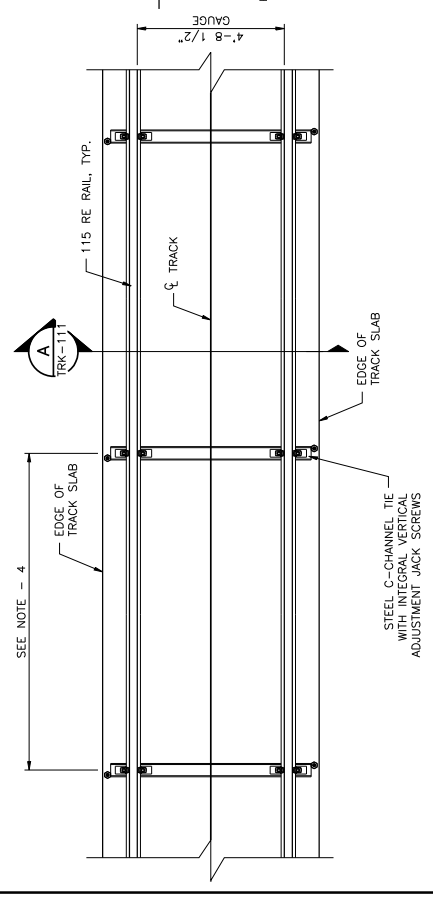
REV	DATE	Description



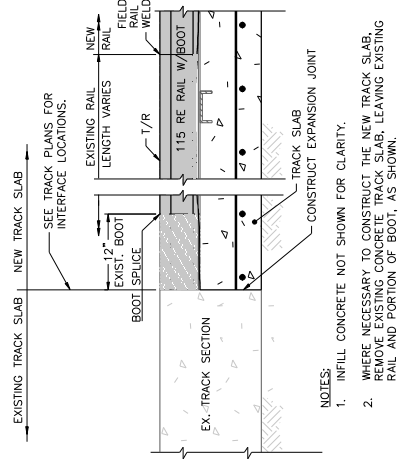
TRACK SLAB EXPANSION JOINT DETAIL (1)
SCALE: NTS



EXTENDED WIDTH TRACK SLAB AT PLATFORMS (5)
SCALE: NTS



TRACK SLAB FASTENING SYSTEM -- PLAN (2)
SCALE: 1"=2'



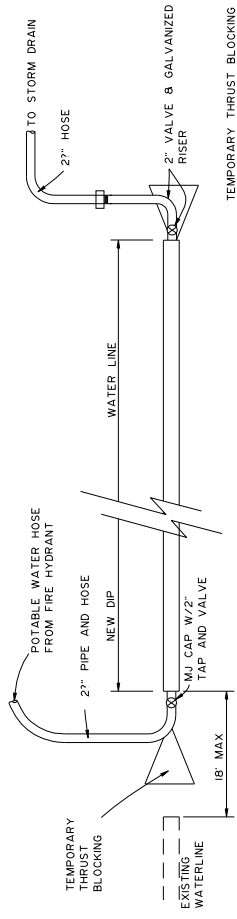
- NOTES:
1. INFILL CONCRETE NOT SHOWN FOR CLARITY.
 2. WHERE NECESSARY TO CONSTRUCT THE NEW TRACK SLAB, CONTRACTOR SHALL REMOVE TRACK SLAB, LEAVING EXISTING RAIL AND PORTION OF BOOT, AS SHOWN.

TREATMENT AT INTERFACE (4)
SCALE: NTS

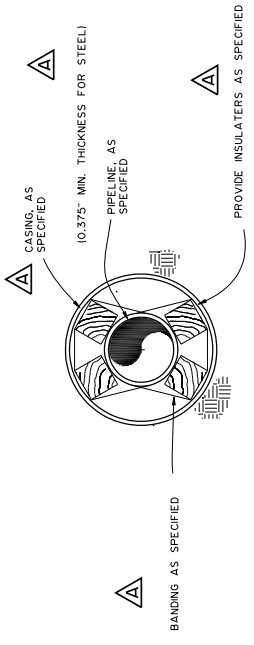
NOTES:

1. EXPANSION JOINT SPACING 100' MAXIMUM
2. CONTROL JOINTS TO BE SPACED EVENLY BETWEEN EXPANSION JOINTS AND SHALL BE NO FURTHER APART THAN 10 FEET. CONTROL JOINT SHALL BE LOCATED OVER C-CHANNEL CROSS-TIES.
3. FOR TRACK SLAB SECTION, SEE DWG. TRK-111.
4. C-CHANNEL TIES ARE TO BE SPACED AT 10'-0" O.C. IN TANGENT AND CURVES > 500 FT. RADIUS OR AS REQUIRED FOR PROPER SETTING OF LINE, GAUGE AND GRADE. PRIOR TO AND DURING PLACEMENT OF CONCRETE.
5. STEEL TIE SHALL BE FABRICATED FROM C 5x9# WITH 5/16" THICK WEB AND WITH TWO 3/8" HOLES FOR TRAPPED AIR TO ESCAPE. TIES SHALL BE COATED WITH POLYLEX ELASTOMERIC COATING, OR OTHER APPROVED ANTI-CORROSION COATING.
6. CONTRACTOR MAY SUBSTITUTE STEEL TIES WITH PLASTIC TIES. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO CONSTRUCTION.

	<p>TRACKWORK</p> <p>CONCRETE TRACK SLAB DETAILS</p>	SHEET AS-SHOWN CAD: <input type="text"/> DRAWING DATE: <input type="text"/> DRAWING NO.: TRK-112																																																																																														
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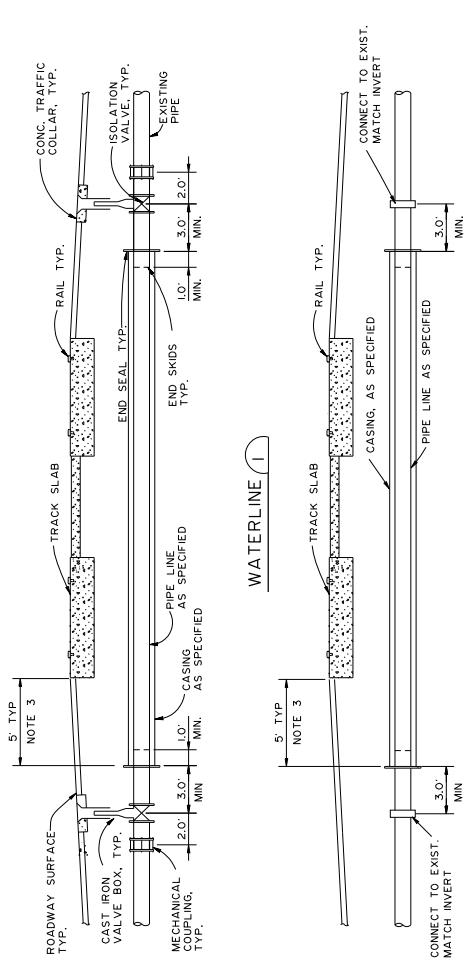
TEMPORARY WASHOUT VALVE DETAIL



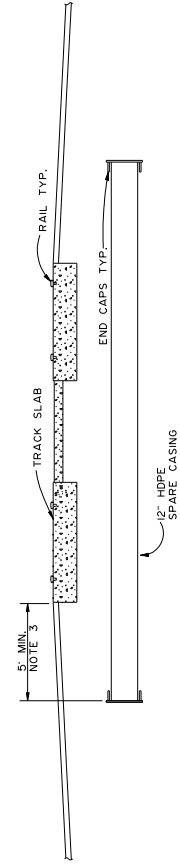
CASING UNDERCROSSING DETAIL 4

NOTES:

1. PACK ANNULAR SPACE WITH PEA GRAVEL USING TREMM LINE
2. SEAL EDGE OF CASING WITH MORTAR, BRICK OR OTHER NON-DETERIORATING MATERIAL TO HOLD PEA GRAVEL IN PLACE. ALLOW FOR A WEEP HOLE AT THE CASING INVERT (BOTH ENDS)
3. CASING TO EXTEND 5' MIN. FROM EDGE OF THICKENED TRACK SLAB UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.
4. STEEL CASING TO BE A MINIMUM OF 6\"/>

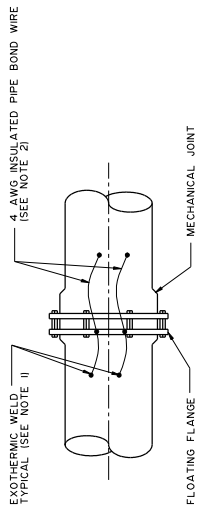


SEWER OR STORM DRAIN 2

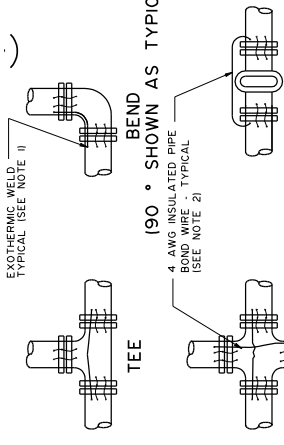


EMPTY CASING 3 CASING DETAILS

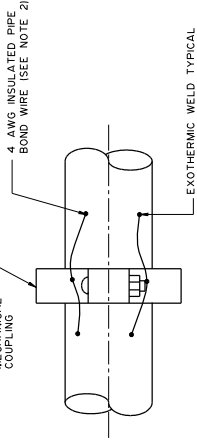
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<p>RECOMMENDED FOR APPROVAL</p> <p>CIVIL STANDARDS</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>DATE</p> <p>DATE</p> <p>DATE</p>																											
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REV	DATE	DESCRIPTION																										



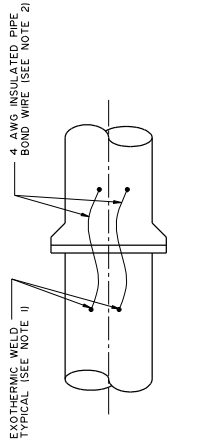
JOINT BOND FOR FLANGED PIPE (1)



JOINT BOND FOR GROOVED END PIPE (2)



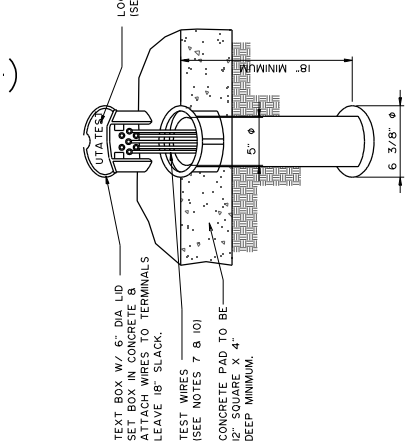
JOINT BOND FOR SPIGOT & SOCKET PIPE (3)



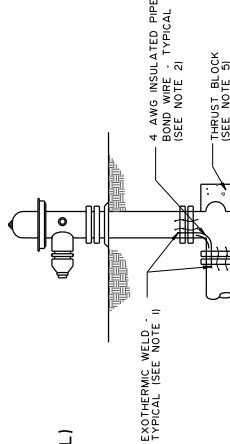
NOTES:

1. EXOTHERMIC WELDS SHALL BE CLEANED AND COATED.
2. JOINT BONDS ARE REQUIRED FOR NEW BURIED METALLIC PIPING.
3. PROVIDE TEST WIRES.
4. SINGLE JOINT PIPE BOND WIRES ARE TO BE 1'-6" LONG. LENGTH OF BOND WIRES FOR FITTINGS ARE TO BE AS REQUIRED. BOND WIRE IS TO BE INSULATED. STRANDED 4 AWG COPPER BOND WIRE IS TO BE COATED WITH COAL TAR MASTIC. TWO BOND WIRES ARE REQUIRED FOR EACH PIPE JOINT AS SHOWN.
5. PIPE COATING SHALL BE CHECKED AND ANY FAULTS LOCATED WILL BE REPAIRED PRIOR TO INSTALLING CONCRETE KICKERS OR THRUST BLOCKS. REBARS SHALL NOT TOUCH THE PIPE.
6. THESE DETAILS APPLY TO ALL NEW DUCTILE IRON PRESSURE PIPE LINES.
7. WIRES TO BE LOOSE LAY AND BACKFILLED WITH STONE-FREE (NO STONES OVER 1/4" DIA.) TOPSOIL. LEAVE ENOUGH SLACK WIRE TO EXTEND 1'-6" OUTSIDE BOX.
8. PROVIDE HARDWOOD BLOCKING OR OTHER SUPPORT TO PREVENT SETTLEMENT AND/OR DAMAGE TO WIRE INSULATION.
9. THE WORDS "UTA TEST" SHALL BE PERMANENTLY CAST OR EMBOSSED ON EVERY TEST STATION LID OR COVER.
10. IDENTIFY CABLES IN EACH BOX USING NON-METALLIC TAGS OR PRESSURE SENSITIVE LABELS.

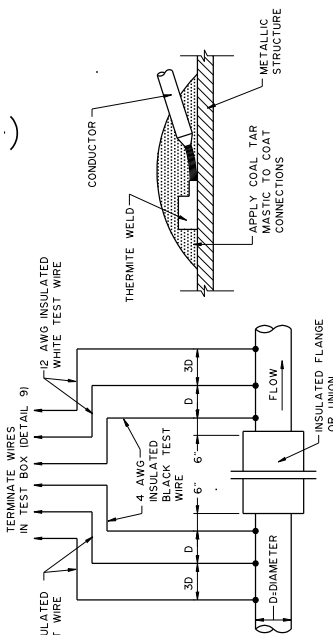
CROSS VALVE JOINT BONDS FOR FITTINGS (4)



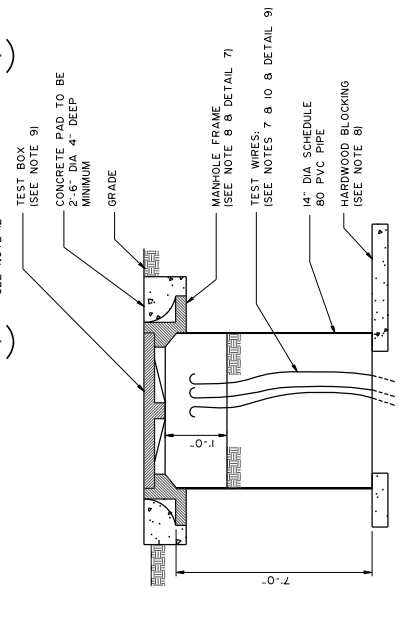
HYDRANT BONDING (5)



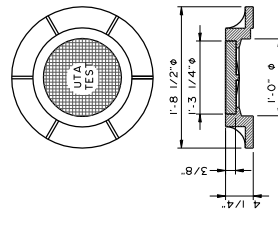
TEST WIRES FOR BURIED DIELECTRIC INSULATORS (9)



WIRE CONNECTION DETAIL (10)



AT-GRADE BOX (6)



MANHOLE FRAME DETAIL (7)

ROADWAY TEST BOX (8)

WIRE CONNECTION DETAIL (10)

REV	DATE	Description
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RECOMMENDED FOR APPROVAL

CIVIL STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By: _____

Drawn By: _____

Checked By: _____

Approved By: _____

RAILROAD CORRIDOR

UTILITY BONDING DETAILS - 1

LIGHT RAIL REFERENCE DRAWINGS

Sheet: AS NOTED

CADD: _____

Submitting Date: _____

Drawing No.: UTIL-101

STANDARD COMMUNICATION SYMBOLS

- PULL BOX / HANDHOLE / MANHOLE
- UNDERGROUND CONDUIT / DUCTBANK
- PULL BOX / HANDHOLE / MANHOLE WITH UNDERGROUND RACEWAYS OR CONDUITS

ABBREVIATIONS

AC	ALTERNATE CURRENT	SD	STORM DRAIN
C	CONDUIT	SP	SPARE
CCTV	CLOSE CIRCUIT TELEVISION	SS	SANITARY SEWER
CL	CENTER LINE	STA	STATION
COMM	COMMUNICATION	SUBSTA	SUBSTATION
DC	DIRECT CURRENT	TP	TRACTION POWER
DIA & Ø	DIAMETER	TRK	TRACK
DWG	DRAWING	TS	TRAFFIC SIGNAL
E	ELECTRICAL	T/R	TOP OF RAIL
EB	EASTBOUND	TV	TELEVISION CABLE
EI	EMERGENCY TELEPHONE	TVM	TICKET VENDING MACHINE
EXIST & (E)	EXISTING	TWC	TRAIN TO WAYSIDE COMMUNICATION
		TYP	TYPICAL
		UG	UNDERGROUND
FDN	FOUNDATION	WB	WESTBOUND
FDR	FEEDER	W/E	WEST-EAST LINE
FIN	FINISH		
FUR	FURNISH		
FUT	FUTURE		
G	GAS		
HH	HANDHOLE		
HZ	HERTZ		
KV	KILO VOLT		
KW	KILOWATT		
LRT	LIGHT RAIL TRANSIT		
LTG	LIGHTING		
MIN	MINIMUM		
MH	MANHOLE		
NIC	NOT IN CONTRACT		
NMC	NONMETALLIC CONDUIT		
NTS	NOT TO SCALE		
(N)	NEW		
N/S	NORTH-SOUTH LINE		
OCS	OVERHEAD CONTACT SYSTEM		
OH	OVERHEAD		
OPP	OPPOSITE		
P	POLE		
PA	PUBLIC ADDRESS		
PB	PULL BOX		
PIS	PASSENGER INFORMATION SERVICE		
PS	POINT OF SWITCH		
PT & T/T	PUBLIC TELEPHONE		
PVC	POLYVINYL CHLORIDE		

GENERAL NOTES:

1. THE CONTRACTOR SHALL STAKE AND FIELD VERIFY ALL LOCATIONS FOR FOUNDATIONS AND RACEWAYS FOR THE COMMUNICATION SYSTEM. ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. IF MINOR ADJUSTMENTS TO THE LOCATIONS OF RACEWAYS ARE REQUIRED, RELOCATION SHALL BE AS DIRECTED BY THE ENGINEER.
3. SEE CIVIL DRAWINGS FOR OTHER SYMBOLS AND ABBREVIATIONS NOT SHOWN IN THIS DRAWING.
4. STATIONING AND OFFSET FOR POLES AND UNDERGROUND RACEWAYS ARE BASED ON THE TRACK PLAN AND PROFILE DRAWING, UNLESS NOTED OTHERWISE.
5. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF UNDERGROUND UTILITIES AND RELOCATION FOR PULLBOXES, MANHOLES AND DUCTBANKS RACEWAYS.
6. ALL STRUCTURE INDICATED LOCATIONS ARE GIVEN IN REFERENCE TO EB TRACK UNLESS OTHERWISE NOTED.
7. POTHOLE TO LOCATE UTILITIES.
8. LABELING AS SHOWN IN DETAILS SHALL BE TYPICAL FOR ALL UTA MANHOLES AND PULLBOXES.
9. REFER TO SIGNALING SYSTEM DRAWINGS FOR SIGNAL CONDUIT PLAN.
10. REFER TO TRACTION POWER SYSTEM DRAWINGS FOR UNDERGROUND RACEWAY AND CABLE PLANS.

REV	DATE	Description

RECOMMENDED FOR APPROVAL

SYSTEMS STANDARDS

CAPITAL DEVELOPMENT DEPUTY CHIEF

DATE

DATE



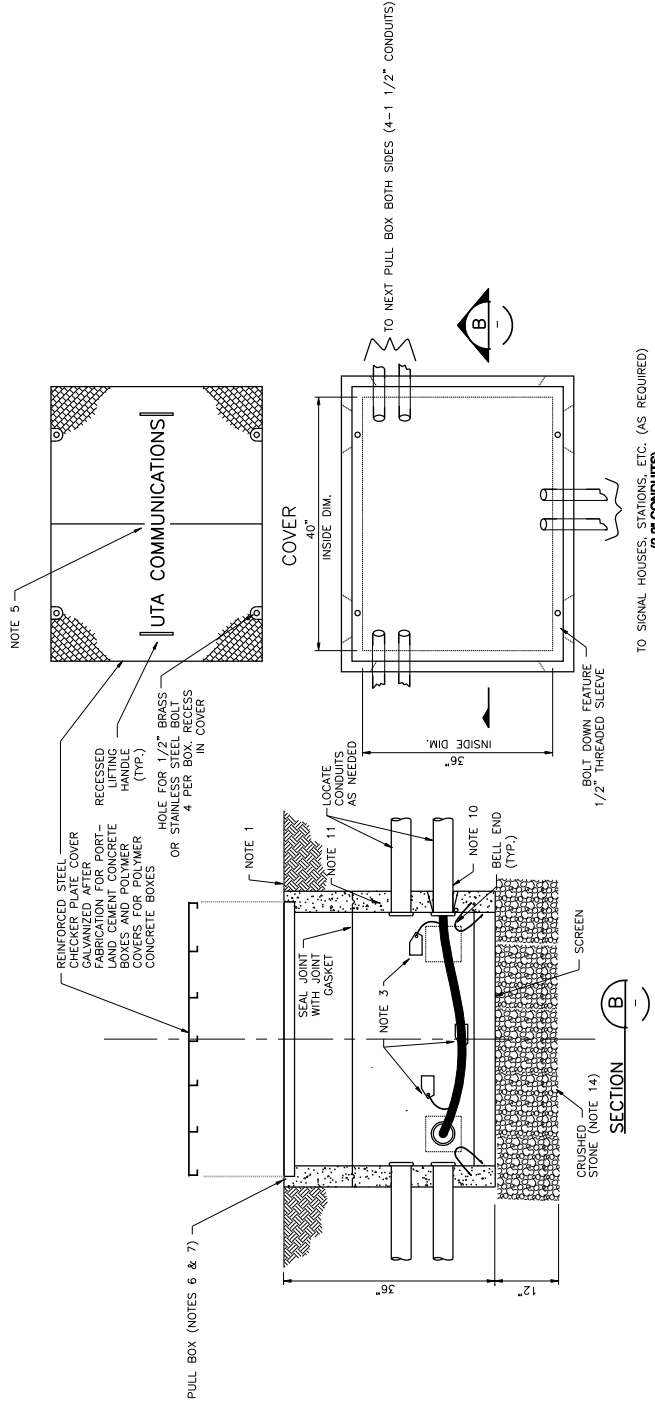
Designed By: _____
Drawn By: _____
Checked By: _____
Approved By: _____

COMMUNICATION SYSTEM
STANDARD DRAWING

SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

LIGHT RAIL REFERENCE DRAWINGS

Scale:	NTS
CADD Template:	
Submitting Date:	
Drawing No.:	COS-100



ELEVATION VIEW

PLAN VIEW

NOTES:

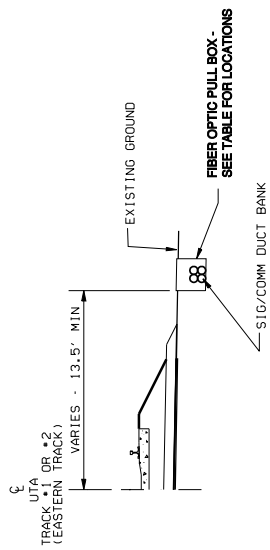
1. TOP OF PULL BOXES SHALL BE FLUSH WITH SURROUNDING GRADE OR TOP OF ADJACENT CURB, EXCEPT THAT IN UNPAVED AREAS WHERE PULL BOX IS NOT IMMEDIATELY ADJACENT TO AND PROTECTED BY A CONCRETE FOUNDATION, POLE OR OTHER PROTECTIVE CONSTRUCTION, THE BOX SHALL BE PLACED WITH ITS TOP 0.10 FOOT ABOVE SURROUNDING GRADE. IF PRACTICABLE, PULL BOXES SHOWN IN THE VICINITY OF CURBS SHALL BE PLACED ADJACENT TO THE BACK OF CURB.
2. WHEN PULL BOX IS INSTALLED IN SIDEWALK AREA, THE DEPTH OF THE PULL BOX SHALL BE ADJUSTED SO THAT THE TOP OF THE BOX IS FLUSH WITH THE TOP OF SIDEWALK.
3. ALL CABLES SHALL BE LABELED AS SPECIFIED IN THE CONTRACT SPECIFICATION.
4. ALL CONDUIT SHALL BE PLUGGED AND SEALED AFTER INSTALLATION TO KEEP OUT MOISTURE AND DEBRIS UNTIL CABLE IS INSTALLED.
5. ALL PULL BOXES THAT ARE BEING INSTALLED FOR THE UTA SHALL READ "UTAH COMMUNICATIONS", AND APPROVED BY THE ENGINEER.
6. CONTRACTOR SHALL PROVIDE POLYMER CONCRETE BOXES AT LOCATIONS NOT SUBJECT TO REGULAR HIGHWAY LOADS, OR RAILROAD LOADS (1:1 FROM THE END OF THE TIE).
7. PULL BOXES THAT ARE SUBJECT TO SEVERE LOADS, SUCH AS HIGHWAY AND RAILROAD LOADS, THE CONTRACTOR SHALL USE A STANDARD CONCRETE BOX, OR OPTIONALLY ENCASE POLYMER BOX IN CONCRETE. THESE BOXES ARE DEFINED AS VEHICLE TRAFFIC RATED (VTR).
8. ALL DIMENSIONS SHOWN ARE THE MINIMUM REQUIRED.
9. KNOCK-OUT AREA AROUND CONDUIT SHALL BE GROUTED WITH NON-SHRINK GROUT.
10. CONDUITS SHALL SLOPE DOWN TOWARDS THE PULL BOX SO AS TO ALLOW THE CONDUITS TO DRAIN INTO THE PULL BOX.

11. PULL BOXES SUBJECT TO VEHICULAR TRAFFIC SHALL BE RATED BASED ON ASTM C857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRE CAST CONCRETE UTILITY STRUCTURES".
12. WHERE CONDUITS ARE TO REMAIN EMPTY CONTRACTOR SHALL MANDREL THE CONDUITS AND INSTALL A PULL STRING, IMMEDIATELY FOLLOWING THE CONTRACTOR SHALL INSTALL AND TIGHTEN DOWN THE PULL BOX COVERS. CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HRS PRIOR TO MANDRELING.
13. PULL BOXES SHALL BE INSTALLED SUCH THAT 40" DIMENSION BE PLACED PARALLEL TO TRACK CENTER LINE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
14. INSTALL PERMEABLE MATERIAL UNDER PULL BOXES CONSISTING OF CRUSHED STONE, FREE FROM ORGANIC MATERIAL, CLAY BALLS, OR OTHER DELETERIOUS MATERIAL, FOR EASY IDENTIFICATION.
15. EACH CONDUIT OF THE CONDUIT GROUP SHALL BE DYED WITH A DISTINCT COLOR FOR EASY IDENTIFICATION.
16. CONTRACTOR SHALL SUBMIT TO THE ENGINEER PROPOSED BOX, CONDUIT, MISC. MATERIALS, AND INSTALLATION INFORMATION FOR APPROVAL.
17. (2) 2" CONDUITS SHALL BE PROVIDED TO SIGNAL HOUSES, STATIONS, OPERATIONS CONTROL CENTER, INTERSECTION CONTROLLERS, AND TPSS SITES.

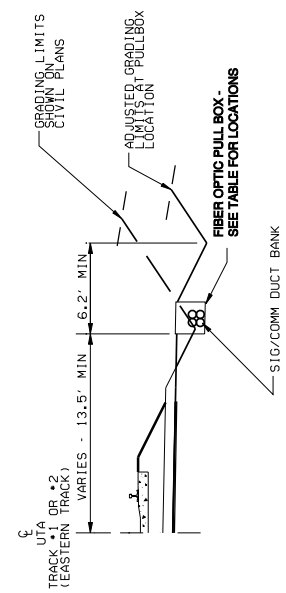
18. THE CONFIGURATION OF CONDUITS SHOWN IN THIS DRAWING (4-1 1/2" CONDUITS BETWEEN COMMUNICATION PULL BOXES AND 2-2" CONDUITS BETWEEN A COMMUNICATION PULL BOX AND A SIGNAL HOUSE, STATION, ETC.) IS TO SUPPORT THE BASIC (FIBER OPTIC) COMMUNICATION OBJECTIVE.

19. SELECTED SIGNAL CONDUITS MAY BE DOCUMENTED AND INSTALLED WITH THE COMMUNICATIONS DUCT BANK IF, DURING DESIGN, IT IS DETERMINED TO BE BENEFICIAL.

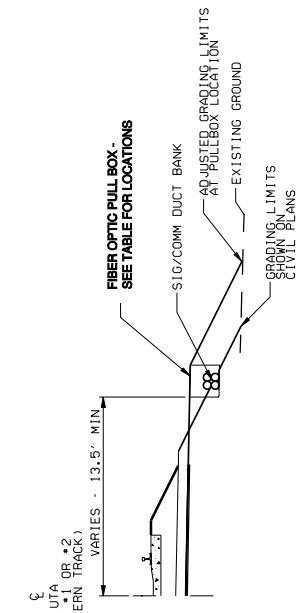
	RECOMMENDED FOR APPROVAL _____ SYSTEMS STANDARDS _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____	DATE _____ DATE _____
	DESIGNED BY _____ DRAWN BY _____ CHECKED BY _____ APPROVED BY _____	COMMUNICATIONS SYSTEM STANDARD DRAWING COMMUNICATIONS PULL BOX DETAIL
REVISIONS NO. DATE DESCRIPTION	COMMUNICATIONS SYSTEM STANDARD DRAWING COMMUNICATIONS PULL BOX DETAIL	LIGHT RAIL REFERENCE DRAWINGS



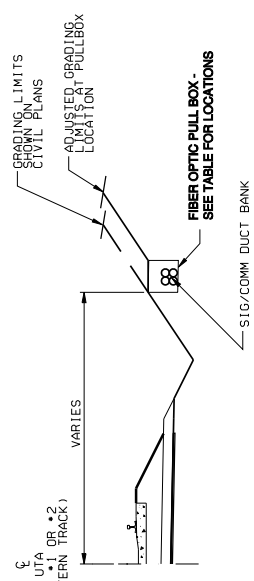
SECTION A
TYPICAL PULL BOX LOCATION
NON-DITCH AREA



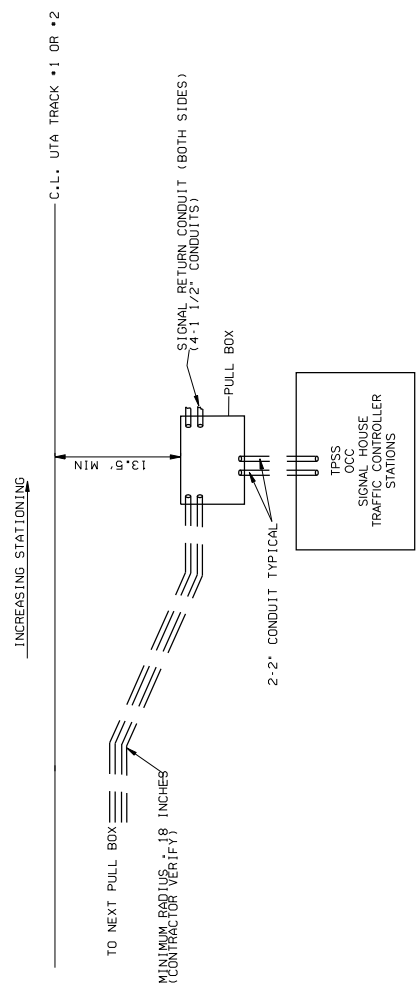
SECTION B
TYPICAL PULL BOX LOCATION
DITCH AREA - CUT SECTION



SECTION C
TYPICAL PULL BOX LOCATION
FILL SECTION



SECTION D
TYPICAL PULL BOX LOCATION
DITCH AREA - LARGE CUT SECTION




PLAN VIEW

<p>UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS</p>	<p>COMMUNICATION SYSTEM STANDARD DRAWING TYPICAL SECTIONS FOR PULLBOX LOCATIONS</p>	<p>Light Rail Reference Drawings</p>	<p>COMMUNICATION SYSTEM STANDARD DRAWING TYPICAL SECTIONS FOR PULLBOX LOCATIONS</p>
<p>RECOMMENDED FOR APPROVAL</p> <p>_____ SYSTEMS STANDARDS</p> <p>_____ CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>DATE</p> <p>DATE</p>	<p>DATE</p> <p>DATE</p>	<p>DATE</p> <p>DATE</p>
<p>DESIGNED BY: _____</p> <p>DRAWN BY: _____</p> <p>CHECKED BY: _____</p> <p>APPROVED BY: _____</p>	<p>DATE</p> <p>DATE</p>	<p>DATE</p> <p>DATE</p>	<p>DATE</p> <p>DATE</p>
<p>SCALE: NTS</p> <p>CADD: []</p> <p>DATE: []</p> <p>DRAWING NO.: COS-102</p>			

SYMBOLS

<p>OC5 INSTALLATION</p> <p>POLE AND FOUNDATION</p> <p>POLE WITH LIGHTING FIXTURES</p> <p>COMPOUND POLE</p> <p>COMPOUND POLE WITH LIGHTING FIXTURES</p> <p>CROSS OR HEAD SPAN SUPPORT</p> <p>POLE WITH SINGLE CANTILEVER ARM</p> <p>POLE WITH BACK TO BACK SINGLE CANTILEVER ARMS</p> <p>POLE WITH TWIN BACK TO BACK CANTILEVERS</p> <p>DOWN GUY AND FOUNDATION</p> <p>FEEDER POLE</p> <p>POLE WITH BALANCE WEIGHT ASSEMBLY</p> <p>POLE WITH FIXED TERMINATION ASSEMBLY</p> <p>POLE WITH MIDPOINT ANCHOR</p> <p>POLE WITH PULL OFF</p> <p>FEEDER WIRE</p> <p>TRACK CENTERLINE</p> <p>IN-RUNNING CATENARY</p> <p>OUT-OF-RUNNING ANCHORED CATENARY</p>	<p>SECTION INSULATOR (BRIDGING)</p> <p>SECTION INSULATOR (NONBRIDGING)</p> <p>TURNBUCKLE</p> <p>SINGLE CONTACT WIRE DEAD END</p> <p>SIMPLE CATENARY DEAD END</p> <p>CATENARY STAGGER IN INCHES (DIRECTION AND MAGNITUDE)</p> <p>ZERO STAGGER</p> <p>STRING LINE MAGNITUDE (X) IN INCHES AND CURVE DIRECTION</p> <p>WIRE RUN NUMBER (DIRECT SUSPENSION OR AUTOTENSION)</p> <p>FEEDER CABLE TAP ON OC5</p> <p>SPAN LENGTH (ft.)</p> <p>JUMPER, IN-SPAN</p> <p>JUMPER, CONTINUITY</p> <p>JUMPER, POTENTIAL EQUALIZING</p> <p>OUT-OF-RUNNING SECTION INSULATOR</p> <p>WIRE CROSSING</p> <p>CATENARY SUPPORT (BRIDGE, SHOT, OR TUNNEL)</p> <p>TUNNEL/OVERHEAD BRIDGE PULL OFF</p> <p>TUNNEL/OVERHEAD BRIDGE SUPPORT AND REGISTRATION</p>	<p>TUNNEL/OVERHEAD BRIDGE SINGLE ELASTIC SUPPORT</p> <p>TUNNEL/OVERHEAD BRIDGE DOUBLE ELASTIC SUPPORT</p> <p>MIDPOINT ANCHOR LOCATION AND DISTANCE TO BALANCE WEIGHT ASSEMBLY</p> <p>FIXED TERMINATION END AND DISTANCE TO BALANCE WEIGHT ASSEMBLY</p> <p>MIDPOINT ANCHOR</p> <p>TRACTION POWER SUBSTATION</p> <p>GRADE CROSSING</p> <p>OVERHEAD BRIDGE</p> <p>UNDERGRADE BRIDGE</p> <p>MANHOLE</p> <p>PASSENGER STATION</p>	<p>MPA</p> <p>FTA</p> <p>TPSS</p> <p>MH</p>
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 <p>UTAH TRANSIT AUTHORITY</p>	<p>OVERHEAD CONTACT SYSTEM STANDARD DRAWING SYMBOLS</p>
<p>RECOMMENDED FOR APPROVAL</p> <p>SYSTEMS STANDARDS</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>DATE</p> <p>DATE</p> <p>DATE</p>
<p>DATE</p> <p>REV</p>	<p>DESCRIPTION</p>
<p>Drawn By: _____</p> <p>Checked By: _____</p> <p>Approved By: _____</p>	
<p>Scale: NONE</p> <p>CAD: None</p> <p>Submitting Date: _____</p> <p>Drawing No: OCS-100</p>	
<p>LIGHT RAIL REFERENCE DRAWINGS</p>	


NOTES:

1. FOR ABBREVIATIONS AND GENERAL NOTES, SEE DRAWING TPI01.
2. FOR SYMBOLS, SEE DRAWING OCS-100.
3. WEIGHT OF CATENARY INCLUDES AN ASSUMED HANGER LOAD OF 0.2 LB/FT.
4. ICE CONDITION IS WITH ONE HALF INCH RADIAL ICE ON MESSENGER AND CONTACT WIRE.
5. MESSENGER TENSION IS THE LOADED CONDITION WITH CONTACT WIRE AND HANGERS.
6. FOS IS FACTOR OF SAFETY.
7. WIND PRESSURES ARE BASED ON MESC. RULE 250B FOR HEAVY LOADING DISTRICT.

CATENARY CONDUCTOR PROPERTIES			
DESIGN ITEM	UNITS	MESSENGER	CONTACT WIRE
MAKE UP OF CONDUCTOR	-	500 KCMIL/37 STRANDS	350 KCMIL GROOVED
MATERIAL	-	HARD DRAWN COPPER	HARD DRAWN COPPER
DIAMETER	IN	0.813	0.620
CROSS SECTIONAL AREA	SQ. IN	0.392	0.276
WEIGHT OF CONDUCTOR	LB/FT	1.544	1.063
WEIGHT OF CATENARY (INCLUDING HANGERS)	LB/FT	2.807	
RADIAL THICKNESS OF ICE	IN	0.500	0.500
WEIGHT OF ICE	LB/FT	0.816	0.696
WEIGHT OF CATENARY WITH ICE	LB/FT	4.320	
BREAKING LOAD	LB	2250	1810
MODULUS OF ELASTICITY FINAL	PSI	17.0 x 10 ⁶	17.0 x 10 ⁶
COEFFICIENT OF EXPANSION	PER DEG F	9.4 x 10 ⁻⁶	9.4 x 10 ⁻⁶

WIRE TENSIONS

LOADING CONDITIONS	NORMAL AND LOW PROFILE SIMPLE CATENARY - AUTO-TENSIONED				SINGLE WIRE FIXED TERMINATION				
	MESSENGER WIRE		CONTACT WIRE		CONTACT WIRE ONLY		CONTACT WIRE ONLY		
	WIND (LB/FT)	TENSION (LBI)	FOS SEE NOTE 6	WIND (LB/FT)	TENSION (LBI)	FOS SEE NOTE 6	WIND (LB/FT)	TENSION (LBI)	FOS SEE NOTE 6
NO WIND OR ICE	0	6000	3.75	0	3000	3.94	0	4650	2.54
0°F	0	6000	3.75	0	3000	3.94	0	2500	4.72
60°F	0	6000	3.75	0	3000	3.94	0
130°F	0	6000	3.75	0	3000	3.94	0
70 MPH WIND	0.85	6000	3.75	0.65	3000	3.94	0.65	4720	2.50
0°F	0.85	6000	3.75	0.65	3000	3.94	0.65	2650	4.46
60°F	0.85	6000	3.75	0.65	3000	3.94	0.65	2650	4.46
40 MPH WIND	0.28	7775	2.90	0.20	4315	2.74	0.20	4200	2.81
-30°F	0.62	6125	3.68	0.54	3010	3.92	0.54	3135	3.77
0°F WITH ICE	0.28	7785	2.90	0.14	5935	2.00	0.14	4060	2.91
-30°F WORN C.W. NO ICE	0.28	6050	3.72	0.50	3005	3.93	0.52	3105	3.80
0°F WORN C.W. WITH ICE	0.28	6050	3.72	0.50	3005	3.93	0.52	3105	3.80

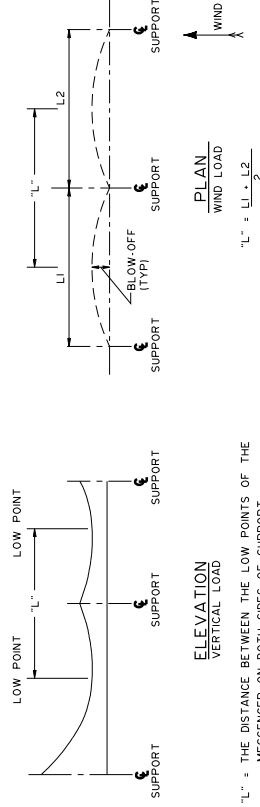
	UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	OVERHEAD CONTACT SYSTEM STANDARD DRAWING CATENARY CONDUCTOR PARTICULARS
RECOMMENDED FOR APPROVAL _____ SYSTEMS STANDARDS	DATE _____ _____ CAPITAL DEVELOPMENT DEPUTY CHIEF	DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____
DATE _____ REV _____	Description _____	SHEET: NONE CADD Template: _____ Submitting Date: _____ Drawing No.: OCS-101

SIMPLE CATENARY - NORMAL HEIGHT

"L" (FT)	VERTICAL LOAD (LB)		WIND LOAD (LB)		NON-OPERATING WIND LOAD (LB)	
	NO ICE	WITH ICE	OPERATING 60°F, 35 MPH MESSENGER CONTACT	WITH ICE	OPERATING 60°F, 35 MPH MESSENGER CONTACT	NON-OPERATING 60°F, 40 MPH ICE CONTACT
60	174	265	32	24	36	32
65	189	287	34	26	39	35
70	203	309	37	28	42	38
75	218	331	39	30	45	41
80	233	354	42	32	48	43
85	247	376	45	34	51	46
90	262	398	47	36	54	49
95	276	420	50	38	57	51
100	291	442	53	40	60	54
105	305	464	55	42	63	57
110	320	486	58	44	66	59
115	334	508	60	46	69	62
120	349	530	63	48	73	65
125	363	552	66	50	76	68
130	378	574	68	52	79	70
140	407	619	74	56	85	76
150	436	663	79	60	91	81
160	465	707	84	64	97	86
170	494	751	89	68	103	92
180	523	795	95	72	109	97
190	552	840	100	76	115	103
200	581	888	105	80	121	108
210	610	932	110	84	127	113

NOTES:

1. VERTICAL LOAD CALCULATIONS FOR THE SIMPLE CATENARY SYSTEM INCLUDES AN ASSUMED HANGER LOAD OF 0.2 LB/FT.
2. ICE CONDITION IS WITH 1/2 INCH RADIAL ICE ON MESSENGER AND CONTACT WIRE.
3. WIND PRESSURES ARE BASED ON NES, RULE 250B FOR HEAVY LOADING DISTRICT.
4. FOR ABBREVIATIONS AND GENERAL NOTES, SEE DRAWING TPI01.
5. FOR SYMBOLS, SEE DRAWING OCS-100.



SIMPLE CATENARY - LOW PROFILE

"L" (FT)	VERTICAL LOAD (LB)		WIND LOAD (LB)		NON-OPERATING WIND LOAD (LB)	
	NO ICE	WITH ICE	OPERATING 60°F, 35 MPH MESSENGER CONTACT	WITH ICE	OPERATING 60°F, 35 MPH MESSENGER CONTACT	NON-OPERATING 60°F, 40 MPH ICE CONTACT
30	87	133	16	12	18	16
35	102	155	18	14	21	19
40	116	177	21	16	24	22
45	131	199	24	18	27	24
50	145	221	26	20	30	27
55	160	243	29	22	33	30
60	174	265	32	24	36	32
70	203	309	37	28	42	38
80	233	354	42	32	48	47
90	262	398	47	36	54	49
100	291	442	53	40	60	54
105	305	464	55	42	63	57
110	320	486	58	44	66	59
115	334	508	60	46	69	62
120	349	530	63	48	73	65
125	363	552	66	50	76	68
130	378	574	68	52	79	70
135	392	597	71	54	82	73
140	407	619	74	56	85	76
145	422	641	76	58	88	78
150	436	663	79	60	91	81

FIXED TERMINATION SINGLE CONTACT WIRE

"L" (FT)	VERTICAL LOAD (LB)		WIND LOAD (LB)		NON-OPERATING WIND LOAD (LB)	
	NO ICE	WITH ICE	OPERATING 60°F, 35 MPH CONTACT	WITH ICE	OPERATING 60°F, 35 MPH CONTACT	NON-OPERATING 60°F, 40 MPH ICE CONTACT
30	32	53	12	12	28	28
35	37	62	14	14	33	33
40	43	70	16	16	38	38
45	48	79	18	18	43	43
50	53	88	20	20	47	47
55	58	97	22	22	52	52
60	64	106	24	24	57	57
70	74	132	28	28	66	66
80	85	141	32	32	76	76
90	96	158	36	36	85	85
100	106	176	40	40	95	95
105	112	185	42	42	100	100
110	117	193	44	44	104	104
115	122	202	46	46	109	109
120	128	211	48	48	114	114
125	133	220	50	50	119	119
130	138	229	52	52	123	123
135	144	237	54	54	128	128

REV	DATE	DESCRIPTION

RECOMMENDED FOR APPROVAL

SYSTEMS STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



UTA
UTAH TRANSIT AUTHORITY

REFERENCE DRAWINGS

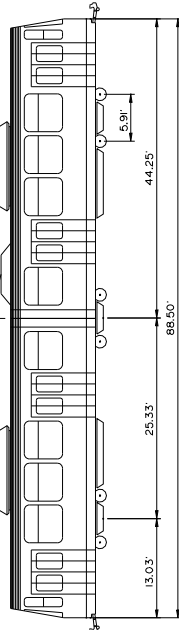
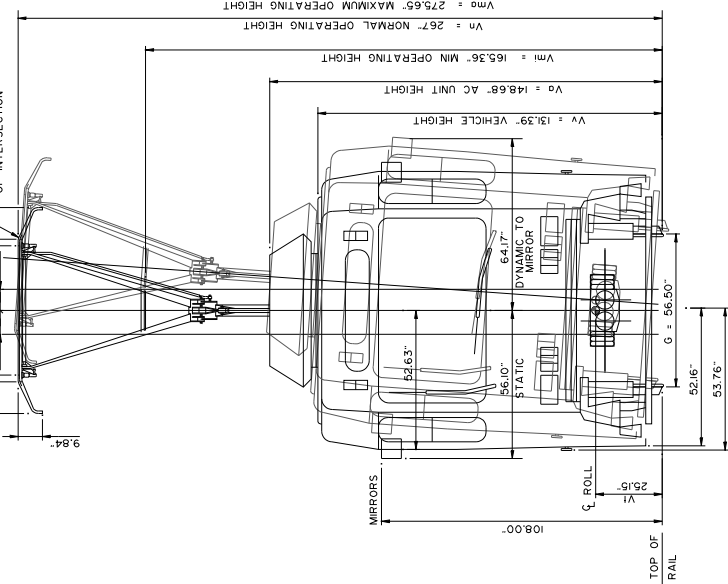
Designed By: _____
Drewn By: _____
Checked By: _____
Approved By: _____

CL

CARBON CURRENT COLLECTING STRIPS

PAN HEAD PLAN

$W_p = 74.80"$ PANTOGRAPH WIDTH
 $W_h = 52.24"$ HORN WIDTH
 $W_c = 47.24"$ CARBON WIDTH
 9" MAX STAGGER ON CURVE TANGENT
 8" MAX STAGGER ON TANGENT
 HORN POINT OF INTERSECTION
 12"



ENVELOPE AND CONTACT WIRE CRITERIA

CLEARANCE ENVELOPE DETAILS:

HALF WIDTH OF VEHICLE = 3.00 DEGREES EACH SIDE OF CENTERLINE
 FULL WIDTH OF VEHICLE = 6.24 FT ± 2 IN DIAGRAM = 6.24 FT / 2 ± 3.12 FT

FULL SWAY AT 27° HEIGHT
 MAX OPERATING HEIGHT = 22.25 FT
 TOP OF RAIL TO CENTER OF SWAY = 21.0 FT (-)
 TOP OF PANTOGRAPH TO CENTER OF SWAY = 20.15 FT (-)
 FULL SWAY = 20.15 TAN 3.00° = 1.06 FT = 12.67 IN (-)
 SWAY OF PANTOGRAPH TO CL = 14.67 IN (-)
 TOTAL SWAY, CL TO ② AND ③ TO ② SAY, 14.70 IN = 1.23 FT

TRACK ALIGNMENT:
 TRACK ALLOWANCES ALIGNMENT = 1 3/4 IN = 1.75 IN
 GROSS LEVEL @ 1 1/4" DIFFERENCE = 5.70 IN (-)
 7.45 IN (-)
 TOTAL TRACK TOLERANCE EFFECTS, ② TO ③ AND ③ TO ② SAY, 7.45 IN = 0.62 FT

ELECTRICAL/MECHANICAL CLEARANCE ALLOWANCE, SAY, 6.00 IN = 0.50 FT
 REQUIRED CLEARANCE ENVELOPE (ONE HALF) = 5.47 FT
 REQUIRED CLEARANCE ENVELOPE (TOTAL) = 10.94 FT

PANTOGRAPH SECURITY AT 22-3:

TRACK ALLOWANCES ALIGNMENT = 1 3/4" = 1.75 IN
 GROSS LEVEL EFFECT @ 1 1/4" DIFFERENCE = 5.70 IN
 LATERAL SHIFT AT ROLL CENTER = 2.32 IN
 VEHICLE - PANTOGRAPH SWAY INTO WIND = 7.45 IN (50% OF FULL SWAY)
 BLOW OFF OF CONTACT WIRE² (210 FT) = 8.82 IN
 POLE DEFLECTION DUE TO WIND = 4.00 IN
 STAGGER EFFECT/STAGGER MOVEMENT = 1.25 IN
 ERECTION TOLERANCE = 1.00 IN
 TOTAL HALF SWAY = 32.29 IN
 HALF PANTOGRAPH WIDTH (WP/2) = 37.40 IN

PANTOGRAPH SECURITY 53.40 IN 5.11 IN > 4.00 IN EDGE ALLOWANCE

1 CROSS LEVEL EFFECT:

CROSS LEVEL DIFFERENCE 1 1/4" = 1.25 IN
 TRACK GAUGE 4'-8 1/2" = 56.50 IN
 RAIL HEAD WIDTH (2 23/32") = 2.72 IN
 CENTER TO CENTER OF RAILS = 59.22 IN
 CENTER WIRE (NORMAL OPERATING HEIGHT) = 22.25 FT
 CROSS LEVEL EFFECT = 22.25 x 1.25/59.22 = 0.47 FT = 5.70 IN

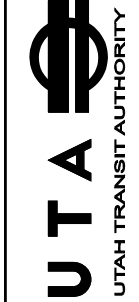
2 BLOW OFF OF CONTACT WIRE:

FOR SIMPLE A.T. ON TANGENT TRACK (MAX) = 210 FT.
 WIND PRESSURE @ 12.9 PSF = 0.40 LBS/FT
 CONTACT WIRE TENSION = 3000 LBS

CLEARANCE ENVELOPE

CONTACT WIRE CRITERIA

CABLE HORIZONTAL SAG (PARABOLIC EQUATION): $L/161.2 \times \frac{8W}{8M} = 0.400 \times \frac{1.25(12.2)}{8M} = 0.74 \text{ FT} = 8.82 \text{ IN}$



REFERENCE DRAWINGS

RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

OVERHEAD CONTACT SYSTEM STANDARD DRAWING VEHICLE AND PANTOGRAPH CLEARANCE ENVELOPE

Sheet No. _____
 CAD File Name _____
 Drawing Date _____
 Drawing No. OCS-104

Description

DATE

REV

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STANDARD FOUNDATION SYMBOLS

- FOUNDATION FOR STEEL POLE
- FOUNDATION WITH ISLAND FOR STEEL POLE
- FOUNDATION FOR DOUBLE POLE
- FOUNDATION WITH ISLAND FOR DOUBLE POLE
- POINT OF SWITCH
- PULL BOX
- UNDERGROUND CONDUIT

ABBREVIATIONS

AC	ALTERNATE CURRENT
C	CONDUIT
℄	CENTER LINE
DC	DIRECT CURRENT
DWG	DRAWING
E	ELECTRICAL
EXIST	EXISTING
FDN	FOUNDATION
FDR	FEEDER
FUR	FURNISH
FIN	FINISH
G	GAS
LRT	LIGHT RAIL TRANSIT
LTO	LIGHTING
MIN	MINIMUM
NIC	NOT IN CONTRACT
NMC	NONMETALLIC CONDUIT
NTS	NOT TO SCALE
PCS	OVERHEAD CONTACT SYSTEM
OH	OVERHEAD
OPP	OPPOSITE
PB	PULL BOX
PT & T/T	TELEPHONE
PVC	POLYVINYL CHLORIDE
SD	STORM DRAIN
SP	SPARE
SS	SANITARY SEWER
TP	TRACTION POWER
TRK	TRACK
TS	TRAFFIC SIGNAL
T/R	TOP OF RAIL
TV	TELEVISION CABLE
UG	UNDERGROUND

GENERAL NOTES:

- THE CONTRACTOR SHALL STAKE AND FIELD VERIFY ALL LOCATIONS FOR FOUNDATIONS AND RACEWAYS FOR THE OVERHEAD CONTACT, TRACTION POWER AND SIGNALING SYSTEMS. ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- IF MINOR ADJUSTMENTS TO THE LOCATIONS OF FOUNDATIONS AND RACEWAYS ARE REQUIRED, RELOCATION SHALL BE AS DIRECTED BY THE ENGINEER.
- SEE CIVIL DRAWINGS FOR OTHER SYMBOLS AND ABBREVIATIONS NOT SHOWN IN THIS DRAWING.
- STATIONING AND OFFSET FOR POLES AND UNDERGROUND RACEWAYS ARE BASED ON THE TRACK PLAN AND PROFILE DRAWINGS, UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF UNDERGROUND UTILITIES PRIOR TO EXCAVATION FOR FOUNDATIONS AND RACEWAYS.
- ON POLE FOUNDATION PLANS, FOUNDATIONS ARE SITE SPECIFIC UNLESS OTHERWISE NOTED. FOUNDATIONS ARE SHOWN ON THE APPROPRIATE DRAWINGS.

REV	DATE	Description

RECOMMENDED FOR APPROVAL _____ DATE _____

SYSTEMS STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By: _____

Drawn By: _____

Checked By: _____

Approved By: _____

OVERHEAD CONTACT SYSTEM
STANDARD DRAWING
 POLE FDN AND UNDERGROUND RACEWAY
 SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

LIGHT RAIL REFERENCE DRAWINGS


Sheet: NONE

CADD Sheets: _____

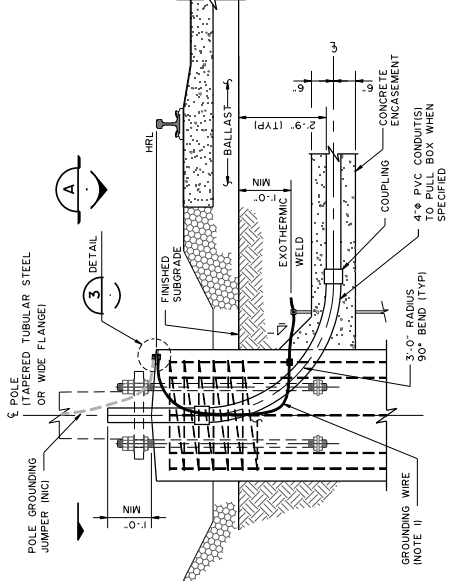
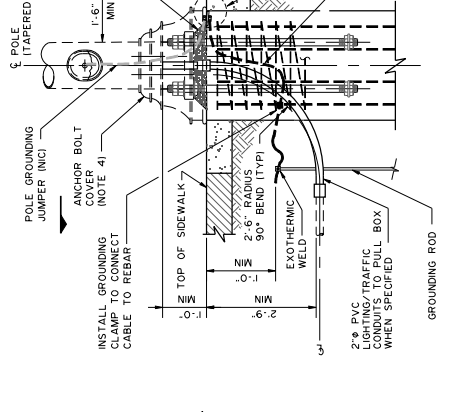
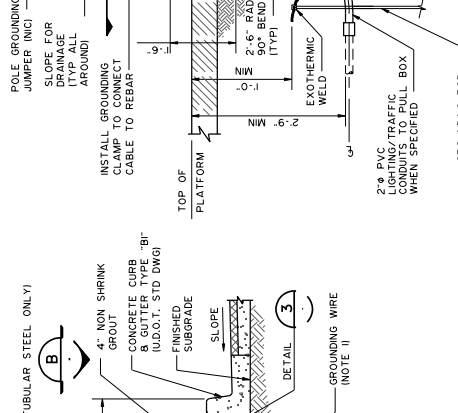
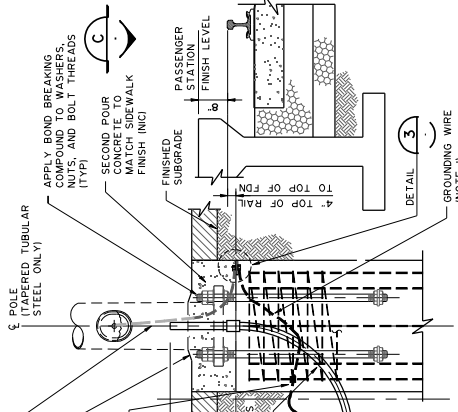
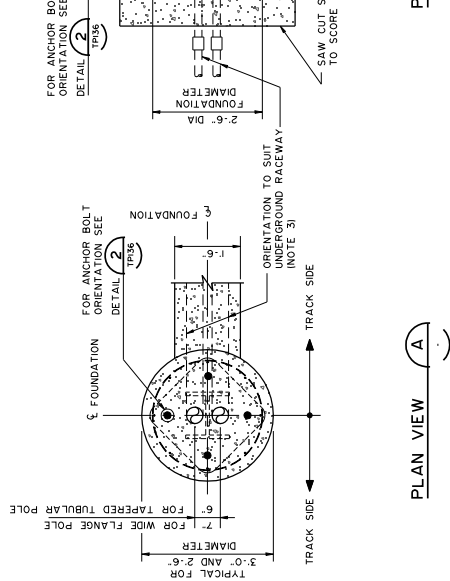
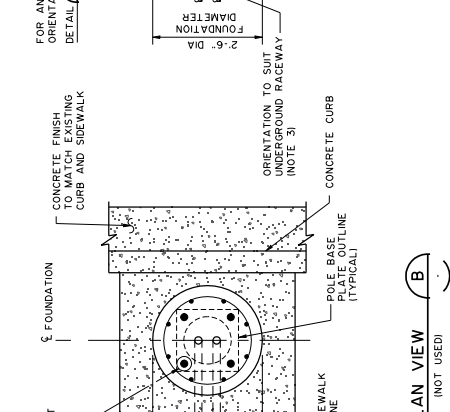
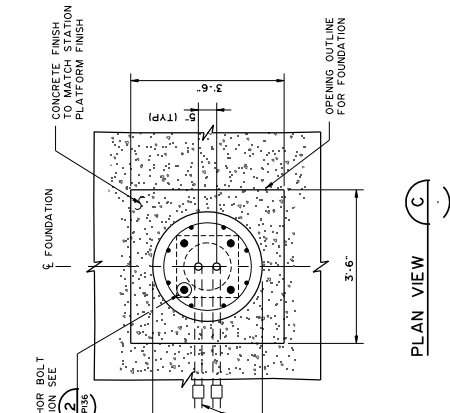
Submitting Date: _____

Drawing No: OCS-105

1. THE PROJECT SHALL DOCUMENT THE TRACTION POWER POLE FOUNDATIONS AND ALL UNDERGROUND RACEWAYS (SIGNAL, COMMUNICATION, TRACTION POWER, AND STATION) AS AN INTEGRATED DRAWING PACKAGE.
2. TO ILLUSTRATE THE INTENDED APPROACH, A NUMBER OF "EXAMPLE" DRAWINGS ARE INCLUDED.
3. TP403 AND TP404 ARE TWO "POLE FOUNDATION AND UNDERGROUND RACEWAY" DRAWINGS COVERING A PORTION OF THE NORTH/SOUTH TRAX LINE.
4. TP403 SHOWS THE TRACTION POWER FOUNDATIONS AND THE COMMUNICATIONS DUCT BANK (100 SG-C) PROCEEDING THROUGH THE FULL LENGTH OF THE DRAWING PLUS A CALL-OUT FOR ENLARGED DETAIL (SG501) AT THE 9400 SOUTH GRADE CROSSING AND A SECOND CALL-OUT FOR ENLARGED DETAIL (TP702) AT THE 9400 SOUTH TRACTION POWER SUBSTATION (SRN13). REFERENCE TO SG501 (A SIGNAL DRAWING) ILLUSTRATES ALL OF THE CONDUITS FOR THE 9400 SOUTH GRADE CROSSING AS WELL AS ANY OTHER CONDUITS IN THE AREA OF THE ENLARGEMENT. REFERENCE TO TP702 (A TRACTION POWER DRAWING) ILLUSTRATES ALL OF THE CONDUITS FOR THE 9400 SOUTH TRACTION POWER SUBSTATION AS WELL AS ANY OTHER CONDUITS IN THE AREA OF THE ENLARGEMENT. THERE ARE SEVERAL CALL-OUTS ON TP702 FOR CONDUIT CROSS SECTIONS AND DETAILS SHOWN ON DRAWINGS TP662 AND TP663.
5. TP404 SHOWS THE TRACTION POWER FOUNDATIONS AND THE COMMUNICATIONS DUCT BANK (100 SG-C) PROCEEDING THROUGH THE FULL LENGTH OF THE DRAWING PLUS A CALL-OUT FOR ENLARGED DETAIL (SG522) AT THE 9000 SOUTH GRADE CROSSING AND A SECOND CALL-OUT FOR ENLARGED DETAIL (TP802) AT THE 9000 SOUTH TRAX STATION. REFERENCE TO SG522 (A SIGNAL DRAWING) ILLUSTRATES ALL OF THE CONDUITS FOR THE 9000 SOUTH GRADE CROSSING AS WELL AS ANY OTHER CONDUITS IN THE AREA OF THE ENLARGEMENT. REFERENCE TO TP802 (A STATION DRAWING) ILLUSTRATES ALL OF THE CONDUITS FOR THE 9000 SOUTH TRAX STATION AS WELL AS ANY OTHER CONDUITS IN THE AREA OF THE ENLARGEMENT. THERE ARE SEVERAL CALL-OUTS ON TP802 FOR CONDUIT CROSS SECTIONS AND DETAILS SHOWN ON DRAWINGS TP663 AND SG81.
6. IN THIS MANNER, ALL RACEWAYS ARE SHOWN IN AN INTEGRATED DRAWING PACKAGE. THE RACEWAYS WOULD BE SHOWN ON THE BASE DRAWING SET OR ON "ENLARGEMENT" DRAWINGS FOR GRADE CROSSING, SIGNALING, TRACTION POWER SUBSTATION, AND TRAX STATION PURPOSES WHERE MORE DETAIL IS REQUIRED.

Scale: NTS CADD Template: Submitting Date: Drawing No.: DCS-106	OVERHEAD CONTACT SYSTEM STANDARD DRAWING INTEGRATED POLE FOUNDATIONS AND UNDERGROUND RACEWAY DRAWINGS LIGHT RAIL REFERENCE DRAWINGS	Designed By: Drawn By: Checked By: Approved By:
 UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS		
RECOMMENDED FOR APPROVAL SYSTEMS STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____		
REV DATE	Description	

- NOTES:**
- FOR FOUNDATION NOTES SEE DRAWING OCS-107.
 - FOR SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES, SEE DRAWING OCS-105.
 - FEEDER CONDUITS SHALL BE INSTALLED IN FOUNDATIONS DURING CONSTRUCTION. SEE POLE FOUNDATION AND UNDERGROUND RACEWAY DRAWINGS.



TYPES 1 THROUGH 6
OPEN ROUTE FEEDER CONDUITS

TYPES 7, 8 AND 9
SIDEWALK WITH BOLT COVER
(NOT USED)

TYPES 10, 11, 12 AND 13
AT STATION PLATFORM

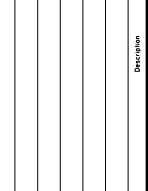
TYPES 10, 11, 12 AND 13
AT STATION PLATFORM

Drawn By:	Checked By:	Approved By:
Drawn By:	Checked By:	Approved By:
Drawn By:	Checked By:	Approved By:
Drawn By:	Checked By:	Approved By:

Drawn By:	Checked By:	Approved By:
Drawn By:	Checked By:	Approved By:
Drawn By:	Checked By:	Approved By:
Drawn By:	Checked By:	Approved By:

RECOMMENDED FOR APPROVAL	DATE
SYSTEMS STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

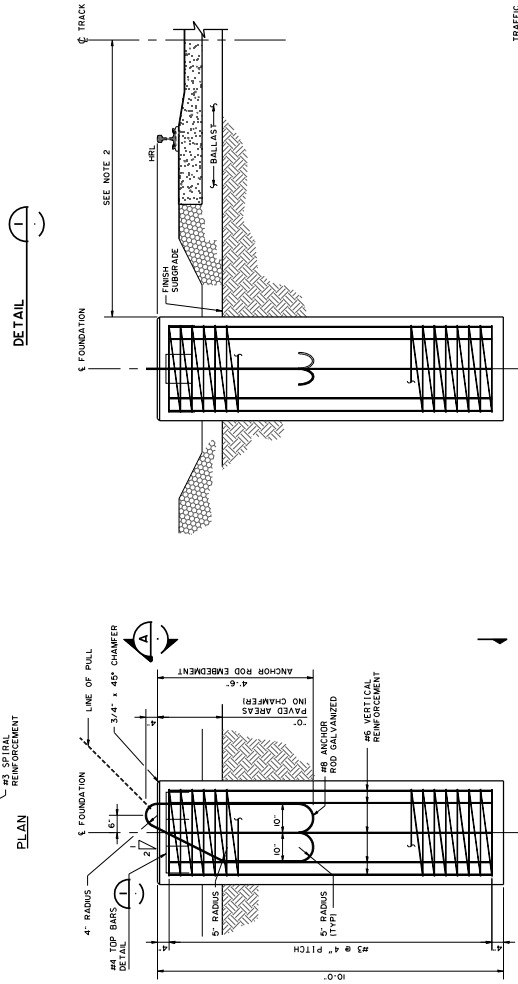
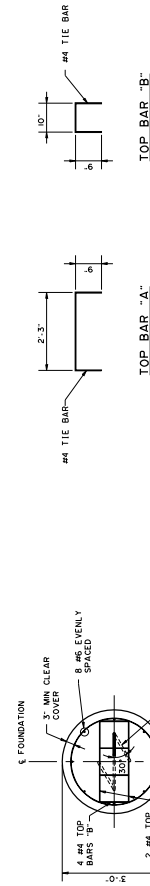
REV	DATE	DESCRIPTION



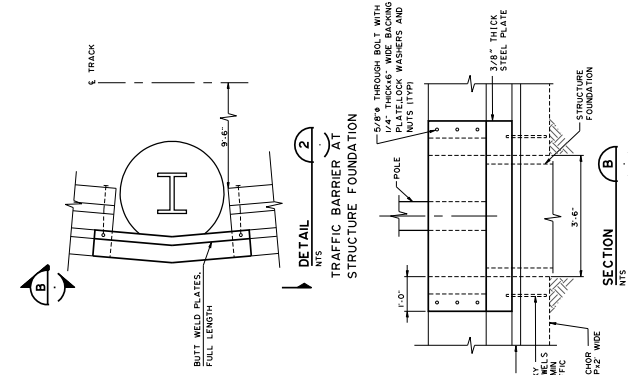
OVERHEAD CONTACT SYSTEM
STANDARD DRAWING
BALLESTED TRACK
CATENARY POLE FOUNDATIONS
FEEDER RISERS AND EMBEDMENT DETAILS
LIGHT RAIL REFERENCE DRAWINGS

Sheet:	OCS-108
NTS	
CADD Filename:	
Issuing Date:	
Drawn No.:	
Checked No.:	
Approved No.:	

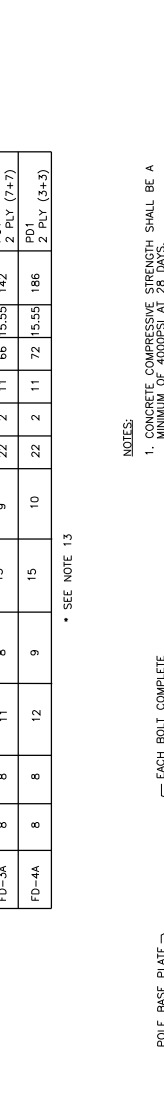
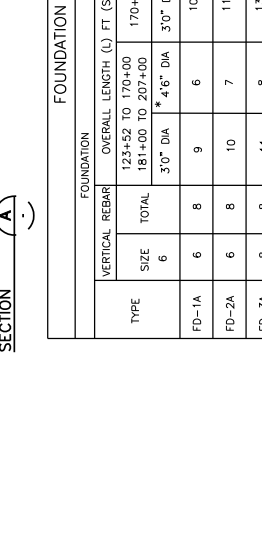
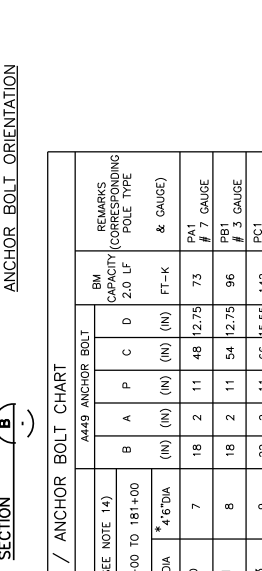
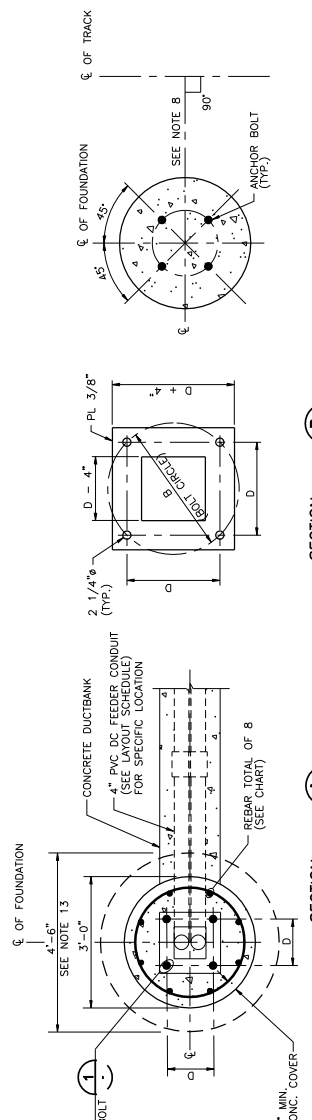
- NOTES:**
1. FOR FOUNDATION NOTES, SEE DRAWING OCS-107.
 2. FOR FOUNDATION CLEARANCES, SEE POLE FOUNDATION AND UNDERGROUND RACEWAY.
 3. FOR DIMENSIONS, ABBREVIATIONS, AND GENERAL NOTES, SEE DRAWING OCS-100.



ELEVATION
TYPE I
DOWN GUY FOUNDATION



<p>DESIGNED BY: _____</p> <p>DRAWN BY: _____</p> <p>CHECKED BY: _____</p> <p>APPROVED BY: _____</p>	<p>DATE: _____</p> <p>DATE: _____</p> <p>DATE: _____</p> <p>DATE: _____</p>	<p>RECOMMENDED FOR APPROVAL</p> <p>SYSTEMS STANDARDS _____</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF _____</p>	<p>DATE: _____</p> <p>DATE: _____</p> <p>DATE: _____</p> <p>DATE: _____</p>
<p>UTAH TRANSIT AUTHORITY</p> <p>REFERENCE DRAWINGS</p>		<p>OVERHEAD CONTACT SYSTEM</p> <p>STANDARD DRAWING</p> <p>BALLASTED TRACK</p> <p>DOWN GUY FOUNDATION DETAILS</p> <p>LIGHT RAIL REFERENCE DRAWINGS</p>	
<p>UTAH TRANSIT AUTHORITY</p> <p>REFERENCE DRAWINGS</p>		<p>DCS-109</p>	



FOUNDATION / ANCHOR BOLT CHART

TYPE	VERTICAL REBAR		FOUNDATION OVERALL LENGTH (L) FT (SEE NOTE 14)				4449 ANCHOR BOLT				REMARKS CAPACITY (CORRESPONDING POLE TYPE & GAUGE)		
	SIZE	TOTAL	123+52 TO 170+00	170+00 TO 181+00	B	A	P	C	D	BM CAPACITY 2.0 LF			
FD-1A	6	8	3'0" DIA * 4'6" DIA	6	10	7	18	2	11	48	12.75	73	PA1 # 7 GAUGE
FD-2A	6	8	10	7	11	8	18	2	11	54	12.75	96	PB1 # 3 GAUGE
FD-3A	8	8	11	8	13	9	22	2	11	66	15.55	142	PC1 2 PLY (7+7)
FD-4A	8	8	12	9	15	10	22	2	11	72	15.55	186	PD1 2 PLY (3+3)

* SEE NOTE 13



- NOTES:**
- CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4,000 PSI.
 - REINFORCING BARS SHALL BE ASTM A615 GRADE 60.
 - STRUCTURAL STEEL SHALL BE ASTM A36.
 - WELDING SHALL BE IN CONFORMANCE WITH THE AWS D1.1 SPECIFICATIONS.
 - ANCHOR BOLTS SHALL BE ASTM A490 HEAVY HEX NUTS AND WASHERS SHALL BE ASTM A436 ALL GALVANIZED TO ASTM 153.
 - FOR SITE SPECIFIC FOUNDATION TYPE AND OFFSET REFER TO LAYOUT PLAN DRAWINGS.
 - CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
 - FOR CURVED TRACK, THE LINE SHOWN PERPENDICULAR TO TRACK CENTERLINE SHALL BE RADIAL TO THE CURVE.
 - PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE DURING CONCRETE POURING.
 - LEAVE SPACE (4" APPROX) FOR FINAL CONCRETE AND OR PAVER FINISH TO SHOW MONOLITHIC FINISH.
 - FOR LUMINAIRE CONDUIT AND SIZE SEE LIGHTING PLANS.
 - CONDUIT SIZES AND ROUTING FOR LRT SIGNAL SWITCH INDICATOR AND ROUTE SELECTOR SEE SIGNAL PLANS.
 - CONTRACTOR HAS THE OPTION TO USE 4"-6" CIDH FOUNDATION WITH SAME REBAR CAGES AS THE 3'-0" CIDH IN CASE BEDROCK IS ENCOUNTERED.
 - ADD EXTERIOR FINISH TO FOUNDATION LENGTH FOR STRUCTURES WITH FINISH REBAR AT THE TOP OF FOUNDATION FOR NON-EFFECTIVE DEPTH AT THE TOP OF FOUNDATION.

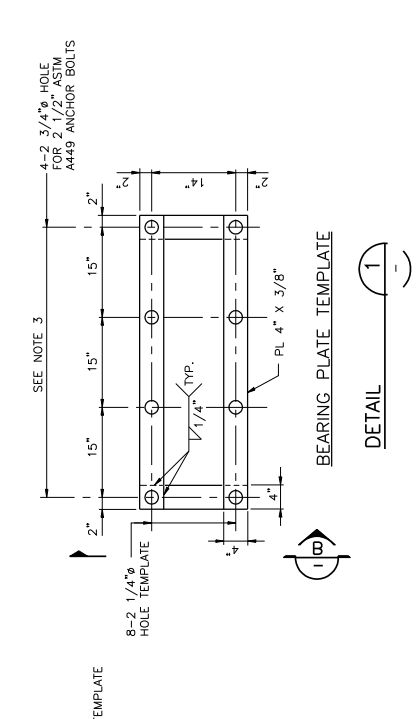
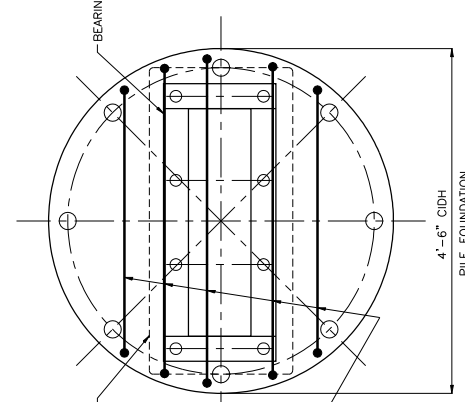
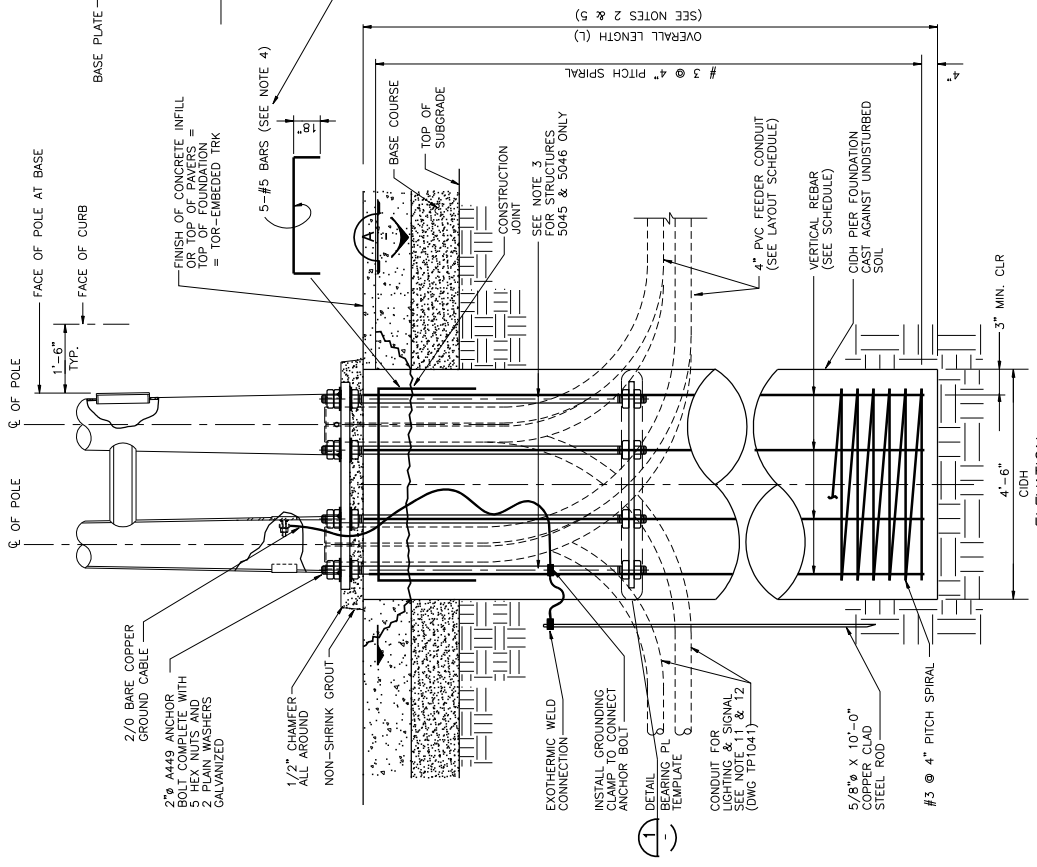
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

OVERHEAD CONTACT SYSTEM
STANDARD DRAWING
EMBEDDED TRACK
OCS POLE FOUNDATION DETAILS
LIGHT RAIL REFERENCE DRAWINGS

RECOMMENDED FOR APPROVAL _____ DATE _____
SYSTEMS STANDARDS _____ DATE _____
CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

DESIGNED BY _____
DRAWN BY _____
CHECKED BY _____
APPROVED BY _____

SCALE: NIS
CADD FILENAME: _____
REVISION DATE: _____
DRAWING NO.: _____
DRAWING NO.: OCS-110



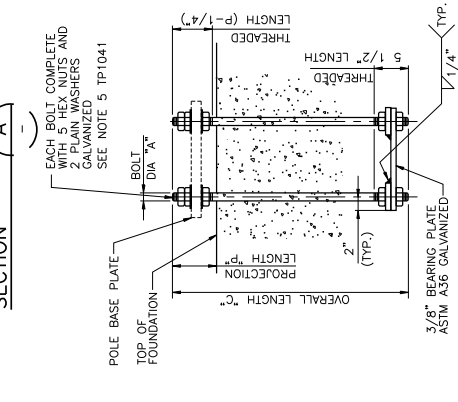
TANDEM POLE FOUNDATION / ANCHOR BOLT CHART

TYPE	VERTICAL REBAR SIZE	FOUNDATION OVERALL LENGTH (L) FT. (SEE NOTE 2)		A449 ANCHOR BOLT			REMARKS (CORRESPONDING POLE & GEN. APPLICATION)
		123+50 TO 148+00 & 176+00 TO 203+00	148+00 TO 170+00 & 203+00 TO 207+00	A (IN)	P (IN)	C (IN)	
FD-11A	8	8	7	2	11	48	PF1, P01
FD-22A	11	8	10	2	11	54	PW1, P11
SEE NOTE 6 BELOW				2 1/2	11	60	PP1**

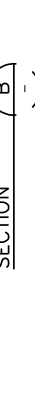
WHERE:
 PF1 = FEEDER POLE
 P01 = OVERLAP / XO POLE
 PP1 = PULL-OFF(HEAVY) POLE
 PW1 = TERMINATION POLE
 PP1** = COUNTERWEIGHT POLE

- NOTES:
- FOR FOUNDATION GENERAL NOTES SEE DWG. OCS-110.
 - ADD EXTRA 2 FT. OF FOUNDATION LENGTH FOR STRUCTURES WITHOUT SURROUNDING INFILL CONCRETE SLAB OR SIDEWALK SLAB TO ACCOUNT FOR NON-EFFECTIVE DEPTH AT THE TOP OF FOUNDATION.
 - FOR STRUCTURES 5045 & 5046, USE 4-2 1/2" DIA A449 ANCHOR BOLTS (2 EA ON THE OUTSIDE) TO ACCOUNT FOR MORE THAN NORMAL HEAVY PULL-OFF LOAD. OVERALL ANCHOR BOLT LENGTH "C" SHALL BE 60" FOR ALL BOLTS.
 - FOR STRUCTURES 5045 & 5046 ONLY ADD 5-#5 HARPIN BARS.
 - OVERALL LENGTH (L) FOR STRUCTURES 5045 & 5046 ONLY = 12.0'
 - MINIMUM EMBEDMENT DEPTH FOR STRUCTURES 5079 & 5080 = 12.0' (I.E. EMBEDMENT DEPTH DOES NOT INCLUDE EXPOSED LENGTH OF FOUNDATION)

SECTION A-A



SECTION B-B



TANDEM POLE FOUNDATION DETAILS

DESIGNED BY	UTAH TRANSIT AUTHORITY	RECOMMENDED FOR APPROVAL	DATE
DRAWN BY	REFERENCE DRAWINGS	SYSTEMS STANDARDS	DATE
CHECKED BY	UTAH TRANSIT AUTHORITY	CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE
APPROVED BY	REFERENCE DRAWINGS		
SCALE	UTAH TRANSIT AUTHORITY		
NIS	UTAH TRANSIT AUTHORITY		
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SUBMITTAL DATE	UTAH TRANSIT AUTHORITY		
DRAWING NO.	UTAH TRANSIT AUTHORITY		
OCS-111	UTAH TRANSIT AUTHORITY		

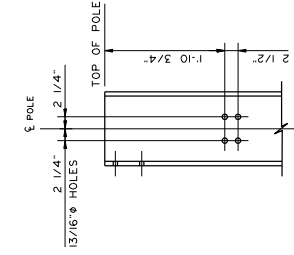
OVERHEAD CONTACT SYSTEM
 STANDARD DRAWING
 EMBEDDED TRACK

OCS TANDEM POLE FOUNDATION DETAILS
 LIGHT RAIL REFERENCE DRAWINGS

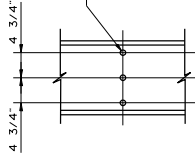


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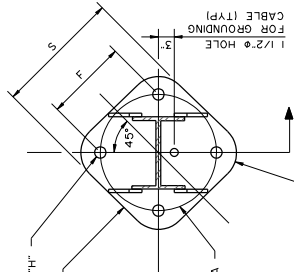
- STRUCTURAL STEEL FOR POLES, BASE PLATES, AND STIFFENERS SHALL CONFORM TO ASTM SPECIFICATION A36.
- ALL POLES, INCLUDING BASE PLATES AND STIFFENERS, SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- STRUCTURAL STEEL DETAILING SHALL BE IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE FOR BUILDINGS AND BRIDGES, LATEST EDITION.
- BOLTS, WASHERS, AND NUTS FOR CONNECTIONS TO POLES SHALL CONFORM TO ONE OF THE FOLLOWING STANDARD SPECIFICATIONS:
 1. A503 (HEAVY BOLTS FOR STRUCTURAL STEEL JOINTS)
 2. A325 (HEAVY BOLTS FOR STRUCTURAL STEEL)
 3. A449 (BOLTS ARE PERMITTED ONLY IN CONNECTIONS WITH BOLT DIAMETERS GREATER THAN 1-1/2 INCHES.)
 4. A570 (BOLTS ARE PERMITTED ONLY IN CONNECTIONS WITH BOLT DIAMETERS GREATER THAN 1-1/2 INCHES.)
 5. WELDING ELECTRODES AND FLUXES SHALL CONFORM TO AMERICAN WELDING SOCIETY SPECIFICATIONS A51 OR A55, LATEST EDITION.
- FOR MOMENT CAPACITY OF EACH POLE REFER TO AISC MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
- FOR ABBREVIATIONS AND GENERAL NOTES, SEE STANDARD PLAN OCS-105.
- FOR SYMBOLS, SEE STANDARD PLAN OCS-100.
- CONTRACTOR SHALL FURNISH AND INSTALL 2/0 BARE COPPER GROUNDING CABLE. CONNECTION OF GROUNDING CABLE TO GROUNDING PLATE SHALL BE BY THE EXOTHERMIC WELD METHOD.



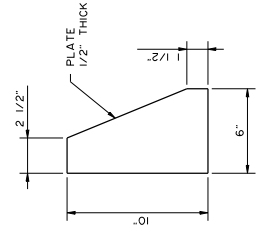
DETAIL 3
HOLES FOR DOWN GUY/
BWA/FT BRACKET
PART No (3)



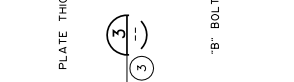
DETAIL 4
HOLES FOR BALANCE
WEIGHT GUIDE BRACKET
PART No (4)



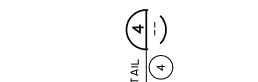
DETAIL 3
HOLES FOR DOWN GUY/
PART No (2)



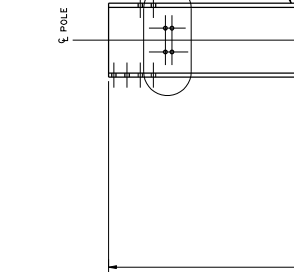
DETAIL 2
STIFFENER PLATE
(TYP ALL POLES)



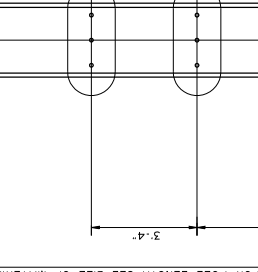
DETAIL 1
PART No (1)



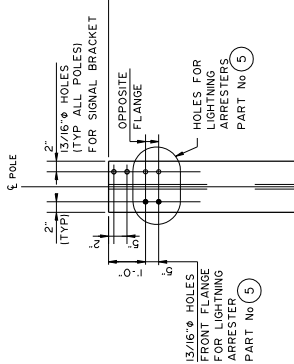
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PART No (2)



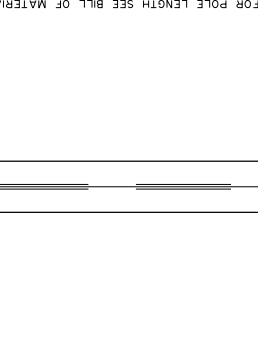
DETAIL 5
PART No (5)



DETAIL 2
PART No (2)



DETAIL 2
PART No (2)



DETAIL 2
PART No (2)

TABLE 1
(DIMENSIONS IN INCHES)

BASE PLATE	DESCRIPTION	S	B	H	R	T	F	ANCHOR BOLT DIA
TYPE A	BASE FOR W8	18	2 1/6	4	2	3/4	1-3/4	2
TYPE B	BASE FOR W14	24	2 5/8	4-5/8	2 1/2	5/2	2	2
TYPE C	BASE FOR W10	18	2 5/8	4	2	3/4	2	2

QUANTITIES EACH TYPE		BILL OF MATERIALS	
ASSEMBLY	TYPE	DESCRIPTION	REMARKS
1	1	HOLES FOR LIGHTNING ARRESTERS	5
1	1	HOLES FOR BALANCE WEIGHT GUIDE BRACKET	4
1	1	HOLES FOR DOWN GUY/BWA/FT BRACKET	3
1	1	BASE PLATE TYPE C	2
1	1	BASE PLATE TYPE B	2
1	1	BASE PLATE TYPE A	2
1	1	W 14 x 61 x 28'-0" LONG	1
1	1	W 14 x 61 x 30'-0" LONG	1
1	1	W 10 x 45 x 30'-0" LONG	1
1	1	W 10 x 45 x 28'-0" LONG	1
1	1	W 8 x 40 x 28'-0" LONG	1
1	1	W 8 x 40 x 28'-0" LONG	1
9	8	STIFFENER PLATE	1
7	6	5	4
3	2	1	

BILL OF MATERIALS



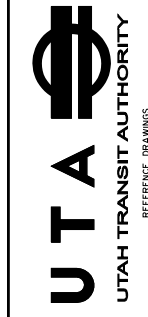
DETAIL 2
PART No (2)



DETAIL 2
PART No (2)

OVERHEAD CONTACT SYSTEM
STANDARD DRAWING
WIDE FLANGE POLE
DETAILS

DESIGNED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 APPROVED BY: _____



RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

REV	DATE	DESCRIPTION

DRAWING NO. OCS-112

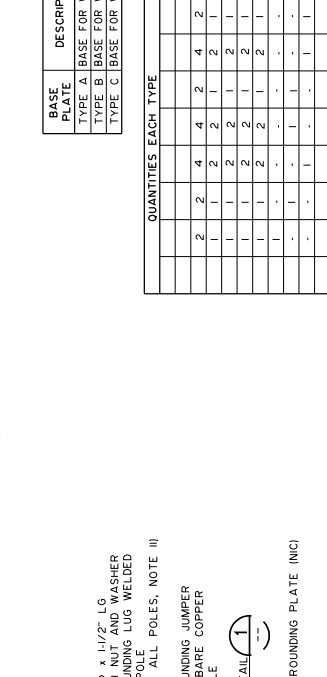
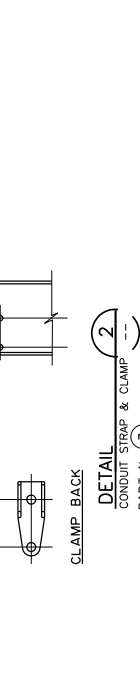
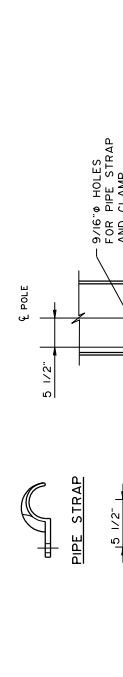
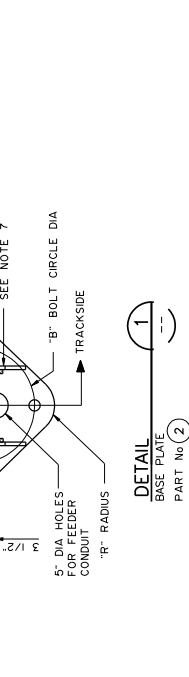
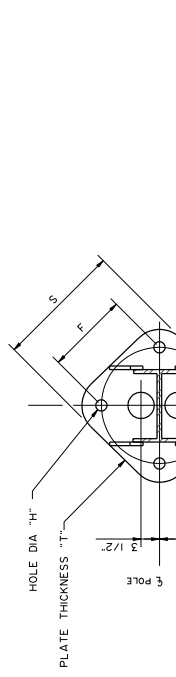
LIGHT RAIL REFERENCE DRAWINGS

REFERENCE DRAWINGS

DATE _____

DATE _____

- NOTES:**
- STRUCTURAL STEEL FOR POLES, BASE PLATES, AND STIFFENERS SHALL CONFORM TO ASTM SPECIFICATIONS A36.
 - ALL POLES, INCLUDING BASE PLATES AND STIFFENERS, SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
 - STRUCTURAL STEEL DETAILING SHALL BE IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE FOR BUILDINGS AND BRIDGES, LATEST EDITION.
 - BOLTS, WASHERS, AND NUTS FOR CONNECTIONS TO POLES SHALL CONFORM TO ONE OF THE FOLLOWING STANDARD SPECIFICATIONS:
HIGH STRENGTH BOLTS FOR STRUCTURAL STEEL SHALL CONFORM TO AISC 308, LATEST EDITION.
A449 BOLTS ARE PERMITTED ONLY IN CONNECTIONS WITH BOLT DIAMETERS GREATER THAN 1/2 INCHES.
WELDING ELECTRODES AND FLUXES SHALL CONFORM TO AMERICAN WELDING SOCIETY SPECIFICATIONS A51 OR A55, LATEST EDITION.
 - FOR MOMENT CAPACITY OF EACH POLE REFER TO AISC MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
 - SEE DRAWING TPI/2 FOR GUSSET PLATE DETAILS.
 - FOR ABBREVIATIONS AND GENERAL NOTES, SEE DRAWING OCS-105.
 - FOR SYMBOLS, SEE DRAWING OCS-100.
 - CONDUIT SEALING BUSHING SHALL CONSIST OF NEOPRENE COATED PRESSURE PLATES, SECURED WITH GALVANIZED STEEL BOLTS. NEOPRENE CONDUITS SHALL BE SEALED WITH THREADED PVC PLUGS.
 - CONTRACTOR SHALL FURNISH AND INSTALL 2/0 BARE COPPER GROUNDING CABLE CONNECTION OF GROUNDING CABLE TO GROUNDING PLATE SHALL BE BY THE EXOTHERMIC WELD METHOD.



FOR POLE LENGTH SEE BILL OF MATERIALS

ELEVATION

TABLE I
DIMENSIONS IN INCHES

BASE PLATE	DESCRIPTION	S	B	H	R	T	F	ANCHOR BOLT DIA
TYPE A	BASE FOR W/O	18 1/2	18	2 1/8	4	2	12 3/4	1 3/4
TYPE B	BASE FOR W/4	24	22	2 5/8	4 5/8	2 1/2	15 1/2	2
TYPE C	BASE FOR W/O	18 1/2	18	2 5/8	4	2	12 3/4	2

QUANTITIES EACH TYPE	ASSEMBLY TYPE	DESCRIPTION	PART No	REMARKS
2	4	MALLEABLE IRON PIPE STRAP WITH CLAMP BACK	7	
1	2	CONDUIT SEALING BUSHING	6	
1	2	CONDUIT COUPLING	5	
1	2	4" x 45° RIGID STEEL ELBOW 24" MN RADIUS (GALV)	4	
1	2	4" RIGID STEEL CONDUIT (GALV)	3	
1	1	BASE PLATE TYPE C	2	
1	1	BASE PLATE TYPE B	2	
1	1	BASE PLATE TYPE A	2	
1	1	W 14 x 61 x 30'-0" LONG	1	
1	1	W 10 x 45 x 30'-0" LONG	1	
1	1	W 14 x 61 x 28'-0" LONG	1	
1	1	W 10 x 45 x 28'-0" LONG	1	
7	6	ASSEMBLY TYPE	2	
1	1	ASSEMBLY TYPE	1	

BILL OF MATERIALS

DESIGNED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 APPROVED BY: _____

DATE: _____

DATE: _____

UTAH TRANSIT AUTHORITY
 REFERENCE DRAWINGS

OVERHEAD CONTACT SYSTEM
 STANDARD DRAWING
 WIDE FLANGE FEEDER POLE
 DETAILS

LIGHT RAIL REFERENCE DRAWINGS

DRAWING No. OCS-113

- NOTES:**
- FOR ABBREVIATIONS AND GENERAL NOTES, SEE DRAWING OCS-105.
 - ALL POLES SHALL BE TAPERED TUBULAR STEEL, THE STANDARD TAPER SHALL BE FOURTEEN HUNDRETHS (1/4) OF AN INCH PER LINEAR FOOT, MEASURED AS CHANGE IN DIAMETER.
 - STEEL FOR POLE SHAFTS, BASE PLATES, HANDHOLE REINFORCEMENTS, AND COVERS SHALL BE FABRICATED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
 - POLES SHALL BE HOT DIP GALVANIZED.
 - TOLERANCE OF POLE LENGTH IS PLUS 2 INCHES AND MINUS 0 INCH.
 - POLES SHALL BE SET PLUMB AFTER FULLY LOADED, SUGGESTED PRELOADED RAKE IS 2 INCHES FOR PULL-OFF CANTILEVERS AND 0 INCH FOR PUSH-OFF CANTILEVERS.
 - LOCATE HANDHOLES ON THE NEUTRAL AXIS AND OPPOSING THE TRAFFIC FLOW.
 - CONTRACTOR SHALL FURNISH AND INSTALL 2/0 BARE COPPER GROUNDING CABLE. CONNECTION OF GROUNDING CABLE TO FOUNDATION ON CONDUIT ON FOUNDATION SHALL BE BY THE EXOTHERMIC WELD METHOD.
 - FURNISH 1/2" x 1 1/2" LONG GROUNDING LUG, WELDED TO INSIDE OF POLE AND POSITIONED OPPOSITE HAND HOLE, NUT AND WASHER INCLUDED.
 - CONTRACTOR SHALL INSTALL LRT TRAFFIC SIGNALS, COUNTDOWN TIMERS, AND SWITCH INDICATORS. FOR LOCATION AND INSTALLATION REQUIREMENTS, SEE DRAWINGS SG-104 AND SG-105.
 - STRUCTURAL STEEL FOR POLE TYPE 12 SHALL HAVE A MINIMUM YIELD STRENGTH OF 65 KSI AND 14 INCH OD DIAMETER BASE, ALL OTHER DIAMETERS SHALL HAVE A MINIMUM YIELD STRENGTH AND 15 INCH OD DIAMETER AT BASE.

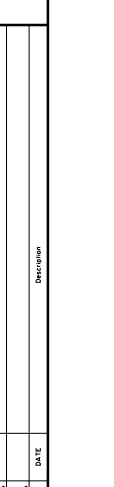
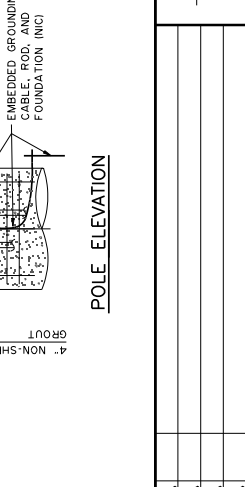
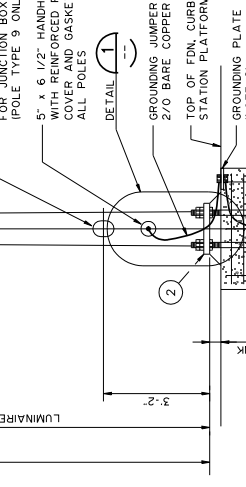
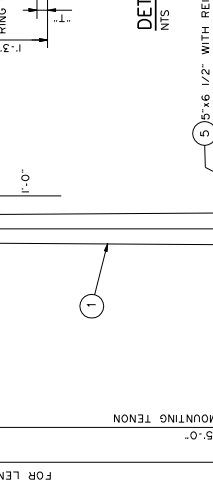
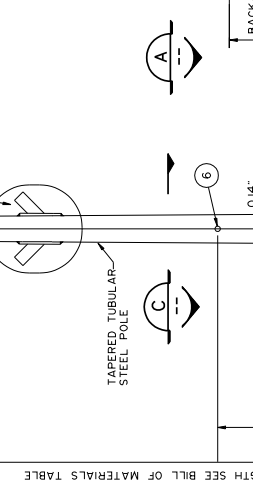
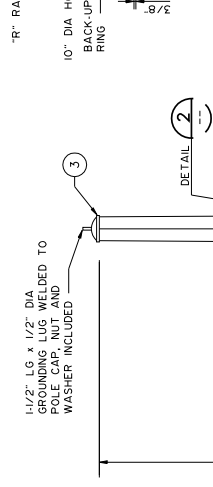
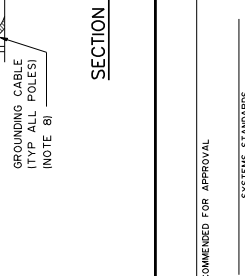
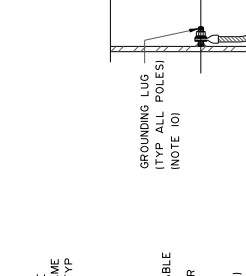
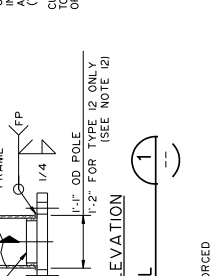
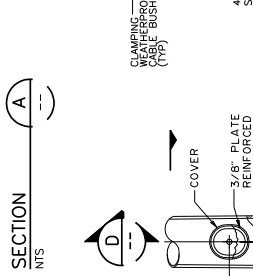
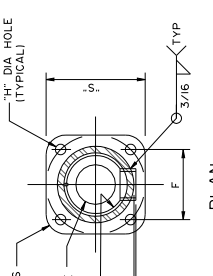
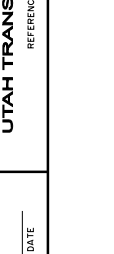
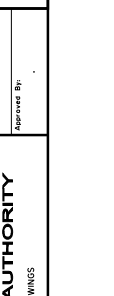
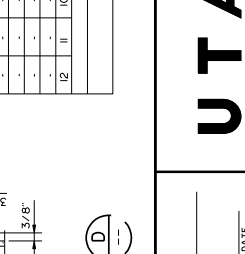
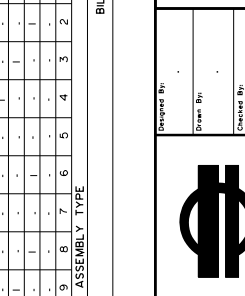
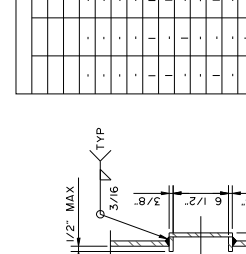
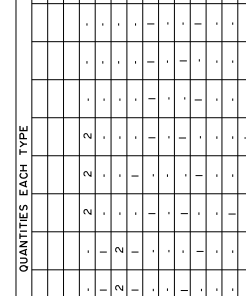
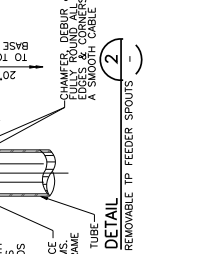
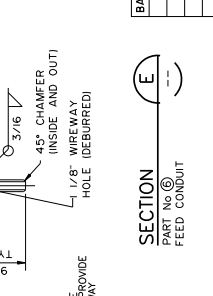
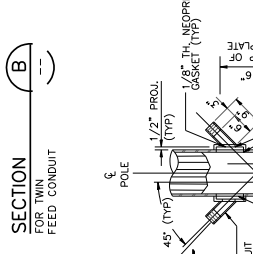
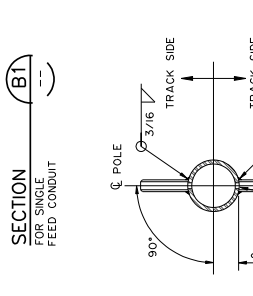
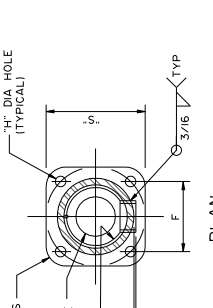
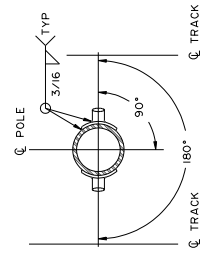
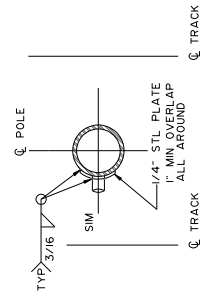


TABLE I BASE PLATE DIMENSIONS (IN)

BASE PLATE	DESCRIPTION	S	F	H	R	T	BOLT DIA
TYPE A	BASE FOR 7 & 8 GA POLES	18 1/2	12	3/4	2 1/8	4	2
TYPE B	BASE FOR 6 GA POLE	18 1/2	12	3/4	2 5/16	4	2
TYPE C	BASE FOR DOUBLE GA POLE	23	15 1/2	2 5/16	4	2	2

QUANTITIES EACH TYPE

ASSEMBLY TYPE	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

BILL OF MATERIALS

DESCRIPTION	REMARKS
2" NOMINAL SCHEDULE 80 PIPE TENON	6
HAND HOLE AT 3'-2" FOR JUNCTION BOX	5
3 IN DIA FEED CONDUIT	4
PRESSED STL CAP & GROUND LUG	3
PRESSED STL CAP (REMOVABLE)	3
BASE PLATE - TYPE C	2
BASE PLATE - TYPE B	2
BASE PLATE - TYPE A	2
TAPERED TUBULAR POLE - 0 GAUGE x 28'-0" LG	1
TAPERED TUBULAR POLE - 0 GAUGE x 30'-0" LG	1
TAPERED TUBULAR POLE - 0 GAUGE x 28'-0" LG	1
TAPERED TUBULAR POLE - 3 GAUGE x 28'-0" LG	1
TAPERED TUBULAR POLE - 0 GAUGE x 25'-8" LG	1
TAPERED TUBULAR POLE - 3 GAUGE x 25'-8" LG	1
TAPERED TUBULAR POLE - 7 GAUGE x 25'-8" LG	1

OVERHEAD CONTACT SYSTEM
STANDARD DRAWING
TAPERED TUBULAR STEEL POLES
DETAILS

UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

Light Rail Reference Drawings

Scale: NTS
CADD: [blank]
Submitting Date: [blank]
Drawing No.: OCS-114

DESIGNED BY: [blank]
DRAWN BY: [blank]
CHECKED BY: [blank]
APPROVED BY: [blank]

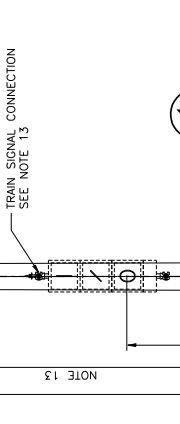
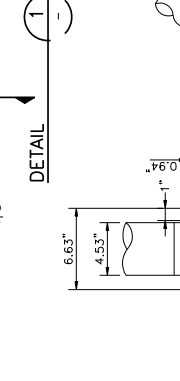
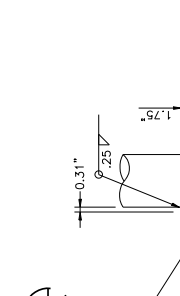
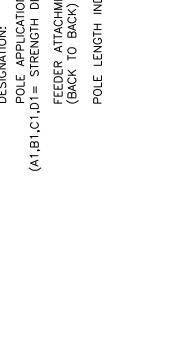
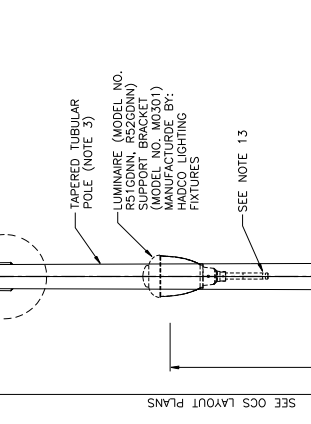
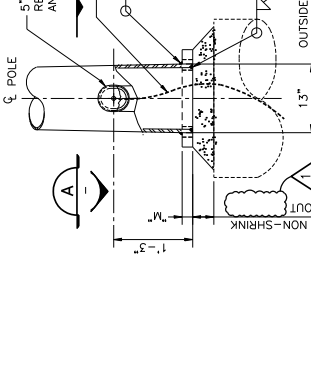
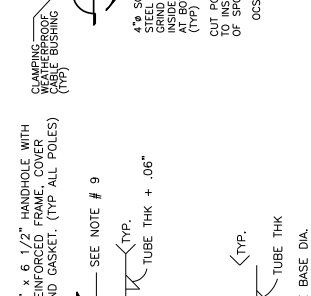
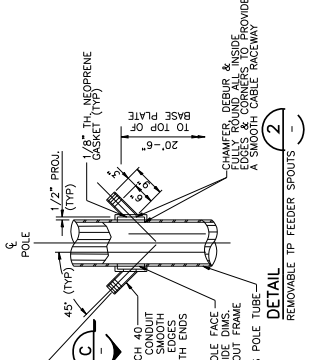
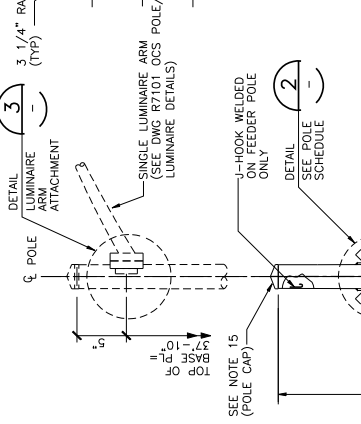
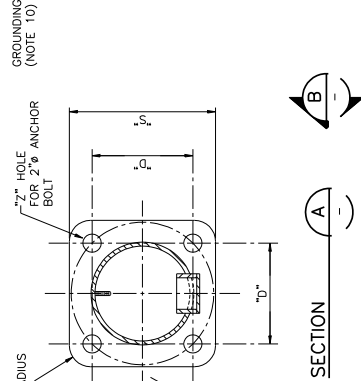
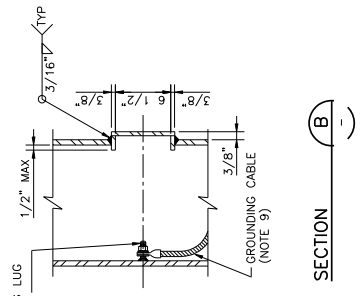
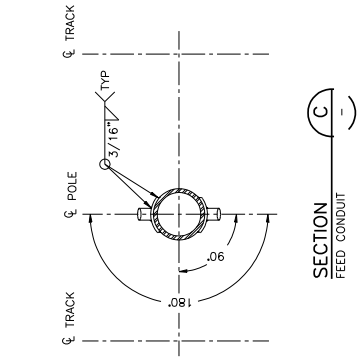
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SYSTEMS STANDARDS: [blank] DATE: [blank]
CAPITAL DEVELOPMENT DEPUTY CHIEF: [blank] DATE: [blank]

REV: [blank] DATE: [blank]

DESCRIPTION: [blank]

FOR LENGTH SEE BILL OF MATERIALS TABLE

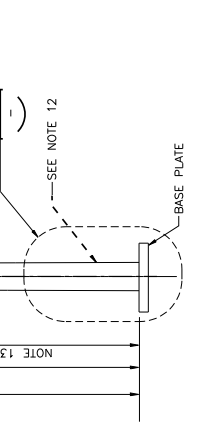
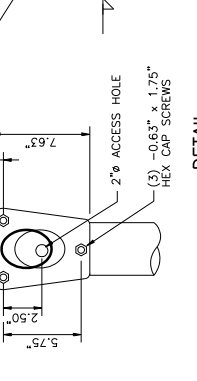
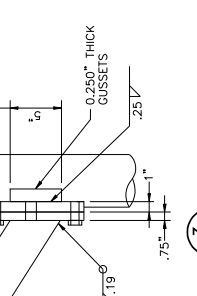
- NOTES:**
- FOR ABBREVIATIONS AND GENERAL NOTES SEE (REFERENCE) DWG OCS-105.
 - FOR SYMBOLS AND STRUCTURAL NOTES SEE (REFERENCE) DWG OCS-100.
 - ALL POLES SHALL BE FABRICATED TUBULAR STEEL. THE STANDARD TAPER SHALL BE FOURTEEN HUNDRETHS (.14) OF AN INCH PER LINEAR FOOT, MEASURED AS CHANGE IN DIAMETER.
 - STEEL FOR POLE SHAFTS, BASE PLATES, HANDHOLE REINFORCEMENTS, AND COVERS SHALL BE FABRICATED IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS.
 - SEE TECHNICAL SPECIFICATIONS.
 - TOLERANCE OF POLE LENGTH IS PLUS 2 INCHES AND MINUS 0 INCHES.
 - POLES SHALL BE SET PLUMB AFTER FULLY LOADED. SUGGESTED PRELOADED RAKE IS 2 INCHES FOR PULL OFF CANTILEVERS AND 70 INCHES FOR PUSH OFF CANTILEVERS.
 - LOCATE HANDHOLES ON THE NEUTRAL AXIS AND OPPOSING THE TRAFFIC FLOW.
 - CONTRACTOR SHALL CONNECT GROUNDING CABLE TO GROUNDING LUG INSIDE POLE.
 - PROVIDE 1/2" DIA x 1 1/2" LONG GROUNDING LUG WELDED TO INSIDE OF POLE, POSITIONED OPPOSITE HANDHOLE, NUT AND WASHER INCLUDED (TYP ALL POLES).
 - NOT USED
 - FOR LUMINAIRE OR TRAIN SIGNAL CONNECTION LOCATIONS AND DETAILS SEE POLE SCHEDULE AND CONNECTION DETAIL.
 - CONNECTION HEIGHTS OF LUMINAIRE OR TRAIN SIGNAL COORDINATE WITH SIGNAL OR LIGHTING ENGINEER.
 - POLE ALLOCATION DESIGNATION SHOWN ON THE LAYOUT PLANS ARE DESCRIBE AS FOLLOWS:
(EXAMPLE)
P.(2)-25L OR TS, SWI, RS, RI, SC, MI, SL1
WHERE:
L = POLE WITH LUMINAIRE
TS = POLE WITH URT TRAFFIC SIGNAL
SWI = POLE WITH SWITCH INDICATOR
RS = POLE WITH ROUTE SELECTOR
RI = POLE WITH ROUTE INDICATOR
SC = POLE WITH SIGNAL COUPLER
MI = POLE WITH MOTORMAN INDICATOR
SL1 = POLE WITH 1 (ONE) STREET LUMINAIRE
 - PROVIDE GALVANIZED REMOVABLE DOME POLE CAP FASTENED TO POLE WITH 3/8" DIA SOCKET SCREWS. COLOR AND PAINTING PROCESS SHALL MATCHED POLE.



POLE SCHEDULE

POLE TYPE (NOTE 14)	QTY	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	THK (IN)	GUAGE (IN)	POLE BASE			ANCHOR BOLT DIA. (IN)	ALLOW BOLT FT-K
							SQUARE PATERN (IN)	THK (IN)	"M" (IN)		
PA1	*	13.00	9.50	25	7	18.50	12.75	2.00	2.31	2.00	73
PB1	*	13.00	*	*	3	18.50	12.75	2.00	2.31	2.00	96
PC1	*	13.00	*	*	7+7	23.00	15.55	2.00	2.31	2.00	142
PD1	*	13.00	*	*	3+3	23.00	15.55	2.00	2.31	2.00	186

* SEE LAYOUT PLANS



**OVERHEAD CONTACT SYSTEM
STANDARD DRAWING**

STANDARD SMOOTH TAPERED TUBULAR STEEL POLES
TYPE PA1, PB1, PC1 & PD1
LIGHT RAIL REFERENCE DRAWINGS

DESIGNED BY: _____
DRAWN BY: _____
CHECKED BY: _____
APPROVED BY: _____

RECOMMENDED FOR APPROVAL
SYSTEMS STANDARDS _____ DATE _____
CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

DATE _____
REV _____

DWG NO. OCS-115

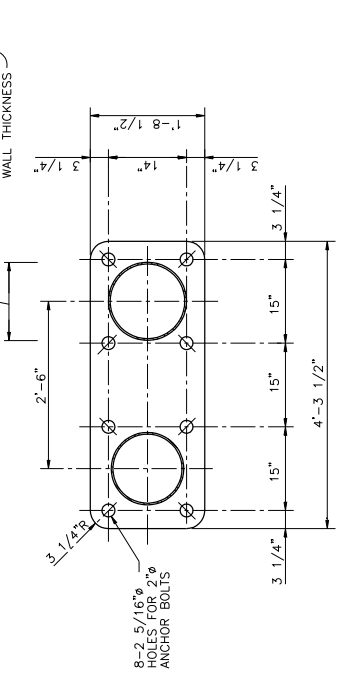
NOTES:

- FOR ABBREVIATIONS AND GENERAL NOTES SEE OCS-105.
- FOR SYMBOLS AND STRUCTURAL NOTES SEE DWG OCS-100.
- ALL POLES SHALL BE TAPERED TUBULAR STEEL. THE STANDARD TAPER SHALL BE FOURTEEN HUNDREDTHS (.14) OF AN INCH PER LINEAR FOOT, MEASURED AS CHANGE IN DIAMETER.
- STEEL FOR POLE SHAFTS, BASE PLATES, HAND HOLE REINFORCEMENTS, AND COVERS SHALL BE FABRICATED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
- POLES SHALL BE HOT DIP GALVANIZED, FOR PAINTING AND COLOR, SEE TECHNICAL SPECIFICATIONS.
- TOLERANCE OF POLE LENGTH IS PLUS 2 INCHES AND MINUS 0 INCHES.
- POLES SHALL BE SET PLUMB AFTER FULLY LOADED. PRE-LOADED RAKE SHALL BE SET IN FIELD BY CONTRACTOR.
- CONTRACTOR SHALL CONNECT GROUNDING CABLE TO GROUNDING LUG INSIDE POLE.
- PROVIDE 1/2" DIA x 1 1/2" LG GROUNDING LUG WELDED TO INSIDE OF POLE, POSITIONED OPPOSITE HAND HOLE. NUT AND WASHER INCLUDED (TYP ALL POLES).
- LOCATE HAND HOLES ON THE NEUTRAL AXIS AND OPPOSING THE TRAFFIC FLOW.
- NOT USED.
- NOT USED.
- FOR LUMINAIRE OR TRAIN SIGNAL CONNECTION LOCATIONS AND DETAILS SEE POLE SCHEDULE AND CONNECTION DETAIL.
- CONNECTION HEIGHTS OF LUMINAIRE OR TRAIN SIGNAL COORDINATE WITH SIGNAL OR LIGHTING ENGINEER.
- POLE ALLOCATION DESIGNATION SHOWN ON THE LAYOUT PLANS ARE DESCRIBE AS FOLLOWS.
(EXAMPLE)
PW1-26L OR TS, SWI, RS, RI, SC, MI, SL1

WHERE:
 L = POLE WITH LUMINAIRE
 TS = POLE WITH LRT TRAFFIC SIGNAL
 SWI = POLE WITH SWITCH INDICATOR
 RS = POLE WITH ROUTE SELECTOR
 RI = POLE WITH ROUTE INDICATOR
 SC = POLE WITH SIGNAL COUPLER
 MI = POLE WITH MOTORMAN INDICATOR
 SL1 = POLE WITH 1 (ONE) STREET LUMINAIRE

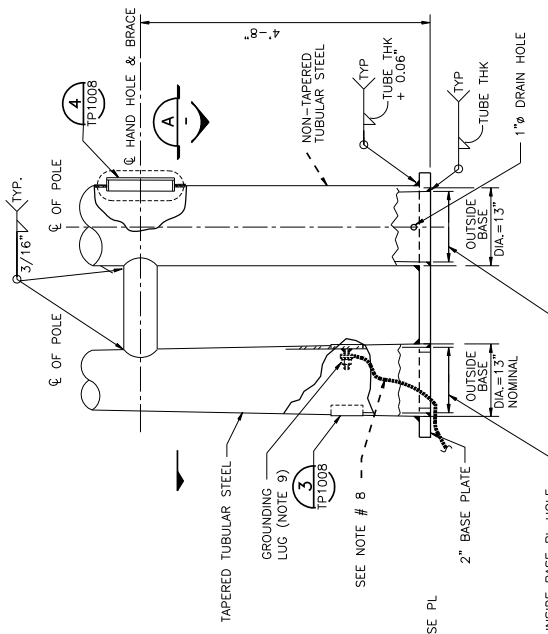
POLE TYPE (NOTE 15)	QTY	POLE TUBE		ANCHOR BOLT		STRUCTURE NO.
		BASE DIA (IN)	TOP DIA (IN)	GAUGE THICK (IN)	DIA (IN)	
PW1	6	13.00	9.34	26	3	5036, 5039, 5079 5037, 5040, 5080
		13.00	13.00	26	0.313	2.00

BASE PL HOLE DIA = 1.3" - 2 x CA (TYP)
 WALL THICKNESS

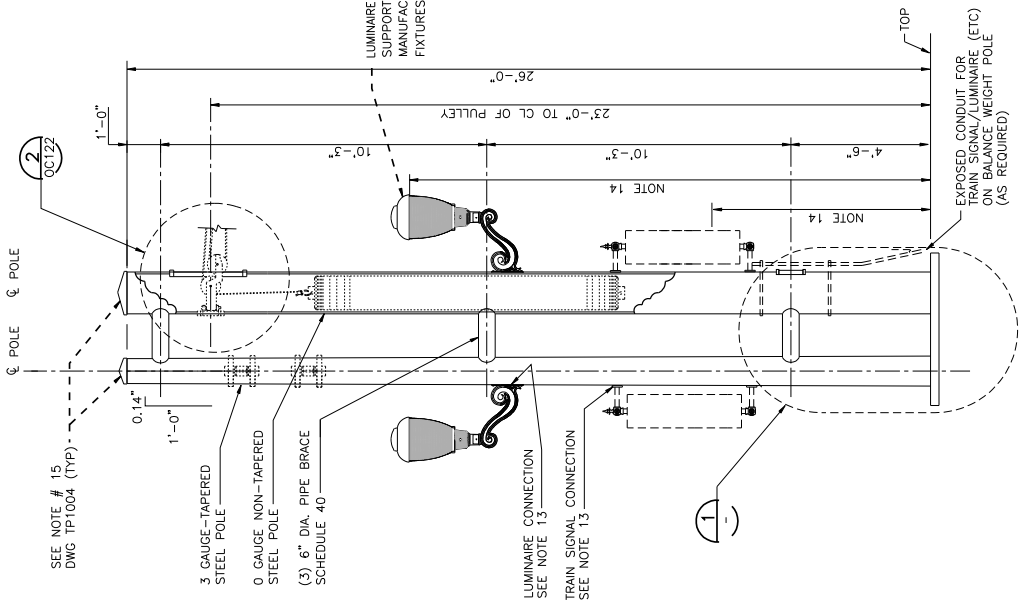


SECTION

LUMINAIRE (MODEL NO. R51GDNH, R52GDNH) SUPPORT BRACKET (MODEL NO. M0301) MANUFACTURED BY HADCO LIGHTING FIXTURES (TYP)



DETAIL



ELEVATION - SIDE VIEW

POLE TYPE PW1
 BALANCE WEIGHT POLE STRUCTURE

Designed By: _____
 Drawn By: _____
 Checked By: _____
 Approved By: _____



RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

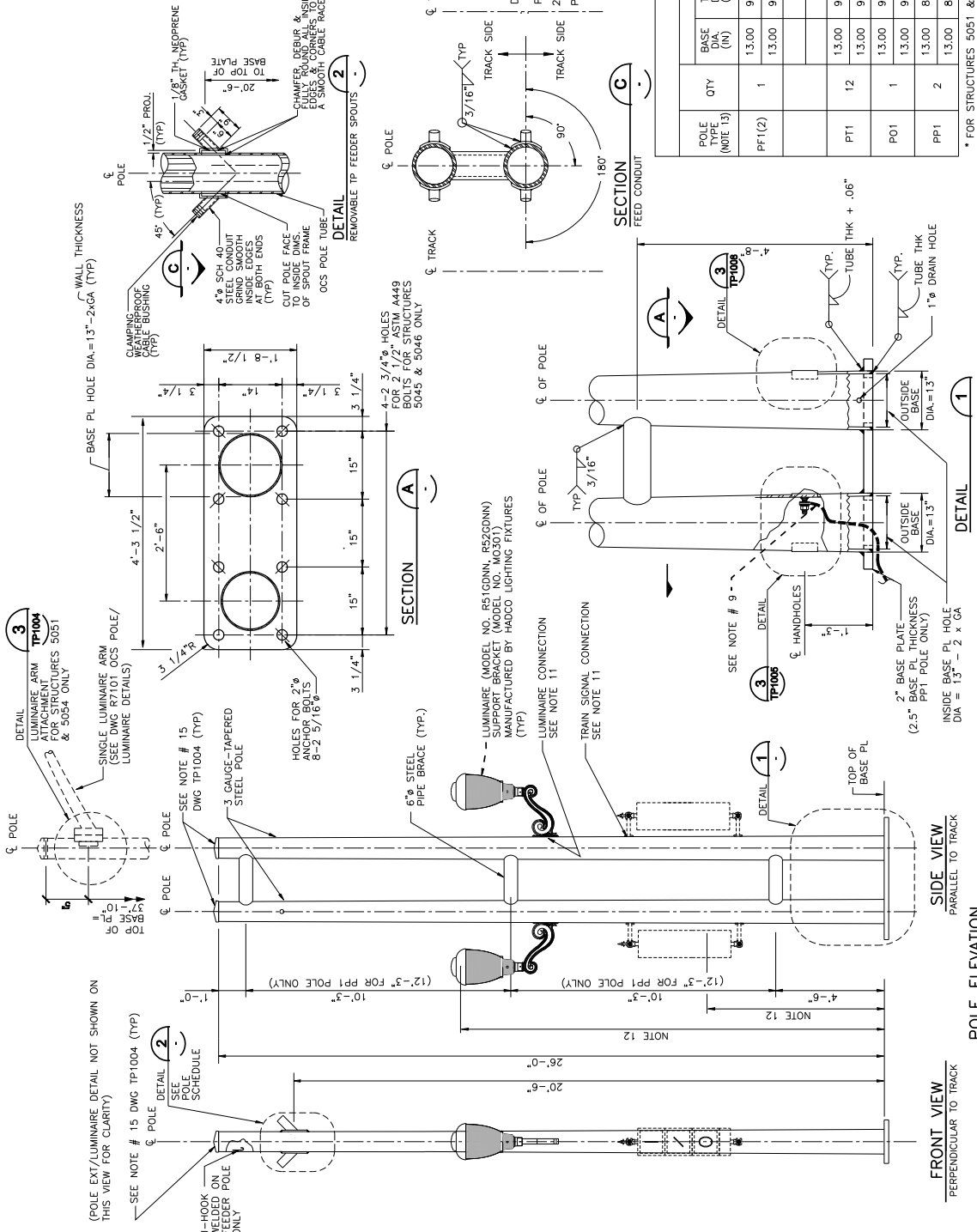
REV	DATE	Description

**OVERHEAD CONTACT SYSTEM
 STANDARD DRAWING**
 TAPERED/NON-TAPERED TUBULAR STEEL POLE
 FOR BALANCE WEIGHT TYPE PW1
 LIGHT RAIL REFERENCE DRAWINGS

Sheet No: OCS-116
 Date: _____
 Drawing No: _____

NOTES:

- FOR ABBREVIATIONS AND GENERAL NOTES SEE OCS-105.
- FOR SYMBOLS AND STRUCTURAL NOTES SEE DWG OCS-100.
- ALL POLES SHALL BE TAPERED TUBULAR STEEL. THE STANDARD TAPER SHALL BE FOURTEEN HUNDREDTHS (1/14) OF AN INCH PER LINEAR FOOT, MEASURED AS CHANGE IN DIAMETER.
- STEEL FOR POLE SHAFTS, BASE PLATES, HANDHOLES REINFORCEMENTS, AND COVERS SHALL BE FABRICATED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
- POLES SHALL BE HOT DIP GALVANIZED. FOR PAINTING AND COLOR SEE TECHNICAL SPECIFICATIONS.
- TOLERANCE OF POLE LENGTH IS PLUS 2 INCHES AND MINUS 0 INCHES.
- POLES SHALL BE SET PLUMB AFTER FULLY LOADED. SUGGESTED PRELOADED RAKE IS 2 INCHES FOR PULL OFF CANTILEVERS AND 0 INCHES FOR PUSH OFF CANTILEVERS.
- LOCATE HANDHOLES ON THE NEUTRAL AXIS AND OPPOSING THE TRACK FACE.
- CONTRACTOR SHALL CONNECT GROUNDING CABLE TO GROUNDING LUG INSIDE POLE.
- PROVIDE 1/2" DIA x 1 1/2" LG. GROUNDING LUG WELDED TO INSIDE OF POLE, POSITIONED OPPOSITE HANDHOLE. NUT AND WASHER INCLUDED (TYP ALL POLES).
- FOR LUMINAIRE OR TRAIN SIGNAL CONNECTION LOCATIONS AND DETAILS SEE POLE SCHEDULE.
- CONNECTION HEIGHTS OF LUMINAIRE OR TRAIN SIGNAL COORDINATE WITH SIGNAL OR LIGHTING ENGINEER.
- POLE ALLOCATION DESIGNATION SHOWN ON THE LAYOUT PLANS ARE DESCRIBE AS FOLLOWS. (EXAMPLE)
 PFT(2)-26L OR TS, SWI, RS, RI, SC, MI, SL1
 WHERE:
 L = POLE WITH LUMINAIRE
 TS = POLE WITH LRT TRAFFIC SIGNAL
 SWI = POLE WITH SWITCH INDICATOR
 RS = POLE WITH ROUTE SELECTOR
 RI = POLE WITH ROUTE INDICATOR
 SC = POLE WITH SIGNAL COUPLER
 MI = POLE WITH MOTORMAN INDICATOR
 SL1 = POLE WITH 1 (ONE) STREET LUMINAIRE



POLE TYPE (NOTE 13)	QTY	POLE TUBE		ANCHOR BOLT DIA. (IN)	3 1/2" FEEDER CONDUIT DETAIL 2	STRUCTURE NO.		
		TOP LENGTH (FT)	Gauge or Bolt DIA. (IN)					
PFT(2)	1	13.00	9.34	26	7	2.00	YES	5078
PT1	12	13.00	9.34	26	3	2.00	NO	5004-1, 5005, 5006, 5007, 5017, 5019, 5041, 5044, 5068-1, 5069, 5070, 5071
P01	1	13.00	9.34	26**	3	2.00	NO	5038, 5055
PP1	2	13.00	8.80	30	3	2.00	NO	5045, 5046

* FOR STRUCTURES 5051 & 5054 ONLY LENGTH = 38.25'
 ** FOR STRUCTURE 5055 ONLY LENGTH = 38.25'



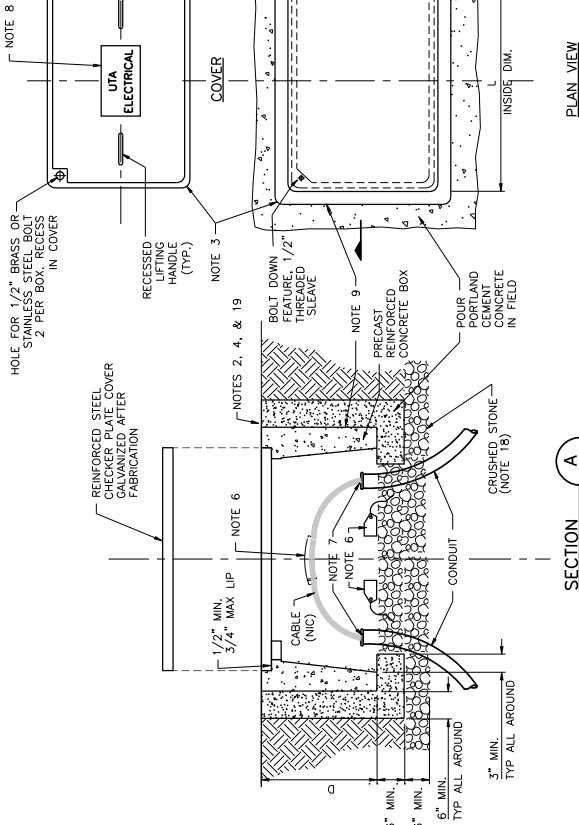
RECOMMENDED FOR APPROVAL _____ DATE _____
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

REV	DATE	Description

Drawn By: _____
 Checked By: _____
 Approved By: _____

OVERHEAD CONTACT SYSTEM
STANDARD DRAWING
 TANDEM TAPERED TUBULAR STEEL POLES
 TYPES PF1, PF2, PT1, P01, PP1
 LIGHT RAIL REFERENCE DRAWINGS

Sheet No: OCS-117
 Date: _____
 Drawing No: _____



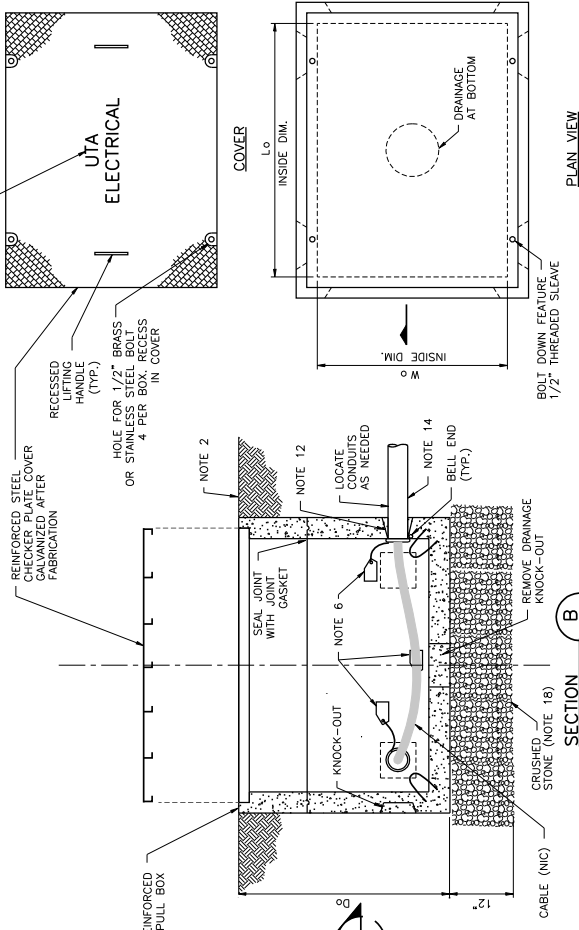
INSTALLATION DETAIL

DIMENSION TABLE

PULL BOX TYPE	MIN DEPTH D (NOTE 11)	MIN. L	MIN. W
AA	18"	27"	18"
BB	18"	40"	25"

NOTES:

- STEEL REINFORCING SHALL BE AS REGULARLY USED IN THE STANDARD PRODUCTS OF RESPECTIVE MANUFACTURER.
- TOP OF PULL BOXES SHALL BE FLUSH WITH SURROUNDING GRADE OR TOP OF ADJACENT CURB, EXCEPT THAT IN UNPAVED AREAS WHERE PULL BOX IS NOT IMMEDIATELY ADJACENT TO AND PROTECTED BY A CONCRETE FOUNDATION, POLE OR OTHER PROTECTIVE CONSTRUCTION, THE BOX SHALL BE PLACED WITH ITS TOP 0.10 FOOT ABOVE SURROUNDING GRADE. WHERE PRACTICABLE, PULL BOXES SHOWN IN THE VICINITY OF CURBS SHALL BE PLACED ADJACENT TO THE BACK OF CURB.
- THE OUTSIDE EDGE OF PULL BOXES AND COVERS FOR TYPES "AA" AND "BB" SHALL HAVE A MINIMUM RADIUS OF 1/4 INCH.
- WHEN PULL BOX IS INSTALLED IN SIDEWALK AREA, THE DEPTH OF THE PULL BOX SHALL BE ADJUSTED SO THAT THE TOP OF THE BOX IS FLUSH WITH THE TOP OF SIDEWALK.
- PULL BOX SHALL NOT BE WITHIN THE BOUNDARIES OF NEW OR EXISTING WHEELCHAIR RAMPS.
- ALL CABLES SHALL BE LABELED AS SPECIFIED IN THE CONTRACT SPECIFICATION.
- ALL CONDUITS SHALL BE SEALED AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.



INSTALLATION DETAIL

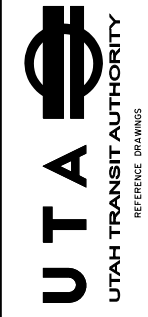
DIMENSION TABLE

PULL BOX TYPE	MIN DEPTH BOX Do (NOTE 11)	MIN. Lo	MIN. Wo
CC	AS REQUIRED	48"	36"
DD	AS REQUIRED	36"	24"
EE	2'-6" MIN.	72"	36"

TYPICAL PULL BOX DETAILS

- ALL PULL BOXES THAT ARE BEING INSTALLED FOR THE UTA SHALL READ "UTAH ELECTRICAL" ON THE COVER, OR ANY OTHER APPROPRIATE LABEL THAT IS APPROVED BY THE ENGINEER.
- PULL BOXES THAT ARE BEING INSTALLED FOR AN AUTHORITY OTHER THAN UTA, SHALL MEET THE REQUIREMENTS OF THAT AUTHORITY.
- ALL DIMENSIONS SHOWN ARE THE MINIMUM REQUIRED.
- EXTENSIONS MAY BE USED.
- KNOCK-OUT AREA AROUND CONDUIT SHALL BE GROUDED WITH NON-SHRINK GROUT.
- TYPE BB SHALL BE USED UNLESS OTHERWISE NOTED.
- CONDUITS SHALL SLOPE DOWN TOWARDS THE PULL BOX SO AS TO ALLOW THE CONDUITS TO DRAIN INTO THE PULL BOX.

- PULL BOXES SHALL BE VEHICULAR TRAFFIC RATED BASED ON ASTM C-857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRE CAST CONCRETE UTILITY STRUCTURES".
- WHERE CONDUITS ARE TO REMAIN EMPTY CONTRACTOR SHALL MANDREL THE CONDUITS AND INSTALL A PULL STRING IMMEDIATELY FOLLOWING THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HRS PRIOR TO MANDRELING.
- PULL BOXES SHALL BE INSTALLED SUCH THAT ITS LARGER DIMENSION "L" BE PLACED PARALLEL TO TRACK CENTER LINE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- INSTALL PERMEABLE MATERIAL UNDER PULL BOXES CONSISTING OF CRUSHED STONE, FREE FROM ORGANIC MATERIAL, CLAY BALLS, OR OTHER DELETERIOUS MATERIAL.
- CONTRACTOR MAY USE A TRAFFIC RATED PRECAST BOX IN LIEU OF CAST-IN-PLACE CONCRETE.
- COVER FOR TYPE "EE" PULL BOX SHALL BE DIVIDED INTO TWO SEGMENTS. PROVIDE 4 HOLD DOWN BOLTS PER SEGMENT.



TRACTION POWER
STANDARD DRAWING
PULL BOX DETAILS

Light Rail Reference Drawings
TRP-100

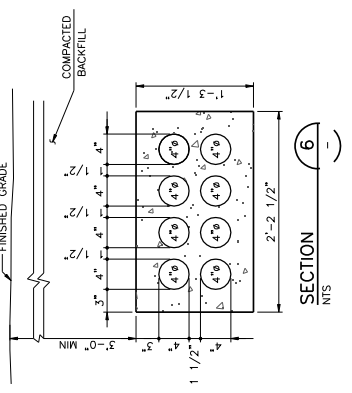
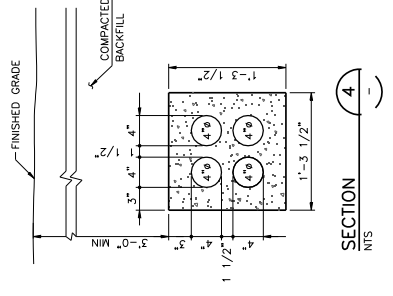
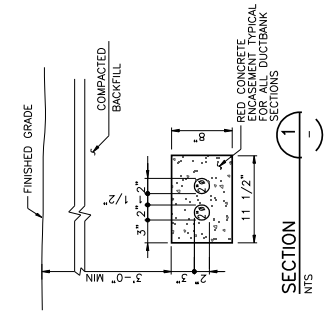
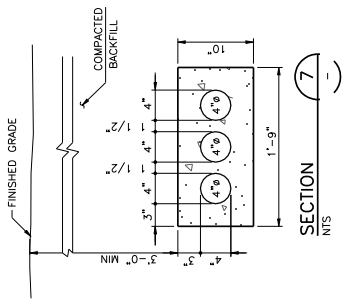
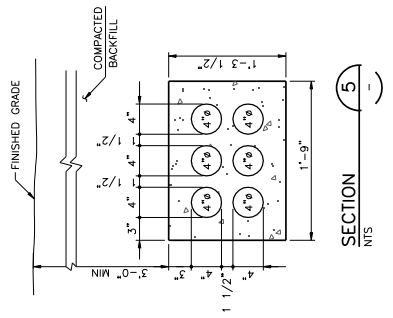
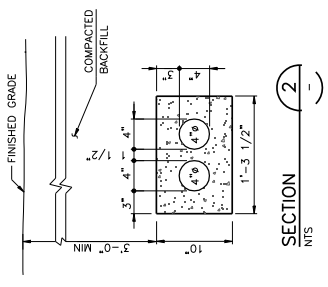
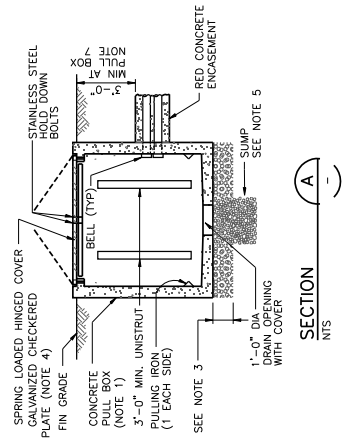
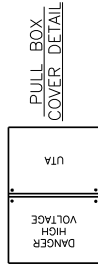
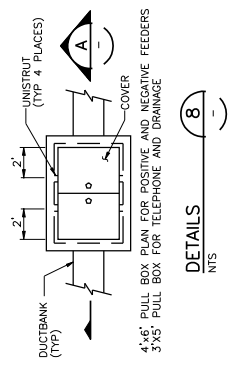
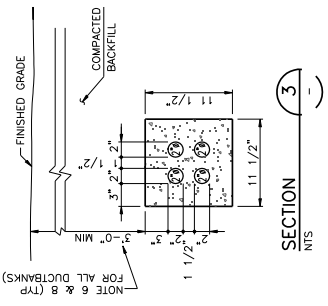
RECOMMENDED FOR APPROVAL
SYSTEMS STANDARDS
DATE

CAPITAL DEVELOPMENT DEPUTY CHIEF
DATE

REV	DATE	Description

Scale: NTS
CADD Filename:
Submitting Date:
Drawing No.: TRP-100

- NOTES:**
- PULL BOX INTERIOR DIMENSIONS FOR POSITIVE AND NEGATIVE DUCT BANKS SHALL BE AS SHOWN. MINIMUM UNLESS OTHERWISE NOTED.
 - CONTRACTOR SHALL INSTALL TOP OF PULL BOX RIM TO FINISHED GRADE. PROVIDE POSITIVE DRAINAGE AWAY FROM PULL BOX.
 - INSTALL 8" DEEP (MIN) DRAINAGE AGGREGATE CONSISTING OF CLEAN CRUSHED ROCK BELOW PULL BOX.
 - PULL BOX AND COVER SHALL BE TRAFFIC RATED FOR LOADING.
 - INSTALL 2"x2"x2" PERMEABLE MATERIAL UNDER SLUMP OPENING CONSISTING OF CRUSHED STONE, FREE FROM ORGANIC MATERIAL, CLAY BALLS, OR OTHER DELETERIOUS SUBSTANCES.
 - WHERE CROSSING UNDER TRACK, TOP OF DUCT BANKS SHALL BE 4'-6" MIN BELOW TOP OF RAIL UNLESS OTHERWISE INDICATED.
 - TRANSITION FROM PULL BOX ENTRANCE TO NORMAL DEPTH AS SHOWN ON DUCT BANK SECTIONS SHALL BE MADE WITH LONG CONDUIT SWEEPS.
 - MINIMUM DIMENSIONS DO NOT APPLY AT CROSSINGS UNDER UTILITY PIPES.



Designed By: _____
 Drawn By: _____
 Checked By: _____
 Approved By: _____



RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

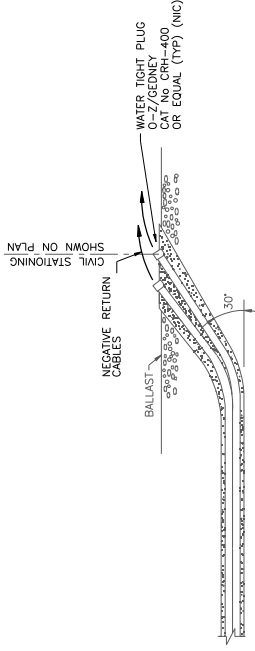
REV	DATE	Description

TRACTION POWER
STANDARD DRAWING
BALLASTED TRACK
RACEWAY DETAILS
 SHEET 1 OF 2
 LIGHT RAIL REFERENCE DRAWINGS

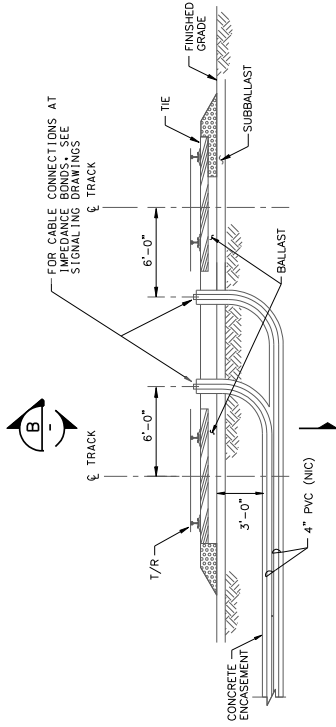
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NOTES:

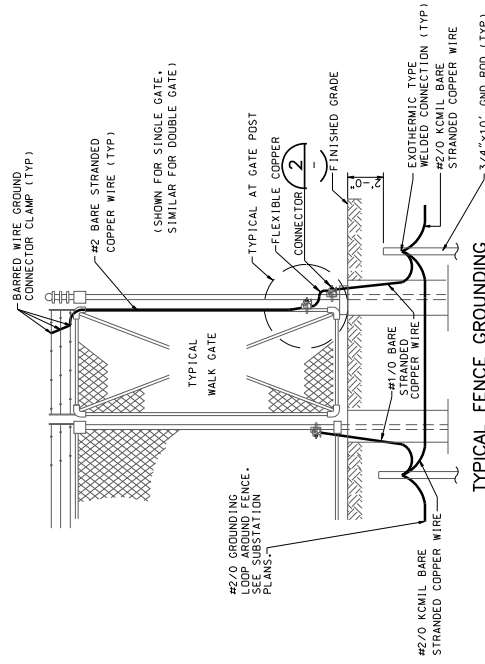
- CONNECT NEGATIVE RETURN CABLES TO IMPEDANCE BONDS AS INDICATED ON SIGNAL TRACK PLANS.



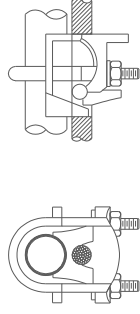
SECTION
NTS
A — B



SECTION AT NEGATIVE RETURN STUBUPS
NTS
A — B



DETAIL
NTS
1 — 1

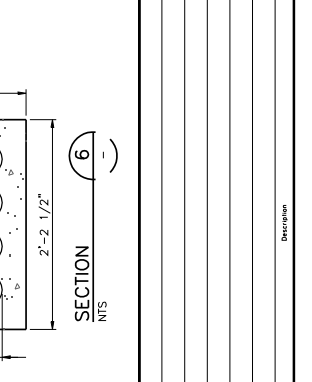
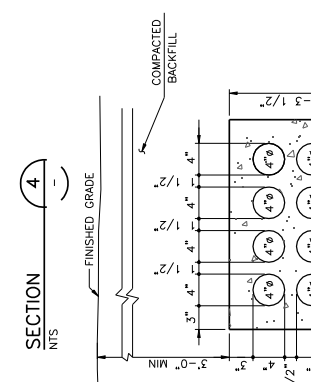
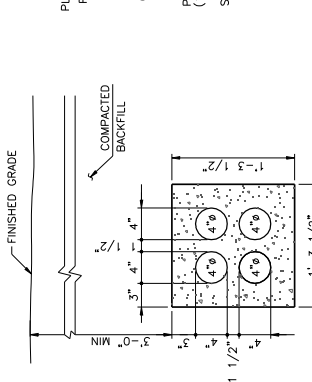
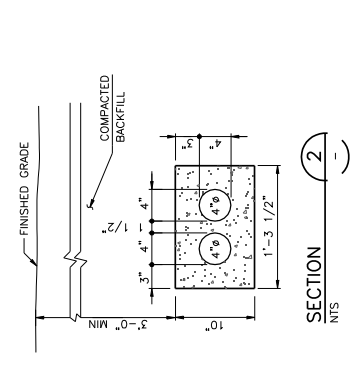
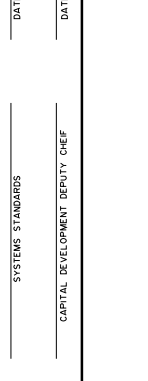
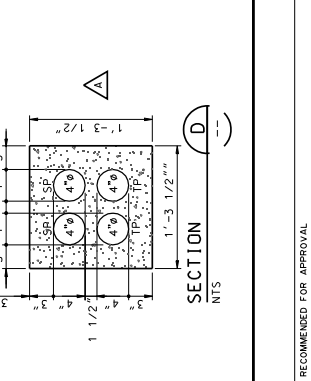
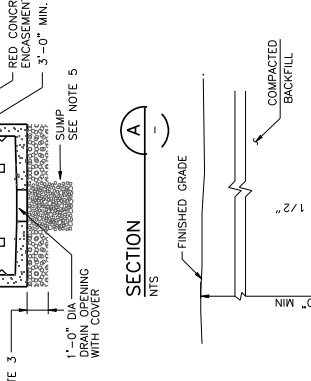
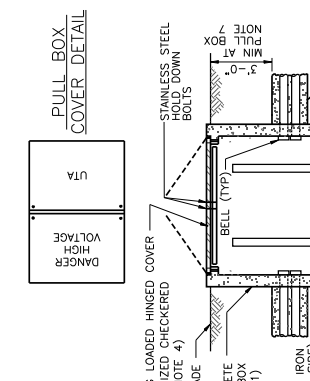
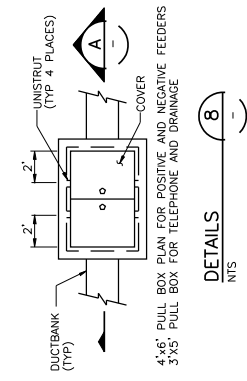
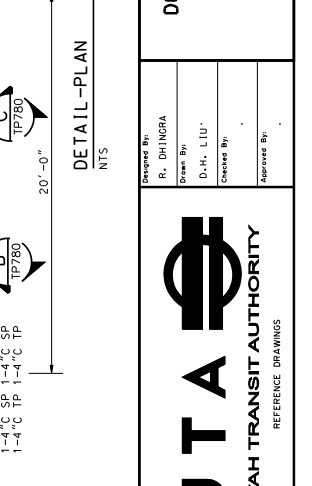
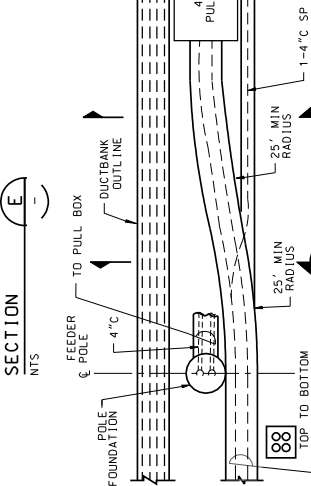
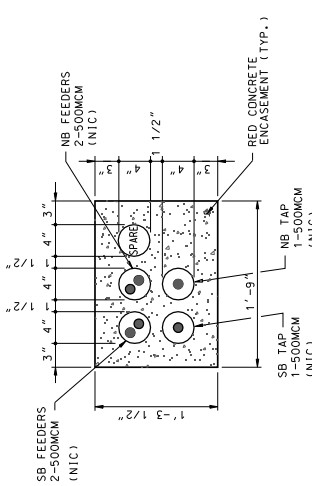
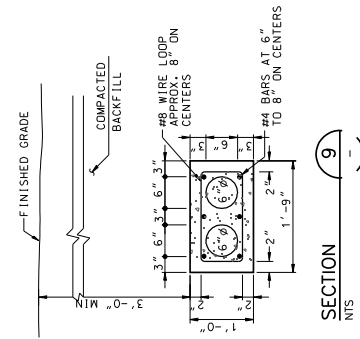


CONNECTOR
DETAIL
NTS
2 — 1

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Drawn By:																								
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RECOMMENDED FOR APPROVAL	DATE																							
SYSTEMS STANDARDS	DATE																							
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE																							
REV	DATE	Description																						

NOTES:

- PULL BOX INTERIOR DIMENSIONS FOR POSITIVE AND NEGATIVE FEEDERS SHALL BE 72" LONG x 48" WIDE x 52" HIGH MINIMUM, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL INSTALL TOP OF PULL BOX RIM 1.5 INCH ABOVE SURROUNDING PAVEMENT UNLESS OTHERWISE INDICATED. PROVIDE POSITIVE DRAINAGE AWAY FROM PULL BOX.
- INSTALL 8" DEEP (MIN) DRAINAGE AGGREGATE CONSISTING OF CLEAN CRUSHED ROCK BELOW PULL BOX.
- PULL BOX AND COVER SHALL BE TRAFFIC RATED FOR 25,000 LBS.
- INSTALL 2"x2"x2" PERMEABLE MATERIAL UNDER SWAMP OPENING CONSISTING OF CRUSHED STONE, FREE FROM ORGANIC MATERIAL, CLAY BALLS, OR OTHER DELETERIOUS MATERIAL. TOP OF SWAMP OPENING SHALL BE 4"-6" MIN BELOW TOP OF RAIL UNLESS OTHERWISE INDICATED.
- TRANSITION FROM PULL BOX ENTRANCE TO NORMAL DEPTH AS SHOWN ON DUCT BANK SECTIONS SHALL BE MADE WITH LONG CONDUIT SWEEPS.
- MINIMUM DIMENSIONS DO NOT APPLY AT CROSSINGS UNDER UTILITY PIPES.



Drawn By: R. DHINGRA
 Checked By: D.H. LIU
 Approved By: _____
 Date: _____
 Title: DOWNTOWN DISTRICT - PHASE 1 TRACTION POWER RACEWAY DETAILS SHEET 1 OF 3

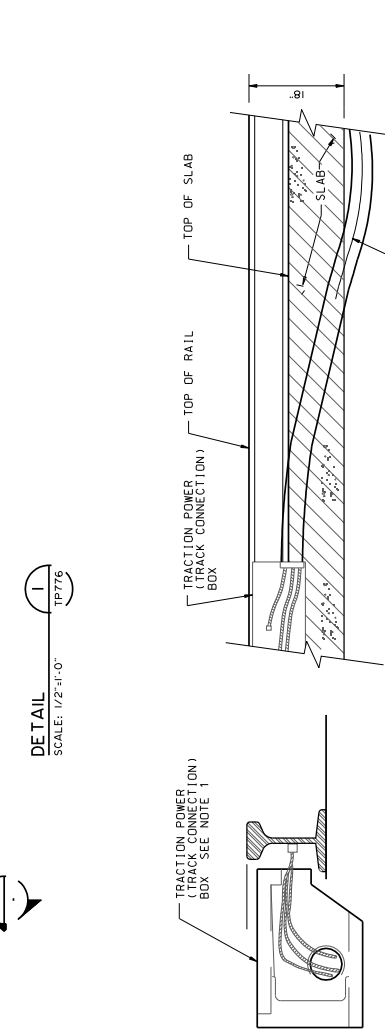
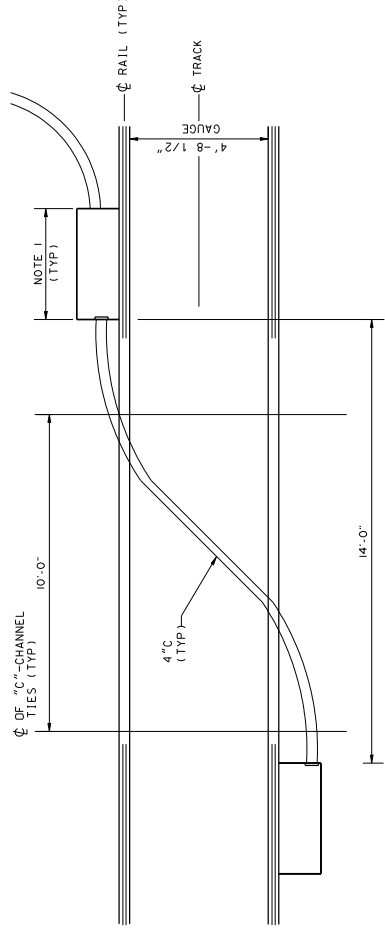
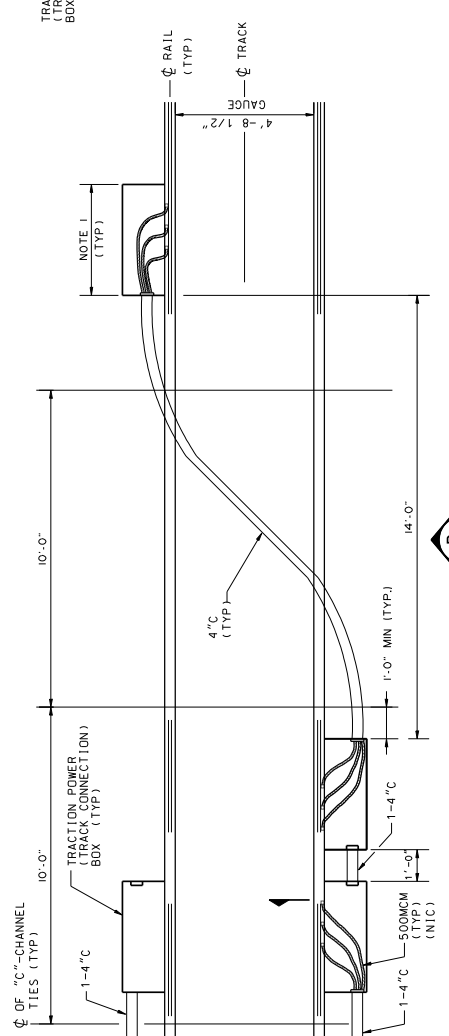
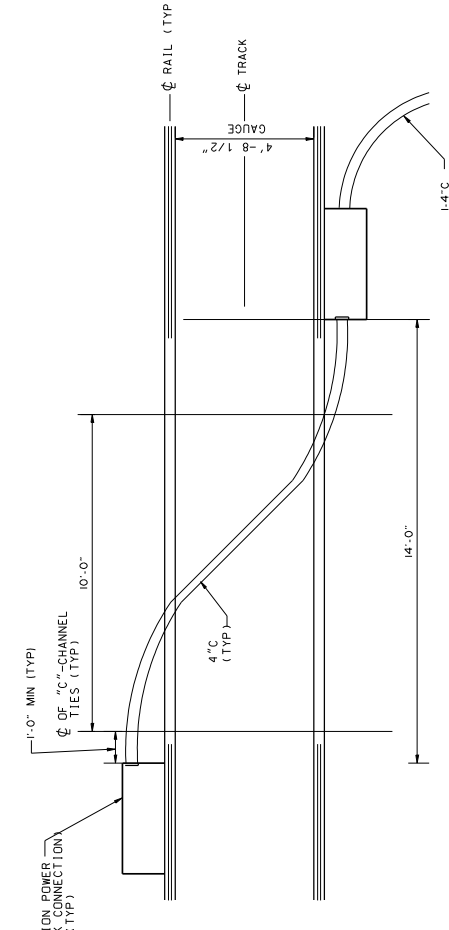


RECOMMENDED FOR APPROVAL: _____ DATE: _____
 SYSTEMS STANDARDS: _____ DATE: _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF: _____ DATE: _____

REV	DATE	Description

NOTES:

- FOR DIMENSION & DETAIL OF TRACTION POWER (TRACK CONNECTION) BOX SEE DWG. CIV-105.



DETAIL
SCALE: 1/2"=1'-0"
2 TP432

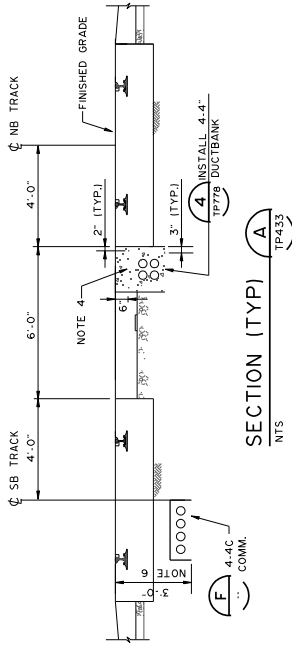
SECTION
SCALE: 1"=1'-0"
B

SECTION
SCALE: 2"=1'-0"
A

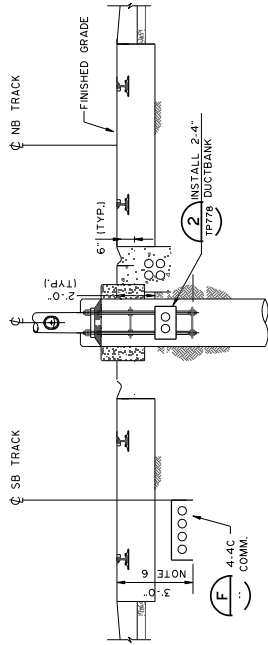
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<p>RECOMMENDED FOR APPROVAL</p> <p>SYSTEMS STANDARDS</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF</p>	<p>DATE</p> <p>DATE</p> <p>DATE</p>		
<p>REV</p> <p>DATE</p> <p>DESCRIPTION</p>			

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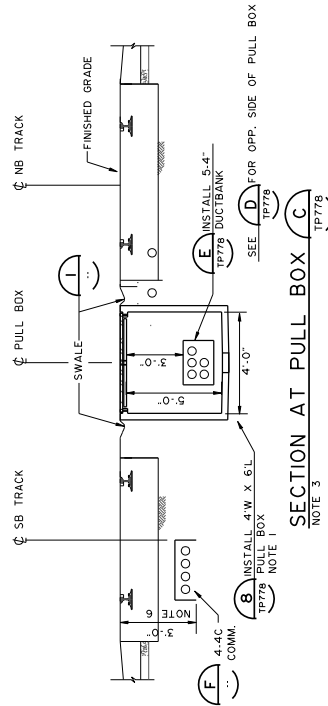
1. CONTRACTOR SHALL COORDINATE WITH THE INSTALLATION OF SWALE.
2. CONCRETE TO MATCH BOX COVER.
3. SEE SECTION A FOR DIMENSIONS.
4. 1/2" x 1/2" x 4'-0" LG CONTINUOUS STEEL PROTECTION PLATE, (OR REBAR CAGING IN CERTAIN PLACES).
5. THE TOP TWO 4"C COMM. SHALL EACH BE PROVIDED WITH 3/4" 1/2" INNER DUCTS, INNER DUCTS SHALL BE FACTORY ASSEMBLED IN PVC CONDUIT SIMILAR TO THAT MANUFACTURED BY CARLON TELCOM OR AS APPROVED BY THE ENGINEER.
6. INCREASE DEPTH AS REQUIRED TO CLEAR UTILITIES.



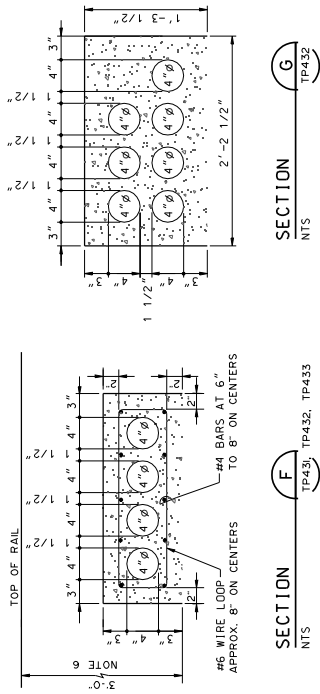
SECTION (TYP) A
TP433



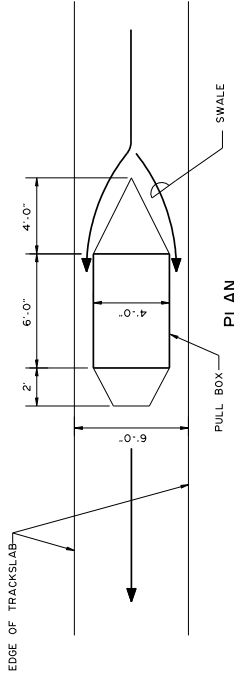
SECTION AT POLE B
TP778



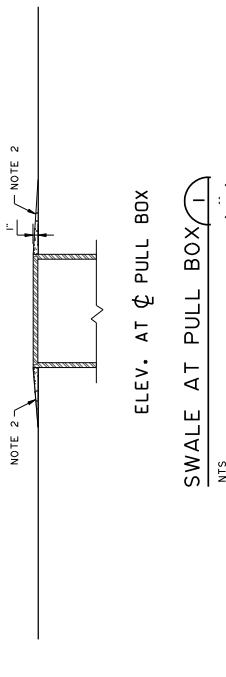
SECTION AT PULL BOX C
TP778



SECTION F
TP431, TP432, TP433



SECTION G
TP432



ELEV. AT PULL BOX

SWALE AT PULL BOX
TP432

RECOMMENDED FOR APPROVAL	DATE
SYSTEMS STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

REV	DATE	Description

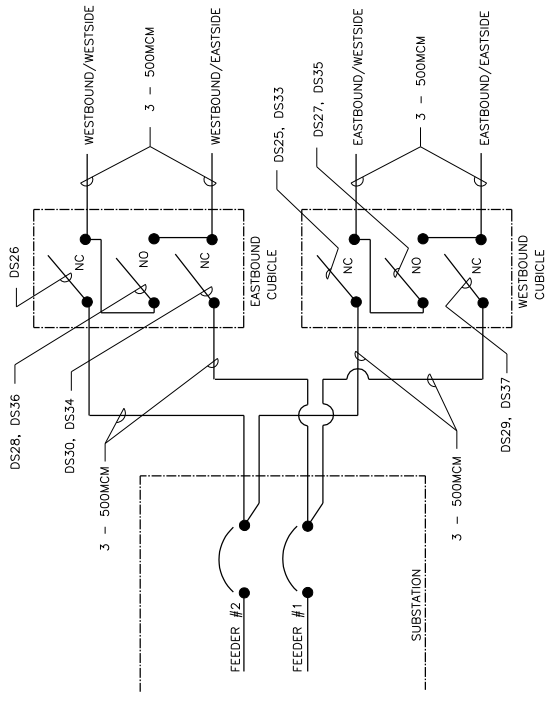
UTAH
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

Designed By: Z. JARKIEWICZ
Drawn By: D-S. TALLITSCH
Checked By:
Approved By:

DOWNTOWN DISTRICT - PHASE 1
TRACTION POWER
RACEWAY DETAILS
SHEET 3 OF 3

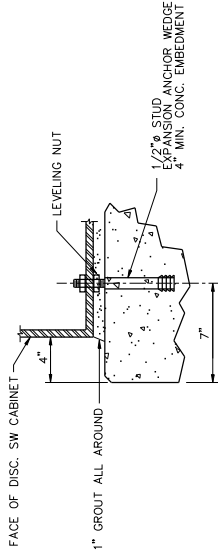
Light Rail Reference Drawings
Drawing No. TRP-105

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Submitting Date:	

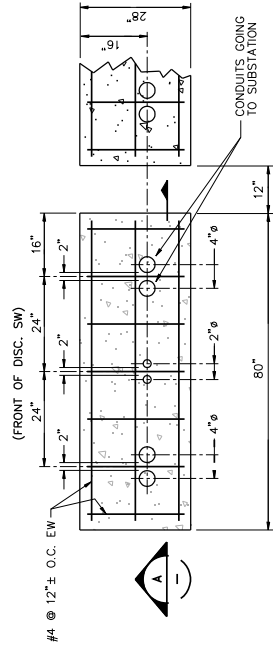


SINGLE LINE
(NTS) TPS E4 & TPS E5

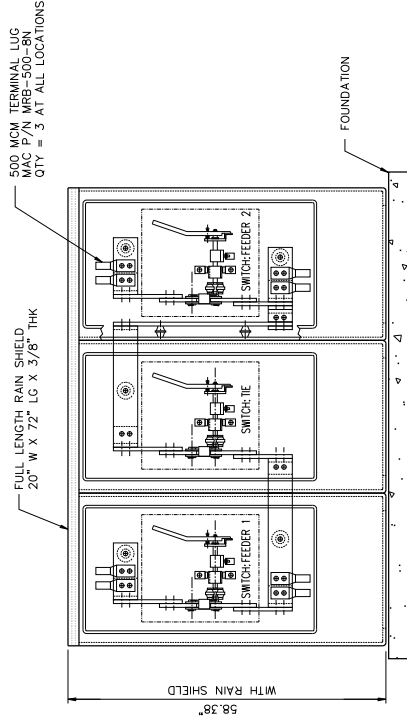
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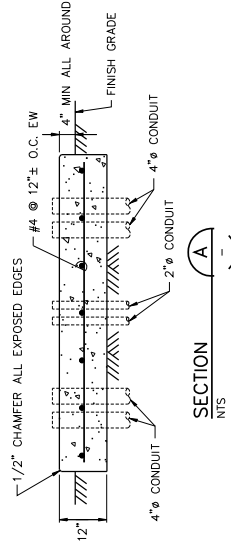
TYPICAL ANCHOR BOLT DETAIL AND CONCRETE EDGE DIST.



TYPICAL FOUNDATION PLAN (DISCONNECT SWITCH) FOR SUBSTATIONS E4 & E5



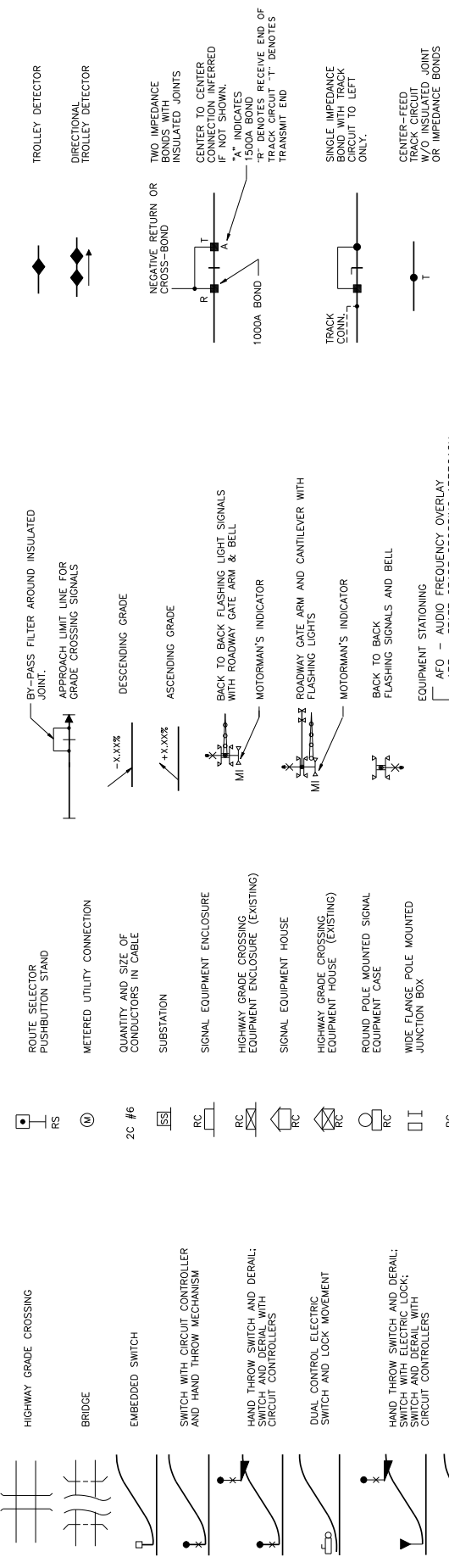
TYPICAL PAD MOUNTED DISCONNECT SWITCHES



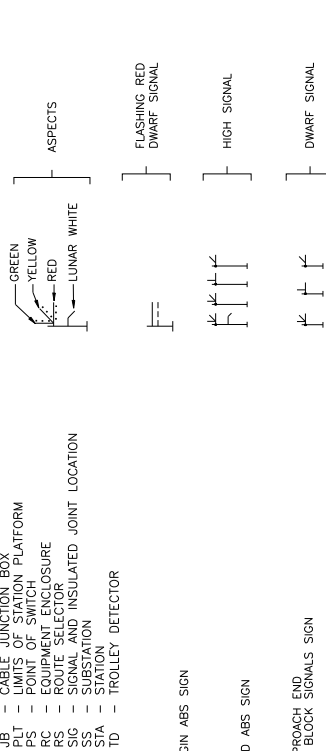
SECTION
NTS

RECOMMENDED FOR APPROVAL SYSTEMS STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____	 UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	Designed By: _____ Drawn By: _____ Checked By: _____ Approved By: _____	TRACTION POWER STANDARD DRAWING DISCONNECT SWITCHES FOUNDATION PLAN AND EQUIPMENT LAYOUT LIGHT RAIL REFERENCE DRAWINGS
		Date: _____ Scale: _____	Sheet No.: _____ Total Sheets: _____ Drawing No.: TRP-106
		Revision: _____ Description: _____	Date: _____ Scale: _____
		Date: _____ Scale: _____	Date: _____ Scale: _____

LAYOUT SYMBOLS



TYPICAL SIGNAL SYMBOLS



- EQUIPMENT STATIONING**
 AFO - AUDIO FREQUENCY OVERLAY
 AP - APPROACH
 BP - BRIDGE
 CF - CENTER FEED
 CS - CUT SECTION
 IL - LIMITS OF CROSSING ISLAND
 IND - INDICATOR
 JB - CABLE JUNCTION BOX
 PL - LIMITS OF PLATFORM
 PC - EQUIPMENT ENCLOSURE
 RS - ROUTE SELECTOR
 SIG - SIGNAL AND INSULATED JOINT LOCATION
 SS - SUBSTATION
 STA - STATION
 TD - TROLLEY DETECTOR

NOTE:
 THESE SYMBOLS ARE APPLICABLE TO SINGLE LINE CONTRACT DRAWINGS. PROVIDE COMPLETE SYMBOL SHEETS FOR WORKING DRAWINGS AND PLANS.

	Drawn By: _____ Checked By: _____ Approved By: _____	Date: _____ Date: _____ Date: _____
	UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	SIGNALING STANDARD DRAWING LAYOUT SYMBOLS

CIRCUIT SYMBOLS

○	AAR TERMINAL		
∞	AAR TERMINALS W/ TEST LINK		
	FUSE		FULL WAVE RECTIFIER
	RESISTOR (FIXED)		STORAGE BATTERY
	RESISTOR (VARIABLE)		GROUND
	LINE ARRESTOR		LAMP
	SHUNT ARRESTOR (EQUALIZER)		TWISTED WIRE PAIR (TW)
	SWITCH MACHINE OVERLOAD RELAY		PUSHBUTTON
	NON VITAL RELAY		VITAL RELAY CONTACT
	BIASED NEUTRAL RELAY		NON-VITAL RELAY CONTACT
	BIASED SLOW RELEASE RELAY		INDICATES HEAVY DUTY CONTACTS
	BIASED SLOW PICKUP RELAY		LEVER BAND (TEXT VARIES)
	AC VANE RELAY		CIRCUIT CONTROLLER CONTACT
	POWER OFF RELAY		DIODE
	TIME ELEMENT RELAY		SWITCH CAM CONTACT
	FLASHER RELAY		WIRES ENTERING OR LEAVING ENCLOSURE
	CAPACITOR		(FIELD SIDE)
	INDUCTOR		
	TRANSFORMER		
	MULTIPLE TAP TRANSFORMER		
	NEUTRAL RELAY		

REV	DATE	DESCRIPTION									
△											
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RECOMMENDED FOR APPROVAL			SYSTEMS STANDARDS	DATE							
CAPITAL DEVELOPMENT DEPUTY CHIEF			DATE								
 UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS											
DESIGNED BY			DRAWN BY			CHECKED BY			APPROVED BY		
SIGNALING STANDARD DRAWING CIRCUIT SYMBOLS											
LIGHT RAIL REFERENCE DRAWINGS											
SHEET: NONE CADD: None SCHEDULE DATE: DRAWING NO.: SIG-101											

ABBREVIATIONS

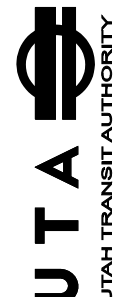
AAR	ASSOCIATION OF AMERICAN RAILROADS
ABS	AUTOMATIC BLOCK SIGNALS
AC	ALTERNATING CURRENT
ADJ	ADJUSTED
AFO	AUDIO FREQUENCY OVERLAY
AK	AFO B TO CABLE
APP	APPROACH
BR	BRIDGE
CF	CENTER FEED FOR TRACK CIRCUIT
CK	VITAL SIGNAL CABLE
CS	CUT SECTION
?	CENTERLINE
DC	DIRECT CURRENT
DL	DERAIL
DIA	DIAMETER
DPDT	DOUBLE POLE DOUBLE THROW
E	EAST
EOT	END OF TRACK
ES	NEARSIDE CROSSING LATCHOUT INDICATOR
EX	EXISTING
FT	FEET
GND	GROUND
G.O.	GENERAL ORDER
HZ	HERTZ
IB	IMPEDANCE BOND
ID	INSIDE DIAMETER
IJ	INSULATED JOINT
IL	CROSSING ISLAND
IN	INCH
IND	INDICATOR
JB	JUNCTION BOX
KW	THOUSAND CIRCULAR MILS
LW	LUNAR WHITE
MAX	MAXIMUM
MI	MOTORMANS INDICATOR
MIN	MINIMUM
MPH	MILES PER HOUR
NB	NORTHBOUND
NC	NICKEL CADMIUM
NEG	NEGATIVE
NIC	NOT IN CONTRACT
NIF	NEARSIDE INDICATOR FIELD CASE
NR	NEGATIVE RETURN
NS	NEARSIDE
NTS	NOT TO SCALE
OCG	OVERHEAD CONTACT SYSTEM
PK	POWER CABLE
PLT	PLATFORM
PO	POWER OFF
POS	POSITIVE
PROT	PROTECTION
PS	POINT OF SWITCH
PVC	POLYVINYLCHLORIDE
RC	EQUIPMENT HOUSE OR CASE
RCVR	RECEIVER
RD	ROAD
RET	RETURN
RS	ROUTE SELECTOR
S	SOUTH
SB	SOUTHBOUND
(SBG)	SWITCH POINTS SPIKED AND CLAMPED IN POSITION SHOWN
SIG	SIGNAL
SP	SOUTHERN PACIFIC RAILROAD
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SS	TRACTION POWER SUBSTATION
ST	STREET

STL	STEEL
STA	STATION
STD	STANDARD
SW	SWITCH
TD	TROLLEY DETECTOR
TK	TRACK WIRE
TO	TURNOUT
TOT	TOP OF CONCRETE
TOF	TOP OF FOUNDATION
TR	TRACTION POWER SUBSTATION
TRK, T	TRACK
TW	TWISTED PAIR
TYP	TYPICAL
UDOT	UTAH DEPT OF TRANSPORTATION
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VAC	VOLTS ALTERNATING CURRENT
W	WEST
WLJB	SWITCH LOCK JUNCTION BOX
XCVR	TRANSCEIVER
XTR	TRANSMITTER

AR	APPROACH STICK RELAY
ASR	APPROACH STICK RELAY
ATR	APPROACH TRACK RELAY
B12	POSITIVE 12 VOLT DC
B20	POSITIVE 12 VOLT DC (FOR CROSSING GATE CONTROL)
B20	POSITIVE 120 VOLT DC (FOR ELECTRIC SWITCHES)
BK20	POSITIVE 120 VOLT AC
CNR	CANCEL PUSH BUTTON RELAY
CANSR	CANCEL PUSH BUTTON STICK RELAY
CH20	NEGATIVE 120 VOLT DC (FOR ELECTRIC SWITCHES)
CK20	NEGATIVE 120 VOLT AC
DR	DISTANT RELAY
EOR	FLASHER RELAY
FOR	TRAFFIC SIGNAL INTERFACE RELAY
GDPR	GATE DOWN REPEATER RELAY
GDSP	GATE DOWN STICK RELAY
GE	GREEN LIGHT WIRE
HPR	HOME-DISTANT REPEATER RELAY
HR	HOME RELAY
LR	LOCK RELAY
LSR	LOCK STICK RELAY
N	NORTH TRACK
N2	NEGATIVE 12 VOLT DC
N2-1	NEGATIVE 12 VOLT DC (FOR CROSSING GATE CONTROL)
NN	NORTH TRACK NORTHBOUND
NNAT	NORTH TRACK NORTHBOUND APPROACH TRACK
NNATT	NORTH TRACK NORTHBOUND APPROACH TRACK FEED
NNATR	NORTH TRACK NORTHBOUND APPROACH TRACK RELAY
MNSR	NORTH TRACK NORTHBOUND STICK RELAY
NS	NORTH TRACK SOUTHBOUND
NSAT	NORTH TRACK SOUTHBOUND APPROACH TRACK
NSATT	NORTH TRACK SOUTHBOUND APPROACH TRACK FEED
NSATR	NORTH TRACK SOUTHBOUND APPROACH TRACK RELAY
NSR	NORTH TRACK SOUTHBOUND STICK RELAY
NKT	NORTH TRACK ISLAND CIRCUIT
NXTR	NORTH TRACK ISLAND CIRCUIT RELAY
NWGR	NORMAL SWITCH CORRESPONDENCE RELAY
NWLRP	NORMAL SWITCH LOCK REPEATER RELAY
NWLSRP	NORMAL SWITCH LOCK STICK REPEATER RELAY
NWPR	NORMAL SWITCH INDICATING RELAY
NWR	NORMAL SWITCH CONTROL RELAY
NWZR	NORMAL SWITCH REQUEST RELAY
O	OVERLOAD RELAY
OR	REPEATER
PBSR	PUSH BUTTON STICK RELAY
POR	POWER OFF RELAY
POS	POWER OFF STICK RELAY
RB	POSITIVE CONTROL FOR TRACK RELAY
RE	RED LIGHT WIRE
RHR	REVERSE HOME RELAY
RN	REVERSE CONTROL FOR TRACK RELAY
RPBSR	REVERSE ROUTE PUSHBUTTON STICK RELAY
RR	ROUTE RELAY
RRR	REVERSE ROUTE RELAY
RRXR	SP CROSSING CONTROL RELAY
RRXTE	SP CROSSING TIME ELEMENT TIMER
RRXTER	SP CROSSING TIME ELEMENT RELAY
RS	ROUTE SELECT PUSH BUTTON
RSR	ROUTE STICK RELAY
RWCR	REVERSE SWITCH CORRESPONDENCE RELAY
RWRP	REVERSE SWITCH INDICATING RELAY
RWR	REVERSE SWITCH CONTROL RELAY
RWZR	REVERSE SWITCH REQUEST RELAY

S	SOUTH TRACK
SN	SOUTH TRACK NORTHBOUND
SNAT	SOUTH TRACK NORTHBOUND APPROACH TRACK
SNATR	SOUTH TRACK NORTHBOUND APPROACH TRACK FEED
SNR	SOUTH TRACK NORTHBOUND APPROACH TRACK RELAY
SS	SOUTH TRACK SOUTHBOUND
SSAT	SOUTH TRACK SOUTHBOUND APPROACH TRACK
SSATR	SOUTH TRACK SOUTHBOUND APPROACH TRACK FEED
SSR	SOUTH TRACK SOUTHBOUND APPROACH TRACK RELAY
SR	STICK RELAY
SXT	SOUTH TRACK ISLAND CIRCUIT
SXTR	SOUTH TRACK ISLAND CIRCUIT RELAY
TB	POSITIVE FEED FOR TRACK CIRCUIT
TE	TIME ELEMENT TIMER
TER	TIME ELEMENT RELAY
TESR	TIME ELEMENT STICK RELAY
TN	NEGATIVE FEED FOR TRACK CIRCUIT
TR	TRACK RELAY
TRR	TRACK STICK RELAY
TTSR	TROLLEY DETECTOR STICK RELAY
WL	SWITCH LOCK
WLTR	SWITCH LOCK TRACK RELAY
XGRP	CROSSING GATE REPEATER RELAY
XLOKR	CROSSING LOCKOUT INDICATOR RELAY
XLSR	GRADE CROSSING LOCKOUT STICK RELAY
XPR	CROSSING CONTROL REPEATER RELAY
XR	CROSSING CONTROL RELAY
XTR	CROSSING GATE TIME ELEMENT RELAY

CIRCUIT NOMENCLATURE



UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

RECOMMENDED FOR APPROVAL

SYSTEMS STANDARDS

CAPITAL DEVELOPMENT DEPUTY CHIEF

DATE

DATE

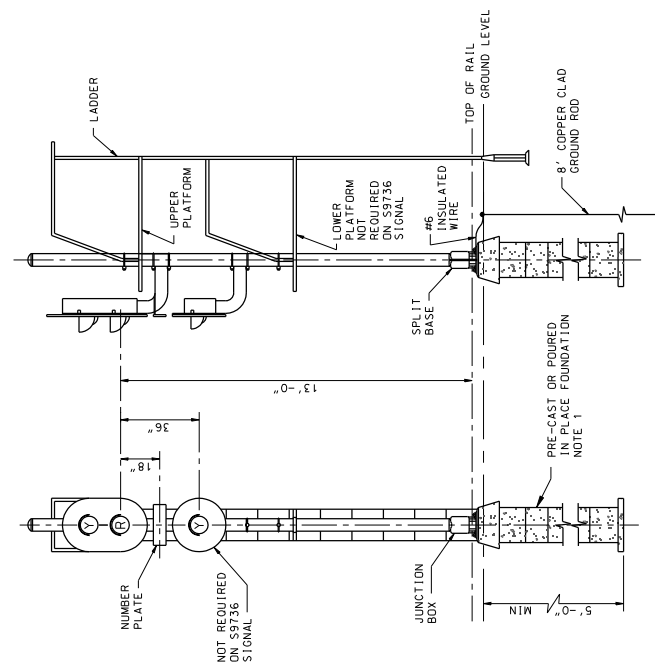
SIGNALING
STANDARD DRAWING
ABBREVIATIONS AND NOMENCLATURE

Light Rail Reference Drawings

SIG-102

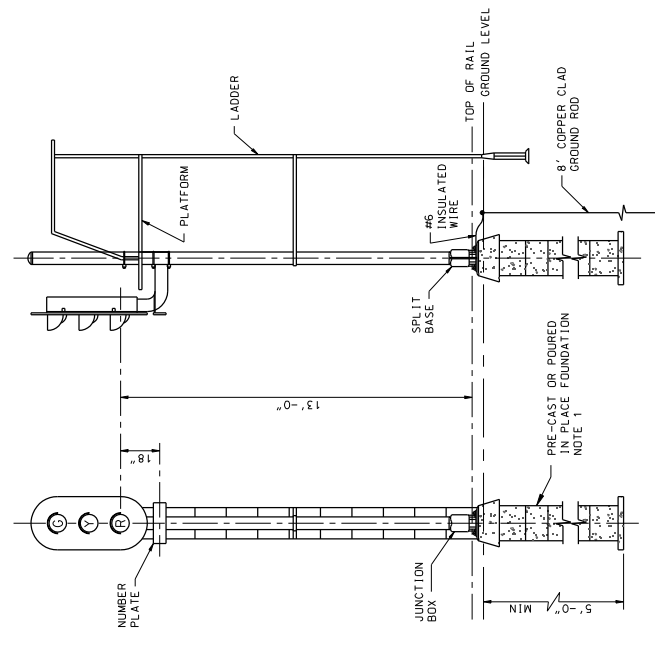
NOTES:

1. CONTRACTOR TO SUBMIT FOUNDATION DESIGN FOR ENGINEER'S APPROVAL.
2. FOR MINIMUM CLEARANCE ON CURVED TRACK REFER TO THE GENERAL ORDERS OF THE PUBLIC SERVICE COMMISSION OF UTAH.
3. NUMBER PLATES AND LABELING SHALL HAVE NUMBERS AND LETTERS THAT ARE 3" X 4" AS SHOWN BELOW. NUMBER FRAMES SHALL ALLOW NUMBERS TO BE INSERTED FROM THE SIDES. LETTERING SHALL BE BLACK ON A WHITE BACKGROUND.

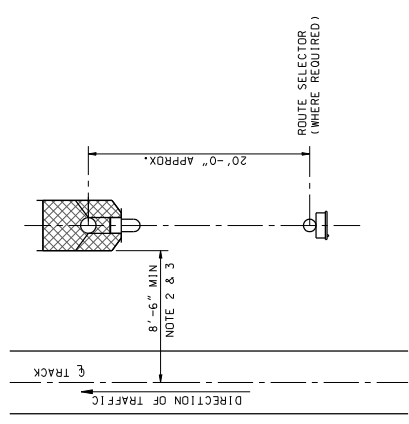
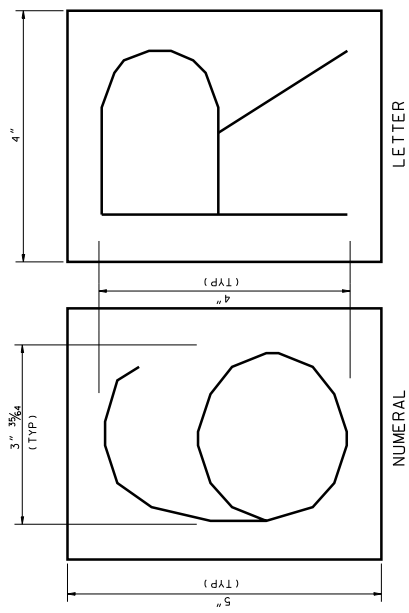


TYPICAL HIGH SIGNAL INSTALLATION DETAIL

SB6 & S9736 HIGH SIGNAL INSTALLATION DETAIL



TYPICAL LOW SIGNAL INSTALLATION DETAIL



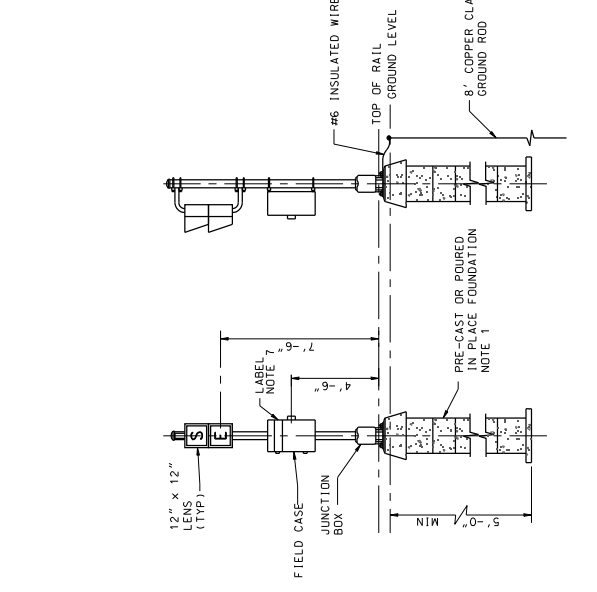
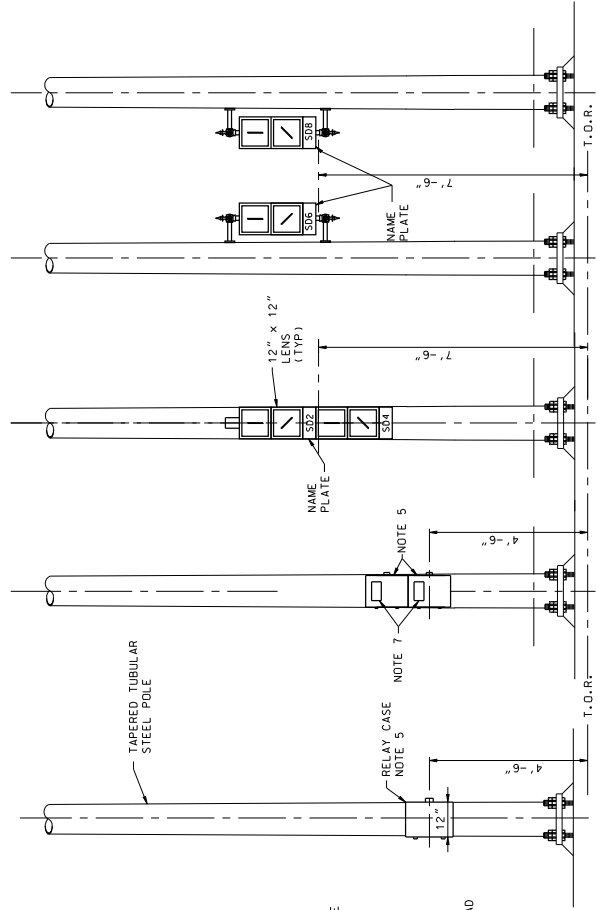
TYPICAL LOCATION OF LOW SIGNAL

TYPICAL LOCATION OF HIGH SIGNAL AND ROUTE SELECTOR

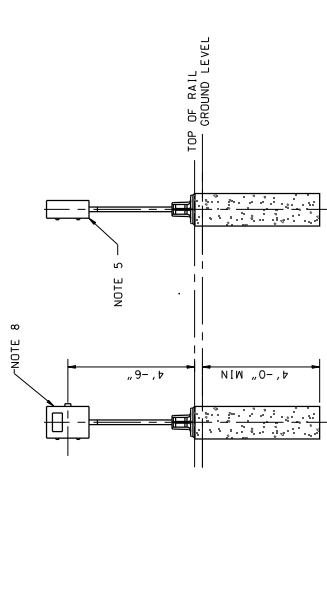
RECOMMENDED FOR APPROVAL SYSTEMS STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____		SIGNALING STANDARD DRAWING TYPICAL INSTALLATION DETAILS WAYSIDE SIGNALING SHEET 1 OF 3 LIGHT RAIL REFERENCE DRAWINGS	Revis: NTS CADD: [] Submit Date: []
			Drawn By: [] Checked By: [] Approved By: []
REV DATE DESCRIPTION	[] [] []	[] [] []	Drawing No.: S1G-103

NOTES:

- 1- CONTRACTOR TO SUBMIT FOUNDATION DESIGN FOR ENGINEER'S APPROVAL.
- 2- FOR MINIMUM CLEARANCE ON CURVED TRACK REFER TO PUBLIC SERVICE COMMISSION OF UTAH GENERAL ORDERS.
- 3- IN THE DOWNTOWN DISTRICT THE 8'-6" CLEARANCE SHALL BE MAINTAINED UNDER NO CIRCUMSTANCE SHALL ANY OF THE CASE EQUIPMENT ENCLOSES, JUNCTION BOXES, OR INDICATORS INTERFERE WITH VEHICULAR TRAFFIC.
- 4- RELAY CASE EQUIPMENT AND ROUTE SELECTOR SHALL BE ENCLOSED WITHIN A WEATHER TIGHT ENCLOSURE WITH A HINGED AND LOCKING COVER.
- 5- ENCLOSURE LABEL SHALL HAVE NUMBERS AND LETTERS THAT ARE THE SAME SIZE AS THOSE SHOWN ON S0630.
- 6- NAME PLATE AND CABLES FOR RELAY CASES AND INDICATORS DOWNTOWN SHALL HAVE 2.5" TALL LETTERS AND NUMBERS. NUMBERS AND LETTERS SHALL BE SIMILAR TO THOSE SHOWN ON S0630.



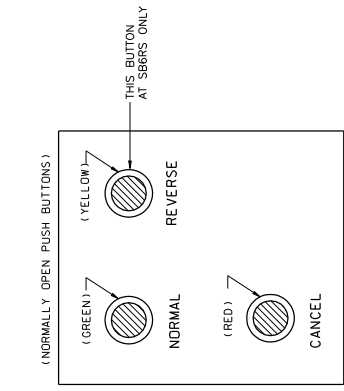
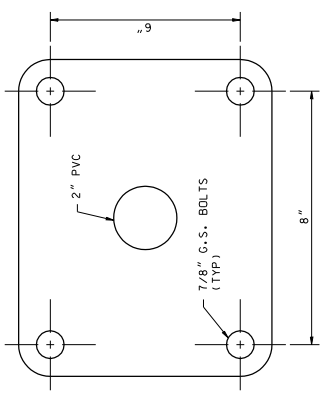
TYPICAL LATCH OUT INDICATOR DETAIL



TYPICAL ROUTE SELECTOR DETAIL

STA 703+55 RELAY CASE
STA 822+20 ROUTE SELECTOR
STA 823+08 SD2+SD4
STA 831+07 (SB SIDE) SD6
STA 831+07 (NB SIDE) SD8

SWITCH INDICATORS AT TAPERED POLE



TYPICAL BOLT PATTERN FOR ROUTE SELECTOR

DETAIL OF ROUTE SELECTOR PUSH-BUTTON FACEPLATE
NOTE 9

TYPICAL LOCATION OF WAYSIDE EQUIPMENT

RECOMMENDED FOR APPROVAL	DATE
SYSTEMS STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

DATE	DESCRIPTION

UTAH
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

Designed By:	Drawn By:
Checked By:	Approved By:

SIGNALING
STANDARD DRAWING
TYPICAL INSTALLATION DETAILS
WAYSIDE SIGNALING
SHEET 2 OF 3
LIGHT RAIL REFERENCE DRAWINGS

Scale:	NTS
CADD Filename:	
Submitting Date:	
Drawing No.:	SIG-104

LRT TRAFFIC SIGNAL HEAD LOCATIONS

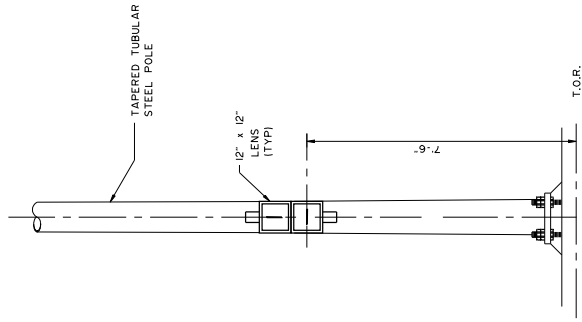
TWO LRT TRAFFIC SIGNAL HEADS FACING OPPOSITE DIRECTIONS SHALL BE INSTALLED ON THE POLES AT THE FOLLOWING LOCATIONS.

STATION	
720-10	755-17
721-46	759-20
728-08	760-09
729-50	762-85
735-92	763-80
737-00	767-08
743-44	767-95
744-75	772-10
751-06	774-89
752-64	775-99
779-55	803-76
782-93.5	806-25.04
783-75	80-20
787-8	81-05
790-84.5	84-3.5
791-73	85-14
794-53	89-20
795-38	822-17
796-76	830-05
799-63	

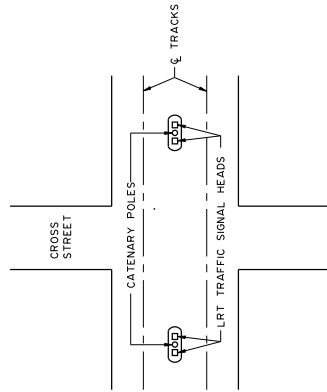
ONE LRT SIGNAL HEAD SHALL BE INSTALLED ON POLES AT THE FOLLOWING LOCATIONS.

POLE STATION	LRT SIGNAL HEAD FACING
807-93.7	SOUTHBOUND LRV'S
807-73	NORTHBOUND LRV'S
823-08	SOUTHBOUND LRV'S
831-07 (NB)	SIDE OF POLE OPPOSITE OF SWITCH INDICATORS
831-07 (SB)	

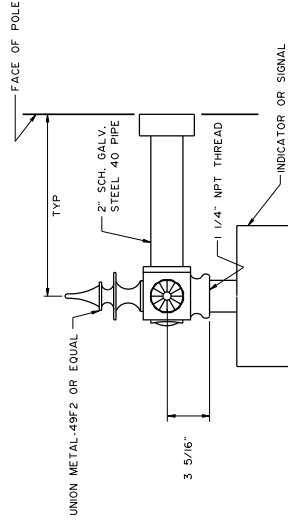
PROVIDE COUNT DOWN TIMER AS PART OF LRT TRAFFIC HEAD AT STATION 830-05



**AT TUBULAR STEEL POLE
LRT TRAFFIC SIGNAL HEAD**



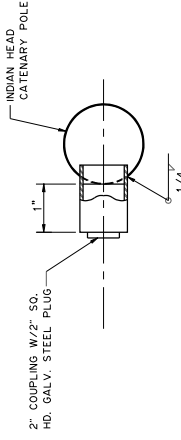
TYPICAL LRT TRAFFIC SIGNAL HEAD LAYOUT



SWITCH INDICATOR & SIGNAL BRACKET DETAIL
(NOTE 1, 5)

NOTES:

- THE POLE AT 829-85 SHALL HAVE A THREADED COUPLING WELDED TO THE END OF THE POLE. THE COUPLING SHALL BE INSTALLED PARALLEL WITH THE TRACK. THE SIZING OF THE COUPLING SHALL BE DETERMINED BY THE SWITCH HEATER MANUFACTURER AND SHALL BE COORDINATED BY THE CONTRACTOR. THE DETAIL OF THE COUPLING SHALL BE SIMILAR TO THE INDICATOR AND LRT TRAFFIC SIGNAL HEAD COUPLING DETAIL SHOWN BELOW.
- CONTRACTOR SHALL EXTEND EXISTING COILED CABLE FROM EXISTING PULLBOXES ADJACENT TO OCS POLES TO THE LRT TRAFFIC SIGNAL HEAD AND/OR COUNT DOWN TIMER. CONTRACTOR SHALL TERMINATE THE CABLES AT THE DEVICES. NOTIFY CITY TRAFFIC DEPARTMENT PRIOR TO TERMINATION.
- SWITCH INDICATOR & SIGNAL BRACKET DETAIL SHALL BE PAINTED THE SAME COLOR AS THE POLE.
- AT STATIONS 806-25.04, 807-47, AND 807-73 SIGNAL HEAD SHALL BE INSTALLED AT 10'-0\"/>

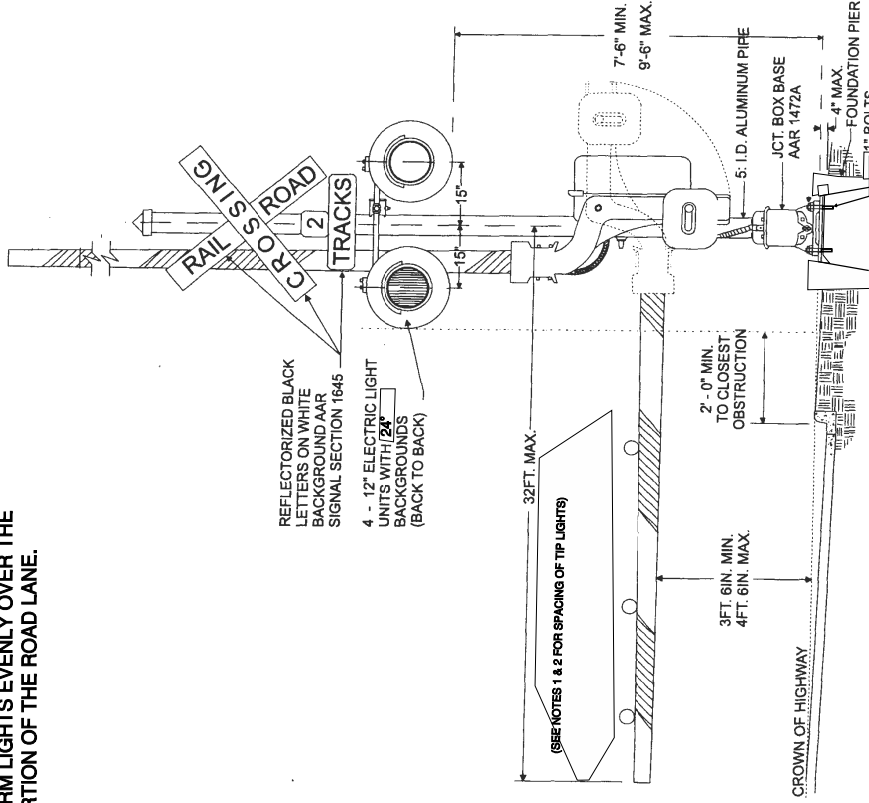
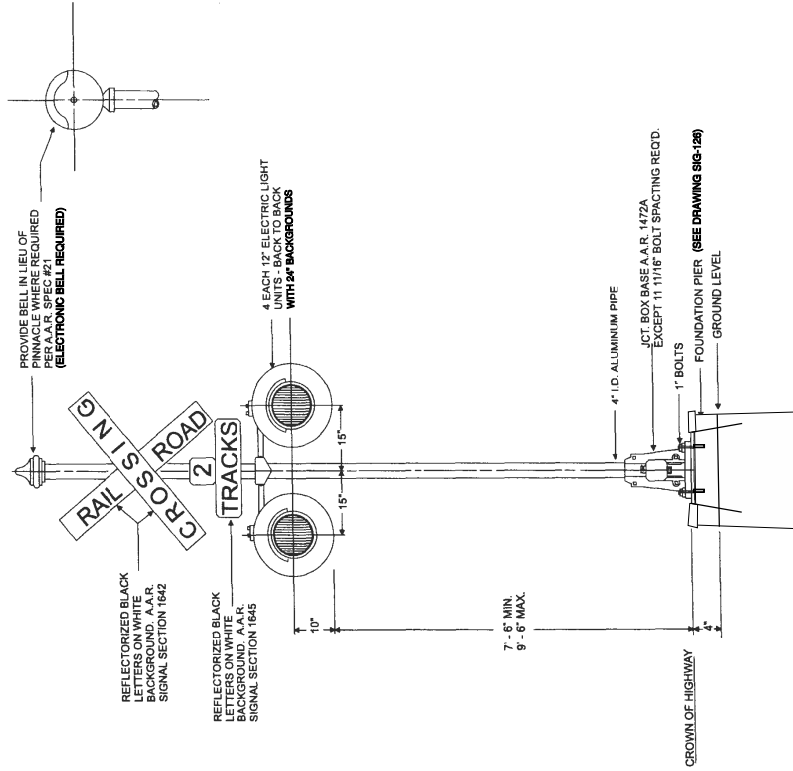


**SWITCH INDICATOR & LRT TRAFFIC
SIGNAL HEAD COUPLING DETAIL**

	<p>UTAH TRANSIT AUTHORITY</p> <p>REFERENCE DRAWINGS</p>	<p>SIGNALING</p> <p>STANDARD DRAWING</p> <p>TYPICAL INSTALLATION DETAILS</p> <p>WAYSIDE SIGNALING</p> <p>SHEET 3 OF 3</p> <p>LIGHT RAIL REFERENCE DRAWINGS</p>
<p>RECOMMENDED FOR APPROVAL</p> <p>SYSTEMS STANDARDS _____ DATE _____</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____</p>	<p>Designed By: _____</p> <p>Drawn By: _____</p> <p>Checked By: _____</p> <p>Approved By: _____</p>	<p>Scale: NTS</p> <p>CADD Template: _____</p> <p>Submitting Date: _____</p> <p>Drawing No: SIG-105</p>

NOTES:

1. GATE ARMS MUST EXTEND OVER AT LEAST 90% OF THE LANE IT IS APPLIED FOR.
2. SPACE GATE ARM LIGHTS EVENLY OVER THE TRAVELED PORTION OF THE ROAD LANE.



REV	DATE	DESCRIPTION

RECOMMENDED FOR APPROVAL	DATE
SYSTEMS STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE

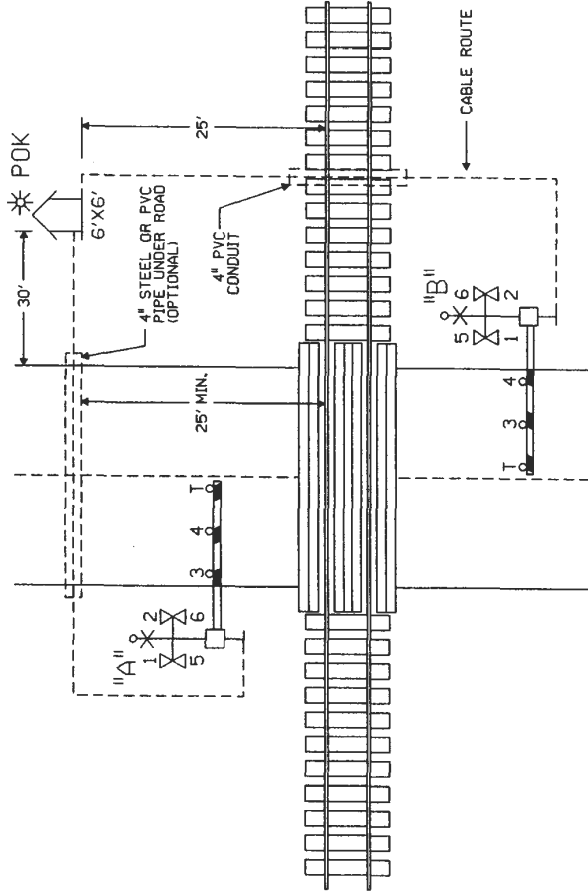
U T A
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

SIGNALING
STANDARD DRAWING
HIGHWAY CROSSING
SIGNALS

LIGHT RAIL REFERENCE DRAWINGS

Drawn By:	
Checked By:	
Approved By:	
Scale:	NTS
CAD File Name:	
Submitting Date:	
Drawing No.:	SIG-106

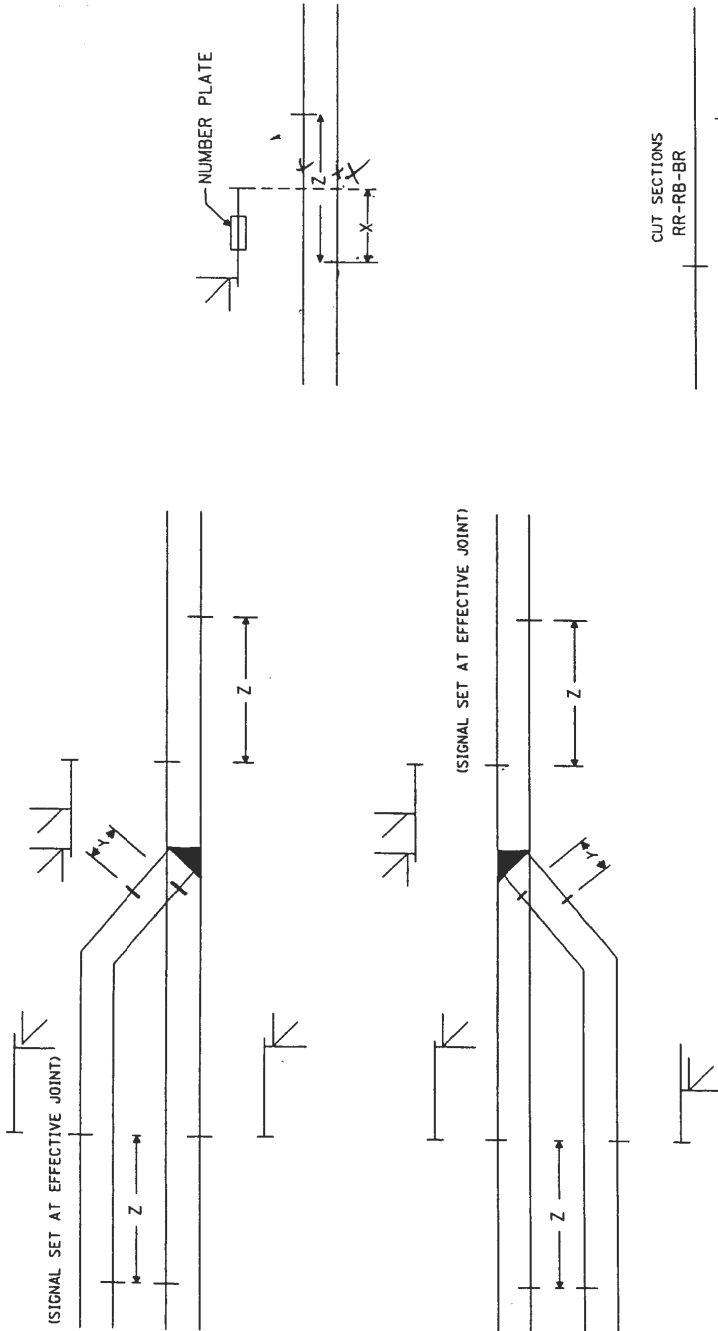
GRADE CROSSING CABLE ROUTE



NOTES:
 CABLE TO BE A MINIMUM OF 30" DEEP.

RECOMMENDED FOR APPROVAL SYSTEMS STANDARDS CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE _____ DATE _____ DATE _____	 UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	SIGNALING STANDARD DRAWING GRADE CROSSING CABLE ROUTE	LIGHT RAIL REFERENCE DRAWINGS	Drawn By: _____ Checked By: _____ Approved By: _____ Scale: NTS CAD: [blank] Submit Date: [blank] Drawing No.: SIG-107
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REV		DATE



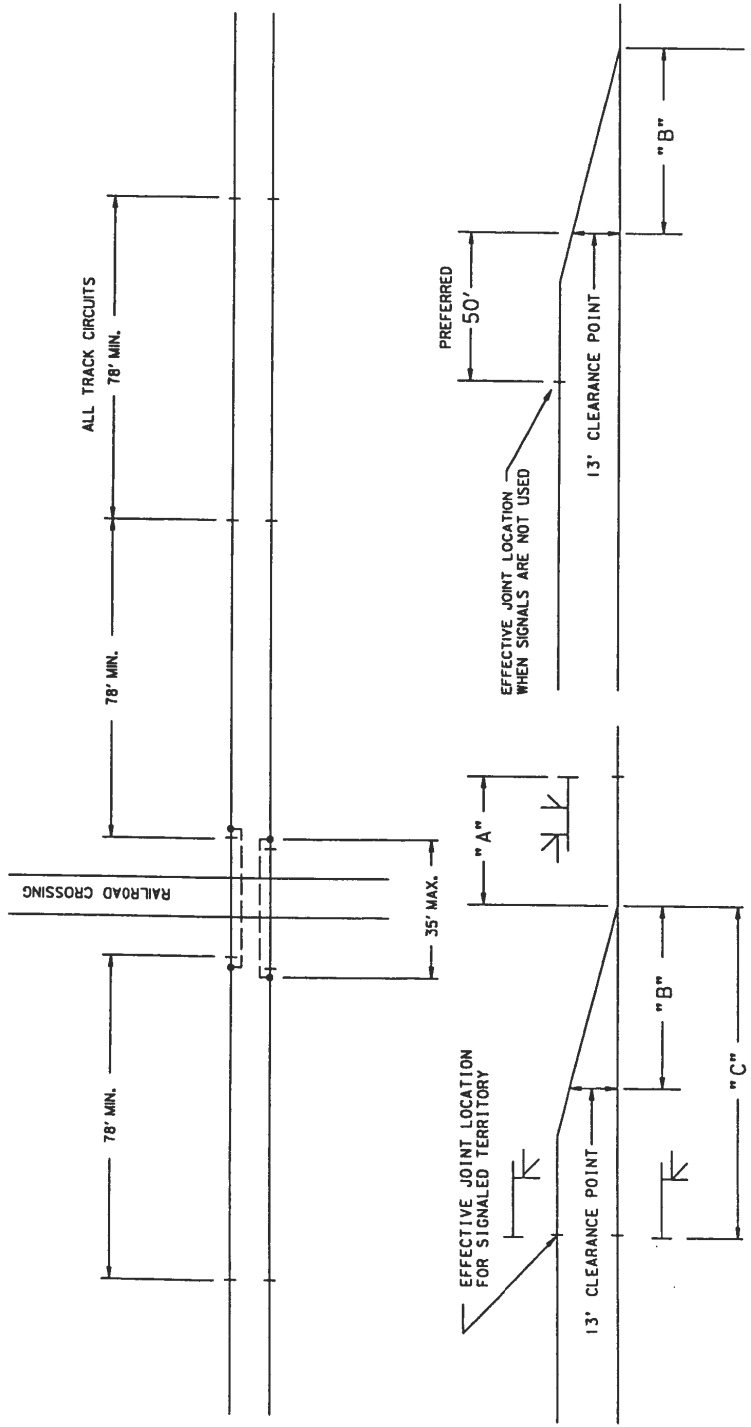
PREFERRED, MINIMUM, AND MAXIMUM INSULATED JOINT SPACING AT ABSOLUTE SIGNALS, INTERMEDIATE SIGNALS, AND CUT-SECTIONS FOR WOOD AND CONCRETE TIES.

WOOD TIES
 X = 1' 7/2" PREFERRED, 0" MINIMUM, 4' 6" MAXIMUM
 Y = 4' 6" MAXIMUM (FOLLOW STANDARD DRAWINGS)
 Z = 3' 3" PREFERRED AND MINIMUM, 4' 6" MAXIMUM
 (EFFECTIVE JOINT AT ABSOLUTE SIGNAL TO BE CENTERED ON SIGNAL)

CONCRETE TIES
 X = 2' 0" PREFERRED, 0" MINIMUM, 4' 6" MAXIMUM
 Y = 4' 6" MAXIMUM (FOLLOW STANDARD DRAWINGS)
 Z = 4' 6" PREFERRED

NOTE: ON "NEW" CONSTRUCTION, WHEN POSSIBLE, PREFERRED INSULATED JOINT SPACING TO BE USED.

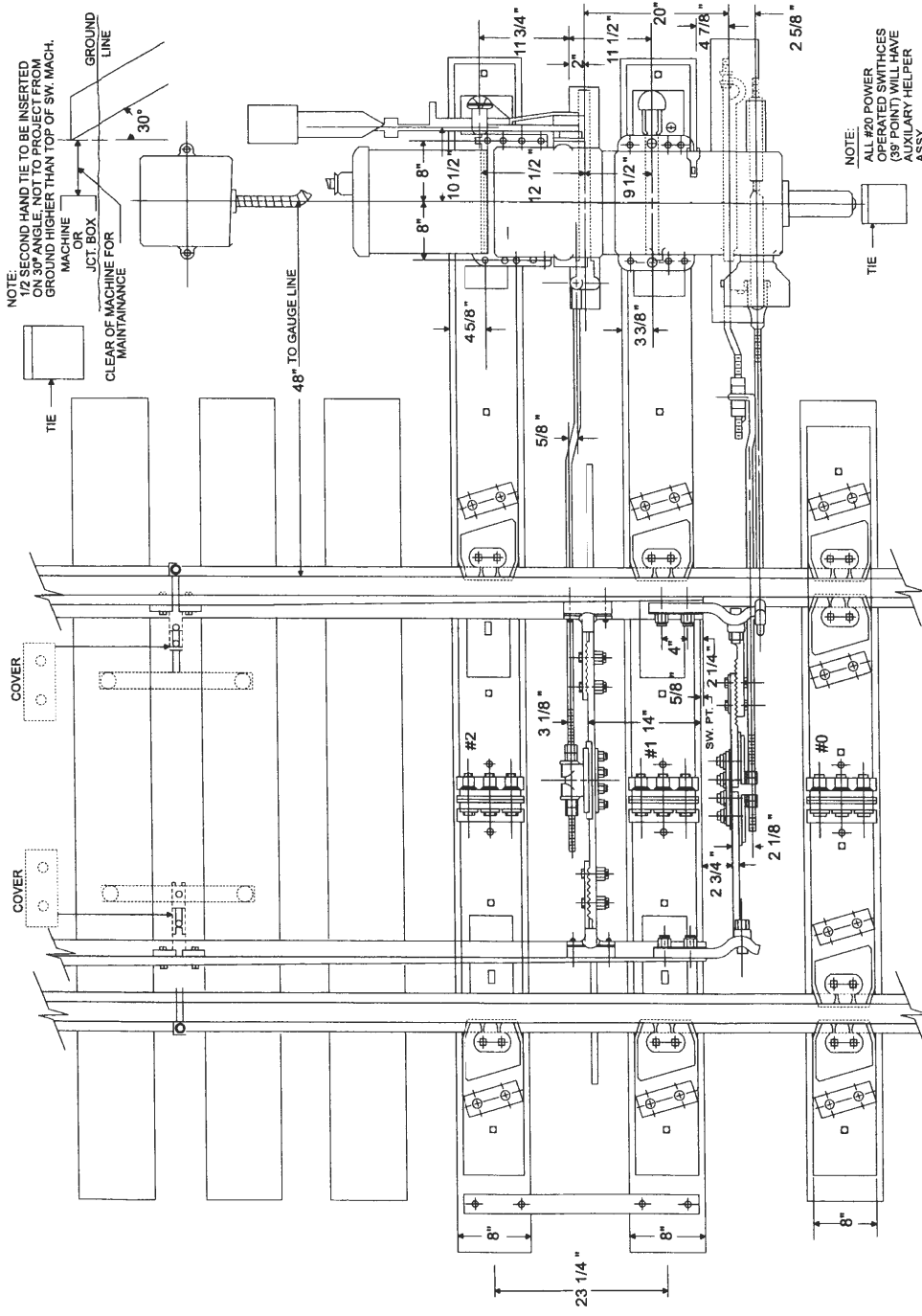
<table border="1"> <tr> <td>Scale:</td> <td>NTS</td> </tr> <tr> <td>Checked:</td> <td>_____</td> </tr> <tr> <td>Submitted:</td> <td>_____</td> </tr> <tr> <td>Drawn:</td> <td>_____</td> </tr> <tr> <td>Checked:</td> <td>_____</td> </tr> <tr> <td>Approved:</td> <td>_____</td> </tr> </table>	Scale:	NTS	Checked:	_____	Submitted:	_____	Drawn:	_____	Checked:	_____	Approved:	_____	<p>SIGNALING STANDARD DRAWING</p> <p>LOCATION OF EFFECTIVE INSULATED JTS. - TRACK CIR. AND DEAD SECTION LENGTHS</p> <p>LIGHT RAIL REFERENCE DRAWINGS</p>	<p>Drawn By: _____</p> <p>Checked By: _____</p> <p>Approved By: _____</p>	<p>UTA UTAH TRANSIT AUTHORITY</p> <p>REFERENCE DRAWINGS</p>	<p>RECOMMENDED FOR APPROVAL</p> <p>SYSTEMS STANDARDS _____ DATE _____</p> <p>CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____</p>	<table border="1"> <tr> <td>REV</td> <td>DATE</td> <td>Description</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REV	DATE	Description												
Scale:	NTS																															
Checked:	_____																															
Submitted:	_____																															
Drawn:	_____																															
Checked:	_____																															
Approved:	_____																															
REV	DATE	Description																														



NOTE:
Pt. Sw. - Cl. Pt. is rounded off to nearest foot beyond 13 ft. Cl. Pt.
Pt. Sw. - Signal and joints are to be placed on tangent track where practical.
Distances shown are well beyond minimum of 75 ft. from 13 ft. Cl. Pt.

Turnout Size	Point Switch - Clearance Point					Point Switch - Signal & Joints				
	"A"	"B"					"C"			
No. 20	45' 0"	13' TC	14' TC	15' TC	20' TC	13' TC	14' TC	15' TC	20' TC	20' TC
No. 16	45' 0"	393'	349'	333'	321'	470'	445'	470'	570'	570'
No. 14	45' 0"	323'	283'	271'	263'	400'	360'	375'	455'	455'
No. 10	45' 0"	290'	247'	237'	231'	365'	325'	330'	400'	400'
		201'	177'	169'	163'	280'	255'	245'	290'	290'

Scale: NTS	CADD Template: Submitting Date:	Drawing No.: SIG-109	SIGNALING STANDARD DRAWING LOCATION OF EFFECTIVE INSULATED JTS. - TRACK CIR. AND DEAD SECTION LENGTHS LIGHT RAIL REFERENCE DRAWINGS
Drawn By: _____ Checked By: _____ Approved By: _____			 UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS
RECOMMENDED FOR APPROVAL SYSTEMS STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____			
REV	DATE	DESCRIPTION	



NOTE:
 1/2 SECOND HAND TIE TO BE INSERTED
 ON 30° ANGLE. NOT TO PROJECT FROM
 GROUND HIGHER THAN TOP OF SW. MACH.

NOTE:
 ALL #20 POWER
 OPERATED SWITCHES
 (39 POINT) WILL HAVE
 A LARY HELPER
 ASSY.

Rev: NTS
 CAD: [blank]
 Submit Date: [blank]
 Drawing No.: SIG-110

SIGNALING
 STANDARD DRAWING
 M23 POWER SWITCH MACHINE LAYOUT

LIGHT RAIL REFERENCE DRAWINGS

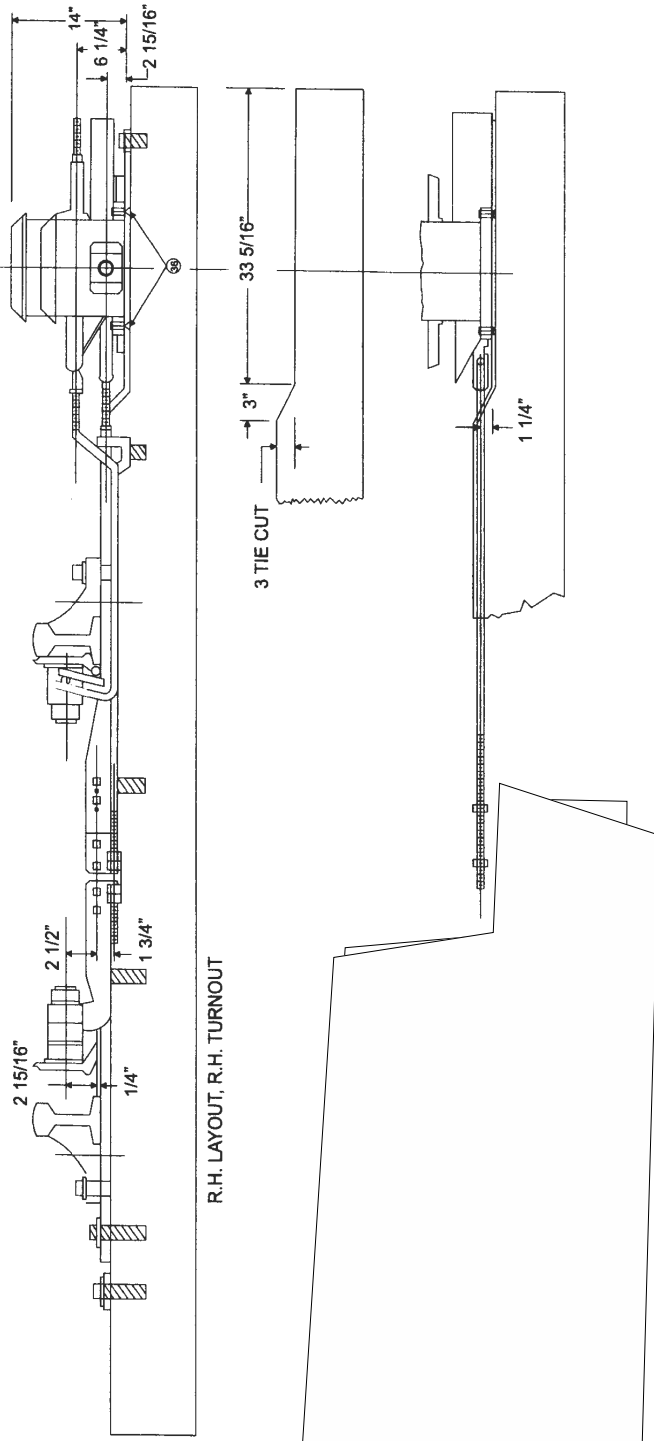
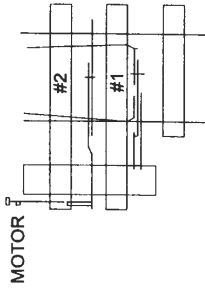
Designed By: [blank]
 Drawn By: [blank]
 Checked By: [blank]
 Approved By: [blank]



RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

REV	DATE	Description

L.H. LAYOUT, L.H. TURNOUT
DIAGRAM "A"

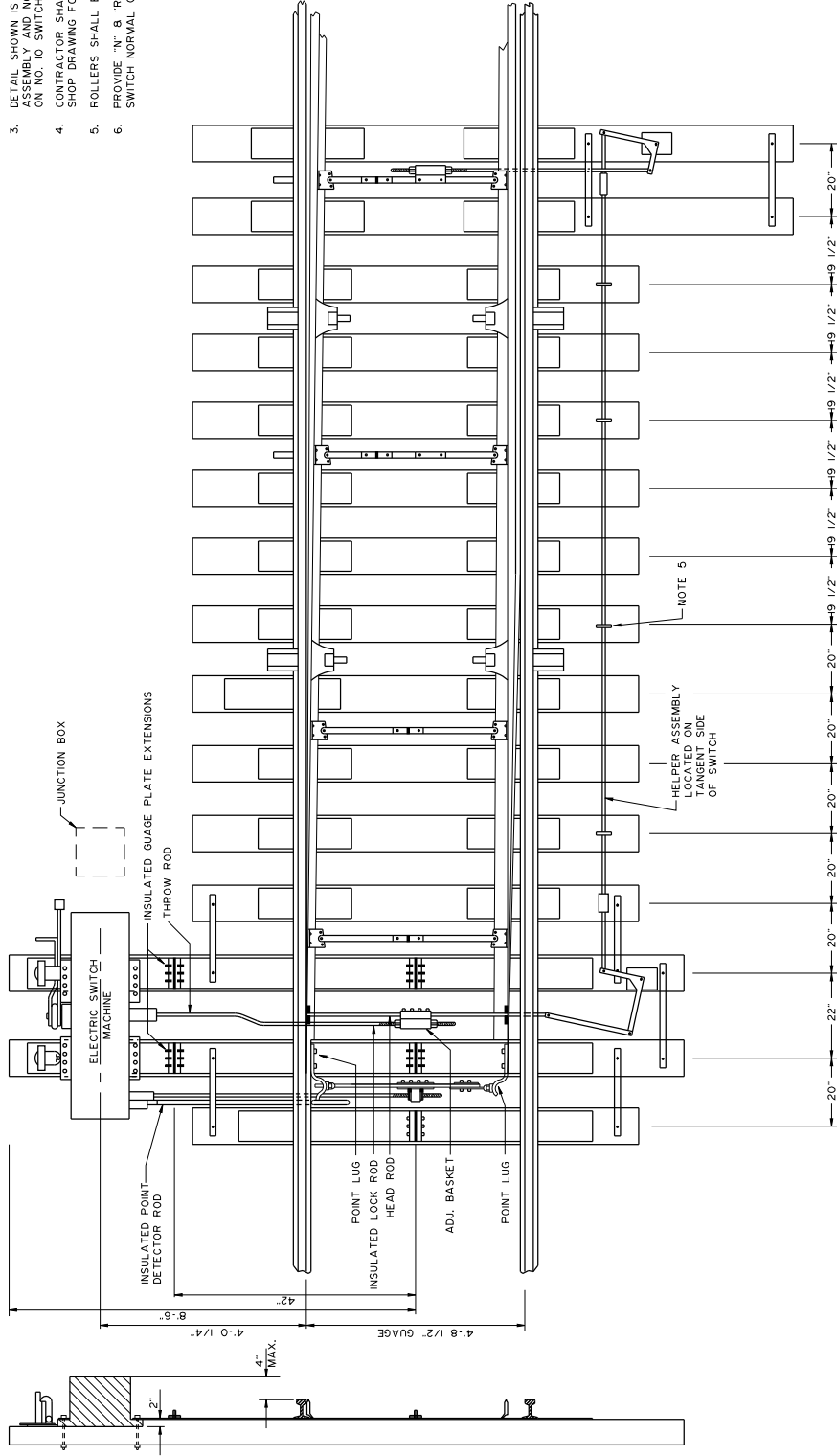


DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY:	SIGNALING STANDARD DRAWING M23 POWER SWITCH MACHINE LAYOUT LIGHT RAIL REFERENCE DRAWINGS	UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	RECOMMENDED FOR APPROVAL SYSTEMS STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____
--	---	---	---

REV	DATE	DESCRIPTION

NOTES:

1. CONTRACTOR SHALL SUPPLY AND INSTALL PIPE CONNECTED HELPER ASSEMBLY COMPLETE WITH MOUNTING HARDWARE AT NO. 20 SWITCH LAYOUTS.
2. DETECTOR RODS SHALL BE CONNECTED TO NORMALLY CLOSED SWITCH POINTS.
3. DETAIL SHOWN IS FOR A NO. 20 TURNOUT HELPER ASSEMBLY AND NO. 4 SWITCH ROD ARE NOT REQUIRED ON NO. 10 SWITCH LAYOUTS.
4. CONTRACTOR SHALL SUBMIT MANUFACTURES LAYOUT SHOP DRAWING FOR APPROVAL.
5. ROLLERS SHALL BE EVENLY SPACED AS POSSIBLE.
6. PROVIDE "N" "B" "R" ATTACHED TO TIE TO IDENTIFY SWITCH NORMAL OR REVERSE POSITION.



Drawn By: _____
 Checked By: _____
 Approved By: _____

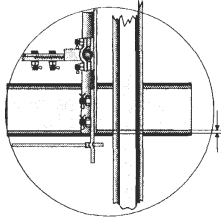
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 CADD Title: _____
 Submit Date: _____
 Drawing No: SIG-112

SIGNALING
 STANDARD DRAWING
 TYPICAL SWITCH AND
 SWITCH MACHINE LAYOUT
 LIGHT RAIL REFERENCE DRAWINGS

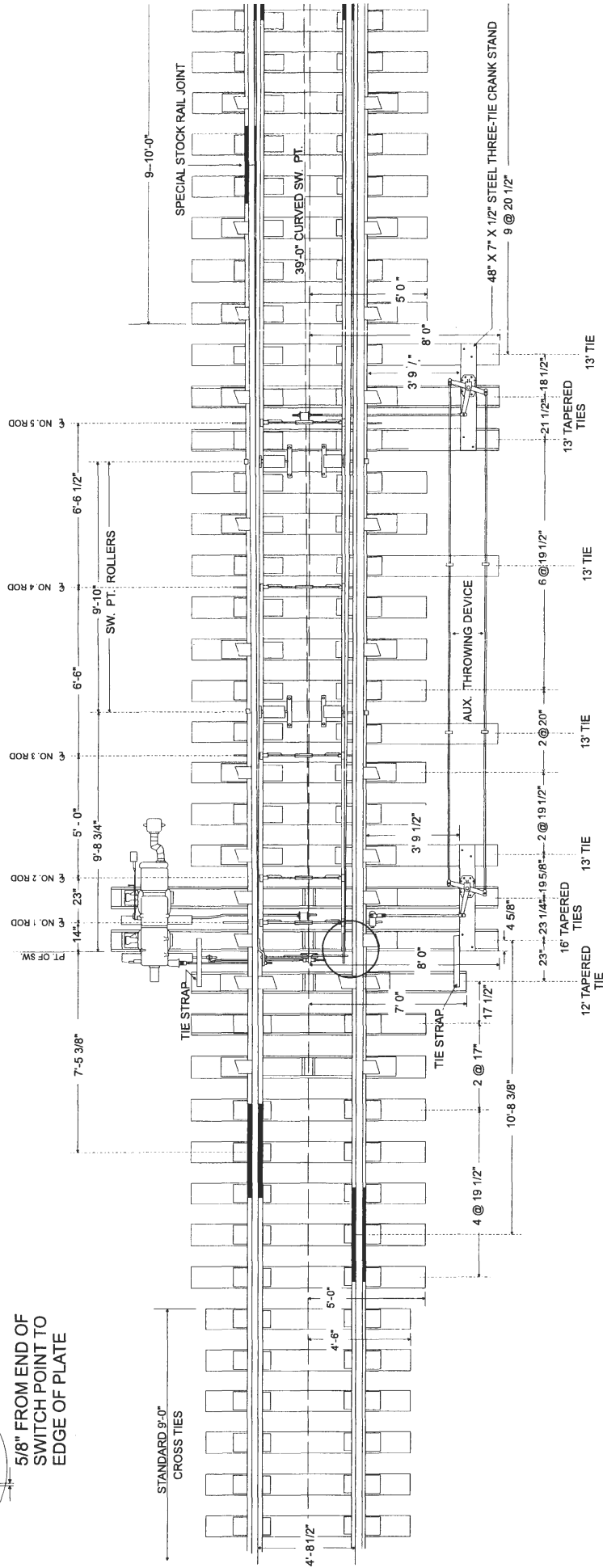
UTAH TRANSIT AUTHORITY
 REFERENCE DRAWINGS

RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

REV	DATE	Description



5/8" FROM END OF SWITCH POINT TO EDGE OF PLATE



SWITCH THROW:

- AT POINT - 4 29/32"
- AT NO. 1 ROD - 4 3/4"
- AT NO. 2 ROD - 4 1/2"
- AT NO. 3 ROD - 3 7/8"
- AT NO. 4 ROD - 3 1/16"
- AT NO. 5 ROD - 2 1/4"

TRACK GAGE

TRACK GAGE THROUGH THE TURNOUT AREA INCLUDING BETWEEN ON CLOSED POINT AND THE OPPOSITE STOCK RAIL, WILL BE A CONSISTENT 4' - 8 1/2".

REV	DATE	Description

RECOMMENDED FOR APPROVAL

SYSTEMS STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By: _____

Drawn By: _____

Checked By: _____

Approved By: _____

SIGNALING

STANDARD DRAWING

AUXILIARY THROWING DEVICE FOR NO. 20 SWITCH

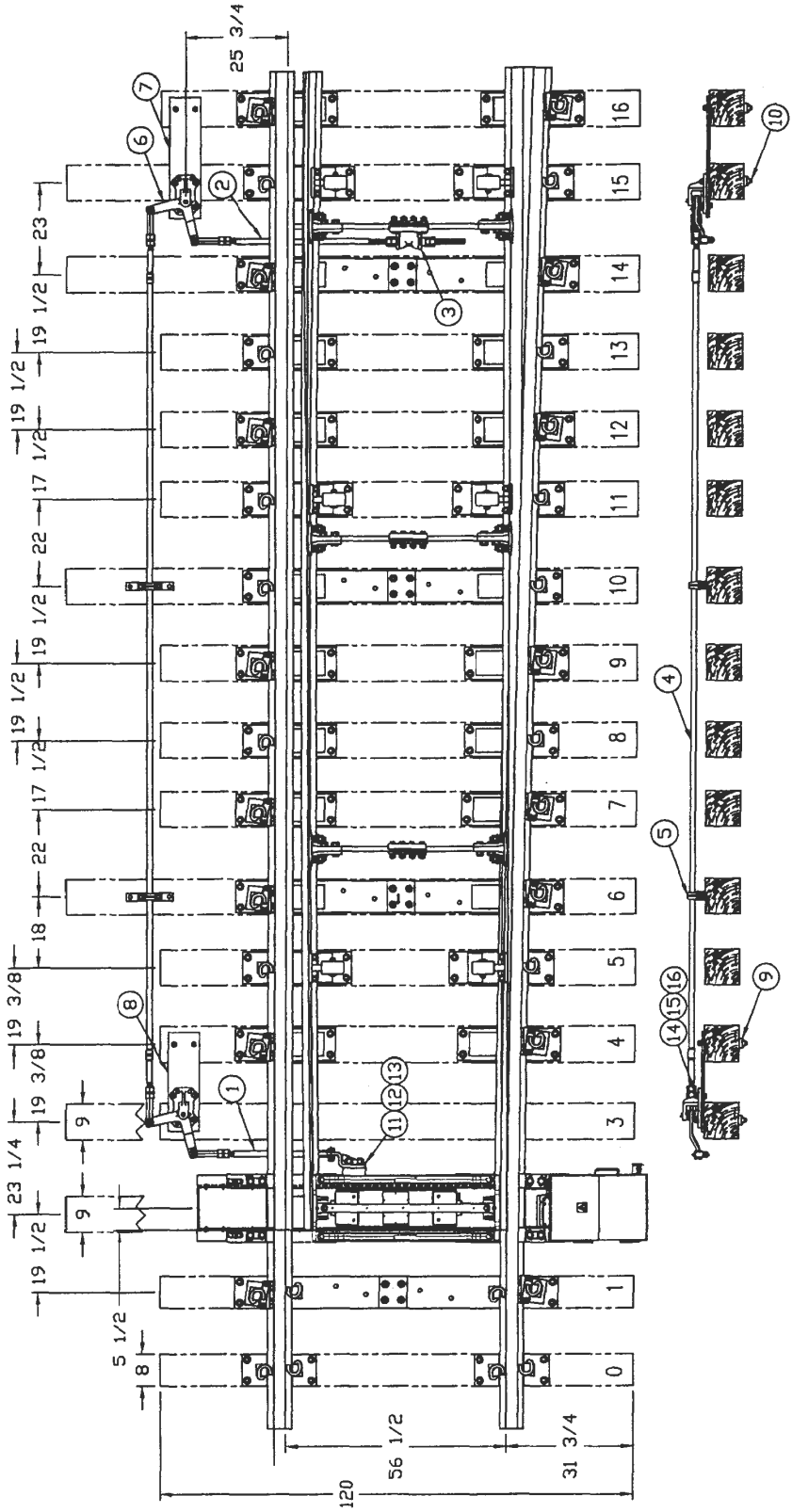
LIGHT RAIL REFERENCE DRAWINGS

Scale: NTS

CAD: [unclear]

Submitting Date: _____

Drawing No: SIG-113

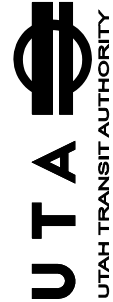


Scale: NTS CADD: [] Schematic Date: [] Drawing No.: SIG-114	SIGNALING STANDARD DRAWING AUXILIARY THROWING WITH CTS-2 SWITCH MACHINE LIGHT RAIL REFERENCE DRAWINGS	Designed By: []	Drawn By: []	Checked By: []	Approved By: []
RECOMMENDED FOR APPROVAL SYSTEMS STANDARDS _____ DATE _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____					
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Description: _____ DATE: _____				

Sheet: NTS
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 Submitting Date: [blank]
 Drawing No.: SIG-115

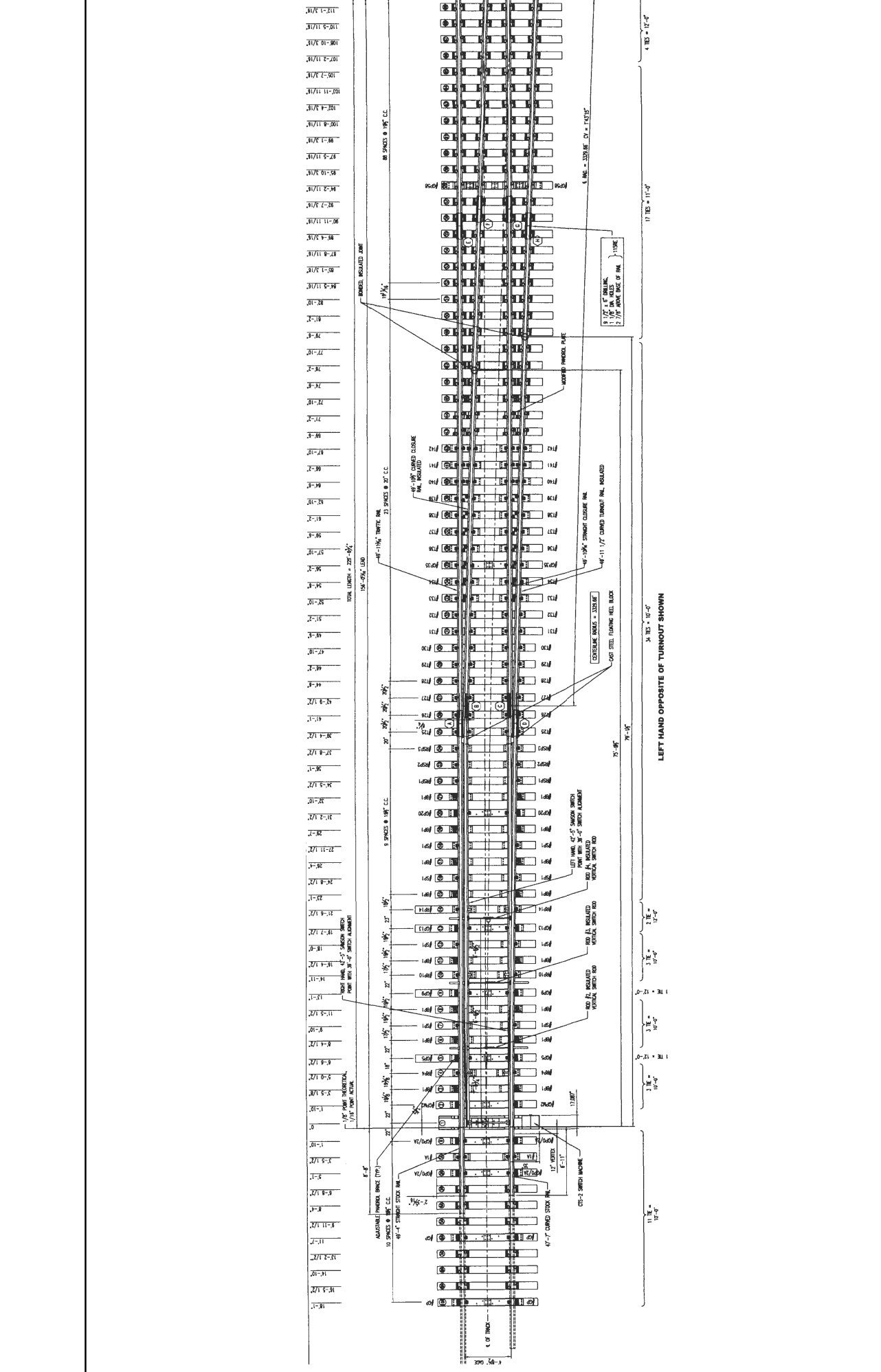
SIGNALING
STANDARD DRAWING
NO. 20 RIGHT-HAND SWITCH
AND CTS-2 SWITCH MACHINE
 LIGHT RAIL REFERENCE DRAWINGS

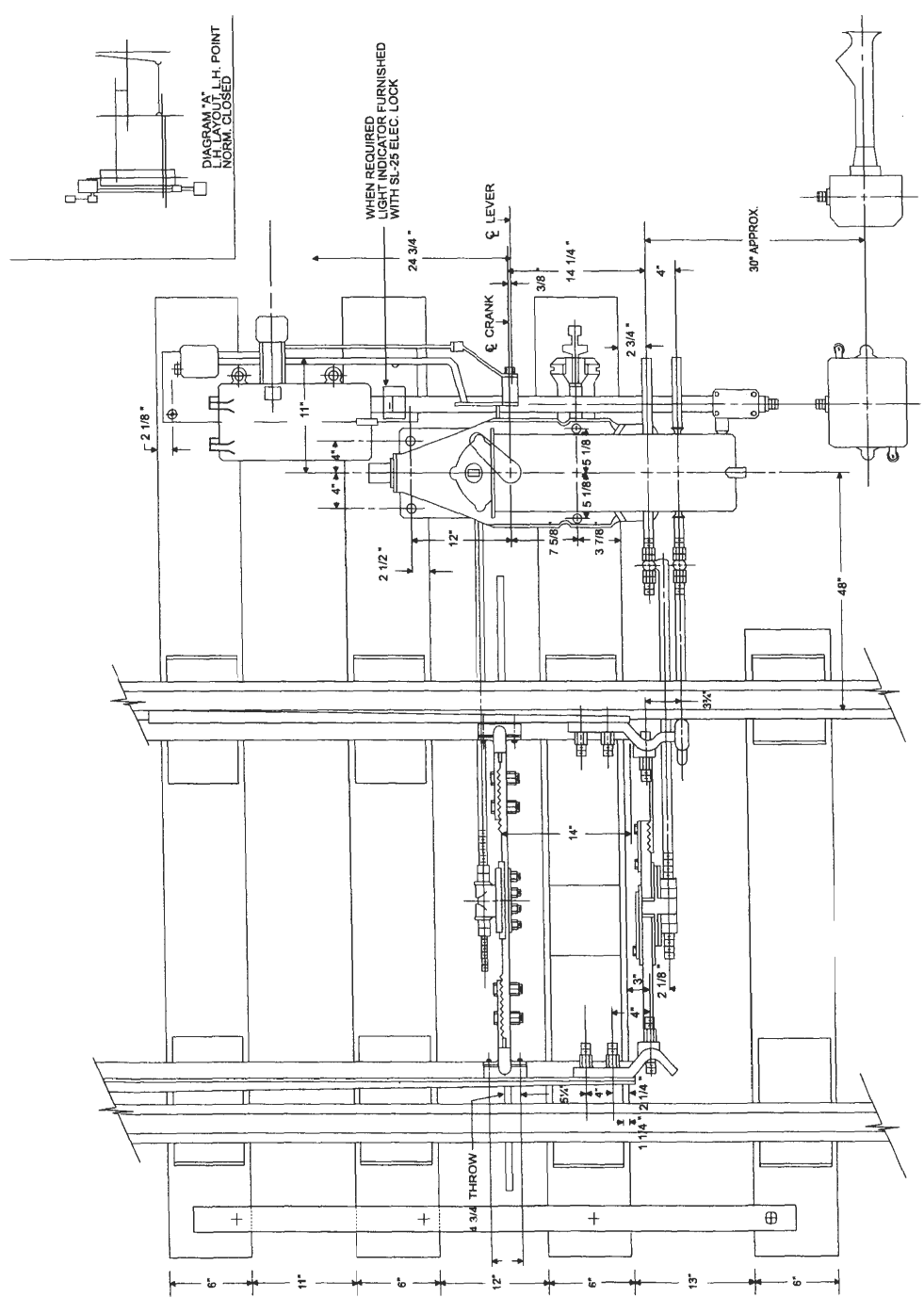
Designed By: [blank]
 Drawn By: [blank]
 Checked By: [blank]
 Approved By: [blank]




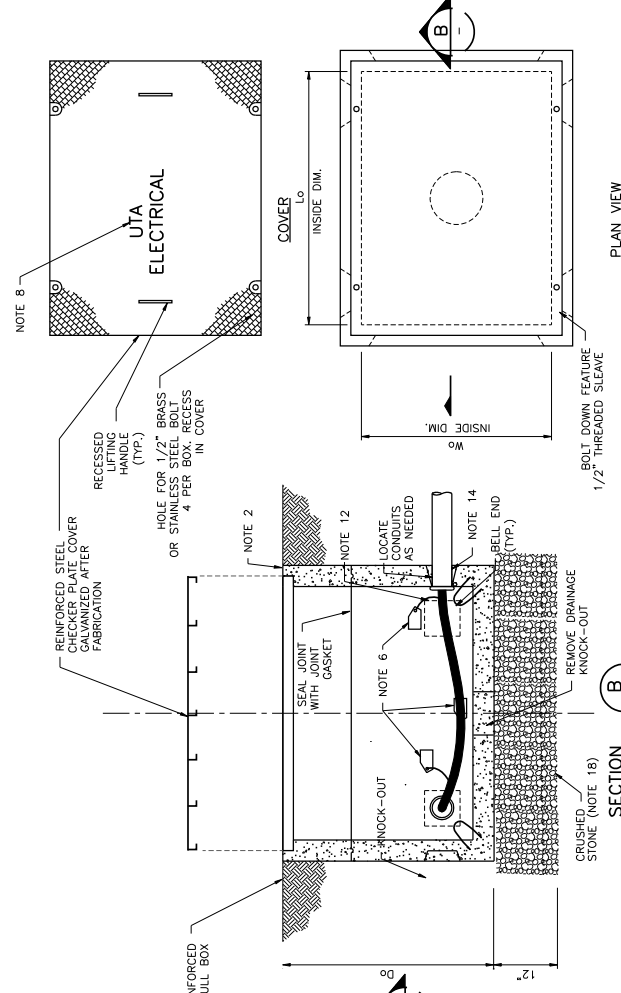
RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

REV	DATE	Description





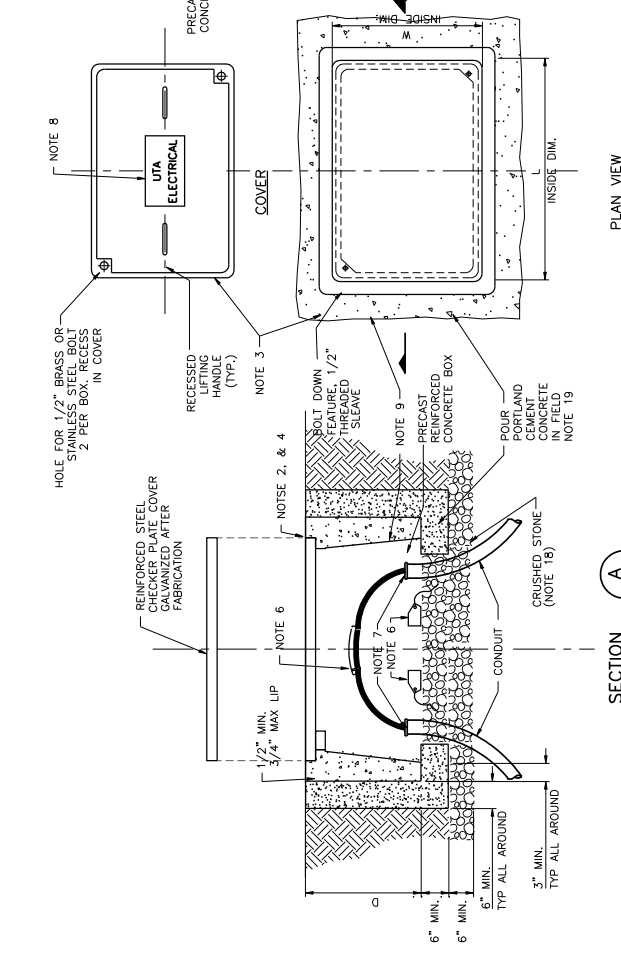
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Checked By:	Designed By:		
Submitted Date:	Drawn By:		
Drawing No. SIG-116	Checked By:		
Approved By:	Approved By:	SIGNALING STANDARD DRAWING T-21 HAND OPERATED SWITCH WITH SL-25 ELECTRIC LOCK LIGHT RAIL REFERENCE DRAWINGS	



INSTALLATION DETAIL

DIMENSION TABLE

PULL BOX TYPE	MIN. DEPTH BOX (NOTE 11)		MIN. Wd
	Do	Lo	
CC	AS REQUIRED	48"	36"



INSTALLATION DETAIL

DIMENSION TABLE

PULL BOX TYPE	MIN. DEPTH BOX (NOTE 11)		MIN. W	MIN. L
	D	L		
AA	18"	27"	18"	18"
BB	18"	40"	25"	25"

TYPICAL PULL BOX DETAILS

1. STEEL REINFORCING SHALL BE AS REGULARLY USED IN THE STANDARD PRODUCTS OF RESPECTIVE MANUFACTURER.
2. TOP OF PULL BOXES SHALL BE FLUSH WITH SUBROUNDING GRADE OR TOP OF ADJACENT CURB, EXCEPT THAT IN UNPAVED AREAS WHERE PULL BOX IS NOT IMMEDIATELY ADJACENT TO AND PROTECTED BY A CONCRETE FOUNDATION, POLE OR OTHER PROTECTIVE CONSTRUCTION, THE BOX SHALL BE PLACED WITH ITS TOP 0.10 FOOT ABOVE SURROUNDING GRADE. WHERE PRACTICABLE, PULL BOXES SHOWN IN THE VICINITY OF CURBS SHALL BE PLACED ADJACENT TO THE BACK OF CURB.
3. THE OUTSIDE EDGE OF PULL BOXES AND COVERS FOR TYPES "AA" AND "BB" SHALL HAVE A MINIMUM RADIUS OF 1/4 INCH.
4. WHEN PULL BOX IS INSTALLED IN SIDEWAY AREA, THE DEPTH OF THE PULL BOX SHALL BE ADJUSTED SO THAT THE TOP OF THE BOX IS FLUSH WITH THE TOP OF SIDEWALK.
5. PULL BOX SHALL NOT BE WITHIN THE BOUNDARIES OF NEW OR EXISTING WHEELCHAIR RAMPS.
6. ALL CABLES SHALL BE LABELED AS SPECIFIED IN THE CONTRACT SPECIFICATION.
7. ALL CONDUITS SHALL BE SEALED AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

8. ALL PULL BOXES, THAT ARE BEING INSTALLED FOR THE UTA, SHALL READ "UTA ELECTRICAL", "UTA TELEPHONE", "UTA COMMUNICATION", OR ANY OTHER APPROPRIATE LABEL THAT IS APPROVED BY THE ENGINEER.
9. PULL BOXES THAT ARE BEING INSTALLED FOR AN AUTHORITY OTHER THAN UTA, SHALL MEET THE REQUIREMENTS OF THAT AUTHORITY.
10. ALL DIMENSIONS SHOWN ARE THE MINIMUM REQUIRED.
11. EXTENSIONS MAY BE USED.
12. KNOCK-OUT AREA AROUND CONDUIT SHALL BE GROUDED WITH NON-SHRINK GROUT.
13. CONTRACTOR TO SIZE PULL BOXES AND INSTALL AS NEEDED.
14. CONDUITS SHALL SLOPE DOWN TOWARDS THE PULL BOX SO AS TO ALLOW THE CONDUITS TO DRAIN INTO THE PULL BOX.
15. PULL BOXES SHALL BE VEHICULAR TRAFFIC RATED BASED ON ASTM C-857 "MINIMUM STRUCTURAL DESIGN SPECIFICATION FOR UNDERGROUND PRE CAST CONCRETE UTILITY STRUCTURES".
16. WHERE CONDUITS ARE TO REMAIN EMPTY, CONTRACTOR SHALL MANDREL THE CONDUITS AND INSTALL A PULL STRING. IMMEDIATELY FOLLOWING THE CONTRACTOR SHALL INSTALL AND SIGHT DOWN THE PULL STRING. PULL BOX COVERS, CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HRS PRIOR TO MANDRELING.
17. PULL BOXES SHALL BE INSTALLED SUCH THAT ITS LARGER DIMENSION "L" BE PLACED PARALLEL TO TRACK CENTER LINE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
18. INSTALL PERMEABLE MATERIAL UNDER PULL BOXES CONSISTING OF CRUSHED STONE, FREE FROM ORGANIC MATERIAL, CLAY BALLS, OR OTHER DELETERIOUS MATERIAL.
20. CONTRACTOR MAY USE A TRAFFIC RATED PULL BOX IN LIEU OF CAST-IN-PLACE CONCRETE.

RECOMMENDED FOR APPROVAL

DATE

SYSTEMS STANDARDS

DATE

CAPITAL DEVELOPMENT DEPUTY CHIEF

DATE

UTA
UTAH TRANSIT AUTHORITY

REFERENCE DRAWINGS

SIGNALING

STANDARD DRAWING

WAYSIDE SIGNALING PULL BOX DETAILS

Drawn By: _____

Checked By: _____

Approved By: _____

Scale: NTS

CADD Filename: _____

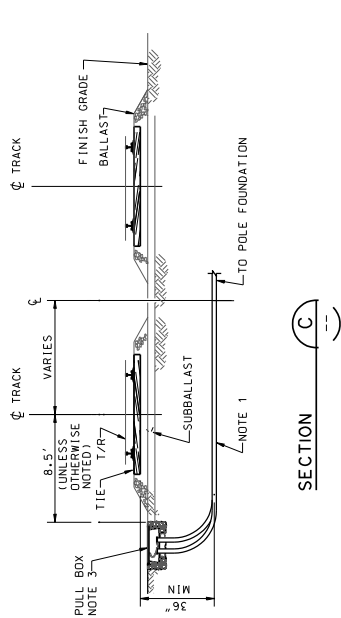
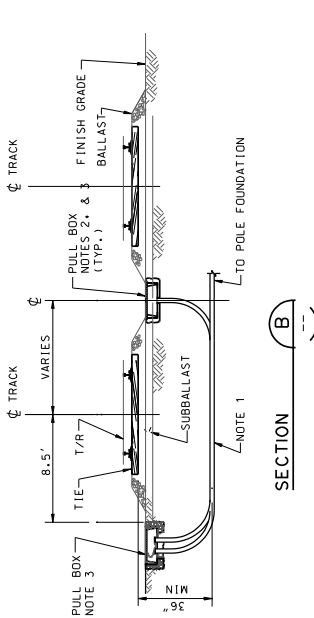
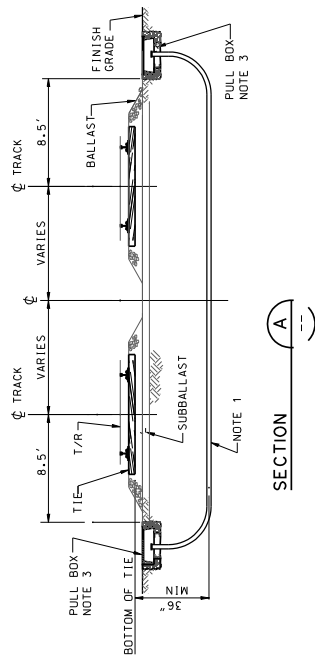
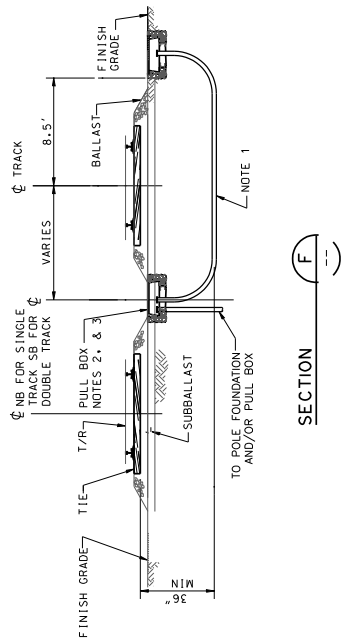
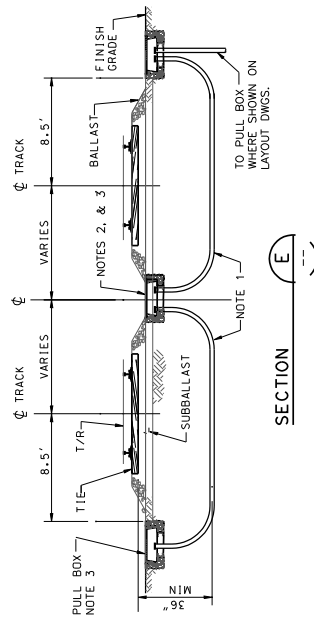
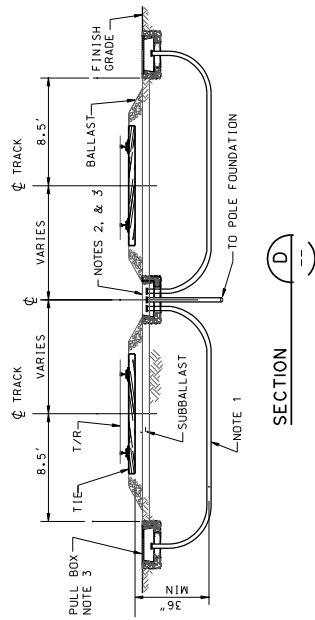
Issue Date: _____

Issue Date: 10/17/06

Drawing No: _____

SIG-117

- NOTES:**
- FOR CONDUIT QUANTITY AND SIZE, SEE POLE FOUNDATION AND UNDERGROUND RACEWAY DRAWINGS, GRADE CROSSING DRAWINGS, AND STATION PUSHBUTTON DRAWINGS.
 - CENTER PULL BOXES BETWEEN TRACKS.
 - ALL PULL BOXES SHALL BE TYPE BB AS SHOWN ON DRAWING SIG-117, EXCEPT FOR THE CROSSING MARKING SYSTEM PULL BOX AS SHOWN ON DRAWING SIG-117, EXCEPT FOR THE CROSSING MARKING SYSTEM PULL BOX AS SHOWN ON DRAWING SIG-117.
 - FOR TYPICAL PULL BOX DETAILS SEE DRAWING SIG-117.
 - ALL CONDUITS SHOWN ON THIS SHEET ARE DIRECT BURIED CONDUITS.



Designed By:
Drawn By:
Checked By:
Approved By:



RECOMMENDED FOR APPROVAL
SYSTEMS STANDARDS _____ DATE _____
CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____

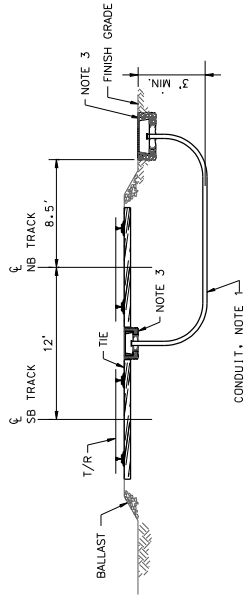
REV	DATE	Description

SIGNALING
STANDARD DRAWING
BALLASTED TRACK
WAYSIDE SIGNALING
RACEWAY DETAILS
LIGHT RAIL REFERENCE DRAWINGS

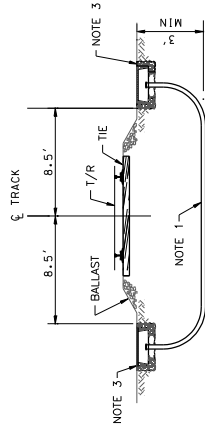
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CADD Number:
Submitting Date:
Drawing No.:
SIG-118

NOTES:

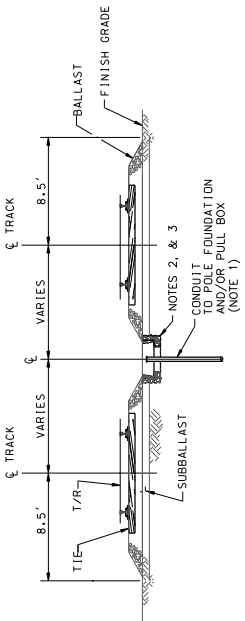
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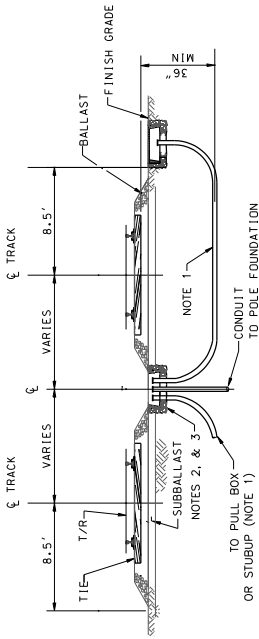
SECTION D
STA 170+15



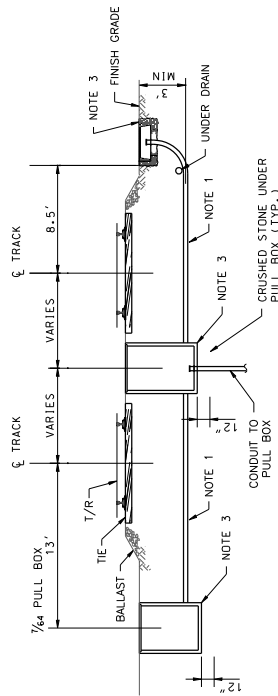
SECTION F



SECTION A



SECTION B

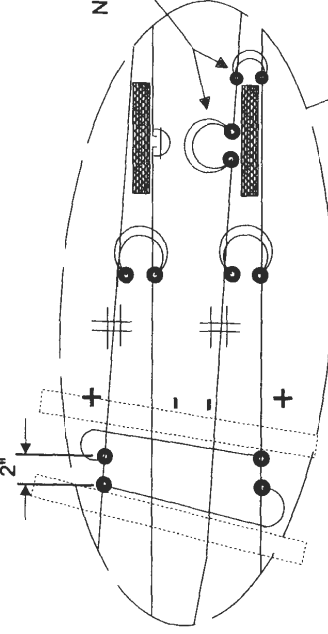


SECTION C
STA 168+55

UTA UTAH TRANSIT AUTHORITY REFERENCE DRAWINGS	SIGNALING STANDARD DRAWING BALLASTED TRACK WAYSIDE SIGNALING RACEWAY DETAILS LIGHT RAIL REFERENCE DRAWINGS	Drawn By: _____ Checked By: _____ Approved By: _____	Date: _____ Date: _____ Date: _____
	Recommended for Approval: SYSTEMS STANDARDS _____ CAPITAL DEVELOPMENT DEPUTY CHIEF _____	Design No.: N15 CADD Sheets: _____ Submit Date: _____ Drawing No.: SIC-119	Description: _____ DATE: _____ DATE: _____ DATE: _____

NOT TO EXCEED 2"

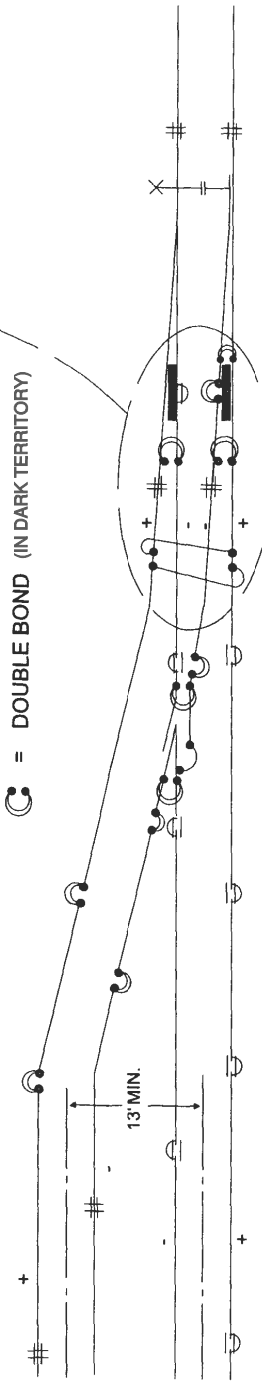
NOTE: MAY USE EITHER OR BOTH



ALL APPROPRIATE JOINTS BONDED

NOTE: FOR DETAIL OF FROG BONDING

- = HEEL BLOCK BONDING
- #— = BONDED JOINT
- # = INSULATED JOINT
- ⊖ ⊕ = DOUBLE BOND (IN DARK TERRITORY)



IF TRACK RELAY IS USED AT END OF TURNOUT, SINGLE BONDING OF TURNOUT IS PERMISSIBLE

NOTE: DOUBLE BOND SHUNT FOULING CIRCUIT.

REV	DATE	Description

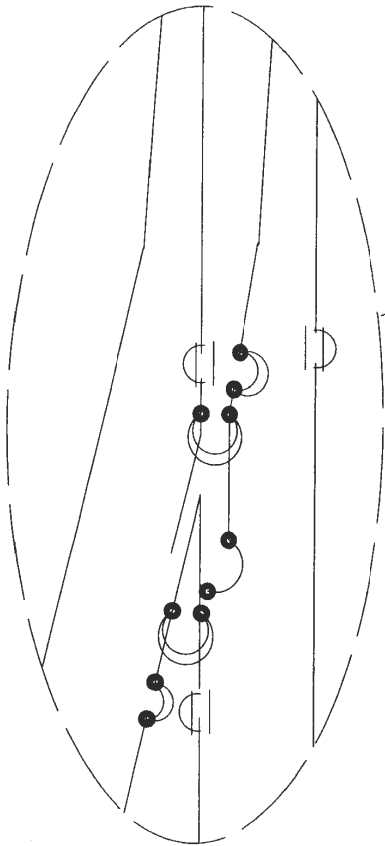
RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By: _____
 Drawn By: _____
 Checked By: _____
 Approved By: _____

SIGNALING
 STANDARD DRAWING
 SWITCH AND FOULING BONDING - HEEL BLOCK
 LIGHT RAIL REFERENCE DRAWINGS

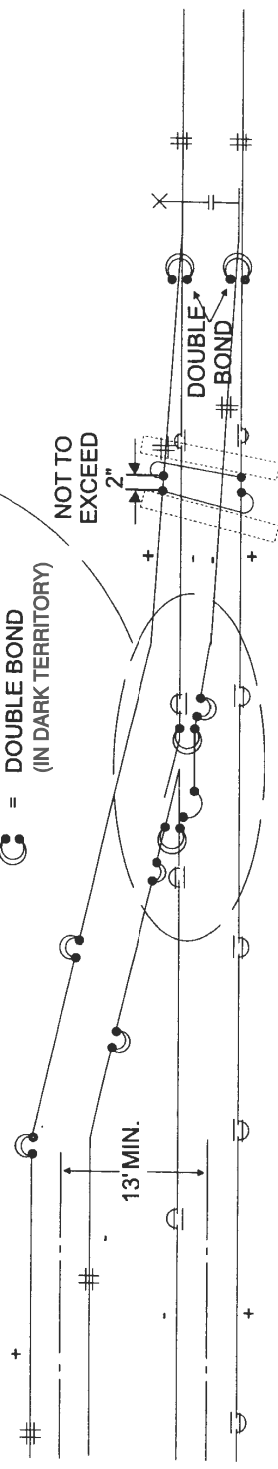
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 CADD Template: _____
 Submitting Date: _____
 Drawing No.: SIG-120



NOTE: FOR DETAIL OF HEEL BONDINGS

ALL APPROPRIATE JOINTS BONDED

- = BONDED JOINT
- # = INSULATED JOINT
- ⊖ = DOUBLE BOND (IN DARK TERRITORY)



NOTE: DOUBLE BOND SHUNT FOULING CIRCUIT (LEAVE EXPOSED)

IF TRACK RELAY IS USED AT END OF TURNOUT, SINGLE BONDING OF TURNOUTS IS PERMISSIBLE

REV	DATE	Description

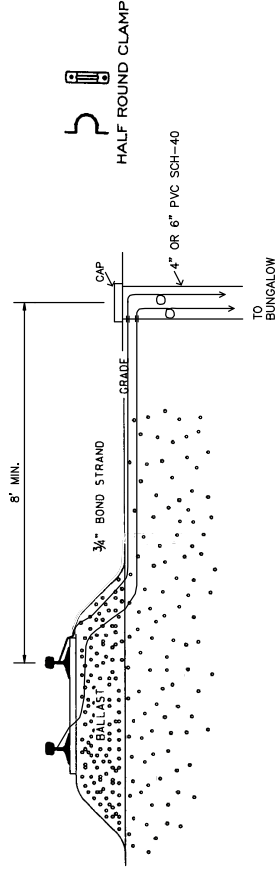
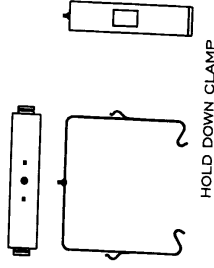
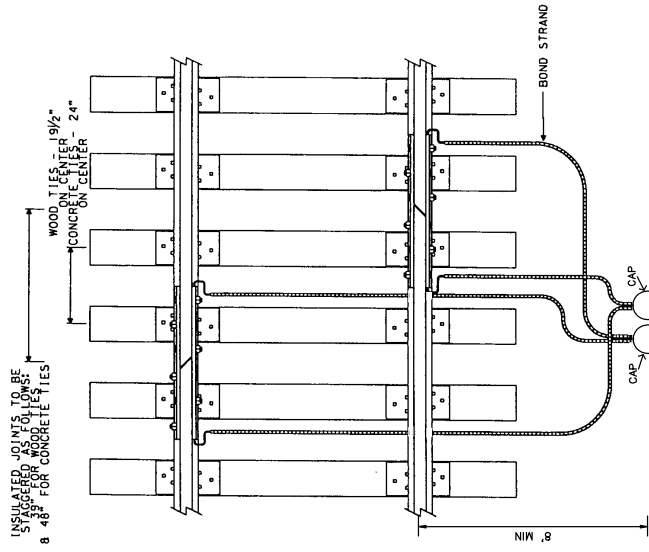
RECOMMENDED FOR APPROVAL
 SYSTEMS STANDARDS _____ DATE _____
 CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____




Designed By: _____
 Drawn By: _____
 Checked By: _____
 Approved By: _____

SIGNALING
 STANDARD DRAWING
 SWITCH AND FOULING BONDING - FROG
 LIGHT RAIL REFERENCE DRAWINGS

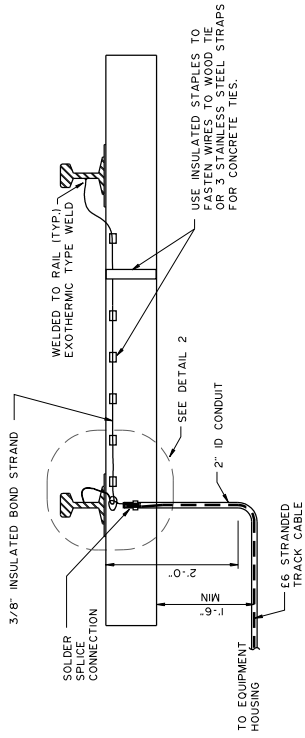
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 Scheduling Date: _____
 Drawing No.: SIG-121



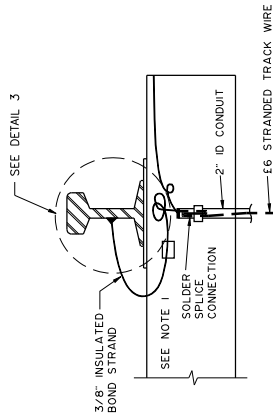
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SIGNALING STANDARD DRAWING TRACK CONNECTIONS AND CABLE MATERIAL			LIGHT RAIL STANDARD DRAWINGS	
Developed By	Drawn By	Checked By	Approved By	
 UTA UTAH TRANSIT AUTHORITY STANDARD DRAWINGS				
RECOMMENDED FOR APPROVAL	STANDARD CHAIRMAN	DATE	CAPITAL DEVELOPMENT DEPUTY DIRECTOR	DATE
REV	DATE	Description		

NOTES:

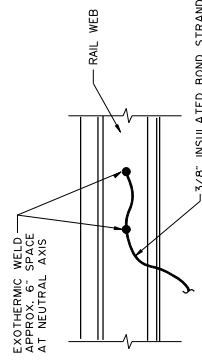
1. SPLICE INSULATED BOND STRAND ONTO E6 TRACK CABLE. ONE FOOT OF BOND STRAND SHOULD BE LEFT UNDER THE TRACK CABLE AND ONE FOOT OF SLACK COILED UP UNDER THE RAIL.



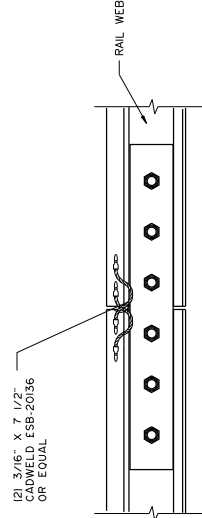
TYPICAL TRACK CONNECTION
FOR AFO TRACK CIRCUITS



DETAIL 1



DETAIL 2



INSULATED JOINT BY PASS

REV	DATE	Description

RECOMMENDED FOR APPROVAL

SYSTEMS STANDARDS _____ DATE _____

CAPITAL DEVELOPMENT DEPUTY CHIEF _____ DATE _____



Designed By	
Drawn By	
Checked By	
Approved By	

SIGNALING
STANDARD DRAWING
TYPICAL TRACK BONDING DETAILS

Light Rail Reference Drawings

STANDARD CABLE

- | | |
|---|--|
| FLASHING LIGHT SIGNALS | 1 - 5C #6 U.G.B.T. (099 1329) |
| CANTILEVER SIGNALS | 1 - 5C #4 U.G.B.T. (099 0748) IF MORE THAN 4 LIGHTS LIT OFF ONE PAIR
1 - 5C #6 U.G.B.T. (099 1329) IF LESS THAN 4 LIGHTS LIT OFF ONE PAIR |
| AUTO-GATES W/FLASHING LIGHTS | 2 - 5C #6 U.G.B.T. (099 1329) |
| COLOR LIGHT | 1 - 7 C #6 PER HEAD (099 1329) |
| M23 SWITCH MACHINE & M23 CROSSOVER | 1 - 5C #6 PREFERRED (099 1329); BUT
3 - 2C #6 ACCEPTABLE
& 1 - 5C #14 U.G.B.T. (099 4593) PER SWITCH MACHINE |
| GRS SWITCH MACHINE & GRS CROSSOVER | 1 - 2C #6 U.G.B.T. (099 1229) & 2 - 5C #14 U.G.B.T. (099 4593) |
| UNIVERSAL CROSSOVER | ALL EXTERIOR TRAC WIRES 1 - 2C #4 (099 0745) PER TRACK CIRCUIT
ALL LIGHT WIRES 1 - 5C #4 (099 4593) PER HEAD |
| CTS-2 SWITCH MACHINE | 1-7C #6 PER UNIT; 1-12C #14 PER UNIT |
| TRACK WIRES
(ACCEPT UNIVERSAL CROSSOVER) | 1 - 2C #6 U.G.B.T. (099 1229) PER TRACK CIRCUIT |
| BATTERY LEADS | 1C #6 COPPER-STRANDED; INSULATED; BLACK (099 1561) |
| JUNCTION BOX TO SIGNAL HEADS | 1C #10 INSULATED; STRANDED; (099 3055) |
| MARKER LIGHTS | 2C #6 U.G.B.T. (099 1229) |
| ELECTRIC LOCKS | 5C #14 U.G.B.T. (099 4593) OR 7C #14 U.G.B.T. (099 4604) |

REV	DATE	Description

RECOMMENDED FOR APPROVAL

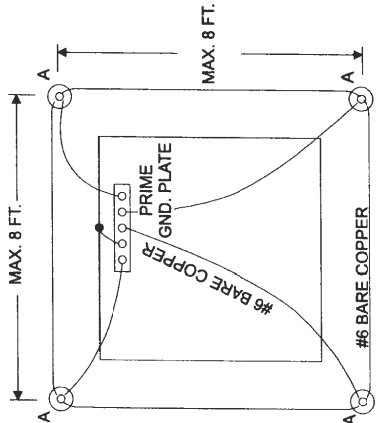
_____ SYSTEMS STANDARDS	_____ DATE
_____ CAPITAL DEVELOPMENT DEPUTY CHIEF	_____ DATE



UTA
UTAH TRANSIT AUTHORITY
REFERENCE DRAWINGS

Designed By: _____	Drawn By: _____	Checked By: _____	Approved By: _____
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SIGNALING STANDARD DRAWING STANDARD CABLE	LIGHT RAIL REFERENCE DRAWINGS
Scale: NTS CADD Template: _____ Scheduling Date: _____	Drawing No.: _____ SIG-024



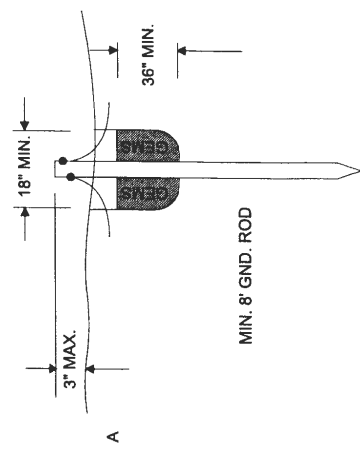
INSTALL AT LEAST EIGHT FOOT GROUND RODS A MAXIMUM OF EIGHT FEET APART.

USE #6 ANNEALED BARE COPPER WIRE (099 0864)

TEST GROUND POTENTIAL WITH THE RODS CONNECTED. IF THE GROUND POTENTIAL IS MORE THAN 15 OHMS, INSTALL AT LEAST TWO 25 LB. BAGS OF GEMS GROUNDING COMPOUND ACCORDING TO THE SKETCH AND ADD AN APPROPRIATE AMOUNT OF WATER.

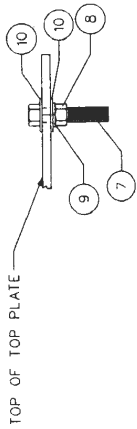
TEST GROUND POTENTIAL AGAIN. THE GROUND POTENTIAL MUST BE 15 OHMS OR LESS.

IF NECESSARY TO GO AWAY FROM THE HOUSE TO ACHIEVE THE GROUND OF 15 OHMS OR LESS, THE GROUND RODS MAY BE INSTALLED IN A STRAIGHT LINE WITH THE RODS NOT MORE THAN EIGHT FEET AWAY.

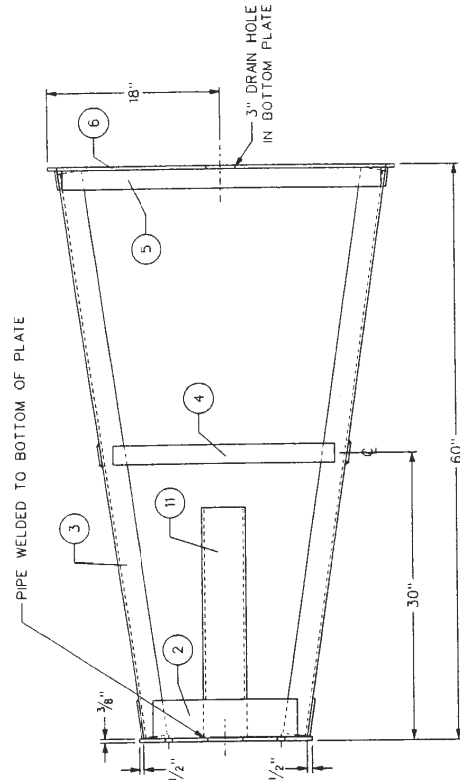
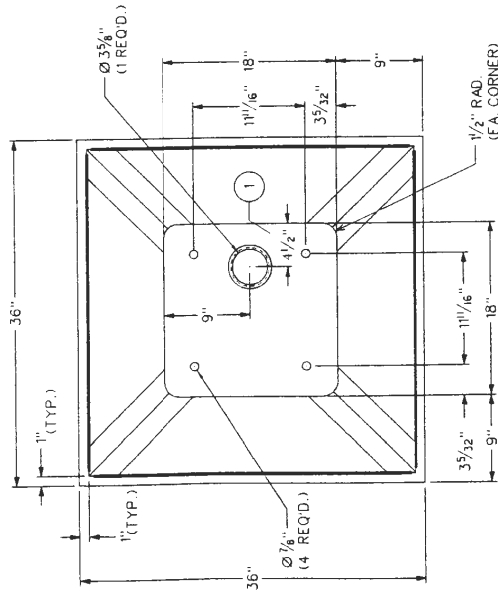


NOTE: GROUND RESISTANCE MUST BE 15 OHMS OR LESS. ALL GROUND ROD CONNECTIONS MUST BE WELDED. ALL BENDS IN WIRE MUST BE AT LEAST 18" RADIUS.

<table border="1"> <tr> <td>Drawn By: _____</td> <td>Checked By: _____</td> <td>Approved By: _____</td> </tr> <tr> <td>Drawn By: _____</td> <td>Checked By: _____</td> <td>Approved By: _____</td> </tr> </table>	Drawn By: _____	Checked By: _____	Approved By: _____	Drawn By: _____	Checked By: _____	Approved By: _____	<p style="text-align: center;">UT A</p> <p style="text-align: center;">UTAH TRANSIT AUTHORITY</p> <p style="text-align: center;">REFERENCE DRAWINGS</p>	<p style="text-align: center;">SIGNALING</p> <p style="text-align: center;">STANDARD DRAWING</p> <p style="text-align: center;">CONTROL HOUSE GROUNDING</p> <p style="text-align: center;">AND GROUND RESISTANCE</p> <p style="text-align: center;">LIGHT RAIL REFERENCE DRAWINGS</p>	Scale: NTS CADD Title: _____ Submit Date: _____ Drawing No.: _____ SIG-125													
Drawn By: _____	Checked By: _____	Approved By: _____																				
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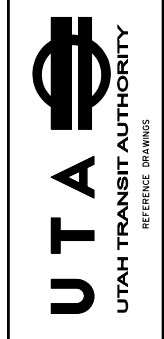
HARDWARE ASSEMBLY DETAIL
(ASSEMBLY AS SHOWN TO PROTECT THREADS)



- NOTES:
1. 60" LENGTH FOR GATEARM FLASHER ASSEMBLIES AND HIGH SIGNALS.
 2. 48" LENGTH FOR FLASHERS AND LOW SIGNALS.

REV	DATE	Description

RECOMMENDED FOR APPROVAL	DATE
SYSTEMS STANDARDS	DATE
CAPITAL DEVELOPMENT DEPUTY CHIEF	DATE



SIGNALING
STANDARD DRAWING
HIGHWAY CROSSING SIGNAL FOUNDATION
LIGHT RAIL REFERENCE DRAWINGS

Scale:	NTS
Checked By:	
Submitted Date:	
Drawn By:	
Drawing No.:	SIG-026