DEVICE LIST

32	REVERSE CURRENT RELAY
33B	BREAKER DOOR POSITION SWITCH
52T	TIME DELAY START
69	PERMISSIVE CONCONTROL SWITCH (REMOTE–LOCAL)
99Y	SURGE DIVERTER FAILURE RELAY
102	LOAD MEASURING CIRCUIT RELAY
108	DC CONTROL POWER SWITCH
108X	DC CONTROL PWR SW–LOAD MEASURING
127	UNDERVOLTAGE RELAY
129	CONTACTOR FOR LOAD MEASURING RESISTOR
130	SATION ALARM ANNUNCIATOR
150Y	IMPULSE TRIPPING RELAY
164C	DC SWGR GROUND RELAY–HOT STRUCTURE
164X	DC SWGR GROUND RELAY–GRD STRUCTURE
169	PERMISSIVE CONTROL SW (REMOTE–LOCAL)
172	DC FEEDER BREAKER
174X	STATION TROUBLE ALARM RELAY
182	LOAD MEASURING TRANSFER RELAY
183	VOLTAGE MEASURING TRANSFER RELAY
186	DC FEEDER BREAKER–CUMMULATIVE LOCKOUT
201	CLOSE RELAY (SCADA)
201D	EMERGENCY CLOSE RELAY (SCADA)
201X	FEEDER MASTER REALY (LATCHING)
a	BREAKER AUX SW CLOSED WHEN BRK CLOSED
b	BREAKER AUX SW CLOSED WHEN BRK OPENED
aa	CLOSING SOL SW–CLOSED AT LIMIT OF SOL TRAVEL
bb	CLOSING SOL SW–OPEN AT LIMIT OF SOL TRAVEL

METERING/INDICATING DEVICES

- (A) AMMETER
- (F) FREQUENCY METER
- (V) VOLTMETER
- (VAR) VARMETER
- (W) WATTMETER
- (WH) WATTHOURMETER
- (AS) AMMETER SWITCH
- (VS) VOLTMETER SWITCH
- (CS) CONTROL SWITCH WITH INDICATING LIGHTS
- (A) INDICATING LIGHT — A–AMBER, B–BLUE, G–GREEN, R–RED, W–WHITE

SYMBOLS

GENERAL CONT'D

- MAGNETIC OVERLOAD DEVICE
- THERMAL OVERLOAD DEVICE
- ELECTRICAL EQUIPMENT, SUCH AS CONTROL PANELS, PULLBOXES, ETC.
- (J) JUNCTION BOX (ALSO IDENTIFIED AS J.B. OR JCT. BOX)
- CONDUIT (CABLE)
- CONDUIT TURNING UP OR TOWARD OBSERVER
- CONDUIT TURNING DOWN OR AWAY FROM OBSERVER
- FLEXIBLE ELECTRICAL CONDUIT
- (S) STARTER/CONTACTOR
- CONTACT NORMALLY CLOSED
- CONTACT NORMALLY OPEN
- LIMIT SWITCH CONTACT
- DISCONNECT SWITCH
- AIR CIRCUIT BREAKER DRAWOUT TYPE
- RESISTOR
- SURGE RESISTOR
- (XX) RELAY
- SHUNT
- DC VOLTAGE TRANSDUCER
- DC CURRENT TRANSDUCER

GROUNDING

- GROUND CABLE BURIED IN EARTH OR EMBEDDED IN CONCRETE
- GROUND CADWELD CONNECTION
- GROUND BOLTED CONNECTION
- GROUND CABLE PIGTAIL (5' MINIMUM)
- 3/4" DIA. 5' LONG SOLID STAINLESS STEEL (TYPE 304) GROUND RODS, MIN. 30 FT. TOTAL LENGTH (6 SECTIONS)
- EXPOSED COPEER GROUND BAR BUS UNLESS OTHERWISE NOTED
- GROUND

ABBREVIATIONS

1/C	SINGLE CONDUCTOR
ALUM.	ALUMINUM
ANR	AUXILIARY NEGATIVE RAIL
BT.	BENT
C, COND.	CONDUIT
CA.	CABLE
CAB.	CABINET
CAT	CATALOG
CONT. RAIL	CONTACT RAIL
CONT.	CONTINUATION
D.E.	DEAD END
DC	DIRECT CURRENT
DIA	DIAMETER
EXP. GAP	EXPANSION GAP
FTG	FITTING
GALV.	GALVANIZED
JB	JUNCTION BOX
JCT	JUNCTION
KCMIL	THOUSAND CIRCULAR MILS
LB.	POUND
MAX	MAXIMUM
MIN	MINIMUM
MTD	MOUNTED
N.B.	NORTHBOUND
NOM	NOMINAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
N.T.S.	NOT TO SCALE
P.B.	PULL BOX
PC.	POINT OF CURVE
PLTF.	PLATFORM
PI	POINT OF INCLINE
PNL	PANEL
P.S.	POINT OF SWITCH
PT	POINT OF TANGENT
R.A.	RAIL ANCHOR
RAD	RADIUS
R.O.W.	RIGHT OF WAY
RR.	RAILROAD
RTRC	REINFORCED THERMOSETTING RESIN (FIBERGLASS) CONDUIT
S.B.	SOUTHBOUND
SEC	SECTION
SIG	STEEL INSIDE GUARD RAIL
SECT.	SECTIONALIZING
SPST	SINGLE POLE SINGLE THROUGH
S.S.	STAINLESS STEEL
STA	STATION
SW.	SWITCH
TRK.	TRACK
TYP	TYPICAL

GENERAL NOTES

1. ALL DISTANCES OF EXISTING STRUCTURES SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY DIMENSIONS BEFORE PROCEEDING WITH THE INSTALLATIONS.
2. TRAYS AND TRAY SUPPORT LOCATIONS SHOWN ON THE DWS ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE CONTRACTOR TO DETERMINE EXACT LOCATIONS, HOWEVER INTERVALS BETWEEN TRAY SUPPORTS SHALL NOT EXCEED 8'–0".
3. EXPOSED CONDUIT AND CABLE RUNS ARE SHOWN DIAGRAMMATICALLY, EXACT RUNS SHALL BE DETERMINED IN FIELD TO SUIT CONDITIONS.
4. ALL CONDUITS FOR DC CABLES SHALL BE RTRC.
5. ALL INDOOR JCT. & TERM. BOXES SHALL BE NEMA 12 TYPE, ALL OUTDOOR BOXES NEMA 4R TYPE, UNLESS OTHERWISE NOTED, AND SHALL BE LOCATED CLEAR OF INTERFERENCES FOR READY ACCESS.
6. SINGLE CONDUCTOR WIRE SHALL BE RATED 600V, TYPE XHHW (SOLID CONDUCTOR) MIN. #12 AWG. UNLESS NOTED OTHERWISE.
7. ALL UNISTRUT CHANNELS, RODS, FITTINGS, STEEL PLATES, AND HARDWARE SHALL BE HOT–DIP GALVANIZED.
8. DEPRESSED FLOOR UNDER AND AROUND D.C. SWITCHGEAR SHALL BE FILLED WITH AMAZITE, OR APPROVED EQUAL, FOR SIZE AND LOCATION SEE STRUCTURAL PLANS.
9. MULTICONDUCTOR CABLES SHALL BE RATED 600V, TYPE XHHW AS SHOWN IN THE CABLE SCHEDULE.
10. ALL DC CABLES SHALL BE RATED 2000V, TYPE RHW–2, LSZH APPROVED FOR CTA USE.

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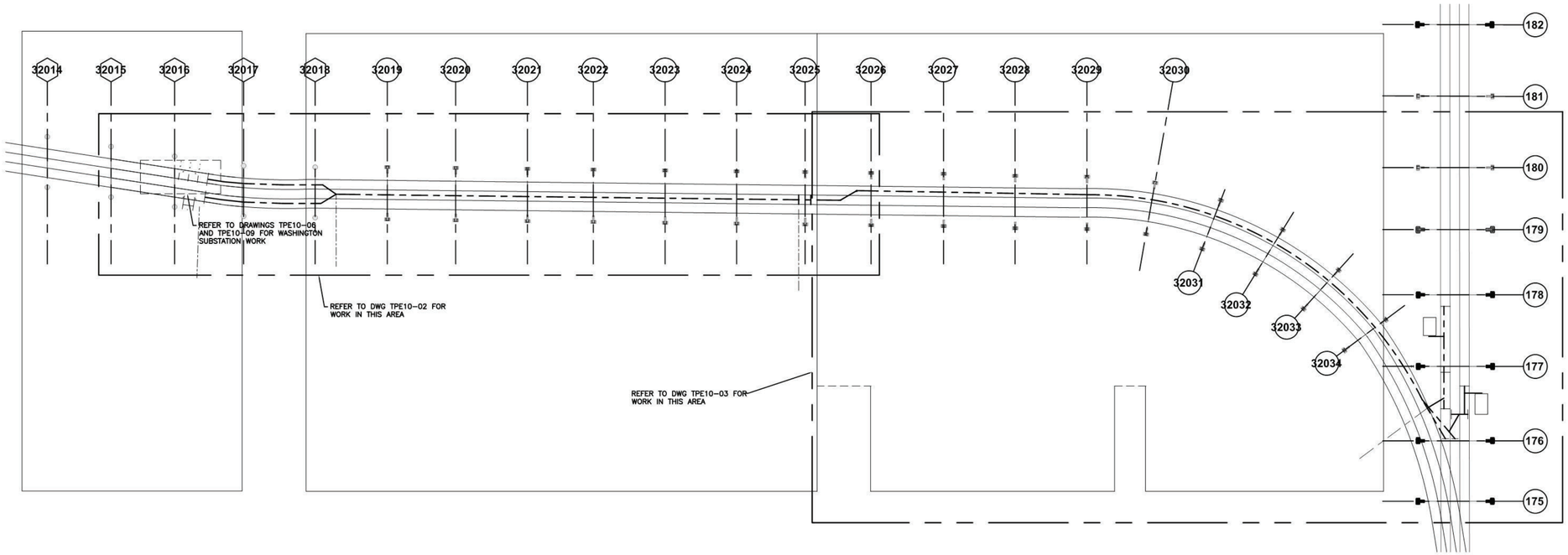
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION TRACTION POWER
GENERAL NOTES, SYMBOLS, ABBREVIATIONS, AND DEVICE LIST

DRAWING NO. **TPE01-01**

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



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154 N DAMEN AVE - DAMEN GREEN LINE STATION

WASHINGTON BLVD SUBSTATION
TRACTION POWER OVERALL SITE PLAN

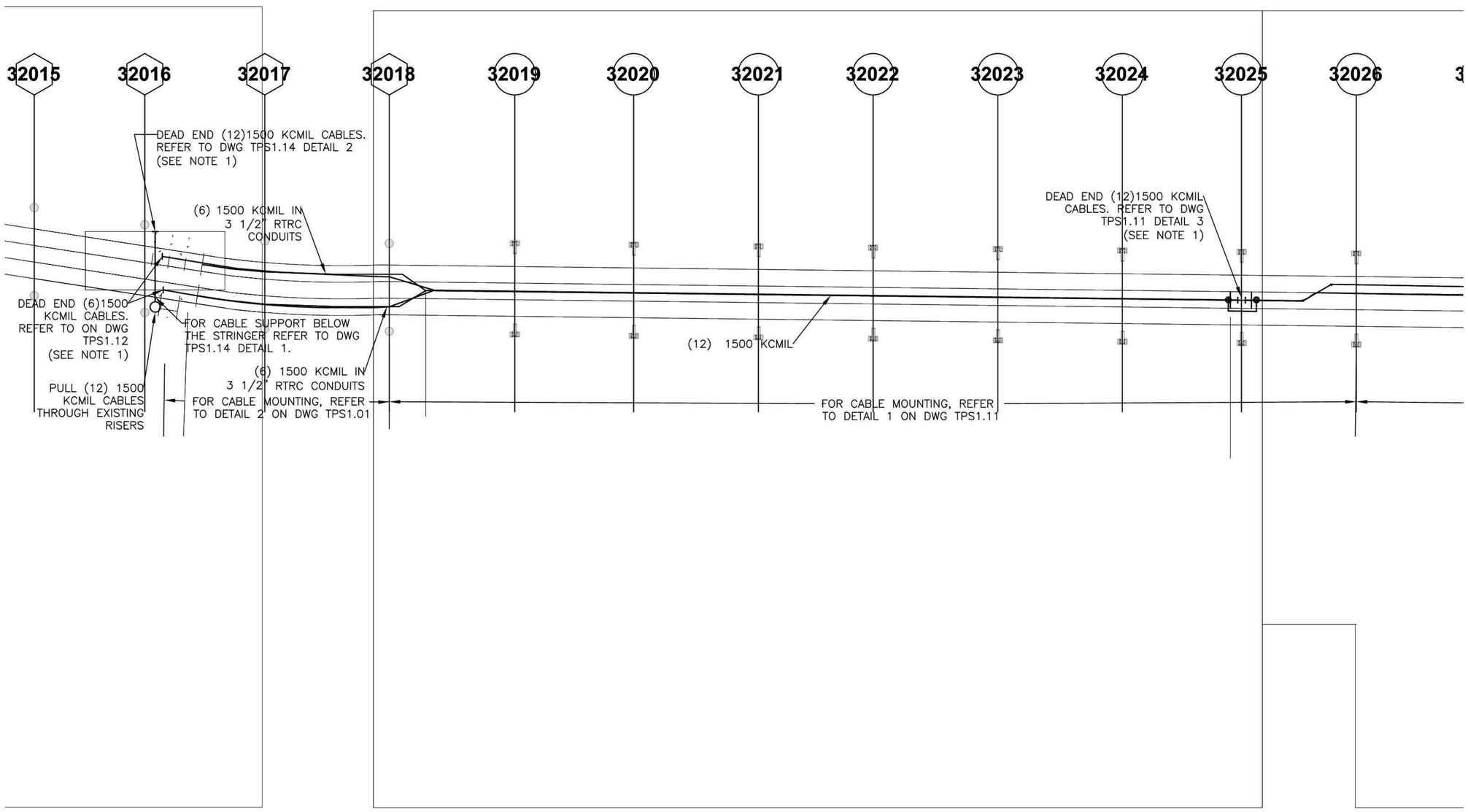
CDOT PROJECT D-7-135

DATE: 11/01/2019

SPEC. NO.

DRAWING NO.
TPE10-01

REVISION NO.



NOTES:

1. FOR DEAD END DETAILS REFER TO DRAWINGS TPE50–15 AND TPE50–16.

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

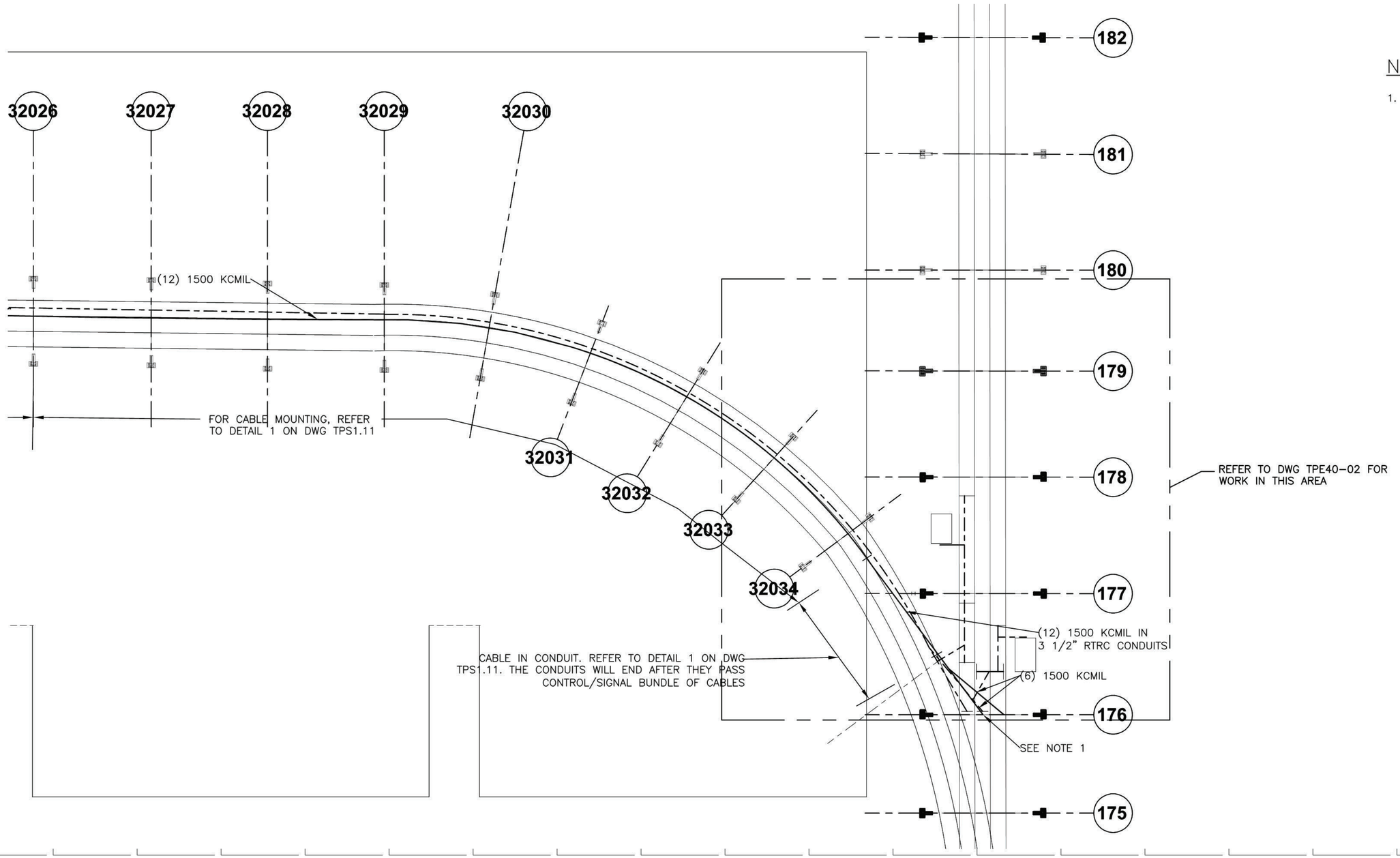
WASHINGTON BLVD SUBSTATION
TRACTION POWER ENLARGED PLAN

DRAWING NO.
TPE10-02

CDOT PROJECT D-7-135

DATE: 11/01/2019

REVISION NO.



NOTES:

1. FOR DEAD END DETAILS REFER TO DETAIL 3 ON DWG TPS-S1.12 AND DRAWINGS TPE50-15 AND TPE50-16.

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

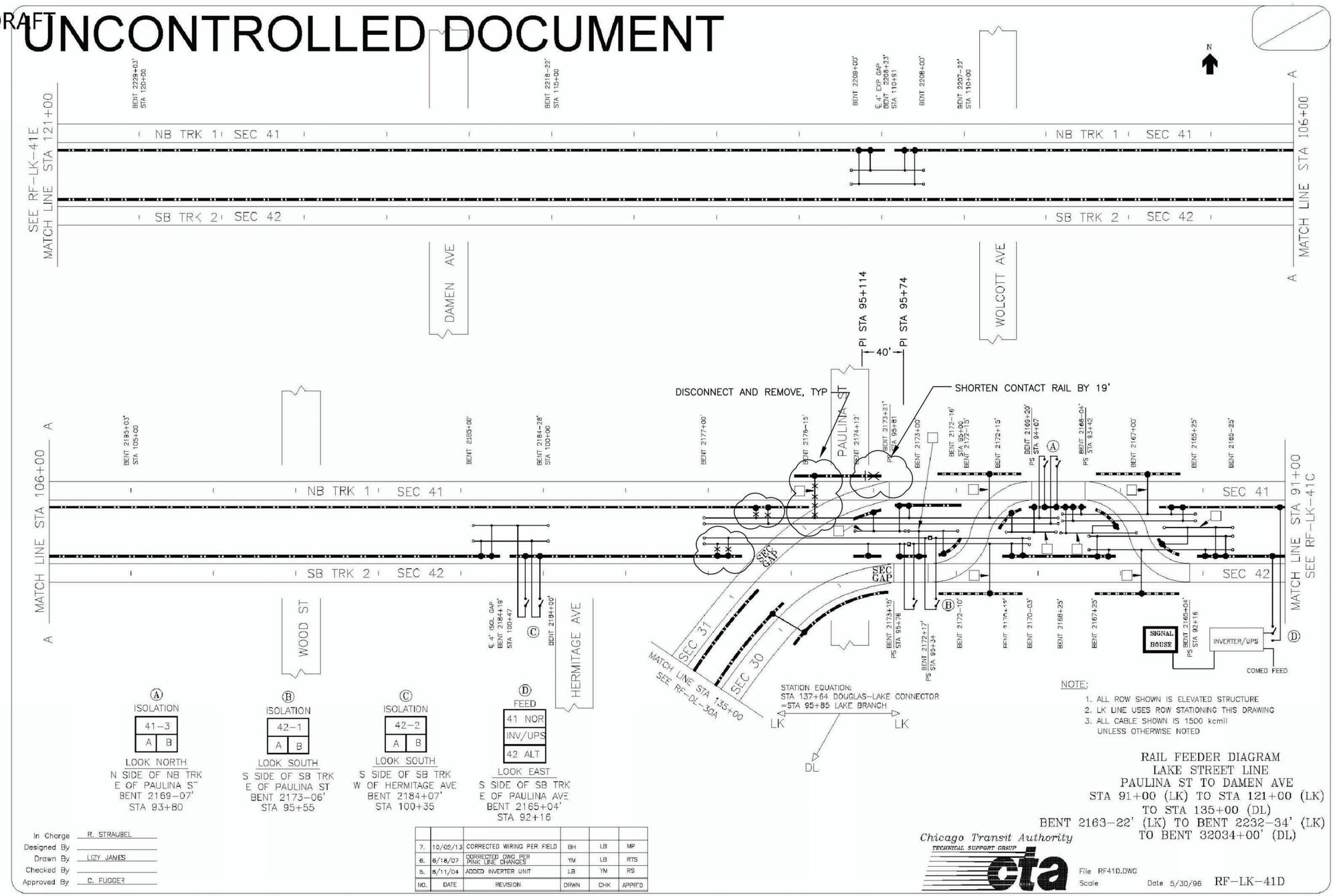
WASHINGTON BLVD SUBSTATION
TRACTION POWER ENLARGED PLAN

DRAWING NO.
TPE10-03

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

DRAFT

UNCONTROLLED DOCUMENT



Ⓐ ISOLATION 41-3 (A | B) — LOOK NORTH — N SIDE OF NB TRK E OF PAULINA ST — BENT 2169-07' STA 93+80

Ⓑ ISOLATION 42-1 (A | B) — LOOK SOUTH — S SIDE OF SB TRK E OF PAULINA ST — BENT 2173-06' STA 95+55

Ⓒ ISOLATION 42-2 (A | B) — LOOK SOUTH — S SIDE OF SB TRK W OF HERMITAGE AVE — BENT 2184+07' STA 100+35

Ⓓ FEED 41 NOR / INV/UPS / 42 ALT — LOOK EAST — S SIDE OF SB TRK E OF PAULINA AVE — BENT 2165+04' STA 92+16

NOTE:
1. ALL ROW SHOWN IS ELEVATED STRUCTURE
2. LK LINE USES ROW STATIONING THIS DRAWING
3. ALL CABLE SHOWN IS 1500 kcmil UNLESS OTHERWISE NOTED

NO.	DATE	REVISION	DRWN	CHK	APPR'D
7.	10/02/13	CORRECTED WIRING PER FIELD	BH	LB	MP
6.	6/18/07	CORRECTED DWG PER PINK LINE CHANGES	YM	LB	RTS
5.	8/11/04	ADDED INVERTER UNIT	LB	YM	RS

In Charge R. STRAUBEL
Designed By
Drawn By LIZY JAMES
Checked By
Approved By C. FUGGER

RAIL FEEDER DIAGRAM
LAKE STREET LINE
PAULINA ST TO DAMEN AVE
STA 91+00 (LK) TO STA 121+00 (LK)
TO STA 135+00 (DL)
BENT 2163-22' (LK) TO BENT 2232-34' (LK)
TO BENT 32034+00' (DL)

Chicago Transit Authority
TECHNICAL SUPPORT GROUP
cta

File RF41D.DWG
Scale
Date 5/30/96
RF-LK-41D

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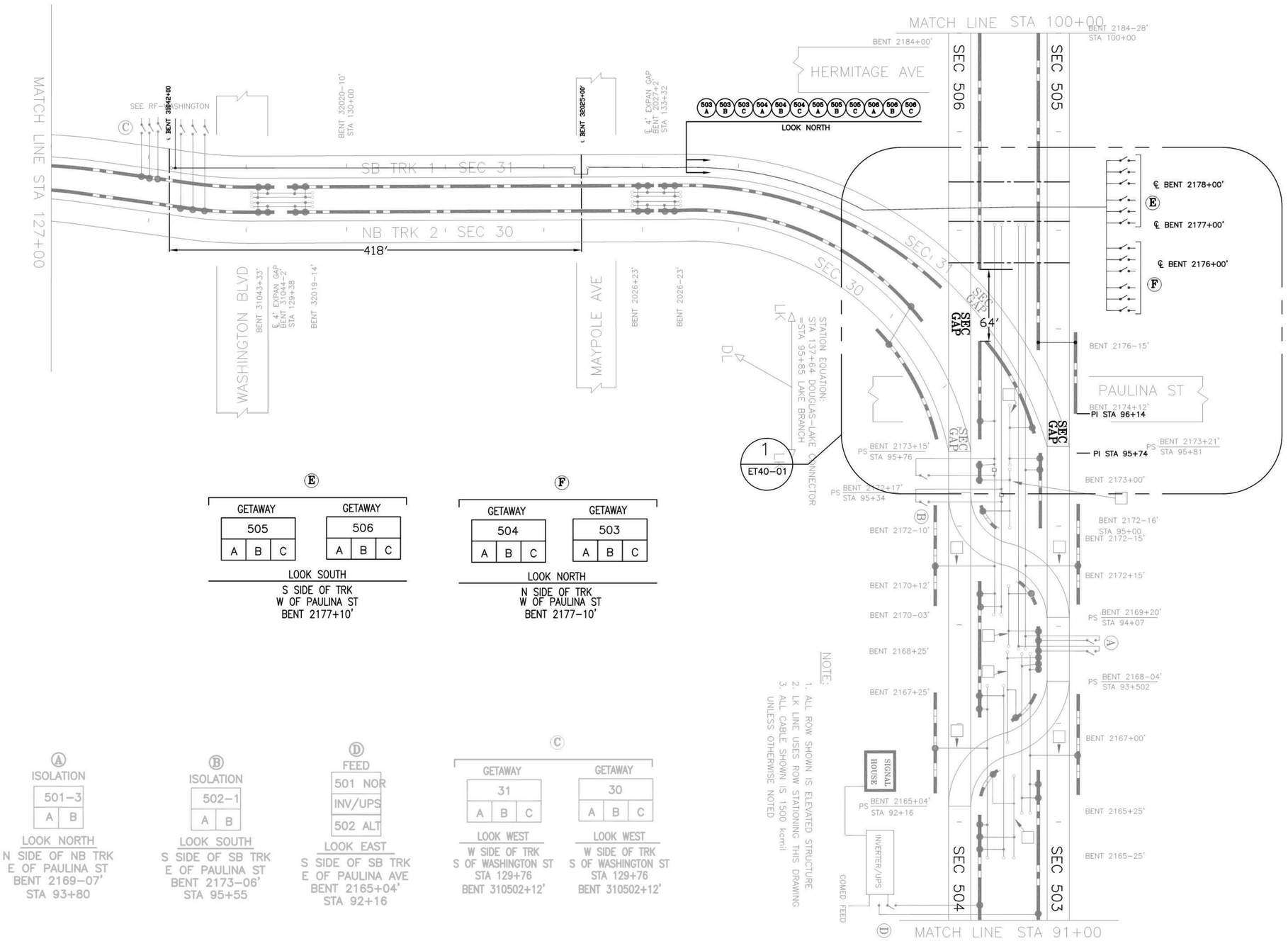
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
RAIL FEEDER DIAGRAM LAKE STREET LINE REMOVAL PLANS

DRAWING NO.
TPE10-04

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



E

GETAWAY			GETAWAY		
505			506		
A	B	C	A	B	C

LOOK SOUTH
S SIDE OF TRK
W OF PAULINA ST
BENT 2177+10'

F

GETAWAY			GETAWAY		
504			503		
A	B	C	A	B	C

LOOK NORTH
N SIDE OF TRK
W OF PAULINA ST
BENT 2177–10'

NOTE:
1. ALL ROW SHOWN IS ELEVATED STRUCTURE
2. LK LINE USES ROW STATIONING THIS DRAWING
3. ALL CABLE SHOWN IS 1500 kcmil UNLESS OTHERWISE NOTED

A
ISOLATION

501–3	
A	B

LOOK NORTH
N SIDE OF NB TRK
E OF PAULINA ST
BENT 2169–07'
STA 93+80

B
ISOLATION

502–1	
A	B

LOOK SOUTH
S SIDE OF SB TRK
E OF PAULINA ST
BENT 2173–06'
STA 95+55

D
FEED

501 NOR
INV/UPS
502 ALT

LOOK EAST
S SIDE OF SB TRK
E OF PAULINA AVE
BENT 2165+04'
STA 92+16

C

GETAWAY			GETAWAY		
31			30		
A	B	C	A	B	C

LOOK WEST
W SIDE OF TRK
S OF WASHINGTON ST
STA 129+76
BENT 310502+12'

LOOK WEST
W SIDE OF TRK
S OF WASHINGTON ST
STA 129+76
BENT 310502+12'

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

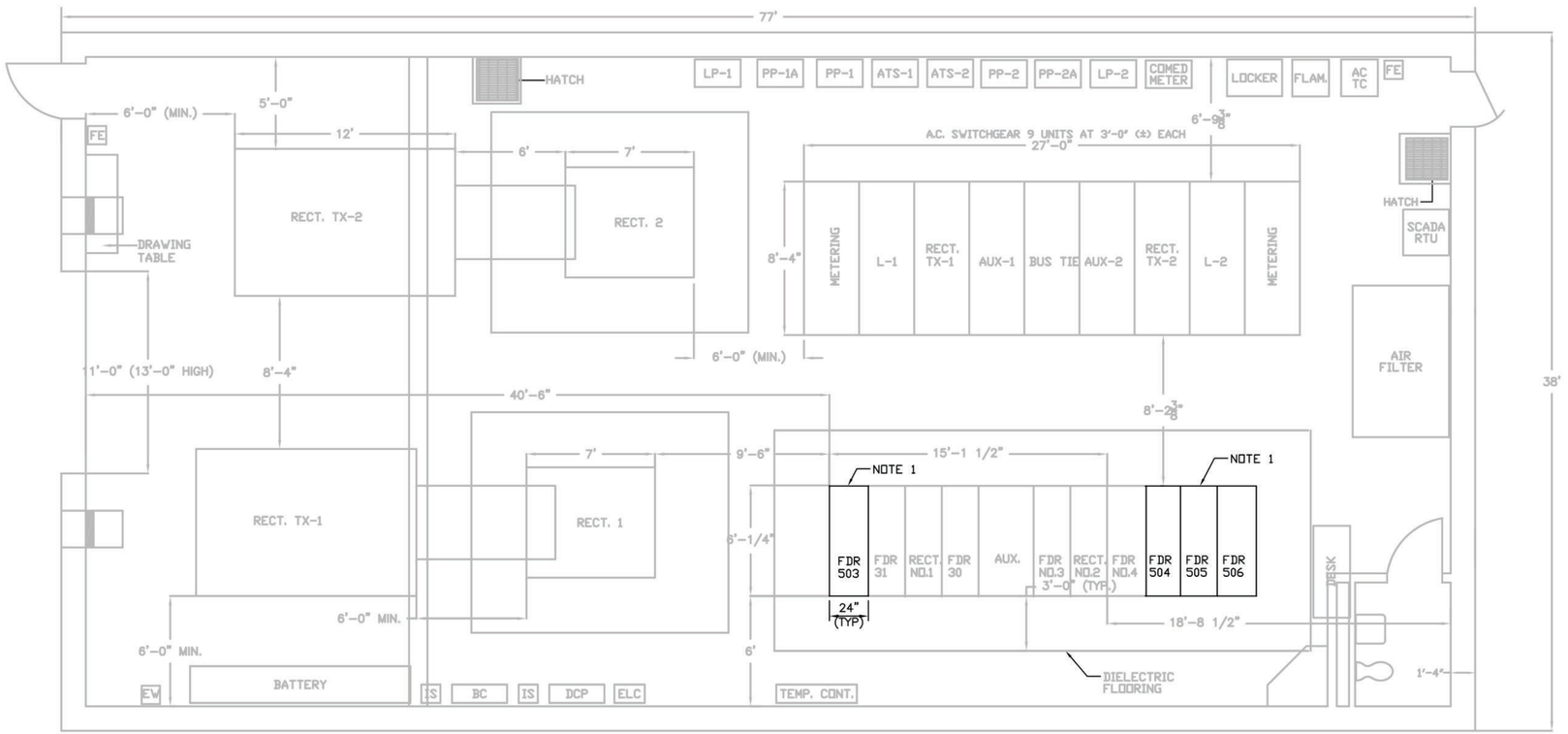
WASHINGTON BLVD SUBSTATION
RAIL FEEDER DIAGRAM FINAL

DRAWING NO.
TPE10-05

CDOT PROJECT D-7-135

DATE: 11/01/2019

REVISION NO.



PLAN

1/4"=1'

NOTES:

1. EXCEPT FOR THE FOUR (4) NEW DC FEEDER CUBICLES ADDED, ALL EQUIPMENT SHOWN IS EXISTING.

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

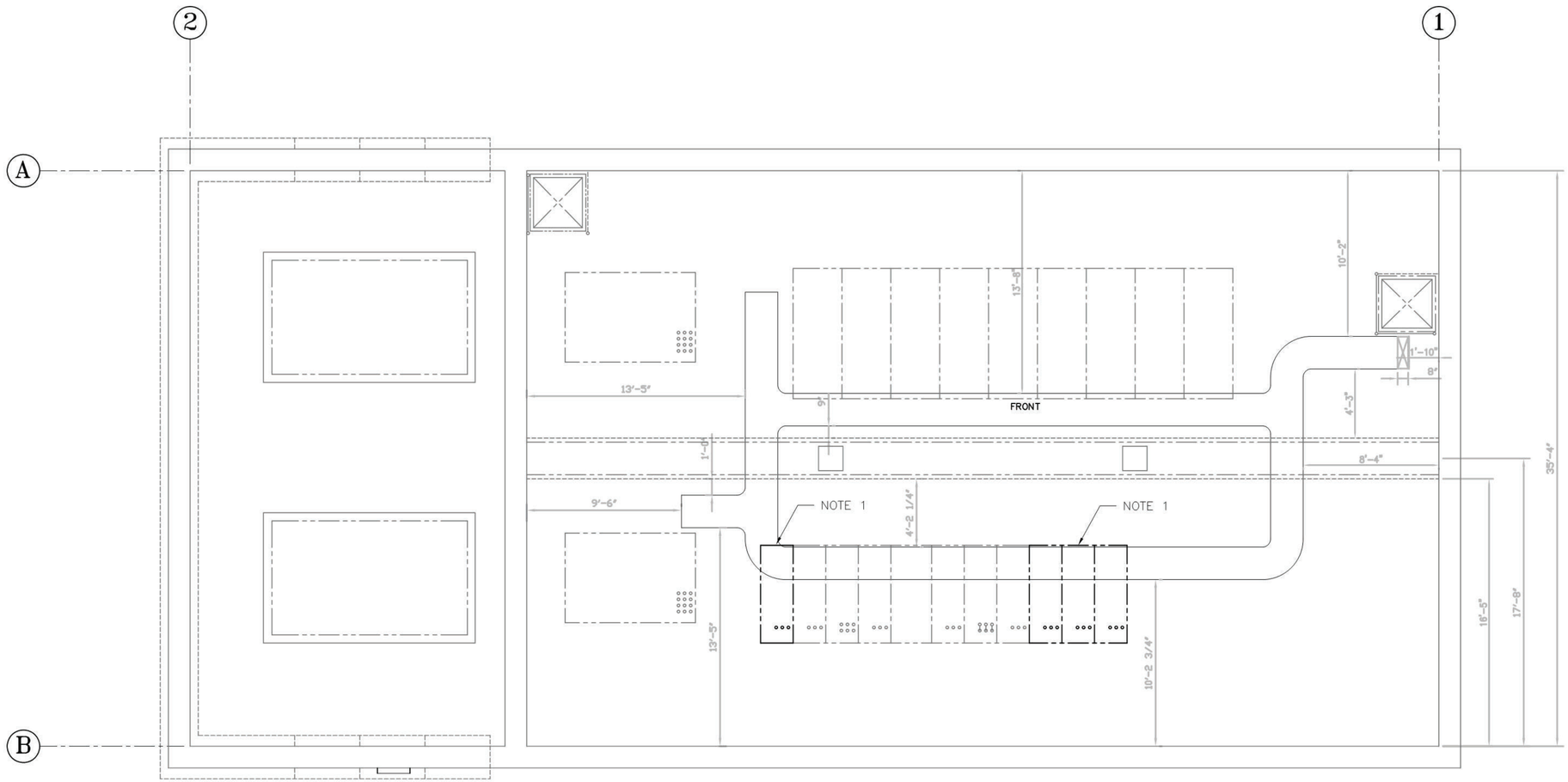
WASHINGTON BLVD SUBSTATION
OPERATING FLOOR GENERAL ARRANGEMENT LAYOUT

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE10-06**

REVISION NO.



NOTES:

1. EXCEPT THE FOUR (4) NEW DC FEEDER CUBICLES ADDED, ALL EQUIPMENT SHOWN IS EXISTING.

PLAN

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

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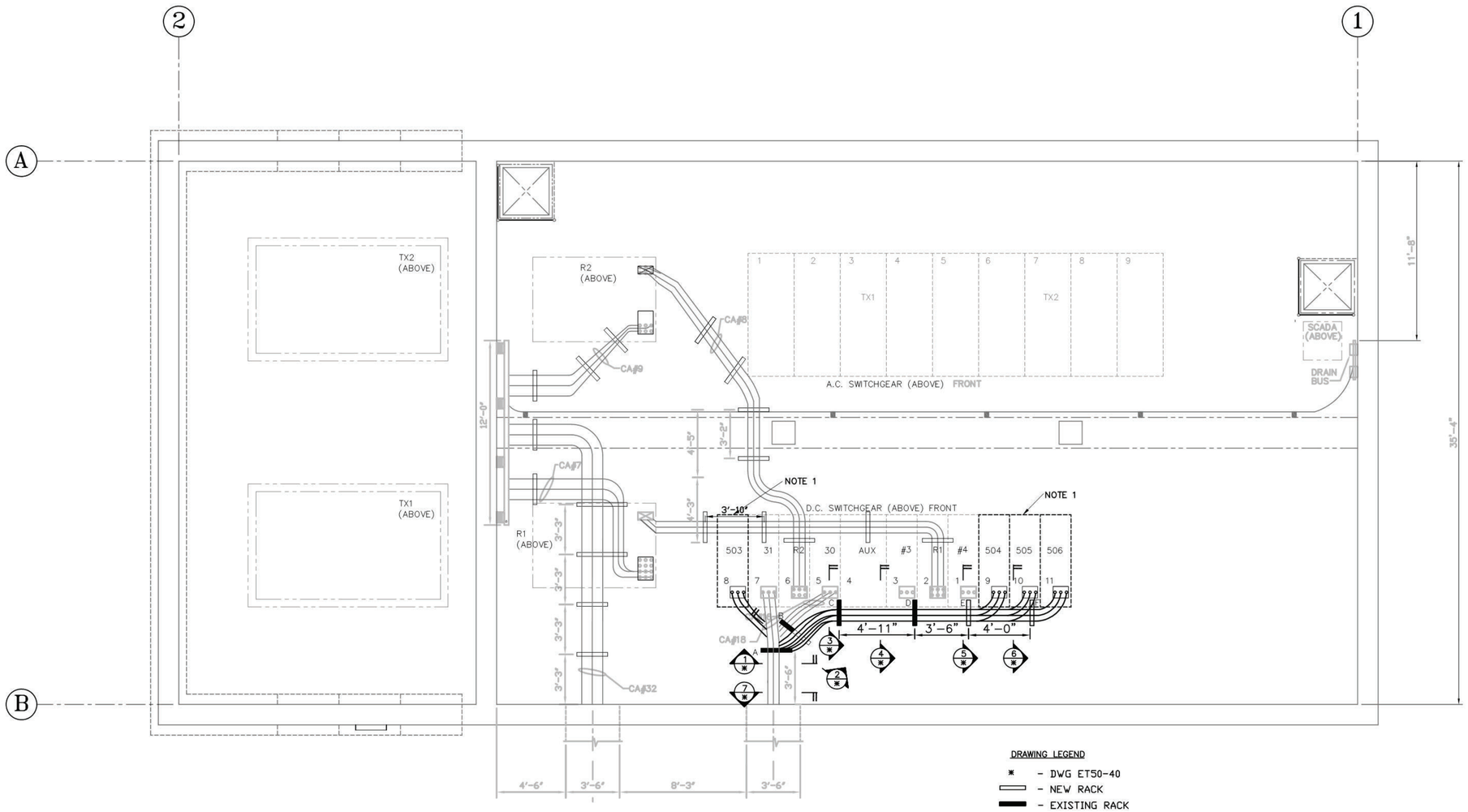
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
FIRST FLOOR CABLE TRAY LAYOUT

DRAWING NO.
TPE10-07

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



NOTES:

1. EXCEPT THE FOUR (4) NEW DC FEEDER CUBICLES ADDED, ALL EQUIPMENT SHOWN IS EXISTING.

PLAN

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

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
CABLE VAULT CABLE LAYOUT

DRAWING NO.
TPE10-08

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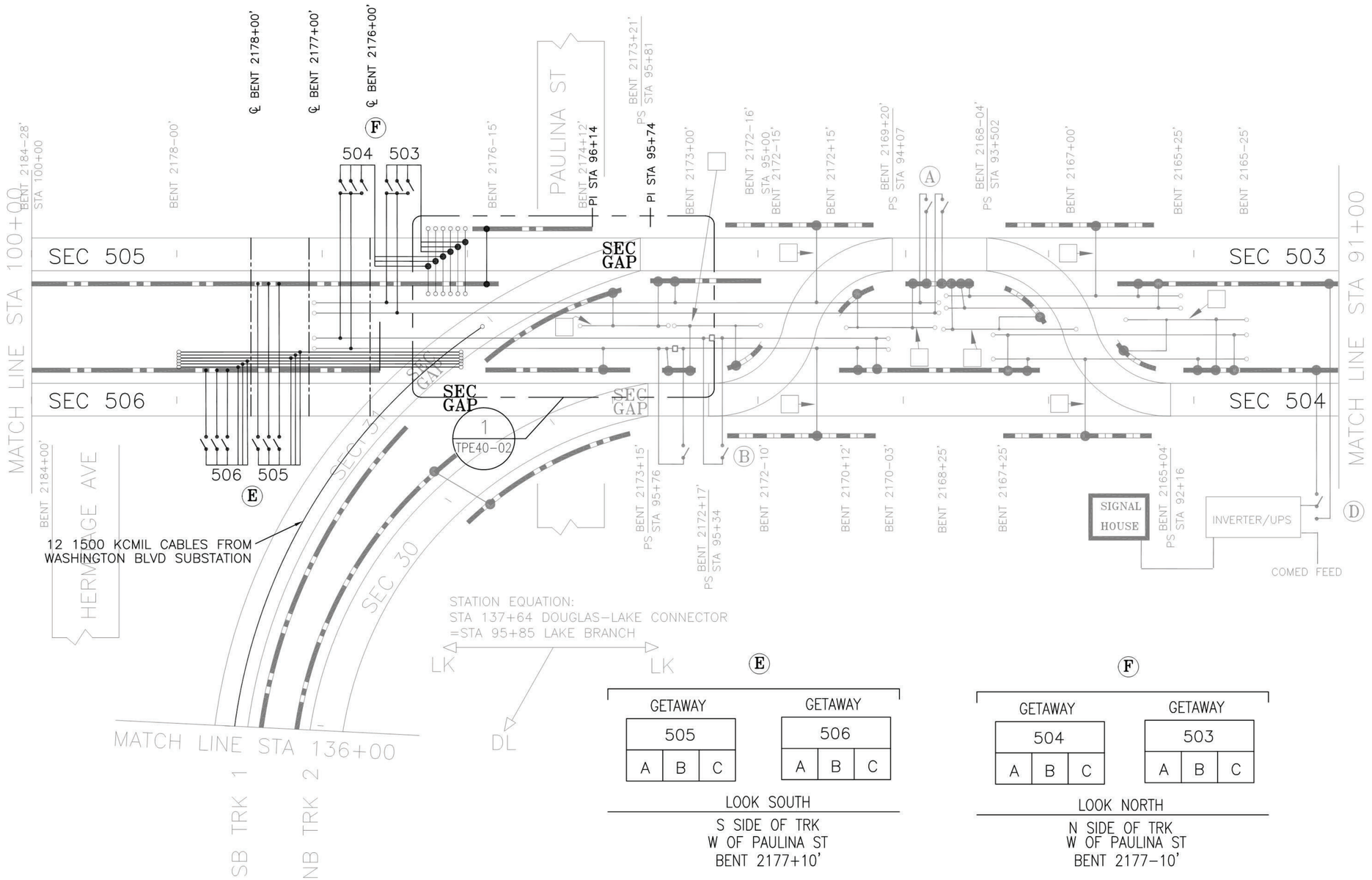

NOTES:

1. ALL ROW SHOWN IS ELEVATED STRUCTURE.
2. LK CABLE USES ROW STATIONING THIS DRAWING.
3. ALL CABLE SHOWN IS 1500KCMIL, UNLESS NOTED OTHERWISE.

E

GETAWAY 505			GETAWAY 506		
A	B	C	A	B	C

LOOK SOUTH

S SIDE OF TRK
W OF PAULINA ST
BENT 2177+10'

F

GETAWAY 504			GETAWAY 503		
A	B	C	A	B	C

LOOK NORTH

N SIDE OF TRK
W OF PAULINA ST
BENT 2177-10'

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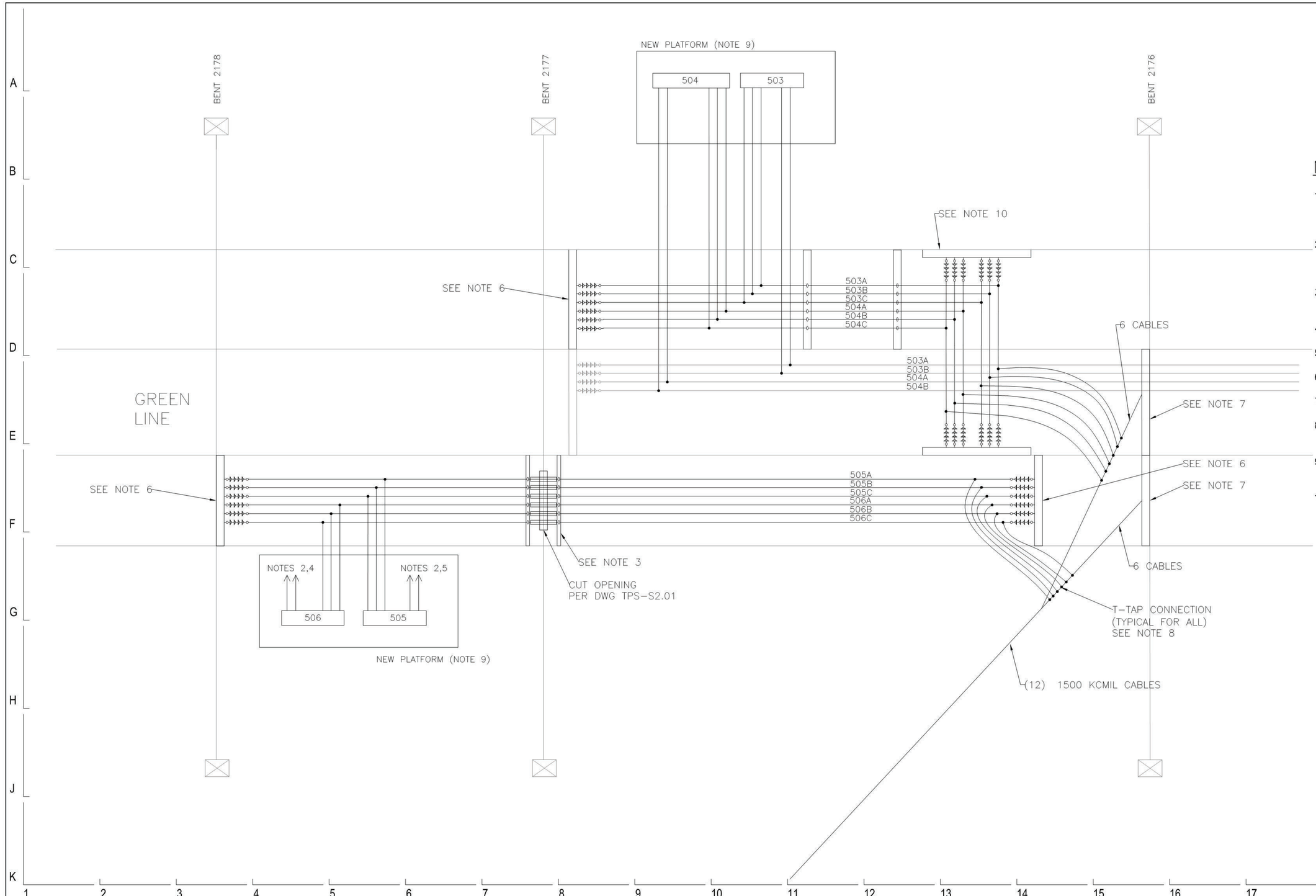
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
ENLARGED RAIL FEEDER DIAGRAM

DRAWING NO.
TPE40-01

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



NOTES:

1. FOR POSITIVE CABLE DEAD END DETAILS REFER TO DWG TPE50–15 AND TPE50–16.
2. REFER TO TPE50–17 FOR CABLE CONNECTION DETAIL TO THE CONTACT RAIL.
3. REFER TO TPE50–18 DETAIL 4 FOR CONDUIT AND SUPPORT.
4. TO CONTACT RAIL SECTION 506.
5. TO CONTACT RAIL SECTION 505.
6. REFER TO DETAIL 2 ON DWG TPS1.12.
7. REFER TO DETAIL 3 ON DWG TPS1.12.
8. REFER TO DETAIL 7 ON DWG TPE50–14.
9. REFER TO DETAIL 1 ON DRAWING TPE50–41.
10. REFER TO DETAIL 2 ON DRAWING TPS1.14

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
CABLE ROUTING PLAN AT LAKE STREET

DRAWING NO.
TPE40-02

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

SYMBOL LEGEND

- ALUMINUM CLAD CONTACT RAIL, DETAIL "1", DRAWINGS STP–111, STP–113
- BASE CONTACT RAIL, DETAIL "1" AND DETAIL "2" DRAWING STP–106
- CONTACT RAIL INCLINE, DETAIL "2" OR "3", DRAWING STP–108
- CONTACT RAIL ANCHOR, STP–713, STP–714, STP–715, STP–716, STP–818.
- CONTACT RAIL CHAIR, DETAIL "1" STP–100 OR DETAIL "8" STP–102.
- CONTACT RAIL TAP, DETAIL "1", DRAWING STP–118.
- CABLE, 1/C, 1000 V DC, SIZE AS NOTED.
- CABLE SPLICE, DETAIL "5", DRAWING STP–201.
- CABLE TAP, DETAIL "7", DRAWING STP–201.
- KNIFE SWITCH, 600 A, 800 V DC, SPST, DRAWING STP–301.
- KNIFE SWITCH, 600 A, 800 V DC, SPDT, DRAWING STP–302.
  KNIFE SWITCH, 1200 A, 800 V DC, SPDT, DRAWING STP–303.
- KNIFE SWITCH, 1200 A, 800 V DC, SPST, DRAWING STP–300.
- DETAIL/ELEVATION NUMBER (1,2,3,...) OR SECTION LETTER (A,B,C,...).
- DRAWING NUMBER(S) WHERE DETAIL/ELEVATION OR SECTION IS SHOWN OR REFERRED.
- SECTION LETTER (A,B,C,...) OR ELEVATION NUMBER (1,2,3,...).
- DRAWING NUMBER WHERE SECTION OR ELEVATION IS SHOWN.
- TYPICAL CONTINUATION CABLE INSTALLATION, DETAIL "1", DRAWING STP–704 OR STP–705.
- TYPICAL ISOLATING GAP CONNECTION, DETAIL "1", DRAWING STP–707 OR STP–708.
- POSITIVE CABLE DEAD END, DETAIL "1", DRAWING STP–203.
- DEAD END TIMBER, DETAIL "1" OR DETAIL "2", DRAWING STP–202.
- SPOOL TYPE INSULATOR CABLE SUPPORT DETAILS "6" OR "7", DRAWING STP–210.

ABBREVIATIONS

ALUM.	ALUMINUM
BT.	BENT
CA.	CABLE
CAB.	CABINET
CAT	CATALOG
C, COND.	CONDUIT
CONT.	CONTINUATION
CONT. RAIL	CONTACT RAIL
D.E.	DEAD END
DIA	DIAMETER
EXP. GAP	EXPANSION GAP
FTG	FITTING
GALV.	GALVANIZED
H.S.	HEEL OF SWITCH
HTL	HEATER TAPE LENGTH
HTR	HEATER
JB	JUNCTION BOX
JCT	JUNCTION
KCMIL	THOUSAND CIRCULAR MILS
LB.	POUND
LTG	LIGHTING
MAX	MAXIMUM
M.H.	MANHOLE
MIN	MINIMUM
MTD	MOUNTED
NOM	NOMINAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
N.B.	NORTHBOUND
N.T.S.	NOT TO SCALE
P.B.	PULL BOX
PC.	POINT OF CURVE
P.HTL	POINT OF HEAT TAPE LENGTH
PI	POINT OF INTERSECTION
PLTF.	PLATFORM
PT. INC. (PI)	POINT OF INCLINE
PNL	PANEL
P.S.	POINT OF SWITCH
PT	POINT OF TANGENT
R.A.	RAIL ANCHOR
RAD	RADIUS
REPT.	REPEATER
R.O.W.	RIGHT OF WAY
RR.	RAILROAD
RTRC	REINFORCED THERMOSETTING RESIN (FIBERGLASS) CONDUIT
S.B.	SOUTHBOUND
SEC.	SECTION
SECT.	SECTIONALIZING
S.S.	STAINLESS STEEL
STA.	STATION
SW.	SWITCH
TRK.	TRACK
TYP	TYPICAL
X–ARM	CROSS ARM
1/C	SINGLE CONDUCTOR

SYMBOL LEGEND FOR CONTACT RAIL HEATERS

- HEATER TAPE CIRCUIT CONTROL CABINET
- N1 NEGATIVE CONNECTION TO RUNNING RAIL
- P1 POSITIVE CONNECTION TO CONTACT RAIL
- OR FUSE BOX

GENERAL NOTES

1. REMOVE ALL EXISTING TRACTION POWER CABLES AND/OR CONTACT RAILS NOT INDICATED TO REMAIN IN SERVICE.
2. ALL MAIN LINE RUNS AND "LAP" CONTACT RAILS SHALL UTILIZE 3.66 m (12'–0") INCLINES.
3. ALL "LEAD/KICK" OR "YARD" CONTACT RAILS SHALL UTILIZE 1.83 m (6'–0") INCLINES.
4. FOR TORQUE TIGHTENING VALUES SEE TESTING SECTION OF SPECIFICATIONS.
5. TRACK ROUTE IDENTIFICATION:

   PURPLE LINE: EVANSTON
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM LINDEN TO THE LOOP SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM LOOP TO LINDEN SHALL BE DESIGNATED NORTH BOUND.

   RED LINE: HOWARD – DAN RYAN
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM HOWARD TO 95TH SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM 95TH TO HOWARD SHALL BE DESIGNATED NORTH BOUND.

   GREEN LINE: HARLEM – ENGLEWOOD/JACKSON PARK
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM HARLEM TO ASHLAND(ENGLEWOOD)/EAST 63RD(JACKSON PARK) SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM ASHLAND (ENGLEWOOD)/EAST 63RD(JACKSON PARK) TO HARLEM SHALL BE DESIGNATED NORTH BOUND.

   BLUE LINE: O'HARE – CONGRESS/DOUGLAS
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM O'HARE TO DESPLAINES(CONGRESS)/CICERO–BERWYN(DOUGLAS) SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM DESPLAINES (CONGRESS)/CICERO–BERWYN(DOUGLAS) TO O'HARE SHALL BE DESIGNATED NORTH BOUND.

   BROWN LINE: RAVENSWOOD
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM KIMBALL TO THE LOOP SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM LOOP TO KIMBALL SHALL BE DESIGNATED NORTH BOUND.

   YELLOW LINE: SKOKIE SWIFT
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM DEMPSTER TO HOWARD SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM HOWARD TO DEMPSTER SHALL BE DESIGNATED NORTH BOUND.

   ORANGE LINE: MIDWAY
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM THE LOOP TO THE MIDWAY YARD SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM MIDWAY YARD TO THE LOOP SHALL BE DESIGNATED NORTH BOUND.

   PINK LINE: DOUGLAS
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM THE LOOP TO 54TH/CERMAK SHALL BE DESIGNATED SOUTH BOUND.
   TRACK(S) ON WHICH TRAINS ARE TRAVELING FROM 54/CERMAK TO THE LOOP SHALL BE DESIGNATED NORTH BOUND.

6. FOR SUBSTATION GROUNDING AND LIGHTING SYMBOLS AND NOTES SEE DRAWING STP–500.

ELEVATED AREA

1. PROVIDE SUFFICIENT CABLE SLACK AT ALL CONTACT RAIL TAPS TO ALLOW FOR 305 mm (1'–0") RAIL TRAVEL IN EACH DIRECTION.
2. STATIONING SHOWN IS ON CENTERLINE OF STRUCTURE.
3. MEASUREMENTS FROM BENTS ARE NOTED AS POSITIVE WHEN THE MEASUREMENT IS AWAY FROM THE LOOP AND NEGATIVE WHEN THE MEASUREMENT IS TOWARD THE LOOP.

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

SYMBOL, ABBREVIATIONS AND GENERAL NOTES

STP - 004

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-004 SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.
DRAWING NO. TPE50-00
REVISION NO.

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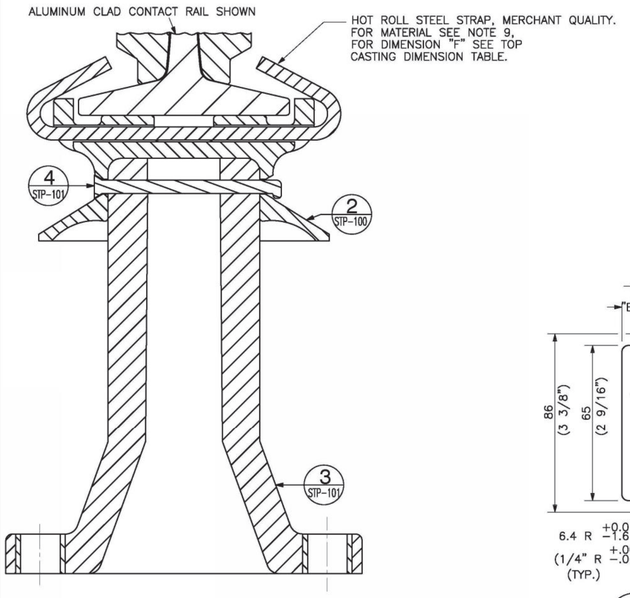
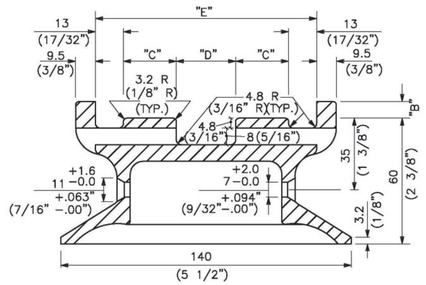
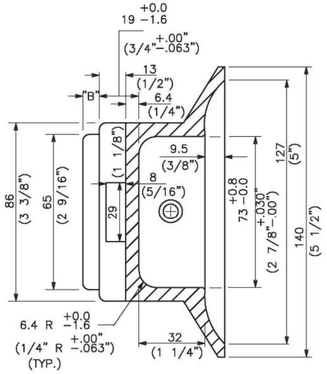
TOP CASTING DIMENSIONS						
TYPE	SIZE	B	C	D	E	F
I	65.3 kg (144 lb)	19 (3/4")	30 (1 3/16")	54 (2 1/8")	141.3 ± 0.8 (5 9/16" ± 1/32")	330 (13")
II	36.3 kg (80 lb)	7.9 (5/16")	25 (1")	54 (2 1/8")	131.7 ± 0.8 (5 3/16" ± 1/32")	279 (11")
III	33.6 kg (74 lb)	7.9 (5/16")	25 (1")	29 (1 1/8")	106.3 ± 0.8 (4 3/16" ± 1/32")	229 (9")
IV	38.6 kg (85 lb)	7.9 (5/16")	29 (1 5/32")	51 (2")	136.5 ± 0.8 (5 3/8" ± 1/32")	279 (11")



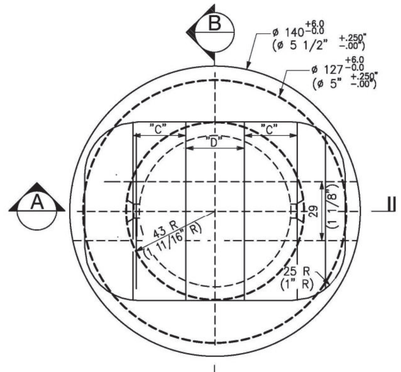
1 STP-100 DETAIL - CONTACT RAIL INSULATOR CHAIR ASSEMBLY



A STP-100 SECTION



B STP-100 SECTION



PLAN VIEW

2 STP-100 DETAIL - TOP CASTING
FOR MATERIAL SEE NOTE 6

NOTES:

1. THE FIBERGLASS CONTACT RAIL INSULATOR CHAIR CAN BE USED IN ALL AREAS EXCEPT TUNNELS, SUBWAYS AND IN MEDIAN STRIPS OF EXPRESSWAY AREAS.
2. GENERAL TOLERANCE IS ± 0.8 (± 1/32"), UNLESS OTHERWISE NOTED.
3. INTERIOR TAPERED SURFACE OF CASTING SHALL BE SMOOTH.
4. FOR INSTALLATION SEE DETAIL "2" DRAWING STP−105.
5. TOP CASTING AND ASSEMBLY SHOWN FOR 33.6 kg/y (74 lb/y) CONTACT RAIL.
6. MATERIAL FOR TOP CASTING: MALLEABLE IRON PER ASTM A47,GRADE NO.32510.
7. TOP CASTING AND INSULATOR BLOCK SHALL COME PRE−ASSEMBLED. RIVET HOLE SHALL BE DRILLED AFTER CHAIR IS ASSEMBLED TO ENSURE EXACT ALIGNMENT.
8. CONTRACTOR TO VERIFY DIMENSION "A" HEIGHT OF ALL INSULATOR BLOCKS WHEN "DIRECT FIXATION" FASTENERS ARE INSTALLED PRIOR TO ORDERING MATERIAL.
9. MATERIAL FOR STEEL STRAP : 3.2 x 25 x "F" (1/8" x 1" x "F") SAE NUMBER 1010, AISI NUMBER C1010.
10. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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APPROVED BY	J. HARPER
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DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	12 MAR 2014	REV. NOTES, REMOVED TABLE
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

FIBERGLASS CONTACT RAIL INSULATOR CHAIR SHEET 1 of 2

STP - 100

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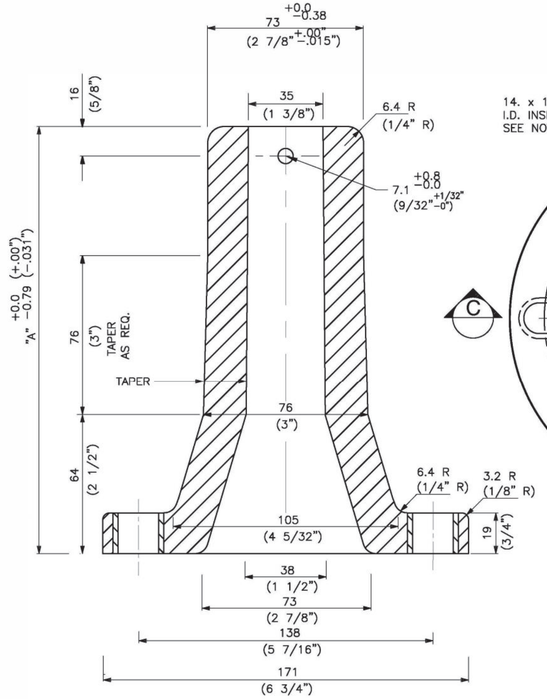
STP-100 FIBERGLASS CONTACT RAIL INSULATOR CHAIR SHEET 1 OF 2

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

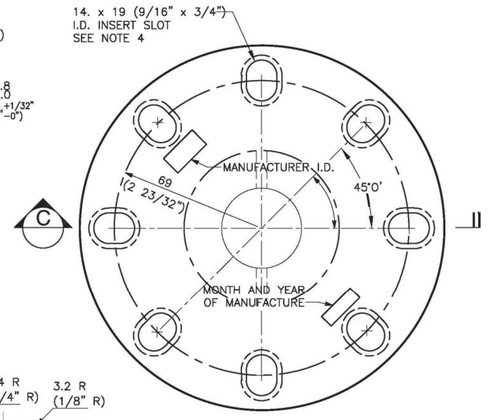
DRAWING NO. TPE50-01

REVISION NO.



C
STP-101
SECTION

3
STP-101
DETAIL - FIBERGLASS INSULATOR BLOCK



BOTTOM VIEW

SIZE OF RAIL kg AND (lb)				HEIGHT OF INSULATOR BLOCK			
RUNNING		CONTACT		DIMENSION "A" *			
				INSUL. TIE PLATE		ROLLED TIE PLATE	
40.82	(90)	33.57	(74,85)	168	(6 5/8")	165	(6 1/2")
40.82	(90)	36.29	(80)	175	(6 7/8")	171	(6 3/4")
40.82	(90)	65.39	(144)	149	(5 7/8")	146	(5 3/4")
40.82	(90)**	33.57	(74,85)	175	(6 7/8")	171	(6 3/4")
45.36	(100)	33.57	(74,85)	184	(7 1/4")	181	(7 1/8")
45.36	(100)	36.29	(80)	191	(7 1/2")	187	(7 3/8")
45.36	(100)	65.39	(144)	165	(6 1/2")	162	(6 3/8")
45.36	(100)**	33.57	(74,85)	191	(7 1/2")	187	(7 3/8")
52.16	(115)	33.57	(74,85)	200	(7 7/8")	197	(7 3/4")
52.16	(115)	36.29	(80)	206	(8 1/8")	203	(8")
52.16	(115)	65.39	(144)	181	(7 1/8")	178	(7")
52.16	(115)**	33.57	(74,85)	206	(8 1/8")	203	(8")

* SEE NOTE NOTE 7 AND NOTE 10
** FOR USE WITH INSULATED TIE PLATES (PANDROL PLATES)
HEIGHT OF RUNNING RAIL VARIES BASED ON TIE PLATES USED IN THE PROJECT

NOTES:

1. THE FIBERGLASS CONTACT RAIL INSULATOR CHAIR CAN BE USED IN ALL AREAS EXCEPT TUNNELS, SUBWAYS AND IN MEDIAN STRIPS OF EXPRESSWAY AREAS.

2. GENERAL TOLERANCE IS ± 0.8 (± 1/32"), UNLESS OTHERWISE NOTED.

3. FOR INSTALLATION SEE DETAIL "2" DRAWING STP-105.

4. INSERT MATERIAL: C12L14, 19 x 24 (3/4" x 15/16") O.D. – 14 x 19 (9/16" x 3/4") I.D. x 19 (3/4") LONG ZINC PLATED STEEL. O.D. HAS 16 TPI MALE DIAMOND KNURL.

5. TOP CASTING AND INSULATOR BLOCK SHALL COME PRE-ASSEMBLED. RIVET HOLE SHALL BE DRILLED AFTER CHAIR IS ASSEMBLED TO ENSURE EXACT ALIGNMENT.

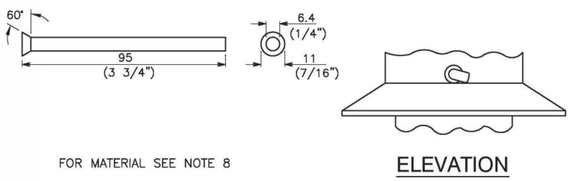
6. HEIGHT OF FIBERGLASS INSULATOR BLOCK ON SUPERELEVATED CURVES GREATER THAN 13 (1/2") SHALL BE VERIFIED IN THE FIELD.

7. PRIOR TO ORDERING MATERIAL, CONTRACTOR TO VERIFY DIMENSION "A" (HEIGHT OF ALL INSULATOR BLOCKS) BASED ON WHAT TIE PLATE IS USED; WHETHER A TIE PAD WILL BE USED; WHETHER DIRECT FIXATION FASTNERS WILL BE USED; AND WHETHER THE TRACK WILL REQUIRE SHIMMING FOR VERTICAL AND/OR HORIZONTAL CURVES.

8. MATERIAL FOR SOFT IRON RIVET : ANNEALED LOW CARBON STEEL OR WROUGHT IRON COUNTERSUNK HEAD ANSI B18.7-72.

9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

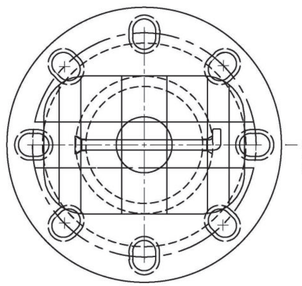
10. THE TABLE GIVEN IS FOR A GENERAL REFERENCE. THE CONTRACTOR TO VERIFY FIELD CONDITIONS AND DETERMINE THE ACTUAL HEIGHT OF INSULATOR BLOCK NEEDED TO OBTAIN THE 6 1/2 INCH HEIGHT DIFFERENCE BETWEEN TOP OF CONTACT RAIL TO TOP OF RUNNING RAIL SHOWN IN STP-105



FOR MATERIAL SEE NOTE 8

ELEVATION

4
STP-101
DETAIL - SOFT IRON RIVET



CENTERLINE OF RIVET AND MOUNTING HOLE SEE NOTE 5

5
STP-101
DETAIL - RIVET ASSEMBLY

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STANDARD TRACTION POWER DRAWINGS

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DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	12 MAR 2014	REV. NOTES AND TABLE
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

FIBERGLASS CONTACT RAIL INSULATOR CHAIR SHEET 2 of 2

STP - 101

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STP-101 FIBERGLASS CONTACT RAIL INSULATOR CHAIR SHEET 2 OF 2

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. TPE50-02

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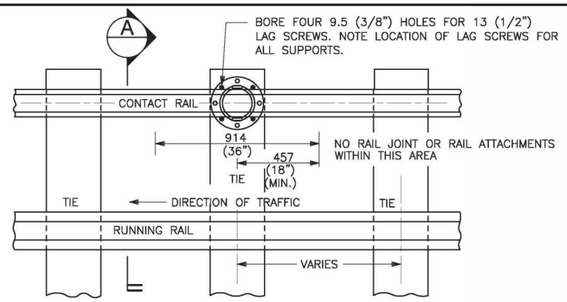
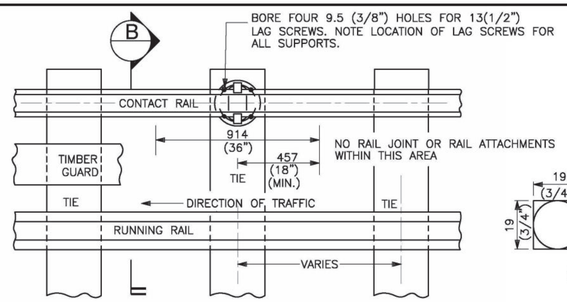
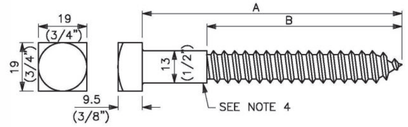
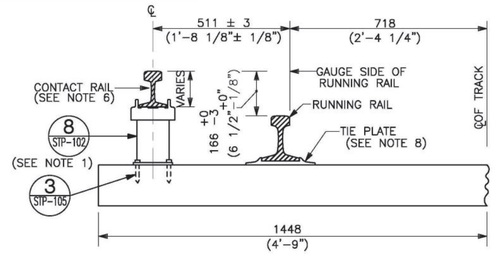






1 STP-105 DETAIL - PORCELAIN INSULATOR CHAIR INSTALLATION



A STP-105 SECTION

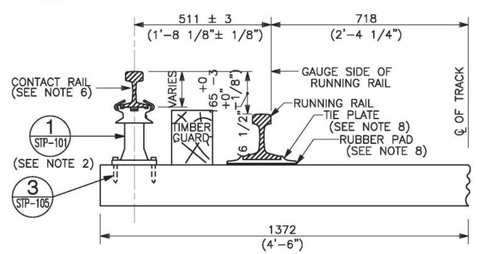
SPECIAL WORK CONTACT RAIL INSULATOR CHAIR SPACING 1829 (6'–0") INCLINE			
TURNOUT NO.	FROM	TO	DISTANCE (SEE NOTE 3)
#4	HEEL OF SWITCH	1ST CHAIR	686 (2'–3")
	1ST CHAIR	2ND "	1981 (6'–6")
	2ND "	3RD "	1981 (6'–6")
#5	HEEL OF SWITCH	1ST CHAIR	762 (2'–6")
	1ST CHAIR	2ND "	2032 (6'–8")
	2ND "	3RD "	1981 (6'–6")
#7	HEEL OF SWITCH	1ST CHAIR	762 (2'–6")
	1ST CHAIR	2ND "	2032 (6'–8")
	2ND "	3RD "	2007 (6'–7")
#9	HEEL OF SWITCH	1ST CHAIR	762 (2'–6")
	1ST CHAIR	2ND "	2032 (6'–8")
	2ND "	3RD "	2032 (6'–8")
#4	POINT OF SWITCH	POINT OF INCLINE	2134 (7'–0")
	POINT OF INCLINE	1ST CHAIR	610 (2'–0")
	1ST CHAIR	2ND "	1829 (6'–0")
#5, 7, & 9	POINT OF SWITCH	POINT OF INCLINE	2134 (7'–0")
	POINT OF INCLINE	1ST CHAIR	610 (2'–0")
	1ST CHAIR	2ND "	1829 (6'–0")

NOTE:

A. AFTER INSTALLATION OF 3RD CHAIR FROM HEEL OF SWITCH ALL SUCCEEDING CHAIRS TO BE INSTALLED AT INTERVALS OF NOT LESS THAN 1829 (6'–0") OR MORE THAN 2438 (8'–0").

B. AFTER INSTALLATION OF 2ND CHAIR FROM POINT OF SWITCH INSTALL ALL SUCCEEDING CHAIRS AT 2438 (8'–0") INTERVALS, SEE NOTE 3.

1 STP-105 DETAIL - BLAIR INSULATOR CHAIR INSTALLATION



B STP-105 SECTION

SPECIAL WORK CONTACT RAIL INSULATOR CHAIR SPACING 3658 (12'–0") INCLINE			
TURNOUT NO.	FROM	TO	DISTANCE (SEE NOTE 3)
#5	HEEL OF SWITCH	1ST CHAIR	762 (2'–6")
	1ST CHAIR	2ND "	2032 (6'–8")
	2ND "	3RD "	1981 (6'–6")
	3RD "	4TH "	2477 (8'–1 1/2")
#7	HEEL OF SWITCH	1ST CHAIR	762 (2'–6")
	1ST CHAIR	2ND "	2032 (6'–8")
	2ND "	3RD "	2007 (6'–7")
	3RD "	4TH "	2489 (8'–2")
#9	HEEL OF SWITCH	1ST CHAIR	762 (2'–6")
	1ST CHAIR	2ND "	2032 (6'–8")
	2ND "	3RD "	2032 (6'–8")
	3RD "	4TH "	2540 (8'–4")
#5, 7 & 9	POINT OF SWITCH	POINT OF INCLINE	2134 (7'–0")
	POINT OF INCLINE	1ST CHAIR	610 (2'–0")
	1ST CHAIR	2ND "	1829 (6'–0")
	2ND "	3RD "	1829 (6'–0")
	3RD "	4TH "	2438 (8'–0")

NOTE:

A. AFTER INSTALLATION OF 3RD CHAIR FROM HEEL OF SWITCH ALL SUCCEEDING CHAIRS TO BE INSTALLED AT INTERVALS OF NOT LESS THAN 1829 (6'–0") OR MORE THAN 2438 (8'–0").

B. AFTER INSTALLATION OF 2ND CHAIR FROM POINT OF SWITCH INSTALL ALL SUCCEEDING CHAIRS AT 2438 (8'–0") INTERVALS, SEE NOTE 3.

TYPE OF CHAIR	DIM. "A" (INCH.)	DIM. "B" (INCH.)
SOLID FIBERGLASS BLOCK WITHOUT BOTTOM CASTING (SEE NOTE 4)	102 (4")	76 (3")
PORCELAN OR FIBERGLASS BLOCK WITH MALLEABLE BOTTOM CASTING (SEE NOTE 5)	76 (3")	51 (2")

3 STP-105 DETAIL - LAG SCREW

NOTES:

1. PORCELAIN INSULATOR CHAIRS SHALL BE USED FOR RIGHT–OF–WAY IN EXPRESSWAY MEDIANS (SALT SPRAY CONDITIONS EXIST) AND SUBWAY TRACK INSTALLATIONS.

2. BLAIR INSULATOR CHAIRS SHALL BE USED FOR BALLASTED RIGHT–OF–WAY (NON–EXPRESSWAY) AND STRUCTURE (ELEVATED) TRACK INSTALLATION.

3. FOR CONTACT RAIL INSULATOR CHAIR SPACING SEE THIS DRAWING. CHAIR SPACING SHALL BE SPACED 2438 (8'–0") APART ON TANGENT TRACK, AND 1829 (6'–0") APART ON CURVES WITH RADIUS LESS THAN 2500 FEET. CHAIR SPACING MAY BE ADJUSTED AS REQUIRED BY FIELD CONDITIONS (EXCEPT FIRST CHAIR) AT POINT OF INCLINE. ADJUSTMENTS ALLOWED ARE: ±610 (±2'–0") ONLY FOR TANGENT TRACK AND –610 (–2'–0") ONLY FOR CURVE TRACK WITH APPROVAL BY CTA ENGINEER.

4. LAG SCREW SQUARE HEAD, GIMLET POINT, EPOXY ELECTROCOATED, HEAD TO BE 9.5 (3/8") THICK, PER AREA 5–M–1:
   - CARBON – 0.18% MIN.
   - TENSILE STRENGTH – 60,000 PSI
   - YIELD POINT, PSI – 0.5 TENSILE STRENGTH
   - ELONGATION IN 51 (2") MIN. – 18%

5. LAG SCREW SQUARE HEAD, GIMLET OR SEMI–CONICAL POINT, EPOXY ELECTROCOATED, HEAD TO BE 9.5 (3/8") THICK, PER AREA 5–M–1:
   - CARBON – 0.18% MIN.
   - TENSILE STRENGTH – 60,000 PSI
   - YIELD POINT, PSI – 0.5 TENSILE STRENGTH
   - ELONGATION IN 51 (2") MIN. – 18%

6. TYPICAL BASE CONTACT RAIL SHOWN.

7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

8. TIE PLATE DESIGNS VARY. TIE PADS MAY OR MAY NOT BE USED. SEE STP – 101 NOTES 7, AND 10

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	12 MAR 2014	ADDED NOTE 8
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

CONTACT RAIL INSULATOR CHAIR INSTALLATION BALLASTED & ELEVATED

STP - 105

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-105 CONTACT RAIL INSULATOR CHAIR INSTALLATION BALLASTED & ELEVATED

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE50-03**

REVISION NO.

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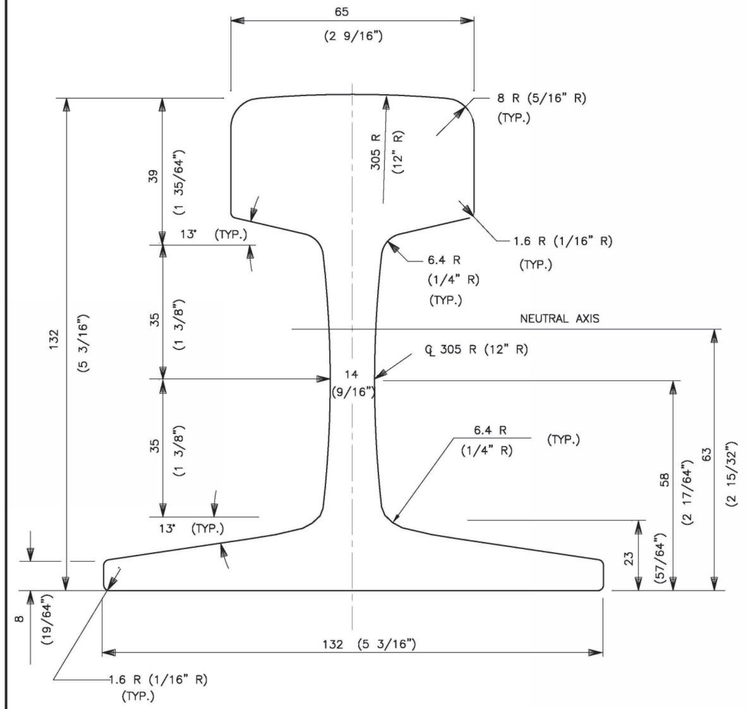
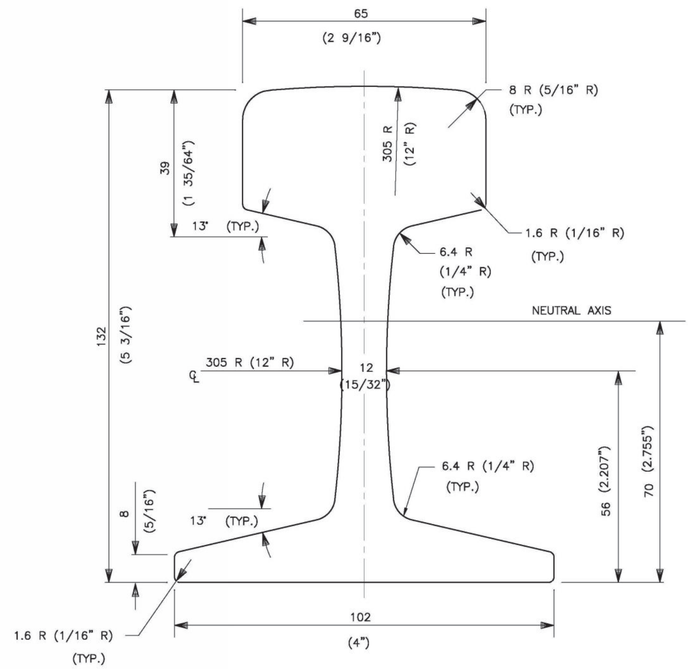


1 STP-106 DETAIL - 42.2 kg/m (85 lb/y)
BASE A.S.C.E. CONTACT RAIL



2 STP-106 DETAIL - 36 kg/m (74 lb/y)
BASE A.S.C.E. CONTACT RAIL

NOTES:

1. END SQUARENESS SHALL BE PER AREMA. CHAPTER 4, PART 2, ARTICLE 13.8. VARIATION IN END SQUARENESS NOT MORE THAN 0.8 (1/32").
2. AFTER BENDING AND WELDING, BASE SHALL BE LEVEL TO A TOLERANCE OF 3.2 (1/8").
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4. GENERAL TOLERANCE IS +/-0.8 (+/- 1/32"), UNLESS OTHERWISE NOTED.

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DRAWINGS

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APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	12 MAR 2014	REV. NOTES
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

85 lb/y and 74 lb/y BASE CONTACT RAIL DETAILS

STP - 106

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-106 85 LB/Y AND 74 LB/Y BASE CONTACT RAIL DETAILS

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE50-04**

REVISION NO.

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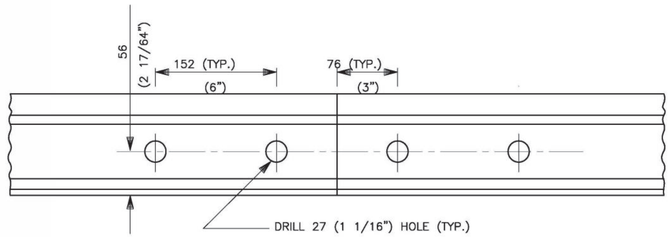
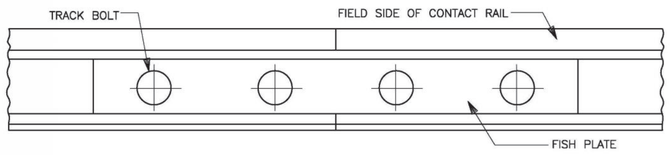
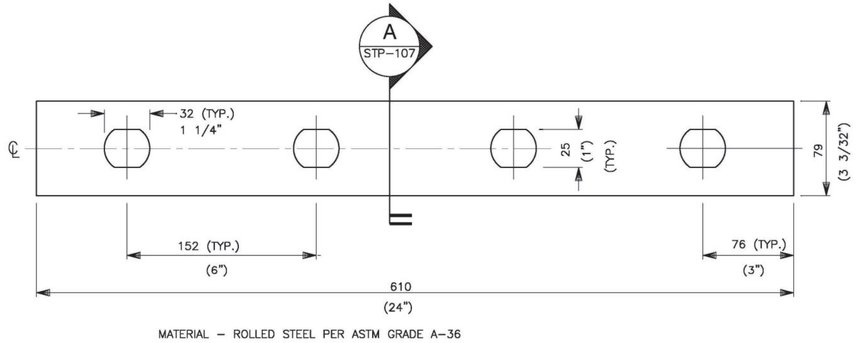


8 STP-107 DETAIL - 85 lb/y and 74 lb/y BASE CONTACT RAIL DRILLING

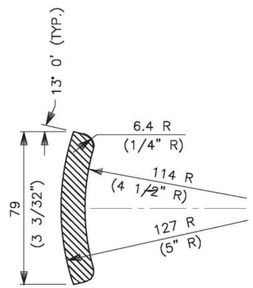


9 STP-107 DETAIL - RAIL JOINT ASSEMBLY

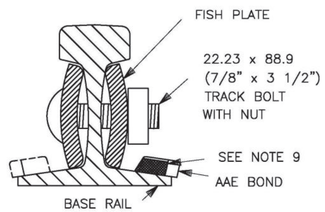


MATERIAL – ROLLED STEEL PER ASTM GRADE A–36

5 STP-107 DETAIL - FISH PLATE FOR 85 lb/y and 74 lb/y A.S.C.E.



A STP-107 SECTION



6 STP-107 DETAIL-TRACK BOLT

NOTES:

1. FINISHING OF JOINT BOLT HOLES SHALL BE PER AREMA. CHAPTER 4, PART 2, ARTICLE 12.3. BOLT HOLES WILL NOT BE TORCH CUT.
2. END SQUARENESS SHALL BE PER AREMA. CHAPTER 4, PART 2, ARTICLE 13.8. VARIATION IN END SQUARENESS NOT MORE THAN 0.8 (1/32").
3. AFTER BENDING AND WELDING, BASE SHALL BE LEVEL TO A TOLERANCE OF 3.2 (1/8").
4. BOLT HOLE DIAMETER TOLERANCE –0, +1.6 (+1/16") WILL BE PERMITTED.
5. A VARIATION OF 0.8 (1/32") IN THE LOCATION OF THE HOLES WILL BE PERMITTED.
6. SIDE OF TRACK BOLT NUTS SHALL BE PARALLEL WITH THE BASE OF RAIL.
7. CHAIR TIE TO BE ADJUSTED TO CONFORM TO CHAIR SUPPORT ZONE.
8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
9. APPLIED – STEEL ARC WELDING. ROD WT. 0.25#.
10. GENERAL TOLERANCE IS +/–0.8 (+/– 1/32"), UNLESS OTHERWISE NOTED.

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DESIGNED BY	CTA
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MARK	DATE	DESCRIPTION
02	12 MAR 2014	ADDED DETAIL 6. REV. NOTES
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

85 lb/y and 74 lb/y BASE CONTACT RAIL FISH PLATE ASSY DETAILS

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STP-107 85 LB/Y AND 74 LB/Y BASE CONTACT RAIL FISH PLATE ASSY DETAILS

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE50-05**

REVISION NO.

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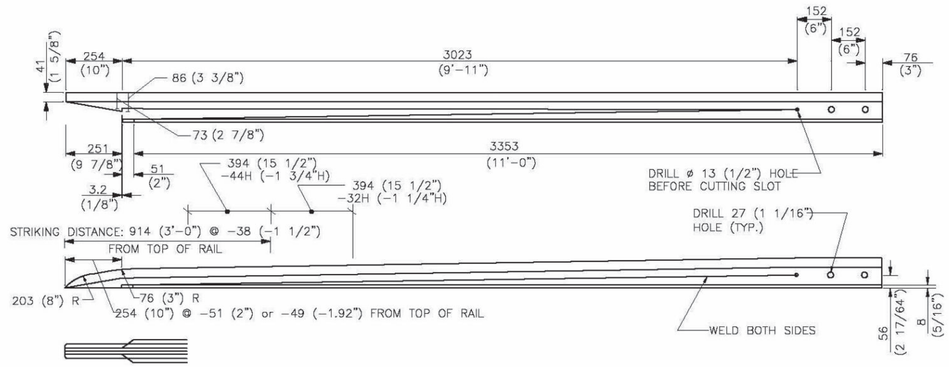
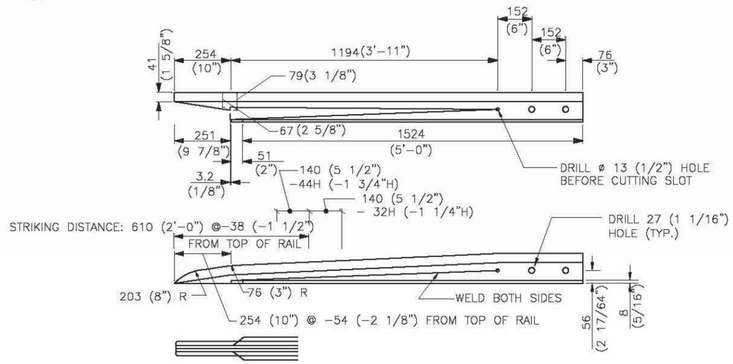


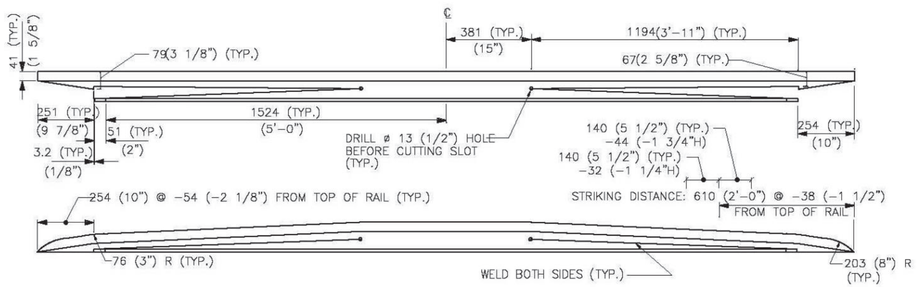
TOP VIEW

2 STP-108 DETAIL - 85 lb/y and 74 lb/y A.S.C.E. CONTACT RAIL 3.658 m (12') INCLINE



PLAN VIEW

3 STP-108 DETAIL - 85 lb/y and 74 lb/y A.S.C.E. CONTACT RAIL 1.829 m (6') INCLINE



6 STP-108 DETAIL - 85 lb/y and 74 lb/y A.S.C.E. BASE CONTACT RAIL DOUBLE INCLINE

NOTES:

1. FINISHING OF JOINT BOLT HOLES SHALL BE PER AREMAA. CHAPTER 4, PART 2, ARTICLE 12.3. BOLT HOLES WILL NOT BE TORCH CUT.
2. END SQUARENESS SHALL BE PER AREMA. CHAPTER 4, PART 2, ARTICLE 13.8. VARIATION IN END SQUARENESS NOT MORE THAN 0.8 (1/32").
3. AFTER BENDING AND WELDING, BASE SHALL BE LEVEL TO A TOLERANCE OF 3.2 (1/8").
4. BOLT HOLE DIAMETER TOLERANCE –0, +1.6 (+1/16") WILL BE PERMITTED.
5. A VARIATION OF 0.8 (1/32") IN THE LOCATION OF THE HOLES WILL BE PERMITTED.
6. CHAIR TIE TO BE ADJUSTED TO CONFORM TO CHAIR SUPPORT ZONE.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
8. GENERAL TOLERANCE IS +/–0.8 (+/– 1/32"), UNLESS OTHERWISE NOTED.

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STANDARD TRACTION POWER DRAWINGS

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APPROVED BY	J. HARPER
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DESIGNED BY	CTA
DRAWN BY	CTA
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FILE NAME	

MARK	DATE	DESCRIPTION
02	12 MAR 2014	REV. NOTES
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

85 lb/y and 74 lb/y BASE CONTACT RAIL INCLINE DETAILS (1 of 2)

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

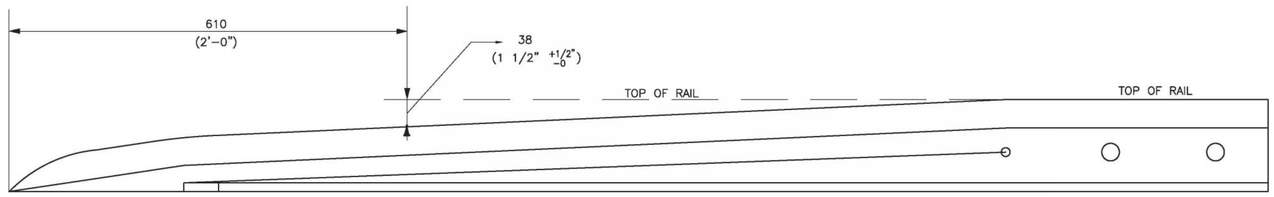
STP-108 85 LB/Y AND 74 LB/Y BASE CONTACT RAIL INCLINE DETAILS

CDOT PROJECT D-7-135 | DATE: 11/01/2019

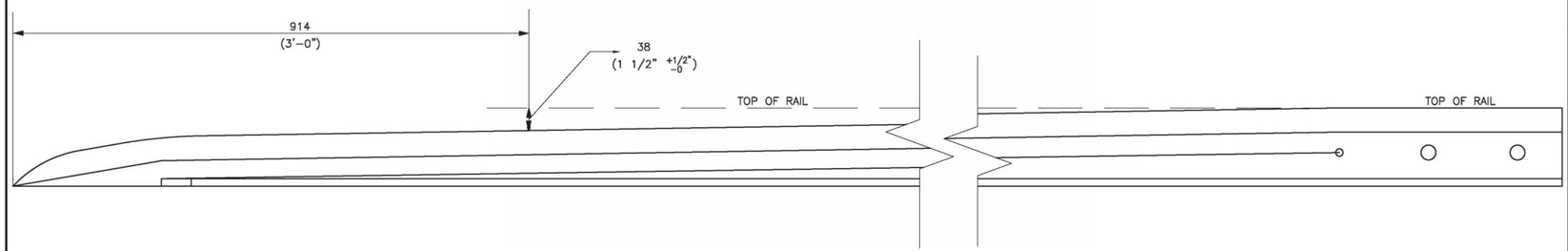
SPEC. NO.

DRAWING NO. **TPE50-06**

REVISION NO.



4 STP–109 DETAIL - STRIKING DISTANCE FOR 85 lb/y and 74 lb/y A.S.C.E. CONTACT RAIL 1.829 m (6') INCLINE



5 STP–109 DETAIL - STRIKING DISTANCE FOR 85 lb/y and 74 lb/y A.S.C.E. RAIL 3.658 m (12') INCLINE

NOTES:

1. FINISHING OF JOINT BOLT HOLES SHALL BE PER AREMA. CHAPTER 4, PART 2, ARTICLE 12.3. BOLT HOLES WILL NOT BE TORCH CUT.
2. END SQUARENESS SHALL BE PER AREMA. CHAPTER 4, PART 2, ARTICLE 13.8. VARIATION IN END SQUARENESS NOT MORE THAN 0.8 (1/32").
3. AFTER BENDING AND WELDING, BASE SHALL BE LEVEL TO A TOLERANCE OF 3.2 (1/8").
4. BOLT HOLE DIAMETER TOLERANCE –0, +1.6 (+1/16") WILL BE PERMITTED.
5. A VARIATION OF 0.8 (1/32") IN THE LOCATION OF THE HOLES WILL BE PERMITTED.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
7. GENERAL TOLERANCE IS +/–0.8 (+/– 1/32"), UNLESS OTHERWISE NOTED.

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MARK	DATE	DESCRIPTION
02	12 MAR 2014	REV. NOTES
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

85 lb/y and 74 lb/y BASE CONTACT RAIL INCLINE DETAILS (2 of 2)

STP - 109

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

STP-109 85 LB/Y AND 74 LB/Y BASE CONTACT RAIL INCLINE DETAILS

DRAWING NO. **TPE50-07**

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

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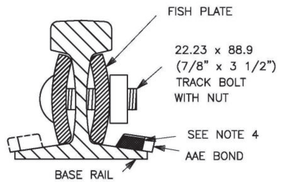
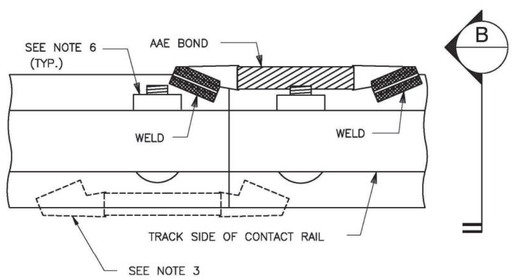
1/27/2020 1:21:53 PM

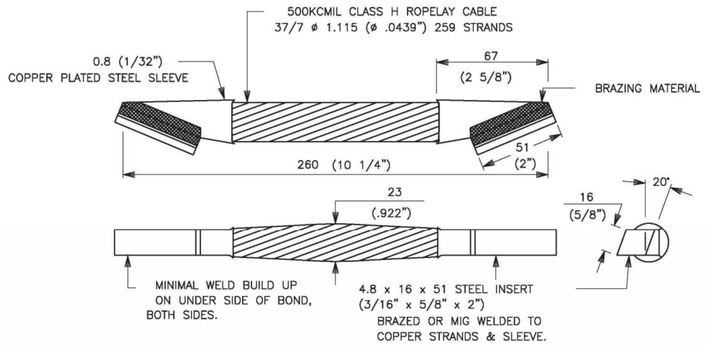


B / STP-110 SECTION



PLAN

7 / STP-110 DETAIL - 85 lb/y and 72 lb/y
A.S.C.E. BASE CONTACT BONDING



4 / STP-110 DETAIL - ERICO TYPE AAE BOND
ERICO PART NO: PBAAE3S10

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. BONDS REQUIRED: MAIN LINE TRACK – TWO, YARD TRACK – ONE.
3. INSTALL SECOND BOND AS SHOWN IN DOTTED OUTLINE WHERE TWO BONDS ARE REQUIRED.
4. APPLIED – STEEL ARC WELDING. ROD WT. 0.25#.
5. GENERAL TOLERANCE IS +/–0.8 (+/– 1/32"), UNLESS OTHERWISE NOTED.
6. SIDE OF TRACK BOLT NUTS SHALL BE PARALLEL WITH THE BASE OF RAIL.

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DESIGNED BY	CTA
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FILE NAME	

MARK	DATE	DESCRIPTION
03	01 AUG 2015	REV. DETAIL 4 TITLE
02	12 MAR 2014	REV. NOTES
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

85 lb/y and 74 lb/y BASE CONTACT RAIL BONDING

STP - 110

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

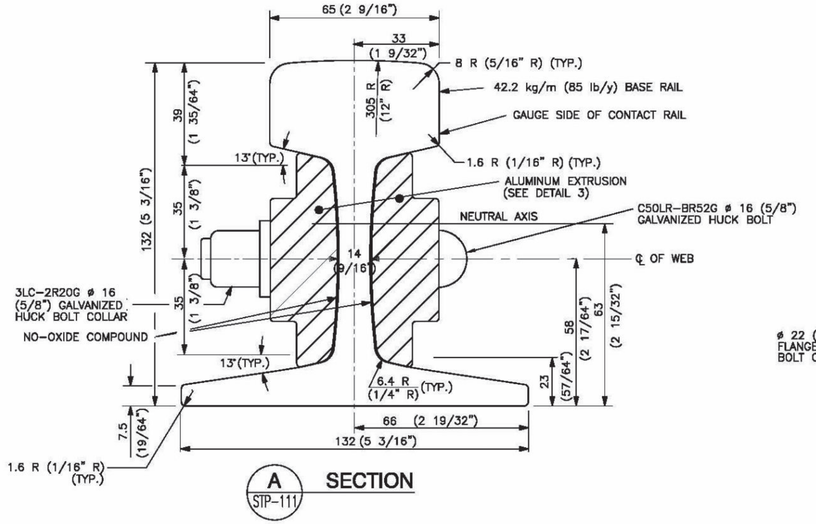
STP-110 85 LB/Y AND 74 LB/Y BASE CONTACT RAIL BONDING

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

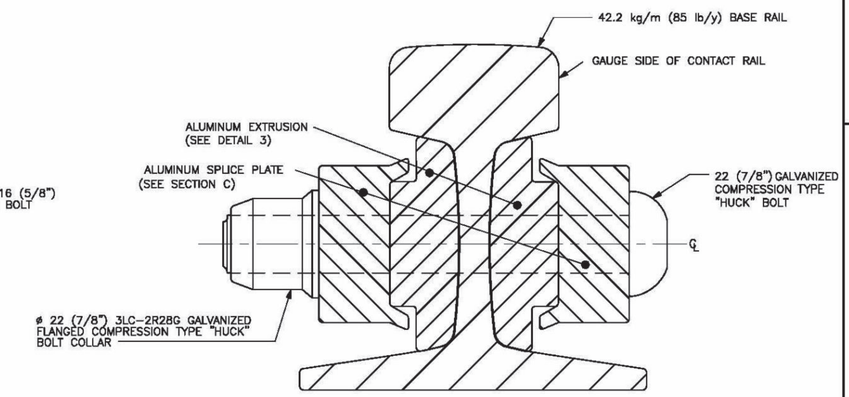
DRAWING NO. TPE50-08

REVISION NO.



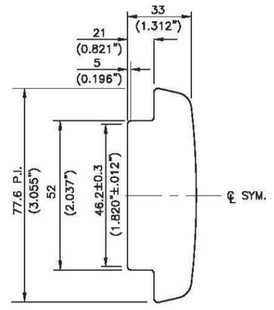
A SECTION
STP–111

1 STP–111 **DETAIL - 42.2 kg/m (85 lb/y) A.S.C.E. ALUMINUM CLAD CONTACT RAIL**



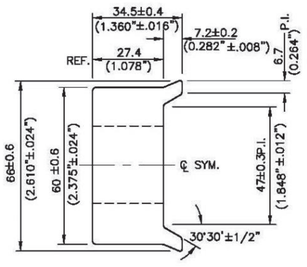
B SECTION
STP–111

2 STP–111 **DETAIL - 42.2 kg/m (85 lb/y) A.S.C.E. ALUMINUM CLAD CONTACT RAIL WITH SPLICE PLATE**

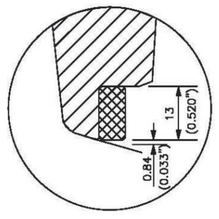


PLAN VIEW

3 STP–111 **DETAIL - ALUMINUM EXTRUSION**



C SECTION
STP–111



8 STP–111 **DETAIL - HEATER TAPE**

NOTE:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALUMINUM EXTRUSION AND SPLICE PLATE TO THE AUTHORITY FOR APPROVAL PRIOR TO FABRICATION.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
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LOCATION IDENTIFIER:

85 lb/y ALUMINUM CLAD CONTACT RAIL DETAILS SHEET 1 of 2

STP - 111

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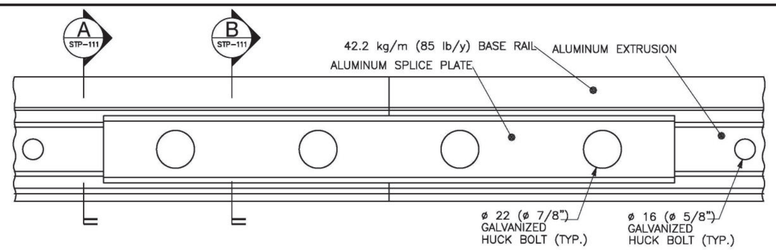
STP-111 85lb/y ALUMINUM CLAD CONTACT RAIL DETAILS SHEET 1 OF 2

CDOT PROJECT D-7-135 | DATE: 11/01/2019

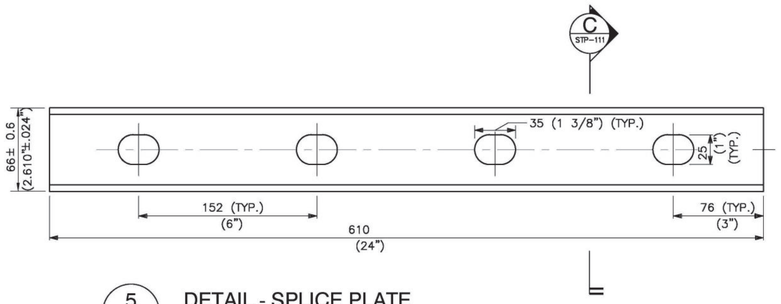
SPEC. NO.

DRAWING NO. TPE50-09

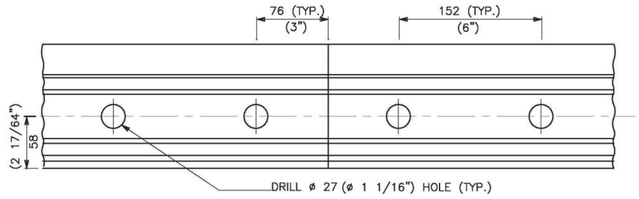
REVISION NO.



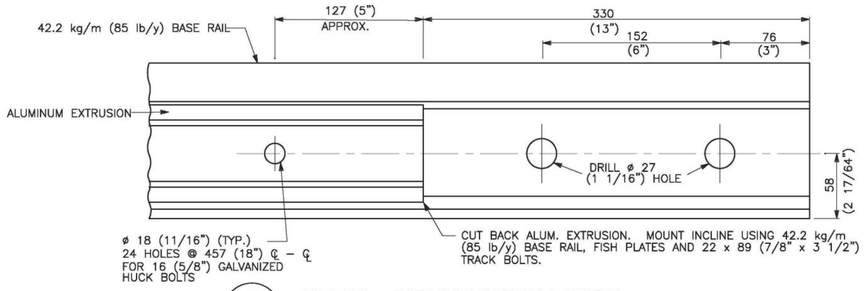
4 STP-112 DETAIL - RAIL JOINT ASSEMBLY



5 STP-112 DETAIL - SPLICE PLATE



6 STP-112 DETAIL - RAIL DRILLING



7 STP-112 DETAIL - INCLINE INSTALLATION

NOTE:

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DESIGNED BY	CTA
DRAWN BY	CTA
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FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

85 lb/y ALUMINUM CLAD CONTACT RAIL DETAILS SHEET 2 of 2

STP - 112

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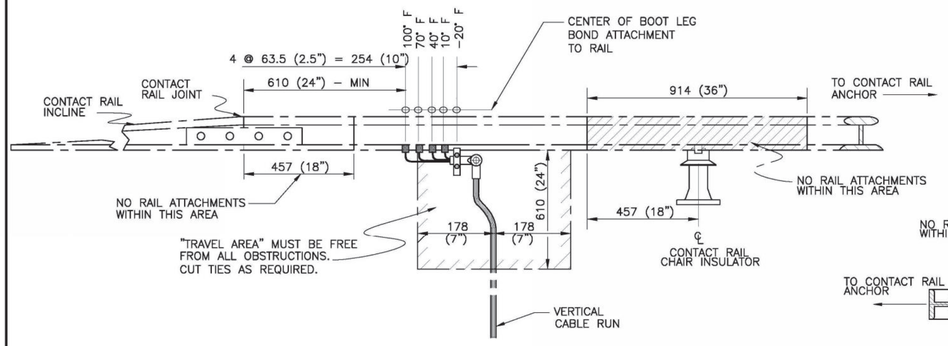
SPEC. NO.

STP-112 85lb/y ALUMINUM CLAD CONTACT RAIL DETAILS SHEET 2 OF 2

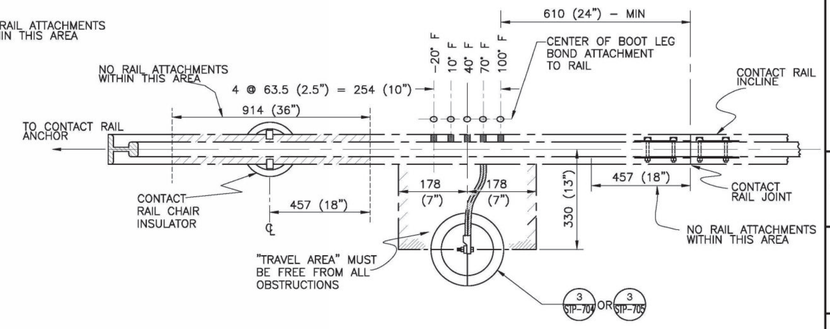
DRAWING NO. TPE50-10

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

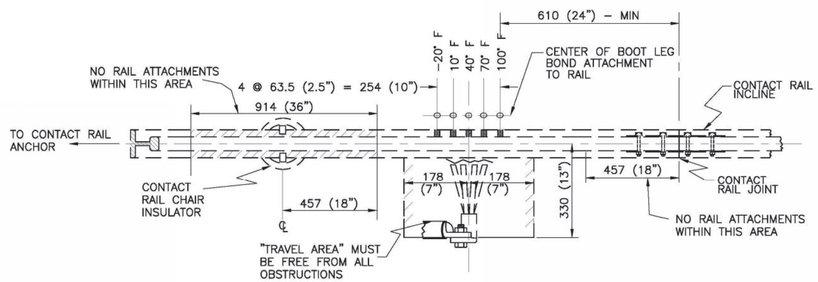


ELEVATION

1 STP-117 DETAIL OF CONTACT RAIL INSTALLED ON ELEVATED TRACK



2 STP-117 DETAIL OF CONTACT RAIL INSTALLED ON BALLASTED TRACK



3 STP-117 DETAIL OF CONTACT RAIL INSTALLED ON DIRECT RAIL FIXATION

NOTES:

1. THE DRAWING INDICATES:
   1.1 PROPER LOCATIONS AT WHICH CONTACT RAIL TAPS ARE TO BE WELDED TO CONTACT RAIL AT VARIOUS TEMPERATURES TO PREVENT DAMAGE TO TAPS DUE TO RAIL MOVEMENT.
   1.2 A BOND CONNNECTION FOR SURFACE OR STRUCTURE. "TRAVEL AREA", APPLIES TO STRUCTURE TRACK PARTICULARLY, WHERE TIES MUST BE MOVED OR CUT OFF TO PROVIDE THIS CLEARANCE.
2. CONNECTION POINTS INDICATED ARE FOR CONTACT RAIL TAPS LOCATED 243.8 m (800 ft.) OR MORE FROM CONTACT RAIL ANCHOR.
3. FOR CONTACT RAIL TAPS LOCATED FROM 121.9 m (400 ft.) TO 243.8 m (800 ft.) FROM CONTACT RAIL ANCHOR, REDUCE DISTANCES FROM CENTERLINE BY ONE–HALF.
4. FOR CONTACT RAIL TAPS LOCATED LESS THAN 121.9 m (400 ft.) FROM CONTACT RAIL ANCHOR, LOCATE CONNECTION AT CENTER LINE OF TAP AT ALL TEMPERATURES.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLEESS OTHERWISE NOTED.

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DRAWINGS

IN CHARGE	S. MATHEW
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MARK	DATE	DESCRIPTION
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00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

CONTACT RAIL TAPS ASSEMBLY AND DETAILS SHEET 1 OF 2

STP - 117

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

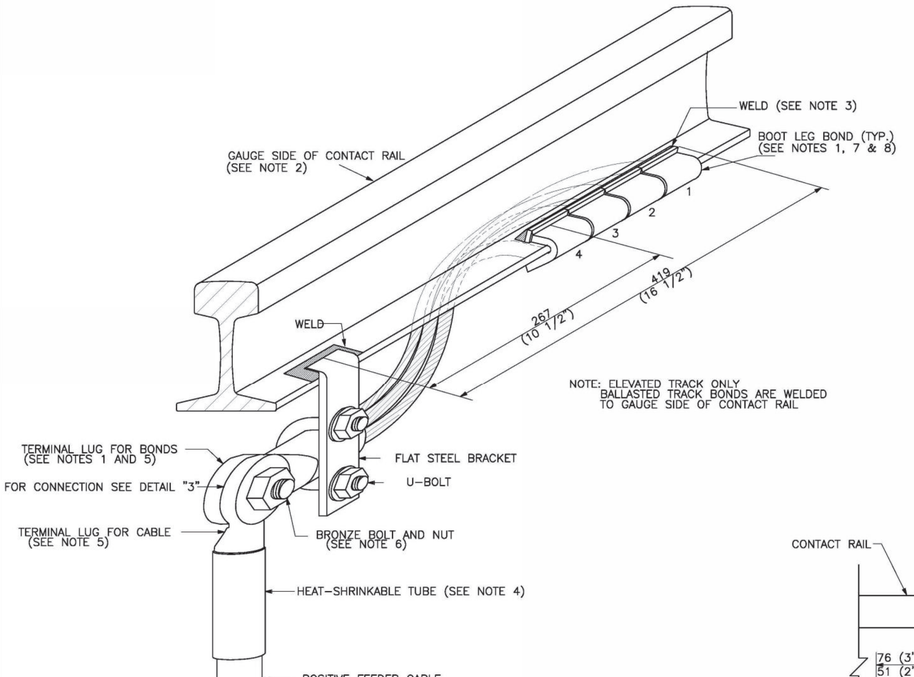
STP-117 CONTACT RAIL TAPS ASSEMBLY AND DETAILS SHEET 1 OF 2

CDOT PROJECT D-7-135 | DATE: 11/01/2019

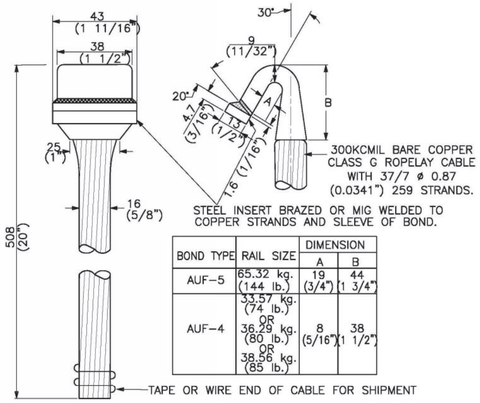
SPEC. NO.

DRAWING NO. TPE50-11

REVISION NO.

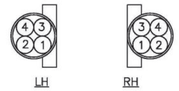


1 STP-118 DETAIL OF CONTACT RAIL BY TAP ASSEMBLY

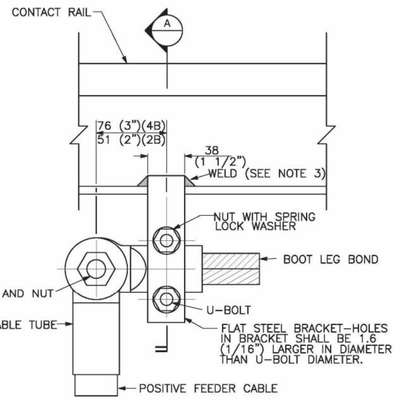


BOND TYPE	RAIL SIZE	DIMENSION A	DIMENSION B
AUF-5	65.32 kg. (144 lb.)	19 (3/4")	44 (1 3/4")
AUF-4	33.57 kg. (74 lb.) OR 36.29 kg. (80 lb.) OR 38.56 kg. (85 lb.)	8 (5/16")	38 (1 1/2")

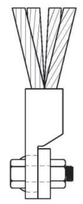
2 STP-118 DETAIL OF BOOT LEG BOND



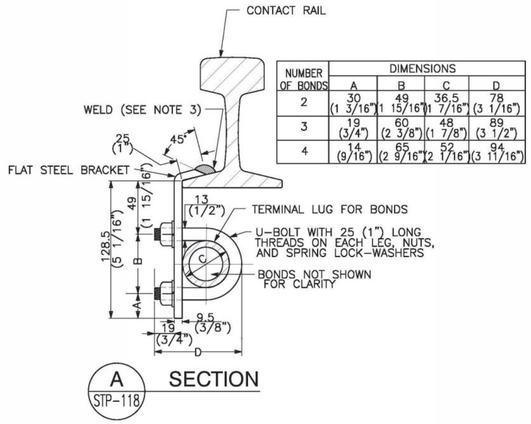
5 STP-118 DETAIL



4 STP-118 DETAIL OF SIDE VIEW



3 STP-118 DETAIL OF TERMINAL LUG



NUMBER OF BONDS	DIMENSIONS A	B	C	D
2	30 (1 3/16")	49 (1 15/16")	36.5 (1 7/16")	78 (3 1/16")
3	19 (3/4")	60 (2 3/8")	48 (1 7/8")	89 (3 1/2")
4	14 (9/16")	65 (2 9/16")	52 (2 1/16")	94 (3 11/16")

A STP-118 SECTION

NOTES:

1. THE NUMBER OF BOOT LEG BONDS REQUIRED IS DEPENDENT ON THE SIZE OF THE POSITIVE D.C. FEEDER:
   A. USE TWO (2) BONDS FOR 500KCMIL FEEDER.
   B. USE THREE (3) BONDS FOR 1000KCMIL FEEDER.
   C. USE FOUR (4) BONDS FOR 1500KCMIL & 2000KCMIL FEEDERS.
   LENGTH OF BOOT LEG BONDS ARE AS FOLLOWS:
   1ST BOND – 508 (20") (FULL LENGTH).
   2ND BOND – 470 (18 1/2").
   3RD BOND – 432 (17").
   4TH BOND – 394 (15 1/2").
   INSTALLATION OF EQUAL QUANTITY OF RIGHT AND LEFT HAND BOND ASSEMBLIES IS REQUIRED, SEE DETAIL "3".
2. RAIL TAP ASSEMBLY TYPICAL FOR BASE & ALUMINUM CLAD RAIL. ELEVATED TRACK, INSTALL AS SHOWN.
3. APPLY 9.5 (3/8") WIDE WELD USING STEEL ARC WELDING ROD, WT. 0.3#, BOND WT. 1.85#.
4. FOR HEAT-SHRINKABLE TUBE SEE DRAWING STP-201, DETAIL 6.
5. FOR TERMINAL LUG SEE DRAWING STP-200, DETAIL 1.
6. FOR BRONZE BOLT AND NUT SEE DRAWING STP-201, DETAIL 4.
7. BUTT BONDS UP AGAINST EACH OTHER BEFORE WELDING.
8. FOR CONTACT RAIL TAP CONNECTIONS DEPENDING ON TEMPERATURE SEE DRAWING STP-117, DETAIL 1.
9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

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MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

CONTACT RAIL TAPS ASSEMBLY AND DETAILS SHEET 2 OF 2

STP - 118

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APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
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DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-118 CONTACT RAIL TAPS ASSEMBLY AND DETAILS SHEET 2 OF 2

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. TPE50-12

REVISION NO.

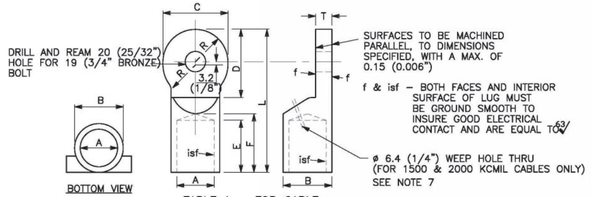


TABLE A – FOR CABLE

CONDUCTOR SIZE (KCMIL)	TERMINAL LUG DIMENSIONS IN MILLIMETERS AND (INCHES)								
	A	B	C	D	E	F	L	R	T
500	24 (15/16)	32 (1 1/4)	51 (2)	54 (2 1/8)	35 (1 3/8)	38 (1 1/2)	95 (3 3/4)	25 (1)	13 (1/2)
1000	30 (1 3/16)	36.5 (1 7/16)	51 (2)	54 (2 1/8)	35 (1 3/8)	38 (1 1/2)	95 (3 3/4)	25 (1)	13 (1/2)
1111	30 (1 3/16)	36.5 (1 7/16)	51 (2)	54 (2 1/8)	35 (1 3/8)	38 (1 1/2)	95 (3 3/4)	25 (1)	13 (1/2)
1500	36.5 (1 7/16)	48 (1 7/8)	63.5 (2 1/2)	67 (2 5/8)	51 (2)	57 (2 1/4)	140 (5 1/2)	32 (1 1/4)	16 (5/8)
2000	36.5 (1 7/16)	48 (1 7/8)	63.5 (2 1/2)	67 (2 5/8)	51 (2)	57 (2 1/4)	140 (5 1/2)	32 (1 1/4)	16 (5/8)

TABLE B – FOR BONDS

NUMBER OF 300KCMIL BONDS	TERMINAL LUG DIMENSIONS IN MILLIMETERS AND (INCHES)								
	A	B	C	D	E	F	L	R	T
2	30 (1 3/16)	36.5 (1 7/16)	51 (2)	54 (2 1/8)	35 (1 3/8)	38 (1 1/2)	95 (3 3/4)	25 (1)	13 (1/2)
3	36.5 (1 7/16)	48 (1 7/8)	63.5 (2 1/2)	67 (2 5/8)	51 (2)	57 (2 1/4)	140 (5 1/2)	32 (1 1/4)	16 (5/8)
4	41 (1 5/8)	52 (2 1/16)	63.5 (2 1/2)	67 (2 5/8)	51 (2)	57 (2 1/4)	140 (5 1/2)	32 (1 1/4)	16 (5/8)

1 STP-200 DETAIL OF STRIGHT TERMINAL LUG

FOR MATERIAL SEE NOTE 3

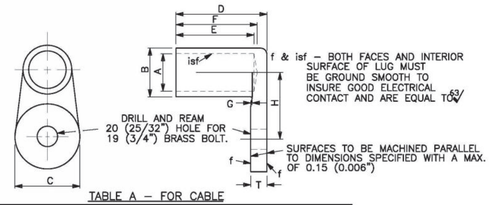


TABLE A – FOR CABLE

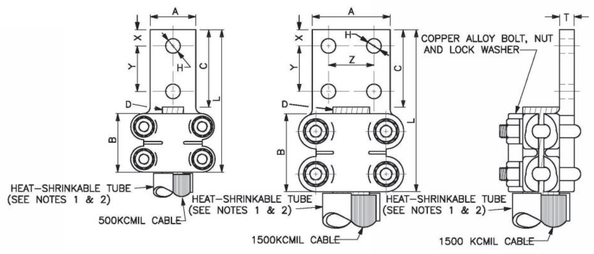
CONDUCTOR SIZE (KCMIL)	TERMINAL LUG DIMENSIONS IN MILLIMETERS AND (INCHES)									
	A	B	C	D	E	F	G	H	T
500	24 (15/16)	32 (1 1/4)	51 (2)	63.5 (2 1/2)	51 (2)	57 (2 1/4)	1,6 (1/16)	65 (2 9/16)	13 (1/2)
1000	30 (1 3/16)	36.5 (1 7/16)	51 (2)	63.5 (2 1/2)	51 (2)	57 (2 1/4)	1,6 (1/16)	65 (2 9/16)	13 (1/2)
1111	30 (1 3/16)	36.5 (1 7/16)	51 (2)	63.5 (2 1/2)	51 (2)	57 (2 1/4)	1,6 (1/16)	65 (2 9/16)	13 (1/2)
1500	36.5 (1 7/16)	48 (1 7/8)	63.5 (2 1/2)	89 (3 1/2)	76 (3)	79 (3 1/8)	1,6 (1/16)	65 (2 9/16)	16 (5/8)
2000	36.5 (1 7/16)	48 (1 7/8)	63.5 (2 1/2)	89 (3 1/2)	76 (3)	79 (3 1/8)	1,6 (1/16)	65 (2 9/16)	16 (5/8)

TABLE B – FOR BONDS

NUMBER OF 300KCMIL BONDS	TERMINAL LUG DIMENSIONS IN MILLIMETERS AND (INCHES)								
	A	B	C	D	E	F	G	H	T
2	30 (1 3/16)	36.5 (1 7/16)	51 (2)	63.5 (2 1/2)	51 (2)	57 (2 1/4)	1,6 (1/16)	65 (2 9/16)	13 (1/2)
3	36.5 (1 7/16)	48 (1 7/8)	63.5 (2 1/2)	89 (3 1/2)	76 (3)	79 (3 1/8)	1,6 (1/16)	65 (2 9/16)	16 (5/8)
4	41 (1 5/8)	52 (2 1/16)	63.5 (2 1/2)	89 (3 1/2)	76 (3)	79 (3 1/8)	1,6 (1/16)	65 (2 9/16)	16 (5/8)

2 STP-200 DETAIL OF 90° TERMINAL LUG

FOR MATERIAL SEE NOTE 3



CABLE SIZE (KCMIL)	DOSSERT CATALOG NUMBER	DIMENSIONS IN MILLIMETERS AND (INCHES)										
		A	B	C	D	H	L	T	X	Y	Z	BOLT SIZE
500	TC 50–2N	38 (1 1/2)	76 (3)	76 (3)	21 (.814)	14 (9/16)	159 (6 1/4)	9.5 (3/8)	16 (5/8)	44.5 (1 3/4)	–	9.5 (3/8)
1500	TC 150–4N	76 (3)	102 (4)	76 (3)	36 (1.412)	14 (9/16)	187 (7 3/8)	14 (9/16)	16 (5/8)	44.5 (1 3/4)	44.5 (1 3/4)	13 (1/2)

3 STP-200 DETAIL OF BOLTED TERMINAL CONNECTOR

FOR MATERIAL SEE NOTE 3

NOTES:

1. ALL ENDS OF CABLE SHALL BE COVERED WITH HEAT–SHRINKABLE TUBE (RAYCHEM OR MAC PRODUCTS OR APPROVED EQUAL WITH HOT MELT MASTIC). TUBE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

2. PRIOR TO APPLYING HEAT SHRINKABLE TUBE: a) BUILD–UP SPLICE JOINT WITH CONTINUOUS WRAPS OF RUBBER TAPE TO CREATE A SMOOTH UNDERLYING SURFACE; b) WRAP WITH HALF–LAPPED FRICTION TAPE OVER ENTIRE SPLICE AREA & AROUND CABLE AND LUG BASE.

3. BOLTED TERMINAL LUGS, SOLDERED LUGS AND TEE CONNECTORS MADE PER COPPER DEVELOPMENT ASSOCIATION (CDA) SPECIFICATION (UNS. NO. C83300).

4. BOLT AND NUT TO BE MADE FROM ONE OF THESE COPPER ALLOYS
a) SILICONE BRONZE, COPPER ALLOY C65500 TEMPER DESIGNATION H00 (1/8 HARD), PER ASTM B 98 OR B 99, MINIMUM HARDNESS TO BE 75 HRB.

b) COPPER ALLOY UNS C36000 WITH A TEMPER DESIGNATION OF H02 (HARD) PER ASTM B16 WITH A MINIMUM HARDNESS RATING OF 78 HRB.

5. ALL TEE CONNECTOR ASSEMBLIES SHALL BE COVERED WITH A SINGLE HALF–LAPPED LAYER OF SCOTCH 2210 VINYL MASTIC TAPE.

6. CABLE NOT SHOWN FOR CLARITY PURPOSES ONLY.

7. WEEP HOLE REQUIRED ONLY FOR LUGS PURCHASED BY CONTRACTOR.

8. EXCEPT WHERE NOTED, ALL BOLTS SHALL MEET ANSI B 18.2.1. TOLERANCES FOR THE BOLT HEAD & NUT HEIGHT, DISTANCE ACROSS THE FLATS AND THE DISTANCE ACROSS THE CORNERS SHALL BE ± 0.8 (1/32")

9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	01 AUG 2015	REVISED NOTE 4
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

CABLE DETAILS (1 of 2)

STP - 200

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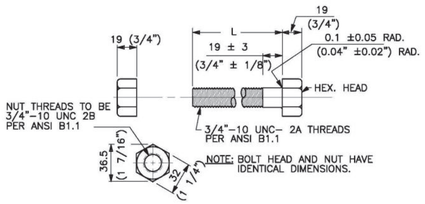
SPEC. NO.

STP-200 CABLE DETAILS (1 OF 2)

DRAWING NO. TPE50-13

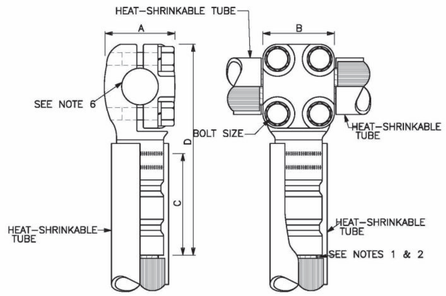
CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



CTA ITEM NO.	LENGTH L
1045368	2–1/4"
1045371	2–3/4"
1045377	4–1/4"

4 STP–201 DETAIL OF BRONZE BOLT & NUT

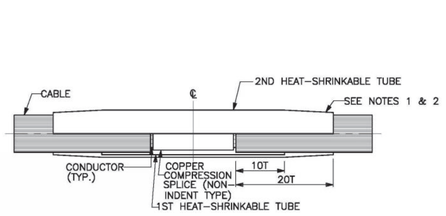
FOR TOLERANCES SEE NOTE 8.
FOR MATERIAL SEE NOTE 4.



CABLE SIZE (KCMIL)		DOSSERT CATALOG NUMBER	DIMENSIONS IN MILLIMETERS AND (INCHES)				
RUN	TAP		A	B	C	D	BOLT SIZE
500	500	BCKT 50 – 50	44.5 (1 3/4)	51 (2)	57 (2 1/4)	135 (5 5/16)	9.5 (3/8)
1000	500	BCKT 100 – 50	56 (2 3/16)	51 (2)	57 (2 1/4)	146 (5 3/4)	13 (1/2)
1000	1000	BCKT 100 – 100	63.5 (2 1/2)	67 (2 5/8)	76 (3)	178 (7)	13 (1/2)
1500	500	BCKT 150 – 50	63.5 (2 1/2)	51 (2)	57 (2 1/4)	157 (6 3/16	13 (1/2)
1500	1000	BCKT 150 – 100	68 (2 11/16)	70 (2 3/4)	76 (3)	184 (7 1/4)	13 (1/2)
1500	1500	BCKT 150 – 150	68 (2 11/16)	70 (2 3/4)	86 (3 3/8)	206 (8 1/8)	13 (1/2)

7 STP–201 DETAIL OF TEE CONNECTOR

FOR MATERIAL SEE NOTE 3



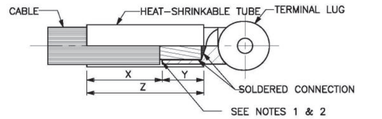
T – THICKNESS OF CABLE INSULATION PLUS JACKET

NOTE: MINIMUM TOTAL THICKNESS OF BOTH HEAT–SHRINKABLE TUBES SHALL BE 1.0 TIMES THE THICKNESS OF THE CABLE INSULATION PLUS JACKET.

SEE TABLE BELOW FOR CORRECT PART NUMBERS.

CABLE SIZE	1ST TUBE	2ND TUBE
500KCMIL	WCSM – 70/20	WCSM – 70/20
1000KCMIL	WCSM – 110/30	WCSM – 110/30
1111KCMIL	WCSM – 110/30	WCSM – 110/30
1500KCMIL	WCSM – 130/35	WCSM – 130/35
2000KCMIL	WCSM – 130/35	WCSM – 130/35

5 STP–201 DETAIL OF CABLE SPLICE



NOTE: SEE TABLE BELOW FOR DIMENSIONS AND CORRECT PART NUMBERS

DIMENSIONS IN MILLIMETERS AND (INCHES)				
CABLE SIZE	TUBE	X	Y	Z
500KCMIL	WCSM–70/20	86 (3 5/8)	35 (1 3/8)	127.5 (5)
1000KCMIL	WCSM–110/30	98 (3 7/8)	54 (2 1/8)	152 (6)
1111KCMIL	WCSM–110/30	98 (3 7/8)	54 (2 1/8)	152 (6)
1500KCMIL	WCSM–130/35	98 (3 7/8)	54 (2 1/8)	152 (6)
2000KCMIL	WCSM–130/35	98 (3 7/8)	54 (2 1/8)	152 (6)

6 STP–201 DETAIL OF TERMINAL LUG INSTALLATION

NOTES:

1. ALL ENDS OF CABLE SHALL BE COVERED WITH HEAT–SHRINKABLE TUBE (RAYCHEM OR MAC PRODUCTS OR APPROVED EQUAL WITH HOT MELT MASTIC). TUBE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

2. PRIOR TO APPLYING HEAT SHRINKABLE TUBE: a) BUILD–UP SPLICE JOINT WITH CONTINUOUS WRAPS OF RUBBER TAPE TO CREATE A SMOOTH UNDERLYING SURFACE; b) WRAP WITH HALF–LAPPED FRICTION TAPE OVER ENTIRE SPLICE AREA & AROUND CABLE AND LUG BASE.

3. BOLTED TERMINAL LUGS, SOLDERED LUGS AND TEE CONNECTORS MADE PER COPPER DEVELOPMENT ASSOCIATION (CDA) SPECIFICATION (UNS. NO. C83300).

4. BOLT AND NUT TO BE MADE FROM SILICONE BRONZE, COPPER ALLOY C65500 TEMPER DESIGNATION H00 (1/8 HARD), PER ASTM B 98 OR B 99, MINIMUM HARDNESS TO BE 75 HRB.

5. ALL TEE CONNECTOR ASSEMBLIES IN ELEVATED AREAS SHALL BE COVERED IN SINGLE HALF–LAPPED LAYER WITH SCOTCH 2210 VINYL MASTIC TAPE. FOR UNDER GROUND INSTALLATIONS, SEE STP–211

6. CABLE NOT SHOWN FOR CLARITY PURPOSES ONLY.

7. WEEP HOLE REQUIRED ONLY FOR LUGS PURCHASED BY CONTRACTOR.

8. EXCEPT WHERE NOTED, ALL BRONZE BOLTS SHALL MEET ANSI B 18.2.1. TOLERANCES FOR THE BOLT HEAD & NUT HEIGHT, DISTANCE ACROSS THE FLATS AND THE DISTANCE ACROSS THE CORNERS SHALL BE ± 0.8 (1/32")

9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	07 MAR 2014	REV. NOTE 5 AND TABLES
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

CABLE DETAILS (2 of 2)

STP - 201

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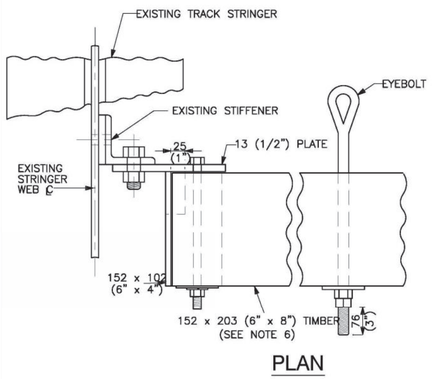
SPEC. NO.

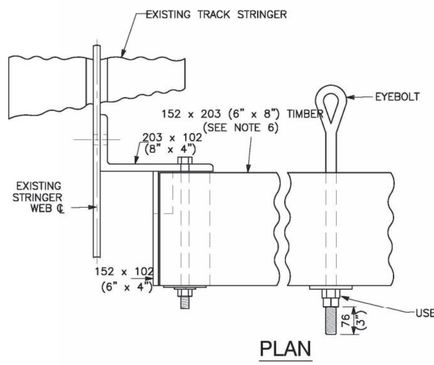
STP-201 CABLE DETAILS (2 OF 2)

DRAWING NO.
TPE50-14

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



PLAN



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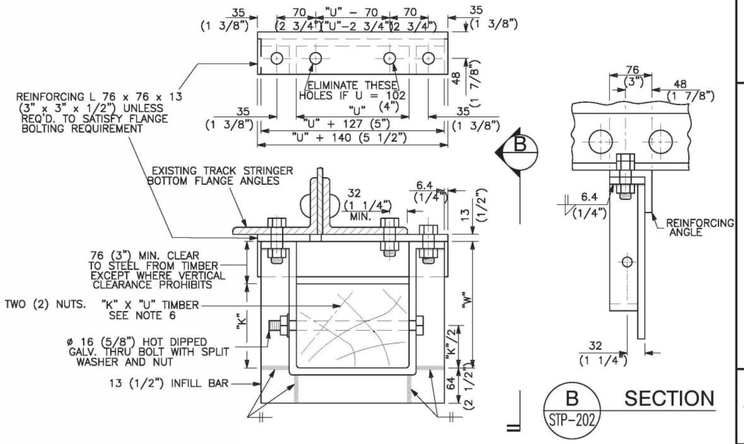
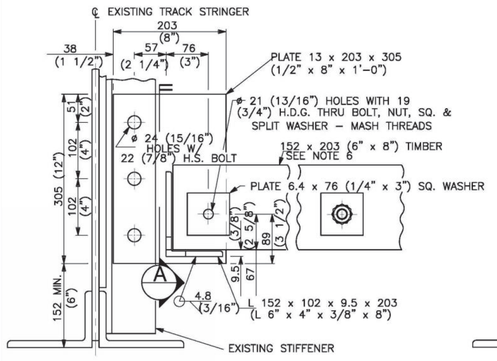
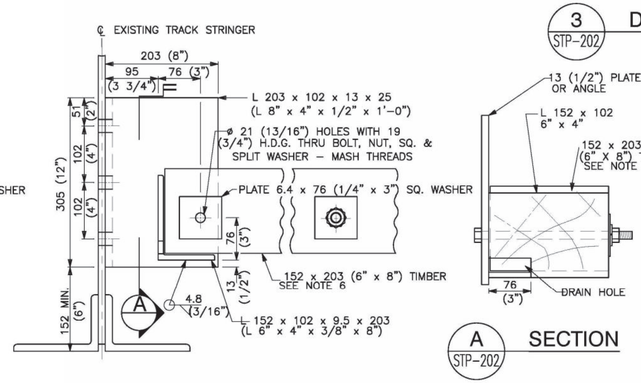


B STP-202 SECTION



ELEVATION

1 STP-202 DETAIL OF CONNECTION AT STIFFENER



A STP-202 SECTION

2 STP-202 DETAIL OF CONNECTION AT WEB PLATE

3 STP-202 DETAIL OF ANGLE TYPE U-CLAMP CABLE DEAD-END

(SHOWN MOUNTED PERPENDICULAR TO TRACK STRINGER)

TABLE OF VARIABLE DIMENSIONS "K" & "U" ARE TIMBER SIZES

U–CLAMP	"K"	"U"	"W"
TYPE "A"	102 (4")	102 (4")	178 (7")
TYPE "B"	152 (6")	152 (6")	229 (9")
TYPE "C"	152 (6")	203 (8")	229 (9")

NOTES:

1. U–CLAMP TO BE USED WHERE CABLE IS BELOW BOTTOM OF TRACK STRINGER.
2. ALL STEEL: ASTM A36.
3. USE GALVANIZED ASTM A325 HIGH STRENGTH ø 19 (3/4") BOLTS IN ø 21 (13/16") HOLES FOR STRUCTURAL ATTACHMENT.
4. ALL HOLES MADE IN TRAIN CARRYING MEMBERS SHALL BE DRILLED FULL SIZE. BURNING AND REAMING OF HOLES IS NOT ALLOWED.
5. HOT DIP GALVANIZE ALL STEEL AFTER WELDING AND DRILLING, ASTM A123.
6. ALL TIMBER SHALL BE DENSE STRUCTURAL GRADE YELLOW PINE PRESSURE TREATED WITH AWPA TYPE P1(95) FOR CREO–PINE TO A NET RETENTION OF 128 kg/cu. m (8 lb/cu. ft). SUPPORT HARDWARE FOR TIMBER AND PORTION OF STRUCTURE COVERED BY SUPPORT HARDWARE SHALL BE PAINTED WITH ONE COAT OF RUSTPROOFING PAINT.
7. THROUGH BOLTS SHALL BE 19 (3/4") A307, GALVANIZED.
8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

TYPICAL DEAD END BRACKET ON TRACK STRINGER WEB

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CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
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FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK CABLE DEAD AND BRACKET DETAILS

STP - 202

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

STP-202 ELEVATED TRACK CABLE DEAD AND BRACKET DETAILS

DRAWING NO. TPE50-15

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

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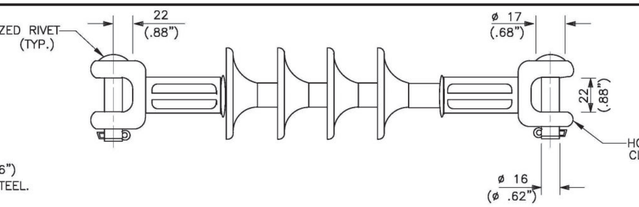
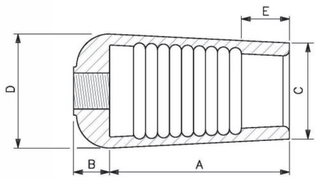
INSTALLATION INSTRUCTIONS:

1. SHANK OF EYEBOLT SHALL BE IN LINE WITH THE CABLE.
2. THE EYE OF THE EYEBOLT SHALL BE IN THE VERTICAL PLANE.
3. WHEN NECESSARY TO DEAD END DIRECTLY TO STEEL, USE TWO INSULATORS AND MAINTAIN A MINIMUM OF 152 (6") CLEARANCE FROM THE NEAREST EDGE OF THE SUPPORT STEEL.
4. SINGLE OR DOUBLE BARREL SCREW JACK CLAMP ADJACENT TO THE BARRELSHALL BE COVERED WITH A SINGLE HALF-LAPPED LAYER OF SCOTCH 2210 VINYL MASTIC TAPE.

MATERIAL PER POSITIVE DEAD END	
ITEM	QUANTITY
INSULATOR	1
EYEBOLT	1
NUT	2
SQUARE WASHER	1
SCREW JACK CLAMP	1
SCREW JACK EYESTUD	1



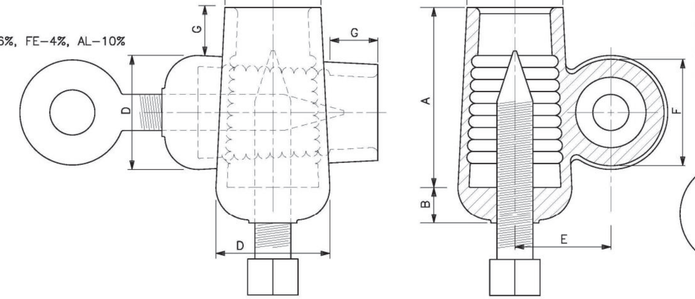
1 STP-203 DETAIL OF POSITIVE CABLE DEAD END / INSULATOR



MATERIAL – ALUMINUM BRONZE ASTM B30, ALLOY 954 CU–86%, FE–4%, AL–10%

SINGLE BARREL SCREW JACK DIMENSIONS					
CABLE SIZE	A	B	C	D	E
500KCMIL	67 (2 5/8")	16 (5/8")	30 (1 3/16")	41 (1 5/8")	13 (1/2")
1000KCMIL	89 (3 1/2")	19 (3/4")	45 (1 3/4")	54 (2 1/8")	25 (1")
1500KCMIL	95 (3 3/4")	19 (3/4")	51 (2")	60 (2 3/8")	25 (1")
2000KCMIL	114 (4 1/2")	25 (1")	56 (2 3/16")	67 (2 5/8")	38 (1 1/2")

3 STP-203 DETAIL OF SINGLE BARREL SCREW JACK END CLAMP



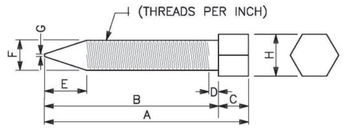
MATERIAL – ALUMINUM BRONZE ASTM B30, ALLOY 954 CU–86%, FE–4%, AL10%

RIGHT ANGLE SCREW JACK CLAMP DIMENSIONS							
CABLE SIZE	A	B	C	D	E	F	G
500KCMIL	67 (2 5/8")	16 (5/8")	30 (1 3/16")	41 (1 5/8")	35 (1 3/8")	37 (1 7/16")	13 (1/2")
1000KCMIL	89 (3 1/2")	19 (3/4")	45 (1 3/4")	54 (2 1/8")	45 (1 3/4")	51 (2")	25 (1")
1500KCMIL	95 (3 3/4")	19 (3/4")	51 (2")	60 (2 3/8")	51 (2")	57 (2 1/4")	25 (1")
2000KCMIL	114 (4 1/2")	25 (1")	56 (2 3/16")	67 (2 5/8")	57.2 (2 1/4")	64 (2 1/2")	38 (1 1/2")

4 STP-203 DETAIL OF RIGHT ANGLE DOUBLE BARREL SCREW JACK DEAD END CLAMP

NOTES:

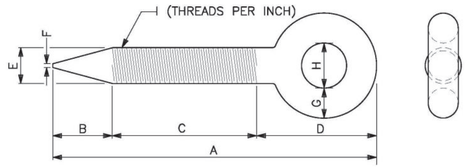
1. FOR INSTALLATION OF STUD IN SCREW JACK CLAMP SEE DETAIL "5" AND TABLE FOR DIMENSION "X".
2. ALL TIMBER SHALL BE DENSE STRUCTURAL GRADE YELLOW PINE PRESSURE TREATED WITH AWPA TYPE P1(95) FOR CREO-PINE TO NET RETENTION OF 128 kg/cu. m (8 lb/cu. ft.). SUPPORT HARDWARE FOR TIMBER AND PORTION OF STRUCTURE COVERED BY SUPPORT HARDWARE SHALL BE PAINTED WITH ONE COAT OF RUSTPROOFING PAINT, MATCHING THE EXISTING COLOR OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
3. MATERIAL FOR POSITIVE DEAD END INSULATOR IS POLYMER EPDM.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



MATERIAL – SILICON ALUMINUM BRONZE ASTM B30, ALLOY 956, CU–91%, SI–2%, AL–7%

STUD DIMENSIONS									
SIZE	A	B	C	D	E	F	G	H	I
16 (5/8")	108 (4 1/4")	92 (3 5/8)	16 (5/8")	4.8 (3/16")	22 (7/8")	16 (5/8")	1.32 (.052")	22 (7/8")	11
19 (3/4")	133 (5 1/4")	114 (4 1/2")	19 (3/4")	6.4 (1/4")	29 (1 1/8")	19 (3/4")	0.86 (.034")	25 (1")	10

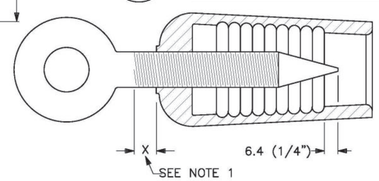
2 STP-203 DETAIL OF HEX HEAD BOLT FOR SCREW JACK CLAMP



MATERIAL – ALUMINUM BRONZE ASTM B30, ALLOY 955 CU–81%, NI–4%, FE–4%, AL–11%

STUD DIMENSIONS									
STUD SIZE	A	B	C	D	E	F	G	H	I
16 (5/8")	171 (6 3/4")	22 (7/8")	89 (3 1/2")	60 (2 3/8")	16 (5/8")	0.6 (.022")	16 (5/8")	24 (15/16")	11
19 (3/4")	171 (6 3/4")	32 (1 1/4")	76 (3")	64 (2 1/2")	19 (3/4")	2.0 (.080")	16 (5/8")	24 (15/16")	10

6 STP-203 DETAIL OF EYESTUD FOR SCREW JACK CLAMP



BARREL SIZE	STUD SIZE	DIM. X
500KCMIL	16 (5/8")	35 (1 3/8")
1000KCMIL	19 (3/4")	19 (3/4")
1500KCMIL	16 (3/4")	13 (1/2")
2000KCMIL	19 (3/4")	0.0 (0")

5 STP-203 DETAIL OF EYESTUD INSTALLATION INSTALLATION

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	07 MAR 2014	REV. DETAIL 1,3,4,6 TITLES
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK POSITIVE CABLE DEAD END DETAILS

STP - 203

FOR INFORMATION ONLY

DESIGN BY:									
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APPROVED BY:		01/27/2020	ISSUE FOR BID	BG	EM	SM			
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

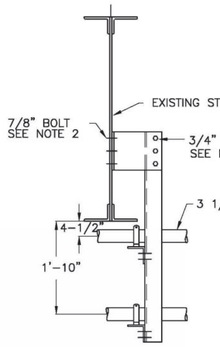
STP-203 ELEVATED TRACK POSITIVE CABLE DEAD END DETAILS

CDOT PROJECT D-7-135 | DATE: 11/01/2019

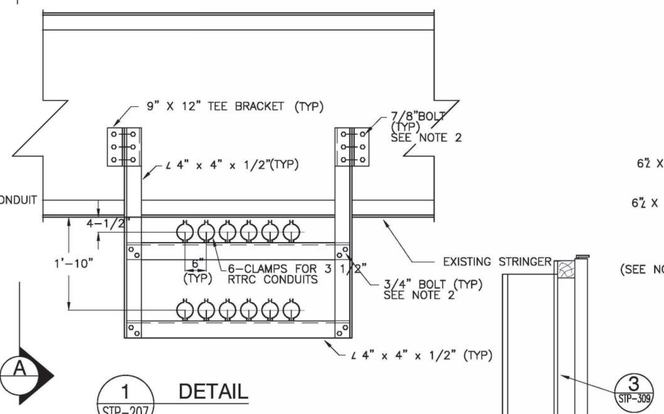
SPEC. NO.

DRAWING NO. TPE50-16

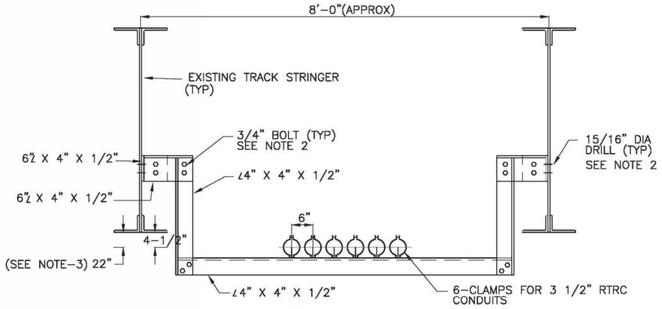
REVISION NO.



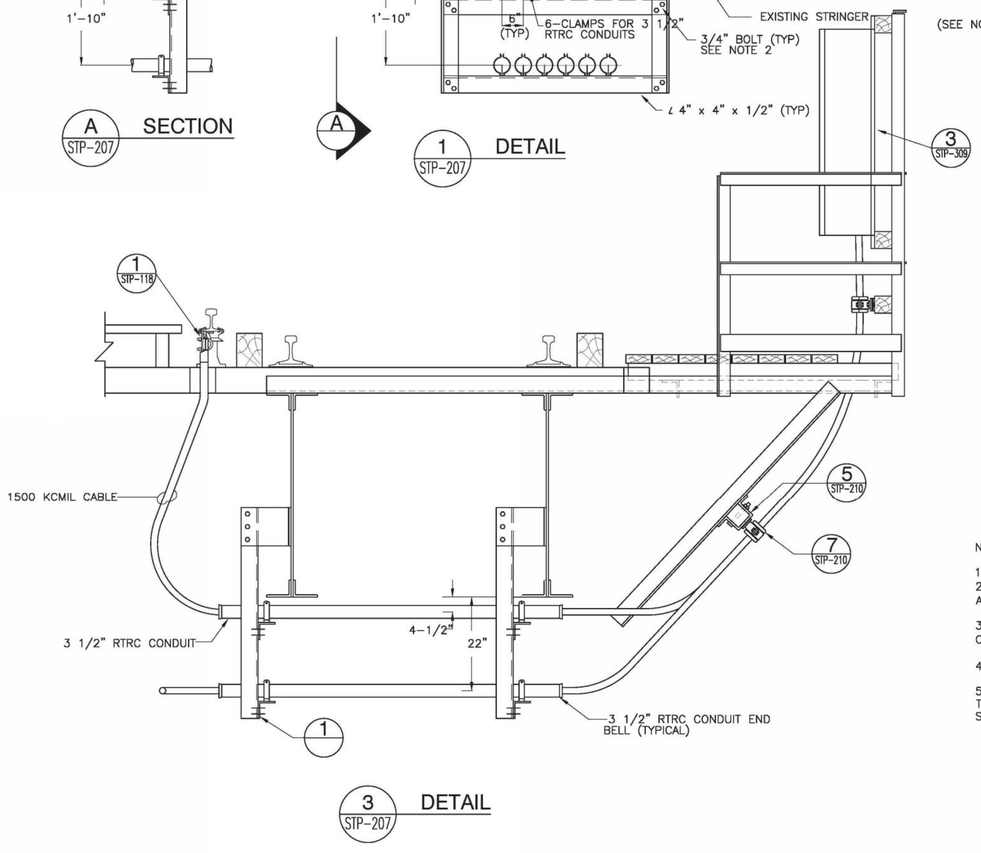
A SECTION
A STP-207



1 DETAIL
STP-207



2 DETAIL
STP-207



3 DETAIL
STP-207

NOTES:

1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS LIST SEE SHEET STP–4.
2. CONNECT NEW STEEL TO EXISTING CTA STRUCTURE WITH 7/8" H.S.BOLTS. ALL OTHER CONNECTIONS SHOULD BE MADE USING 3/4" H.S.BOLTS.
3. DETAIL–3 IS SIMILAR TO DETAIL–2 EXCEPT THE DISTANCE FROM THE BOTTOM OF THE FLANGE TO THE CENTERLINE OF THE CONDUIT IS 22".
4. ALL CLEARENCES TO GRADE SHALL BE 14'–6" MINIMUM (TYPICAL ALL CASES)
5. HIGH STRENGTH BOLTS SHALL BE USED FOR ALL STRUCTURAL JOINTS. TORQUING AND TESTING THE BOLTS SHALL BE AS PER THE STRUCTURAL STEEL SPECIFICATIONS.

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SENSITIVE SECURITY INFORMATION

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STANDARD TRACTION POWER
DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	01 AUG 2015	REVISED NOTE 5
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

TYPICAL AERIAL CABLE SUPPORT DETAILS SHEET 1 OF 2

STP - 207

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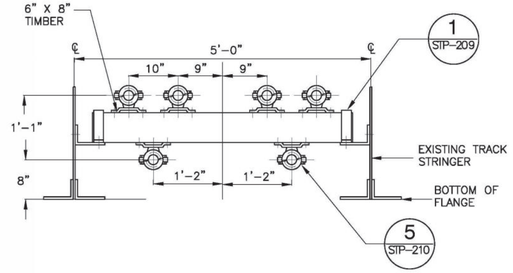
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

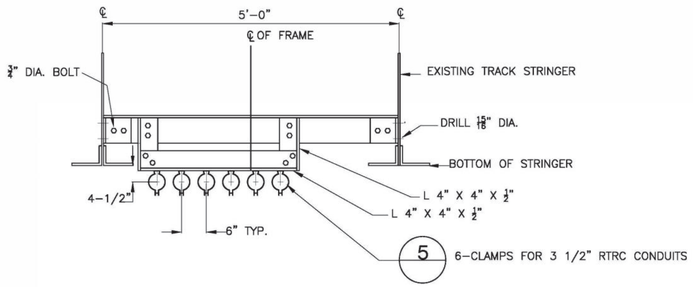
STP-207 TYPICAL AERIAL CABLE SUPPORT DETAILS

DRAWING NO.
TPE50-17

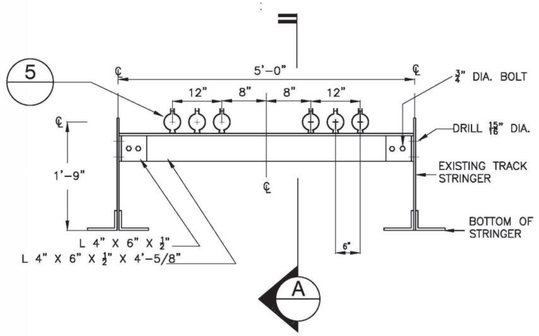
CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



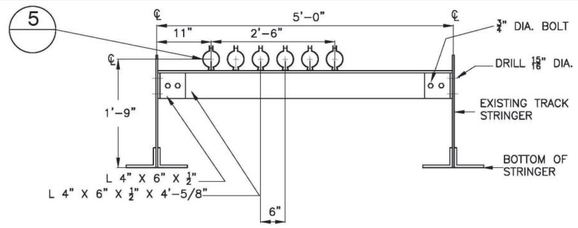
1 STP–208 DETAIL OF TYPICAL CABLE SUPPORT



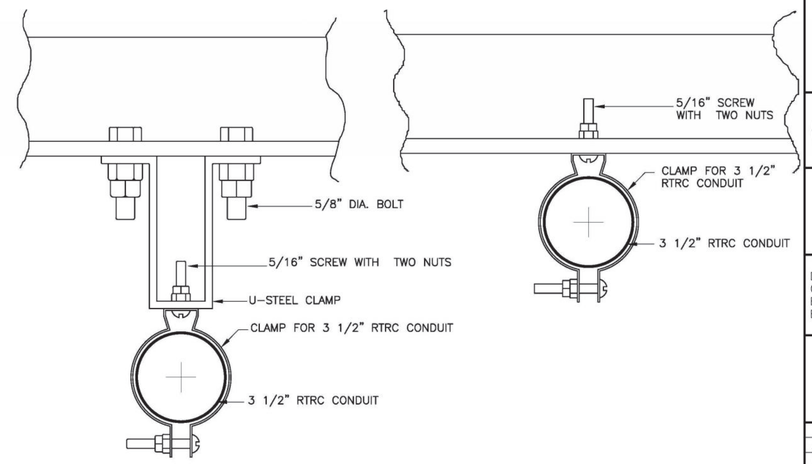
2 STP–208 DETAIL OF TYPICAL CONDUIT SUPPORT

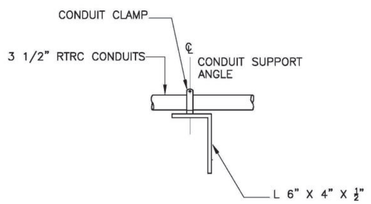


3 STP–208 DETAIL OF TYPICAL CONDUIT SUPPORT



4 STP–208 DETAIL OF TYPICAL CONDUIT SUPPORT





A STP–208 SECTION

5 STP–208 DETAIL OF TYPICAL CONDUIT SUPPORT

NOTES:
1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LIST SEE SHEET STP–4.
2. CONNECT ALL NEW STEEL TO EXISTING CTA STRUCTURE WITH 7/8" H.S. BOLTS. ALL OTHER CONNECTIONS SHOULD BE MADE USING 3/4" H.S.BOLTS.
3. ALL HOLES MADE IN TRAIN CARRYING MEMBERS SHALL BE DRILLED FULL SIZE (15/16"DIA). FOR 7/8" DIA. H.S.BOLTS UNLESS NOTED OTHERWISE BURNING AND REAMING NOT ALLOWED.
4. LL NEW HOLES IN TRACK STRINGER BOTTOM FLANGE ANGLES ARE TO BE STAGGERED WITH EXISTING FASTENERS.
5. ALL NEW STEEL TO BE A36.
6. ALL CLEARANCES TO GRADE SHALL BE 14'–6" MINIMUM. (TYPICAL ALL CASES)

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SENSITIVE SECURITY INFORMATION

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STANDARD TRACTION POWER
DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

TYPICAL AERIAL CABLE SUPPORT DETAILS SHEET 2 OF 2

STP - 208

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-208 TYPICAL AERIAL CABLE SUPPORT DETAILS

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE50-18**

REVISION NO.

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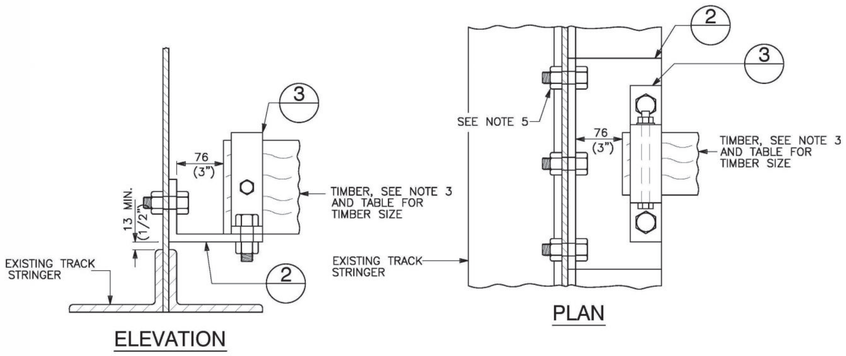


ELEVATION

PLAN

1 STP-209 DETAIL OF WEB MOUNTED CROSS ARM TIMBER

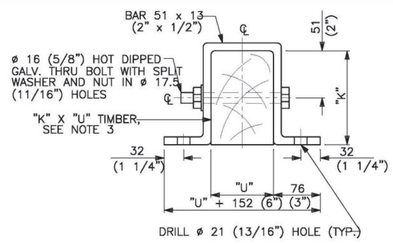
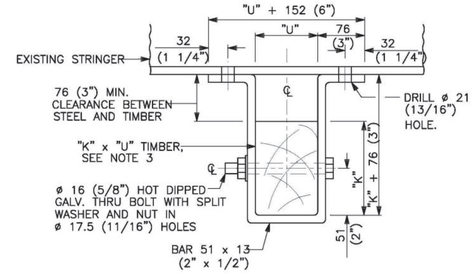
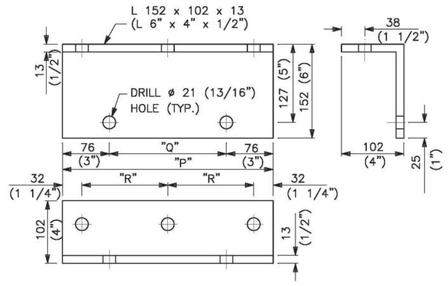


TABLE OF VARIABLE DIMENSIONS "K" & "U" ARE TIMBER SIZES						REMARKS
U-CLAMP	"K"	"U"	"Q"	"P"	"R"	
TYPE "A"	102 (4")	102 (4")	191 (7 1/2")	343 (13 1/2")	140 (5 1/2")	–
TYPE "B"	152 (6")	102 (4")	191 (7 1/2")	343 (13 1/2")	140 (5 1/2")	CROSS ARM
TYPE "C"	152 (6")	152 (6")	241 (9 1/2")	394 (15 1/2")	165 (6 1/2")	–
TYPE "D"	152 (6")	203 (8")	292 (11 1/2")	445 (17 1/2")	191 (7 1/2")	DEAD END

3 STP-209 DETAIL OF "U" CLAMP



4 STP-209 DETAIL OF "U" CLAMP OUTSIDE STRAP



2 STP-209 DETAIL OF LUG ANGLE

NOTES:

1. LUG ANGLE SHALL BE MOUNTED HORIZONTALLY FOR CROSS ARM SUPPORT WITH TIMBER MOUNTED ABOVE LUG ANGLE.
2. LOCATION OF HOLES DRILLED IN TRACK STRINGER FLANGE ANGLES FOR MOUNTING U-CLAMPS SHALL BE AS RECOMMENDED IN THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (LATEST EDITION).
3. ALL TIMBER SHALL BE DENSE STRUCTURAL GRADE YELLOW PINE PRESSURE TREATED WITH AWPA TYPE P1(95) FOR CREO-PINE TO A NET RETENTION OF 128 kg/cu. m (8 lb/cu. ft). SUPPORT HARDWARE FOR TIMBER AND PORTION OF STRUCTURE COVERED BY SUPPORT HARDWARE SHALL BE PAINTED WITH ONE COAT OF RUSTPROOFING PAINT.
4. ALL HOLES MADE IN TRAIN CARRYING MEMBERS SHALL BE DRILLED FULL SIZE. BURNING AND REAMING OF HOLES IS NOT ALLOWED.
5. USE GALVANIZED ASTM A325 HIGH STRENGTH ø 19 (3/4") BOLTS IN ø 21 (13/16") HOLES FOR STRUCTURAL ATTACHMENT.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK CROSS ARM TIMBER AND SPOOL INSULATOR DETAILS (1 of 2)

STP - 209

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

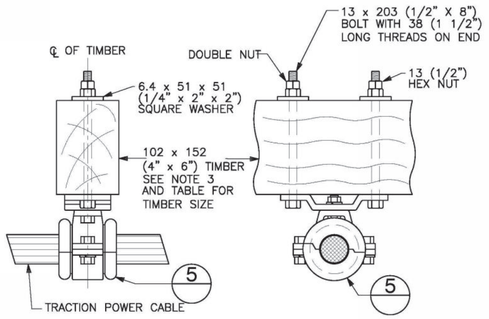
SPEC. NO.

STP-209 ELEVATED TRACK CROSS ARM TIMBER AND SPOOL INSULATOR DETAILS

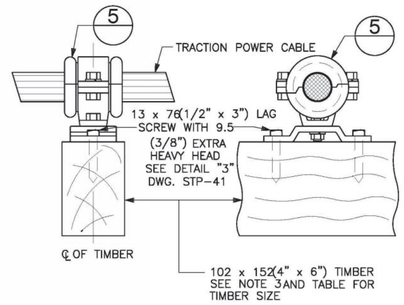
DRAWING NO. TPE50-19

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

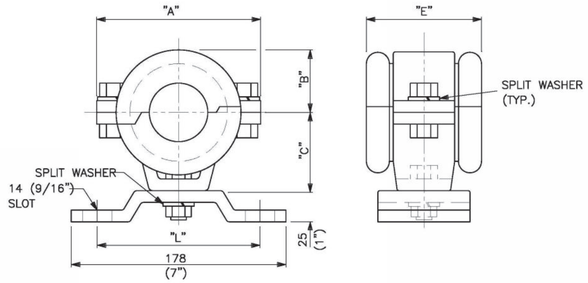
1/27/2020 1:24:37 PM C:\Users\emirabella\Documents\ELEC-DGL_smathew@facetengineering.net.rvt



6 STP-210 DETAIL OF SPOOL TYPE INSULATOR CABLE SUPPORT



7 STP-210 DETAIL OF SPOOL TYPE INSULATOR CABLE SUPPORT



DELTA–STAR SPOOL INSULATOR CABLE SUPPORTS – TYPE "SSL"

PORCELAIN SPOOLS CATALOG NUMBER	CABLE SIZE	CABLE DIAMETER	DIMENSIONS					
			"A"	"B"	"C"	"E"	"L" MIN.	"L" MAX.
350109	500KCMIL	32 (1 1/4")	121 (4 3/4")	44 (1 3/4")	57 (2 1/4")	76 (3")	127 (5")	146 (5 3/4")
350115	1500KCMIL	51 (2")	133 (5 1/4")	51 (2")	64 (2 1/2")	95 (3 3/4")	127 (5")	146 (5 3/4")

5 STP-210 DETAILS OF SPOOL INSULATOR

NOTES:

1. LUG ANGLE SHALL BE MOUNTED HORIZONTALLY FOR CROSS ARM SUPPORT WITH TIMBER MOUNTED ABOVE LUG ANGLE.
2. LOCATION OF HOLES DRILLED IN TRACK STRINGER FLANGE ANGLES FOR MOUNTING U–CLAMPS SHALL BE AS RECOMMENDED IN THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (LATEST EDITION).
3. ALL TIMBER SHALL BE DENSE STRUCTURAL GRADE YELLOW PINE PRESSURE TREATED WITH AWPA TYPE P1(95) FOR CREO–PINE TO A NET RETENTION OF 128 kg/cu. m (8 lb/cu. ft). SUPPORT HARDWARE FOR TIMBER AND PORTION OF STRUCTURE COVERED BY SUPPORT HARDWARE SHALL BE PAINTED WITH ONE COAT OF RUSTPROOFING PAINT.
4. ALL HOLES MADE IN TRAIN CARRYING MEMBERS SHALL BE DRILLED FULL SIZE. BURNING AND REAMING OF HOLES IS NOT ALLOWED.
5. USE GALVANIZED ASTM A325 HIGH STRENGTH ø 19 (3/4") BOLTS IN ø 21 (13/16") HOLES FOR STRUCTURAL ATTACHMENT.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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SENSITIVE SECURITY INFORMATION

STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK CROSS ARM TIMBER AND SPOOL INSULATOR DETAILS (2 of 2)

STP - 210

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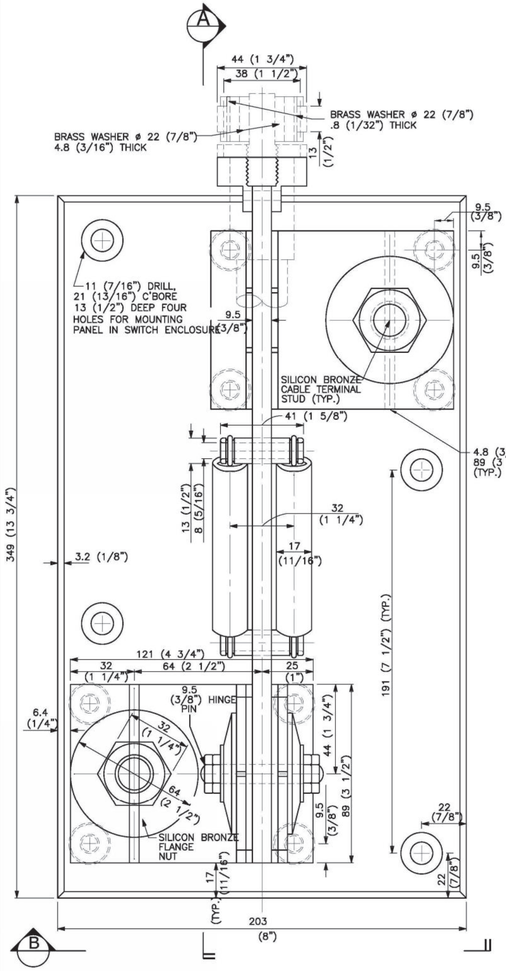
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

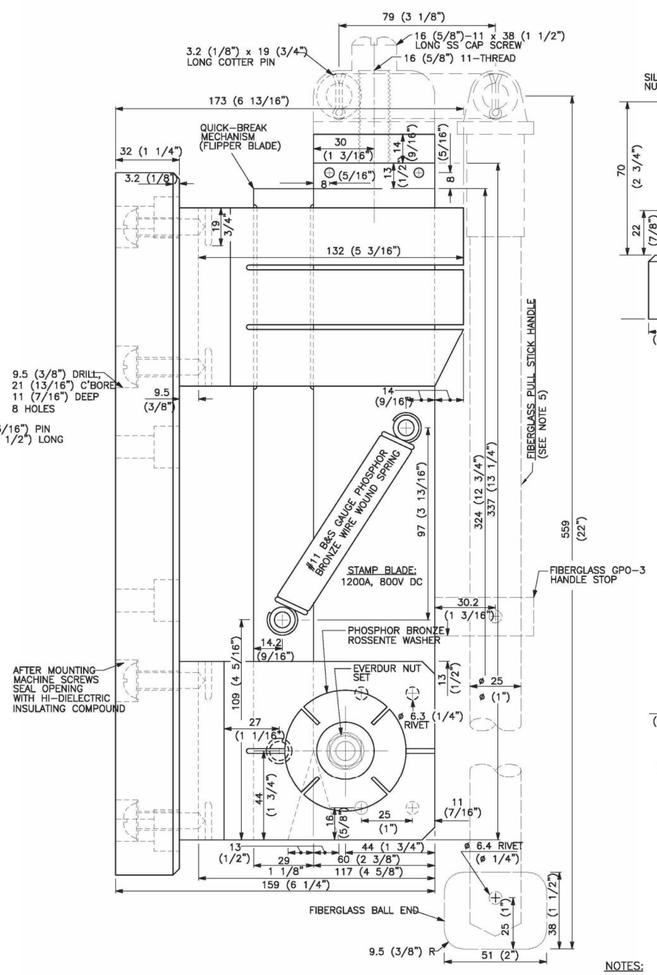
STP-210 ELEVATED TRACK CROSS ARM TIMBER AND SPOOL INSULATOR DETAILS

DRAWING NO. TPE50-20

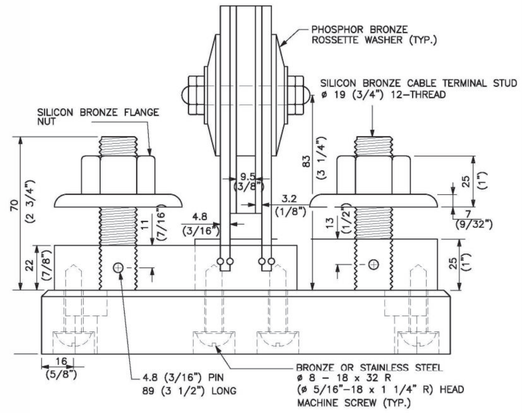
CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



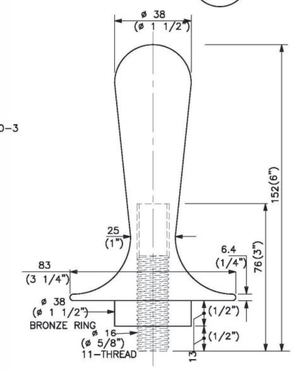
1 STP-300 DETAIL OF PLAN VIEW



A STP-300 SECTION



B STP-300 ELEVATION



2 STP-300 DETAIL OF GRIP HANDLE (SEE NOTE 1)

NOTES:

1. SWITCH HANDLE SHALL BE MOLDED FROM NON–BREAKABLE EPOXY FIBERGLASS.
2. ALL SWITCH CURRENT–CARRYING PARTS SHALL BE MADE OF 98% CONDUCTIVITY BUS BAR COPPER.
3. ALL PINS SHALL BE PHOSPHOR BRONZE OR STAINLESS STEEL.
4. SWITCH BASE SHALL BE FIBERGLASS FILLED POLYESTER TYPE GPO–3.
5. PULL STICK HANDLE ASSEMBLY FOR YARD DISCONNECT INSTALLATION.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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SENSITIVE SECURITY INFORMATION

WARNING: THIS RECORD CONTAINS SENSITIVE SECURITY INFORMATION THAT IS CONTROLLED UNDER 49 CFR PARTS 15 AND 1520. NO PART OF THIS RECORD MAY BE DISCLOSED TO PERSONS WITHOUT A "NEED TO KNOW" AS DEFINED IN CFR PARTS 15 AND 1520, EXCEPT WITH THE WRITTEN PERMISSION OF THE ADMINISTRATOR OF THE TRANSPORTATION SECURITY ADMINISTRATION OR THE SECRETARY OF TRANSPORTATION. UNAUTHORIZED RELEASE MAY RESULT IN CIVIL PENALTY OR OTHER ACTION. FOR U.S. GOVERNMENT AGENCIES, PUBLIC DISCLOSURE IS GOVERNED BY 5 U.S.C. 552 AND 49 CFR PARTS 15 AND 1520.

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STANDARD TRACTION POWER
DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

KNIFE SWITCH 1200 AMP 800V DC SPST

STP - 300

FOR INFORMATION ONLY

DESIGN BY:										
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-300 KNIFE SWITCH 1200 AMP 800 V DC SPST

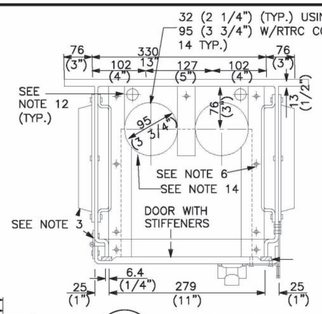
CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

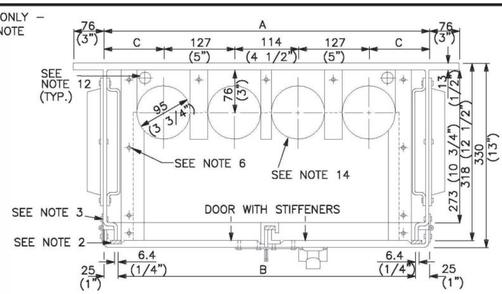
DRAWING NO. **TPE50-21**

REVISION NO.

TABLE A							
TYPE OF SWITCH ENCLOSURE (GANG)	DIMENSIONS IN mm (inches)						
	A	B	C	D	E	F	G
2	584 (23)	533 (21)	108(4 1/4)	289 (11 3/8)	521 (20 1/2)	476(18 3/4)	76 (3)
3	813 (32)	762 (30)	102 (4)	405(15 15/16)	749 (29 1/2)	705(27 3/4)	70 (2 3/4)
4	1067 (42)	1016(40)	108(4 1/4)	530 (20 7/8)	1003(39 1/2)	959(37 3/4)	76 (3)
5	1295 (51)	1245(49)	102 (4)	645 (25 3/8)	1232(48 1/2)	1187(46 3/4)	70 (2 3/4)
6	1549 (61)	1499(59)	108(4 1/4)	772 (30 3/8)	1486(58 1/2)	1441(56 3/4)	76 (3)



A SECTION STP-304



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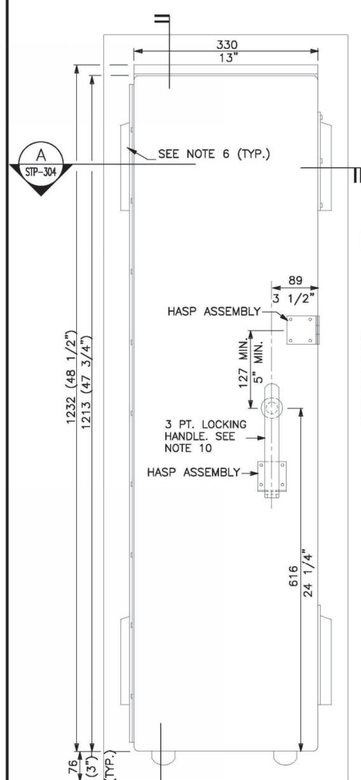
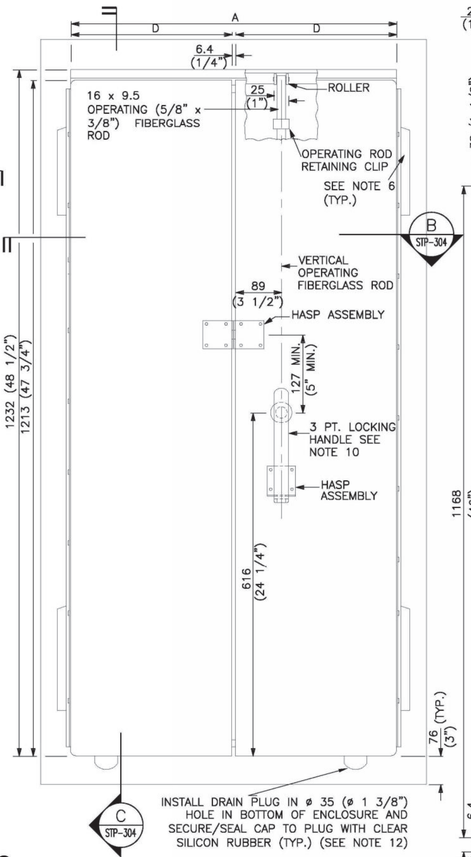
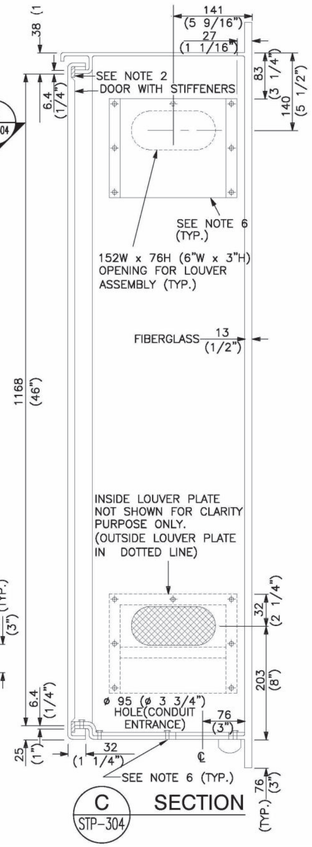


1 STP-304 DETAIL OF ONE GANG-(FRONT ELEVATION)



2 STP-304 DETAIL OF TWO OR MORE GANGS-(FRONT ELEVATION)



C SECTION STP-304

NOTES:

1. ENCLOSURE MATERIAL IS 6.4 (1/4") MINIMUM THICK FIBERGLASS REINFORCED POLYESTER; BACK [INCLUDING 76 (3") FLANGE] IS 13 (1/2") THICK. SEE SPECIFICATION FOR FABRICATION DETAILS.
2. GASKET ALL AROUND DOOR TO BE SELF–GRIPPING AND SELF–SEALING WITH STEEL SPRING CORE. GASKET ON DOOR OVERLAP TO BE NEOPRENE CLOSED CELL WITH SKIN SURFACE.
3. FLAT PIANO HINGE 1181 (46 1/2") LONG – 12 GAUGE S.S., ø 6.4 (1/4") PIN, 51 (2") OPEN WIDTH, S.S. RIVETS AT 127 (5") SPACING WITH S.S. BACKUP WASHERS, DOOR OPENING A MINIMUM OF 180° [ONE GANG–1, TWO OR MORE GANG–2].
4. ALL HARDWARE SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL.
5. HASP – 12 GAUGE S.S. WITH 19 (3/4") HOLES TO ACCOMMODATE 13 (1/2") LOCK SHACKLE, ATTACHED TO DOOR/ENCLOSURE WITH S.S. RIVETS AND BACKUP WASHERS.
6. REMOVABLE BOTTOM AND GASKETED SCREENED LOUVER PLATES ATTACHED TO ENCLOSURE WITH 6.4 (1/4") –20 S.S. NUTSERTS WITH 6.4 (1/4") –20 S.S. SLOTTED PANHEAD BOLTS AND S.S. LOCK WASHERS. GASKET AND S.S. SCREEN SHALL BE BONDED TO LOUVER PLATE WITH RTV SILICON [4 SETS OF LOUVER REQUIRED PER ENCLOSURE]
7. ALL DRILLED HOLES AND EDGES SHALL BE EITHER GEL–COATED OR SEALED WITH RTV SILICONE.
8. ALL METAL PARTS EXTENDING INSIDE ENCLOSURE TO BE INSULATED WITH RTV SILICONE.
9. FOR DIMENSIONS A, B, C, D, E, F, AND G SEE TABLE "A".
10. 3 POINT LATCHING MECHANISM CONSISTS OF 73NS–1 (HANSEN) PADLOCKING S.S. HANDLE AND NO.107 (HANSEN) S.S. SPRING MECHANISM. RODS TO BE NON–CONDUCTIVE FIBERGLASS WITH NYLON ROLLERS.
11. A REMOVABLE COVER SHALL BE PROVIDED OVER 3 POINT LATCH MECHANISM.
12. PLASTIC BOTTOM DRAIN PLUGS – 2 FOR UP TO 3 GANG ENCLOSURES, 3 FOR FOUR OR MORE GANG ENCLOSURES.
13. ALL EXTERIOR SURFACE TO HAVE GRAFFITI PREVENTIVE COATING WITH ABRC "POLYSHIELD" REGULAR.
14. IF ENCLOSURE IS INSTALLED ON STRUCTURE DRILL 32 (2 1/4") HOLE IN REMOVABLE BOTTOM.
15. FOR FIBERGLASS SWITCH ENCLOSURE NUMBER OR LETTER AND ENCLOSURE DESIGNATIONS SEE DRAWING STP–308.
16. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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STANDARD TRACTION POWER DRAWINGS

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APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

FIBERGLASS SWITCH ENCLOSURE WITH FLANGE LIP (SHEET 1 OF 2)

STP - 304

FOR INFORMATION ONLY

DESIGN BY:									
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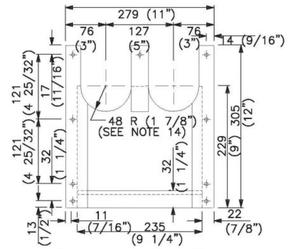
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

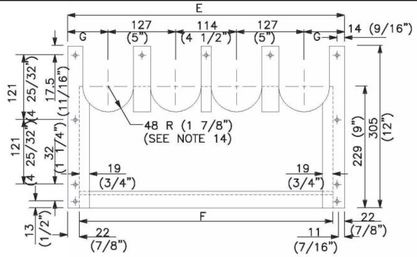
STP-304 FIBERGLASS SWITCH ENCLOSURE WITH FLANGE LIP

DRAWING NO. **TPE50-22**

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

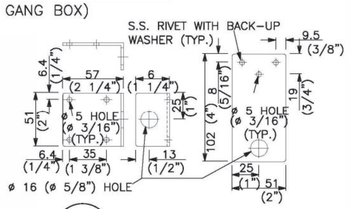


REMOVABLE BOTTOM PANEL
(ONE GANG BOX)

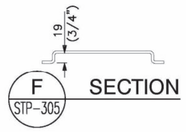


REMOVABLE BOTTOM PANEL
(TWO OR MORE GANGS)

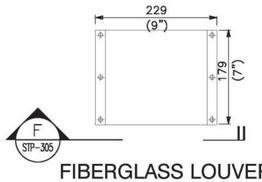
TYPE OF SWITCH ENCLOSURE (GANG)	TABLE A DIMENSIONS IN mm (inches)						
	A	B	C	D	E	F	G
2	584 (23)	533 (21)	108 (4 1/4)	289 (11 3/8)	521 (20 1/2)	476 (18 3/4)	76 (3)
3	813 (32)	762 (30)	102 (4)	405 (15 15/16)	749 (29 1/2)	705 (27 3/4)	70 (2 3/4)
4	1067 (42)	1016 (40)	108 (4 1/4)	530 (20 7/8)	1003 (39 1/2)	959 (37 3/4)	76 (3)
5	1295 (51)	1245 (49)	102 (4)	645 (25 3/8)	1232 (48 1/2)	1187 (46 3/4)	70 (2 3/4)
6	1549 (61)	1499 (59)	108 (4 1/4)	772 (30 3/8)	1486 (58 1/2)	1441 (56 3/4)	76 (3)



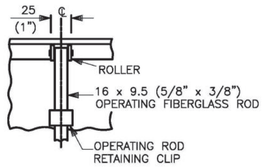
3 STP-305 DETAILS OF DOOR HASP
12 GAUGE STAINLESS STEEL



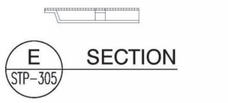
F STP-305 SECTION



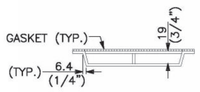
F STP-305 FIBERGLASS LOUVER PLATE
(INSIDE)



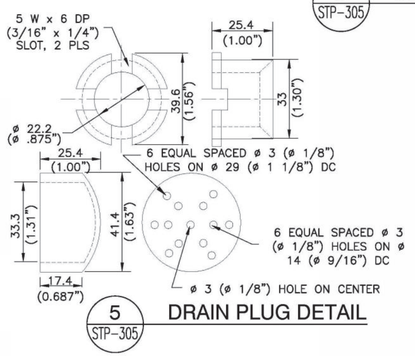
4 STP-305 DETAIL OF OPERATING ROD MOUNTING



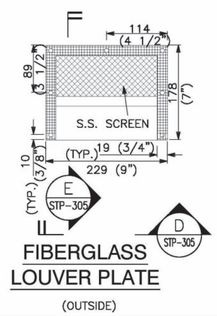
E STP-305 SECTION



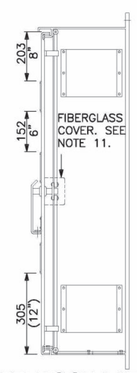
D STP-305 SECTION



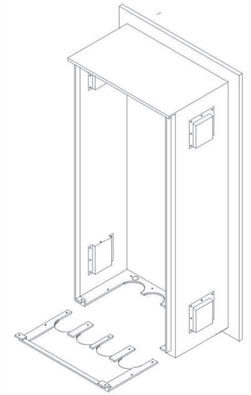
5 STP-305 DRAIN PLUG DETAIL



FIBERGLASS LOUVER PLATE
(OUTSIDE)



3 PT. DOOR LATCH DETAIL



SWITCH ENCLOSURE AND REMOVABLE BOTTOM DETAIL
SHOWN AS 2 GANG SWITCH ENCLOSURE WITHOUT DOORS (TYP.)

NOTES:
1. ENCLOSURE MATERIAL IS 6.4 (1/4") MINIMUM THICK FIBERGLASS REINFORCED POLYESTER; BACK [INCLUDING 76 (3") FLANGE] IS 13 (1/2") THICK. SEE SPECIFICATION FOR FABRICATION DETAILS.
2. GASKET ALL AROUND DOOR TO BE SELF-GRIPPING AND SELF-SEALING WITH STEEL SPRING CORE. GASKET ON DOOR OVERLAP TO BE NEOPRENE CLOSED CELL WITH SKIN SURFACE.
3. FLAT PIANO HINGE 1181 (46 1/2") LONG – 12 GAUGE S.S., ø 6.4 (1/4") PIN, 51 (2") OPEN WIDTH, S.S. RIVETS AT 127 (5") SPACING WITH S.S. BACKUP WASHERS, DOOR OPENING A MINIMUM OF 180° [ONE GANG–1, TWO OR MORE GANG–2].
4. ALL HARDWARE SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL.
5. HASP – 12 GAUGE S.S. WITH 19 (3/4") HOLES TO ACCOMMODATE 13 (1/2") LOCK SHACKLE, ATTACHED TO DOOR/ENCLOSURE WITH S.S. RIVETS AND BACKUP WASHERS.
6. REMOVABLE BOTTOM AND GASKETED SCREENED LOUVER PLATES ATTACHED TO ENCLOSURE WITH 6.4 (1/4") –20 S.S. NUTSERTS WITH 6.4 (1/4") –20 S.S. SLOTTED PANHEAD BOLTS AND S.S. LOCK WASHERS. GASKET AND S.S. SCREEN SHALL BE BONDED TO LOUVER PLATE WITH RTV SILICON [4 SETS OF LOUVER REQUIRED PER ENCLOSURE].
7. ALL DRILLED HOLES AND EDGES SHALL BE EITHER GEL–COATED OR SEALED WITH RTV SILICONE.
8. ALL METAL PARTS EXTENDING INSIDE ENCLOSURE TO BE INSULATED WITH RTV SILICONE.
9. FOR DIMENSIONS A, B, C, D, E, F, AND G SEE TABLE "A".
10. 3 POINT LATCHING MECHANISM CONSISTS OF 73NS–1 (HANSEN) PADLOCKING S.S. HANDLE AND NO.107 (HANSEN) S.S. SPRING MECHANISM. RODS TO BE NON–CONDUCTIVE FIBERGLASS WITH NYLON ROLLERS.
11. A REMOVABLE COVER SHALL BE PROVIDED OVER 3 POINT LATCH MECHANISM.
12. PLASTIC BOTTOM DRAIN PLUGS – 2 FOR UP TO 3 GANG ENCLOSURES, 3 FOR FOUR OR MORE GANG ENCLOSURES.
13. ALL EXTERIOR SURFACE TO HAVE GRAFFITI PREVENTIVE COATING WITH ABRC "POLYSHIELD" REGULAR.
14. IF ENCLOSURE IS INSTALLED ON STRUCTURE DRILL 32 (2 1/4") HOLE IN REMOVABLE BOTTOM.
15. FOR FIBERGLASS SWITCH ENCLOSURE NUMBER OR LETTER AND ENCLOSURE DESIGNATIONS SEE DRAWING STP–308.
16. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

CHICAGO TRANSIT AUTHORITY
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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

FIBERGLASS SWITCH ENCLOSURE WITH FLANGE LIP (SHEET 2 OF 2)

STP - 305

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DESIGN BY:									
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APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-305 FIBERGLASS SWITCH ENCLOSURE WITH FLANGE LIP

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE50-23**

REVISION NO.

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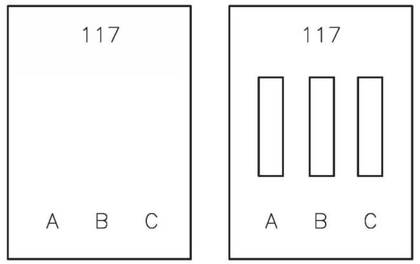
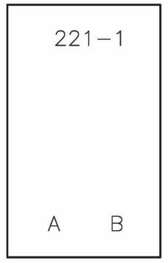


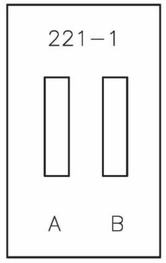
OUTSIDE SEE NOTE 1 (TYP.)

INSIDE SEE NOTE 2 (TYP.)

1 STP-308 **DETAIL OF GETAWAY SWITCH ENCLOSURE**



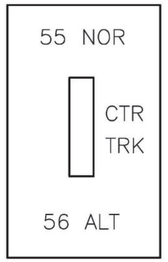
OUTSIDE



INSIDE

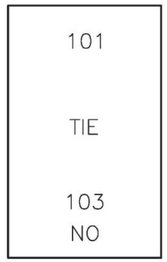
2 STP-308 **DETAIL OF ISOLATING SWITCH ENCLOSURE**

OUTSIDE



INSIDE

3 STP-308 **DETAIL OF SPDT SWITCH ENCLOSURE**



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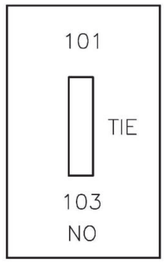
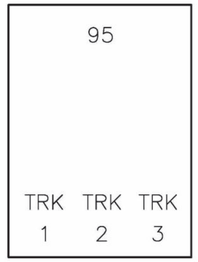
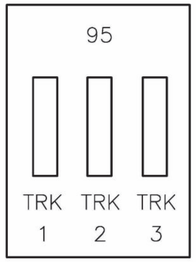


INSIDE

4 STP-308 **DETAIL OF TIE SWITCH ENCLOSURE**



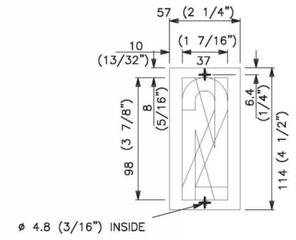
OUTSIDE



INSIDE

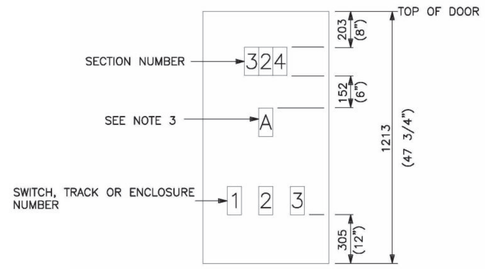
5 STP-308 **DETAIL OF TRACK (YARD) SWITCH ENCLOSURE**

6 STP-308 **DETAIL OF NEGATIVE BUS BAR ENCLOSURE**



7 STP-308 **DETAIL OF PORCELAIN ENAMEL ENCLOSURE NUMBER OR LETTER**

WHITE LETTER (OR NUMBER) ON BLUE BACKGROUND



8 STP-308 **DETAIL OF SWITCH ENCLOSURE LETTER OR NUMBER INSTALLATION**

NOTES:

1. EXTERIOR PORCELAIN ENAMEL STEEL NAMEPLATES TO BE ATTACHED TO THE ENCLOSURE WITH SLOTTED PANHEAD BRASS MACHINE SCREWS, NUTS AND WASHERS.
2. INTERIOR IDENTIFICATION LABELING SHALL UTILIZE 98 (3 7/8") HIGH NUMBERS OR LETTERS.
3. USE LETTER DESIGNATION IF ENCLOSURE IS FED FROM ANOTHER ENCLOSURE ON SAME SECTION AND MANHOLE.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.
5. APPLY SILICON SEALANT to NUTS AND BOLT HEADS TO MAKE WATER TIGHT.
6. ENCLOSURE HAS DOUBLE DOOR OPENING. NOT SHOWN FOR CLARITY.

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CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
02	07 MAR 2014	REVISED DETAIL–3 TITLE
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ENCLOSURE DESIGNATIONS

STP - 308

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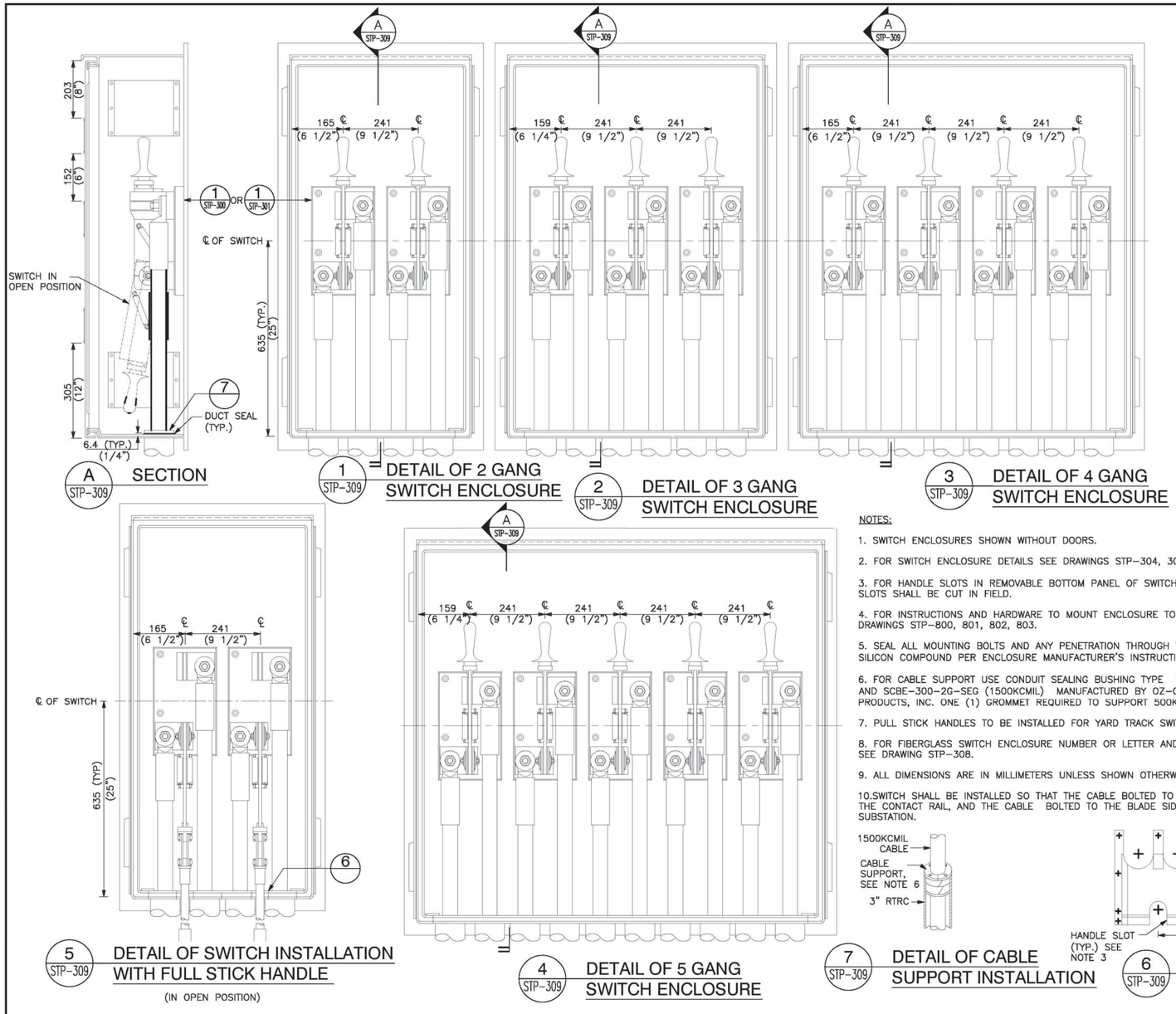
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

STP-308 ENCLOSURE DESIGNATIONS

DRAWING NO.
TPE50-24

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



A STP-309 SECTION

1 STP-309 DETAIL OF 2 GANG SWITCH ENCLOSURE

2 STP-309 DETAIL OF 3 GANG SWITCH ENCLOSURE

3 STP-309 DETAIL OF 4 GANG SWITCH ENCLOSURE

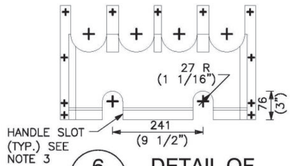
5 STP-309 DETAIL OF SWITCH INSTALLATION WITH FULL STICK HANDLE
(IN OPEN POSITION)

4 STP-309 DETAIL OF 5 GANG SWITCH ENCLOSURE

NOTES:

1. SWITCH ENCLOSURES SHOWN WITHOUT DOORS.
2. FOR SWITCH ENCLOSURE DETAILS SEE DRAWINGS STP–304, 305 & 306.
3. FOR HANDLE SLOTS IN REMOVABLE BOTTOM PANEL OF SWITCH ENCLOSURE SEE DETAIL "1". SLOTS SHALL BE CUT IN FIELD.
4. FOR INSTRUCTIONS AND HARDWARE TO MOUNT ENCLOSURE TO MOUNTING FRAME SEE DRAWINGS STP–800, 801, 802, 803.
5. SEAL ALL MOUNTING BOLTS AND ANY PENETRATION THROUGH THE ENCLOSURE WITH RTV SILICON COMPOUND PER ENCLOSURE MANUFACTURER'S INSTRUCTIONS.
6. FOR CABLE SUPPORT USE CONDUIT SEALING BUSHING TYPE CSBE–300P–SEG (500KCMIL) AND SCBE–300–2G–SEG (1500KCMIL) MANUFACTURED BY OZ–GEDNEY CO. OR SPE–30 MAC PRODUCTS, INC. ONE (1) GROMMET REQUIRED TO SUPPORT 500KCMIL CABLE.
7. PULL STICK HANDLES TO BE INSTALLED FOR YARD TRACK SWITCHES ONLY.
8. FOR FIBERGLASS SWITCH ENCLOSURE NUMBER OR LETTER AND ENCLOSURE DESIGNATIONS SEE DRAWING STP–308.
9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.
10. SWITCH SHALL BE INSTALLED SO THAT THE CABLE BOLTED TO THE CLIP SIDE IS CONNECTED THE CONTACT RAIL, AND THE CABLE BOLTED TO THE BLADE SIDE IS CONNECTED TO THE SUBSTATION.

7 STP-309 DETAIL OF CABLE SUPPORT INSTALLATION



6 STP-309 DETAIL OF BOTTOM PANEL

STP-309

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CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

KNIFE SWITCH MOUNTING AND INSTALLATION DETAILS

STP-309

DESIGN BY:									
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APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
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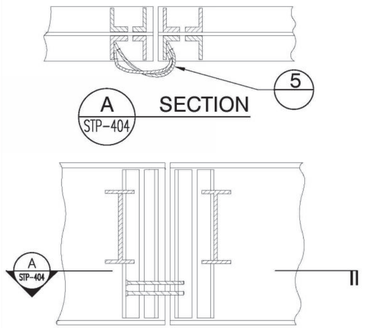
SPEC. NO.

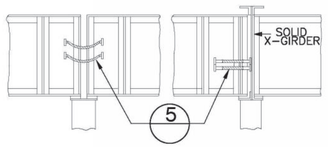
STP-309 KNIFE SWITCH MOUNTING AND INSTALLATION DETAILS

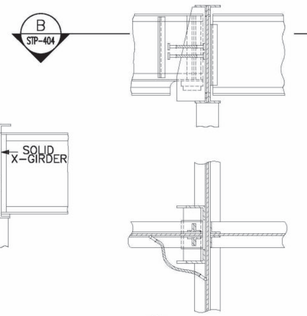
DRAWING NO. TPE50-25

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

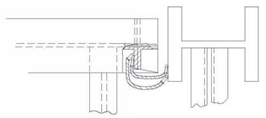


1 STP-404 DETAIL OF INSIDE OR OUTSIDE TRACK STRINGER

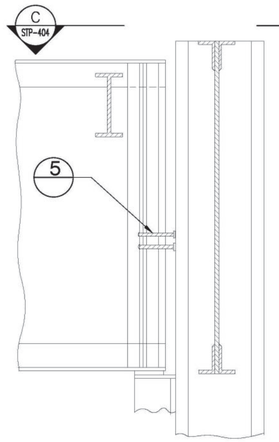




B STP-404 SECTION

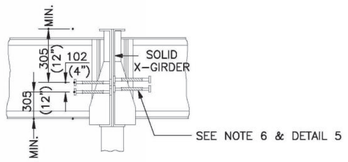


C STP-404 SECTION

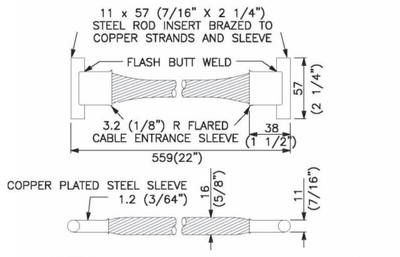


3 STP-404 DETAIL OF OUTSIDE BRIDGE STRINGER

2 STP-404 DETAIL OF TYPICAL SINGLE EXPANSION BENTS



4 STP-404 DETAIL OF TYPICAL DOUBLE EXPANSION BENT



MATERIAL: 300KCMIL COPPER ROPELAY CABLE – 37/7 259 STRANDS, EACH ø 0.87 (0.0341")

5 STP-404 DETAIL OF NEGATIVE RETURN CIRCUIT BOND

(MINIMUM 2 BONDS PER LOCATION)

NOTES:

1. ALL BONDS MUST BE INSTALLED WITHIN 1829 (6'–0") OF CROSS GIRDER.
2. REMOVE ALL LOOSE RUST FROM RAIL AND REMOVE PAINT AND RUST FROM STRUCTURE BEFORE WELDING BONDS.
3. PAINT STRUCTURE AT WELD AFTER BONDS ARE INSTALLED.
4. USE 25 x 4.8 x 356 (1" X 3/16" X 14") IRON WELDING ROD PER WELD, WEIGHT OF ROD PER BOND IS 0.068kg. (0.15 LB.)
5. AFTER WELD HAS COOLED, CLEAN STRUCTURE AND WELD WITH WIRE BRUSH, ALSO APPLY FIELD PRIMER. WHEN DRY, APPLY TOP COAT STRUCTURE PAINT.
6. BONDS MUST NOT BE INSTALLED BELOW POINTS SHOWN TO PERMIT RENEWAL OF WORN MEMBERS.
7. THE CONNECTION SHALL BE COVERED WITH A SINGLE HALF–LAPPED LAYER OF SCOTCH 2210 VINYL MASTIC TAPE.
8. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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DESIGNED BY	CTA
DRAWN BY	CTA
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FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

STRUCTURE TO STRUCTURE BONDING DETAILS

STP - 404

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-404 STRUCTURE TO STRUCTURE BONDING DETAILS

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. TPE50-26

REVISION NO.

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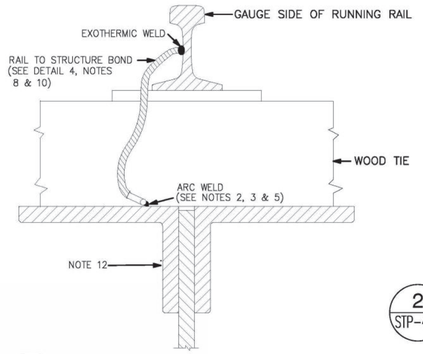
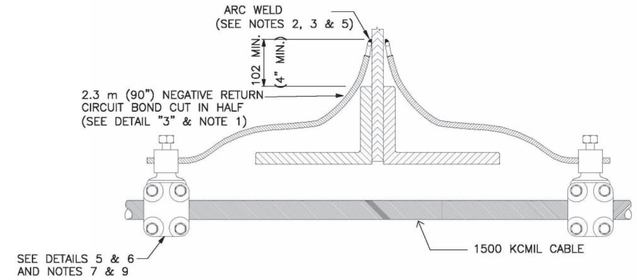
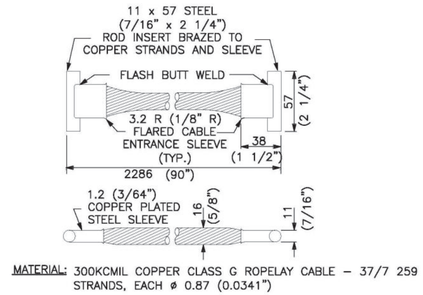


1 STP-405 **DETAIL OF RAIL TO STRUCTURE BOND CONNECTION**

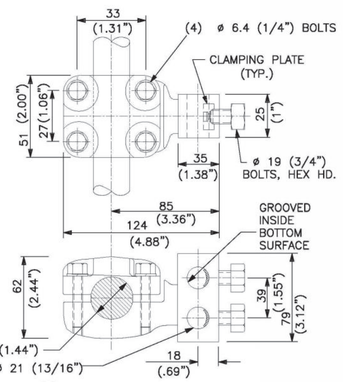


2 STP-405 **DETAIL OF NEGATIVE CABLE TO STRUCTURE BOND CONNECTION**

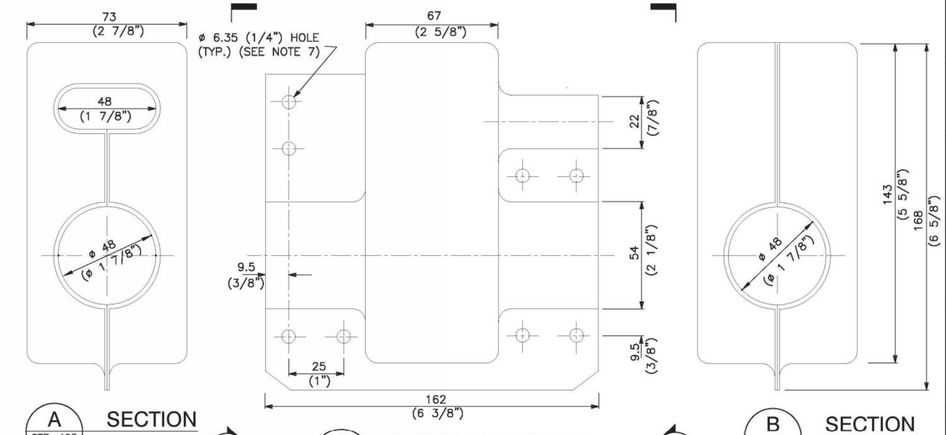


MATERIAL: 300KCMIL COPPER CLASS G ROPELAY CABLE – 37/7 259 STRANDS, EACH ø 0.87 (0.0341")

3 STP-405 **DETAIL OF NEGATIVE RETURN CIRCUIT BOND**



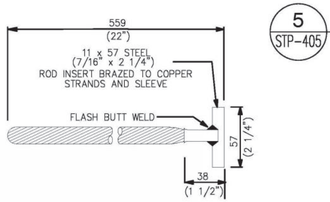
5 STP-405 **DETAIL OF MXTS 1500-350 CONNECTOR**



A STP-405 SECTION

B STP-405 SECTION

6 STP-405 **DETAIL OF RUBBER MOLDING COVER**



4 STP-405 **DETAIL OF RAIL TO STRUCTURE BOND**

MATERIAL: 300KCMIL COPPER CLASS G ROPELAY CABLE – 37/7 259 STRANDS, EACH ø 0.87 (0.0341")

NOTES:

1. INSTALL TWO 1143 (45") BONDS FROM CABLE TO OUTSIDE STRINGERS INSIDE OF TRACKS INSTALL TWO 1143 (45") BONDS FROM CABLE FROM EACH SIDE OF INSIDE STRINGERS.
2. REMOVE ALL LOOSE RUST FROM RAIL AND REMOVE PAINT AND RUST FROM STRUCTURE BEFORE WELDING BONDS.
3. PAINT STRUCTURE AT WELD AFTER BONDS ARE INSTALLED.
4. USE 25.4 x 4.8 x 356 (1" x 3/16" x 14") IRON WELDING ROD PER WELD. WEIGHT OF ROD PER BOND IS .068 kg (0.15 lb).
5. AFTER WELD HAS COOLED , CLEAN STRUCTURE AND WELD WITH WIRE BRUSH, ALSO APPLY FIELD PRIMER. WHEN DRY, APPLY TOP COAT STRUCTURE PAINT.
6. BONDS MUST NOT BE INSTALLED BELOW POINTS SHOWN TO PERMIT RENEWAL OF WORN MEMBERS.
7. THE CONNECTION SHALL BE COVERED BY BLACK UV PROTECTED RUBBER MOLDING. FASTEN MOLDING BY PLASTIC TREE RIVETS (RATCHET FASTENERS).
8. INSTALL ONE BOND PER 11.9 m (39') OF NEGATIVE RAIL, 305 (1'–0") FROM THE SPLICE PLATE END). INSTALL TWO (2) BONDS BETWEEN ISOLATION JOINTS.
9. MXTS 1500–350 CONNECTORS MADE PER COPPER DEVELOPMENT ASSOCIATION (CDA) SPECIFICATION (UNS. NO. C83300).
10. FOR NON–SIGNALED ELEVATED YARD TRACKS INSTALL BONDS AS SHOWN FOR BOTH RUNNING RAILS ON EACH TRACK AT AN INTERVAL NOT TO EXCEED 91.44 m (300').
11. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.
12. ATTACH RAIL TO STRUCTURE BOND TO TOP OF BENT GIRDER. ATTACH TO TRACK STRINGER IF BENT GIRDER NOT AVAILABLE.

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
03	01 AUG 2015	CORRECTED DETAIL 3 TITLE
02	12 MAR 2014	REV. DETAILS 1,4, AND NOTES 8,12
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

RAIL AND CABLE BONDING TO STRUCTURE

STP - 405

FOR INFORMATION ONLY

DESIGN BY:									
DRAWN BY:									
CHECKED BY:									
APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
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DIVISION OF ENGINEERING

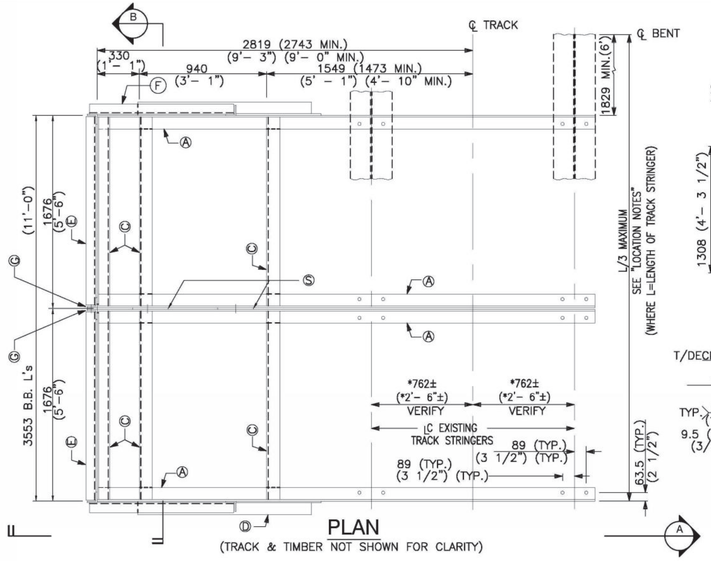
154 N DAMEN AVE - DAMEN GREEN LINE STATION

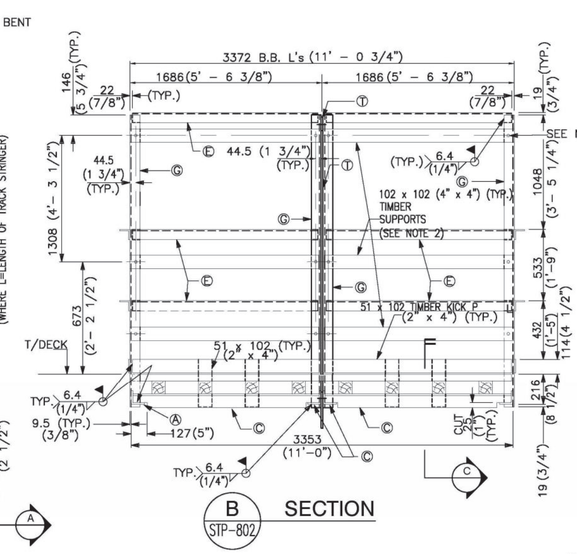
SPEC. NO.

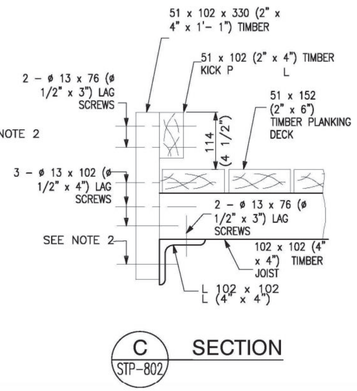
STP-405 RAIL AND CABLE BONDING TO STRUCTURE

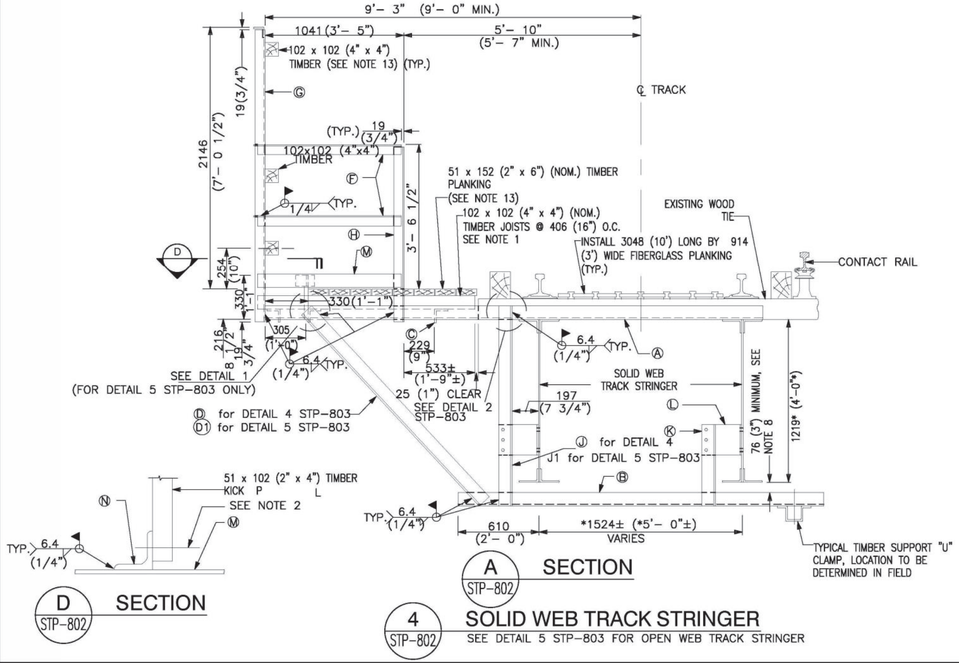
DRAWING NO. **TPE50-27**

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.









NOTES:

1. SEE STP–803 FOR ALL THE NOTES

LOCATION NOTE:

DO NOT POSITION FRAME WITHIN THE MIDDLE THIRD OF A TRACK STRINGER SPAN OR STRADDLE AN EXPANSION BENT.

ONE TRACK INSTALLATION

BILL OF MATERIAL FOR STRUCTURAL STEEL

ITEM	No.	SHAPE	LENGTH	NOTES
A	4	L 102x102x13	L(4"x4"x1/2")	3734* (12'– 3")*	
B	3	L 102x102x13	L(4"x4"x1/2")	2743* (9'– 0")*	
C	6	L 102x102x13	L(4"x4"x1/2")	1646 (5'–4 13/16")	
D	2	L 102x102x13	L(4"x4"x1/2")	1956* (6'– 5")*	
D1	1	L 102x102x13	L(4"x4"x1/2")	1880* (6'– 2")*	
E	6	L 76x76x9.5	L(3"x3"x3/8")	1637 (5'–4 7/16")	
F	4	L 76x76x9.5	L(3"x3"x3/8")	1080 (3'– 6 1/2")	
G	4	L 76x76x9.5	L(3"x3"x3/8")	2362 (7'– 9")	
H	2	L 76x76x9.5	L(3"x3"x3/8")	1295 (4'– 3")	
J	2	L 102x102x13	L(4"x4"x1/2")	1499* (4'– 11")*	
J1	1	L 102x102x13	L(4"x4"x1/2")	1372* (4'– 6")*	
K	3	L 102x102x13	L(4"x4"x1/2")	610* (2'– 0")*	SEE NOTE 9
L	3	WT 305x699	WT (12"x27.5")	229 (0'– 9")	SEE NOTE 9
M	2	BAR 102x9.5	BAR (4"x3/8")	1067 (3'– 6")	KICK PLATE
N	2	L 76x76x9.5	L(3"x3"x3/8")	89 (0'– 3 1/2")	
P	2	L 102x102x13	L(4"x4"x1/2")	2184* (7'– 2")*	
P1	1	L 102x102x13	L(4"x4"x1/2")	2057* (6'– 9")*	
R	2	L 102x102x13	L(4"x4"x1/2")	1930* (6'– 4")*	
R1	1	L 102x102x13	L(4"x4"x1/2")	1778* (5'– 10")*	
S	2	PLATE 9.5x229	PLATE (3/8"x9")	229 (0'– 9")	GUSSET PLATE
T	2	PLATE 9.5x76	PLATE (3/8"x3")	76 (0'– 3")	GUSSET PLATE

* INDICATES DIMENSIONS TO BE VERIFIED, MAY VARY CONSIDERABLY

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK SWITCH PLATFORM FOR TWO ENCLOSURES (SHEET 1)

STP - 802

FOR INFORMATION ONLY

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CHECKED BY:									
APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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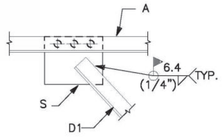
SPEC. NO.

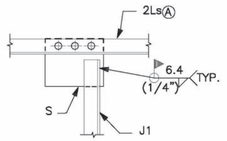
STP-802 ELEVATED TRACK SWITCH PLATFORM FOR TWO ENCLOSURES

DRAWING NO. TPE50-28

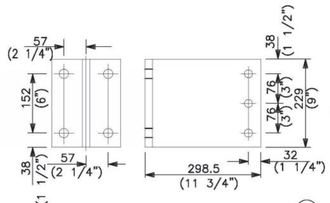
CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



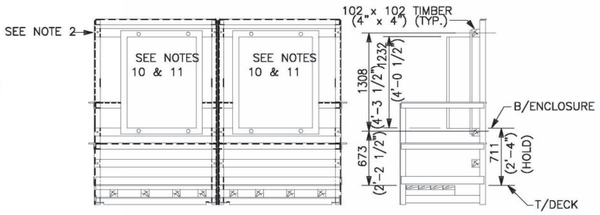
1 STP-803 DETAIL
(FOR DETAIL 5 ONLY)



2 STP-803 DETAIL



3 STP-803 TEE BRACKET DETAIL (L)
(CUT FROM W24X55)



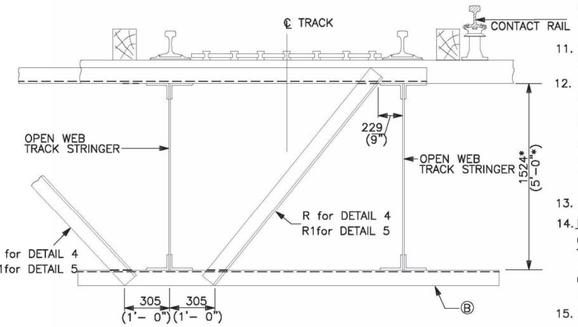
4 STP-803 SWITCH ENCLOSURE TIMBER SUPPORT INSTALLATION DETAIL

ONE TRACK INSTALLATION

BILL OF MATERIAL FOR STRUCTURAL STEEL

ITEM	No.	SHAPE		LENGTH	NOTES
A	4	L 102x102x13	L(4"x4"x1/2")	3734* (12'– 3")*	
B	3	L 102x102x13	L(4"x4"x1/2")	2743* (9'– 0")*	
C	6	L 102x102x13	L(4"x4"x1/2")	1646 (5'–4 13/16")	
D	2	L 102x102x13	L(4"x4"x1/2")	1956* (6'– 5")*	
D1	1	L 102x102x13	L(4"x4"x1/2")	1880* (6'– 2")*	
E	6	L 76x76x9.5	L(3"x3"x3/8")	1637 (5'–4 7/16")	
F	4	L 76x76x9.5	L(3"x3"x3/8")	1080 (3'– 6 1/2")	
G	4	L 76x76x9.5	L(3"x3"x3/8")	2362 (7'– 9")	
H	2	L 76x76x9.5	L(3"x3"x3/8")	1295 (4'– 3")	
J	2	L 102x102x13	L(4"x4"x1/2")	1499* (4'– 11")*	
J1	1	L 102x102x13	L(4"x4"x1/2")	1372* (4'– 6")*	
K	3	L 102x102x13	L(4"x4"x1/2")	610* (2'– 0")*	SEE NOTE 9
L	3	WT 305x699	WT (12"x27.5")	229 (0'– 9")	SEE NOTE 9
M	2	BAR 102x9.5	BAR (4"x3/8")	1067 (3'– 6")	KICK PLATE
N	2	L 76x76x9.5	L(3"x3"x3/8")	89 (0'– 3 1/2")	
P	2	L 102x102x13	L(4"x4"x1/2")	2184* (7'– 2")*	
P1	1	L 102x102x13	L(4"x4"x1/2")	2057* (6'– 9")*	
R	2	L 102x102x13	L(4"x4"x1/2")	1930* (6'– 4")*	
R1	1	L 102x102x13	L(4"x4"x1/2")	1778* (5'– 10")*	
S	2	PLATE 9.5x229	PLATE (3/8"x9")	229 (0'– 9")	GUSSET PLATE
T	2	PLATE 9.5x76	PLATE (3/8"x3")	76 (0'– 3")	GUSSET PLATE

* INDICATES DIMENSIONS TO BE VERIFIED, MAY VARY CONSIDERABLY



5 STP-803 OPEN WEB TRACK STRINGER
(FOR REMAINING INFORMATION SEE SOLID WEB TRACK STRINGER, STP–802)

LOCATION NOTE:

DO NOT POSITION FRAME WITHIN THE MIDDLE THIRD OF A TRACK STRINGER SPAN OR STRADDLE AN EXPANSION BENT.

NOTES:

1. BOLT TIMBER JOISTS TO ANGLES ONLY. USE ø 9.5 (3/8") HOT DIP GALVANIZED CARRIAGE BOLTS WITH HEAVY HEX LOCK NUTS. COUNTERBORE 25 (1") DEEP. BACK FILL COUNTER BORE WITH "DUCT SEAL" OR EQUAL.
2. THROUGH BOLT TIMBER SUPPORTS TO ANGLE FRAME USING ø 19 (3/4") A307 BOLTS, NUTS AND TWO WASHERS IN ø 21 (13/16") HOLES.
3. ALL HOLES MADE INTO TRAIN CARRYING MEMBERS SHALL BE DRILLED FULL SIZE. BURNING AND REAMING OF HOLES SHALL NOT BE ALLOWED.
4. FASTENERS USED FOR PLATFORM FRAME ASSEMBLY OR STRINGER CONNECTIONS SHALL CONSIST OF HIGH STRENGTH STEEL ø 22 (7/8") BOLTS, WASHERS AND NUTS INSTALLED IN ø 24 (15/16") HOLES UNLESS OTHERWISE NOTED. THESE FASTENERS SHALL CONFORM TO LATEST EDITION ASTM SPECIFICATIONS A325, F436 AND A563 RESPECTIVELY. SEE SPECIFICATIONS FOR METHOD OF FASTENER INSTALLATION.
5. DO NOT WELD SWITCH PLATFORM TO STRUCTURE.
6. ALL FRAME CONNECTIONS SHALL BE SHOP WELDED ALL AROUND WITH 6.4 (1/4") CONTINUOUS FILLET WELDS USING E70 ELECTRODES UNLESS OTHERWISE NOTED.
7. ALL STEEL SHALL BE ASTM A36 STRUCTURAL STEEL.
8. WHEN PREVAILING CONDITIONS REQUIRE: ATTACH ANGLES (B) DIRECTLY TO BOTTOM FLANGE OF TRACK STRINGER WITH HIGH STRENGTH BOLTS. ALSO ELIMINATE SUPPORT TEE BRACKET (L) AND ANGLES (J) AND (K). OBTAIN APPROVAL FROM CTA PRIOR TO COMMENCEMENT OF THIS WORK.
9. PROVIDE ONE ADDITIONAL PIECE OF (K) AND (L) FOR EACH TRACK CROSSED. EXTEND PIECE (B) AS REQUIRED.
10. MOUNTING OF TIMBER SUPPORTS SHOWN ARE FOR TYPICAL SWITCH BOX INSTALLATION. ANY DEVIATION IN SWITCH BOX DIMENSION WILL REQUIRE MODIFICATIONS OF THE PLATFORM FRAMING AND LOCATION OF THE TIMBER SUPPORTS.
11. MOUNTING BOLTS FOR ENCLOSURE SHALL BE ø 13 (1/2") STAINLESS STEEL CONFORMING TO ASTM A193. SQUARE PLATE WASHERS, LOCK WASHERS AND NUTS SHALL BE STAINLESS STEEL.
12. ALL NEW MISCELLANEOUS STEEL SHALL RECEIVE THE FOLLOWING:
    A. ONE (1) SHOP COAT AND ONE (1) FIELD COAT OF 2–PART ALUMINUM PIGMENTED EPOXY MASTIC, 5 MIL DFT PER COAT.
    B. ONE (1) FIELD FINISH COAT OF ALIPHATIC ACRYLIC URETHANE, 1.5 MILS DFT. COLOR TO MATCH THAT OF EXISTING TRACK STRINGER.
    C. SHOP AND FIELD CONTACT SURFACES, OR SURFACES WITHIN 51 (2") OF FIELD WELDS, SHALL NOT BE PAINTED IN THE SHOP.
    D. ALL PAINTS USED SHALL BE PRODUCTS OF THE SAME MANUFACTURER, AND SHALL BE APPLIED IN ACCORDANCE WITH PAINT MANUFACTURER'S PUBLISHED INSTRUCTIONS AND RECOMMENDATIONS
13. ALL TIMBER SHALL BE TREATED WITH AWPA TYPE P1(89) FOR CREO–PINE.
14. HAZARDOUS WORKING CONDITIONS:
    CAUTION ALL EMPLOYEES OF THE PRESENCE OF CONTACT RAIL (600 VOLTS DC) AND MOVING TRAINS ON THE CTA TRACKS. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO LIFE OR PROPERTY THROUGH CONTACT WITH THE ELECTRICAL OR OPERATION SYSTEMS. ANY CONTACT WITH LIVE CONTACT RAIL OR "LIVE" PORTIONS OF TRAIN UNDER–CARRIAGE MAY RESULT IN A SEVERE BURN OR DEATH.
15. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

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IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK SWITCH PLATFORM FOR 2 ENCLOSURES (SHEET 2)

STP - 803

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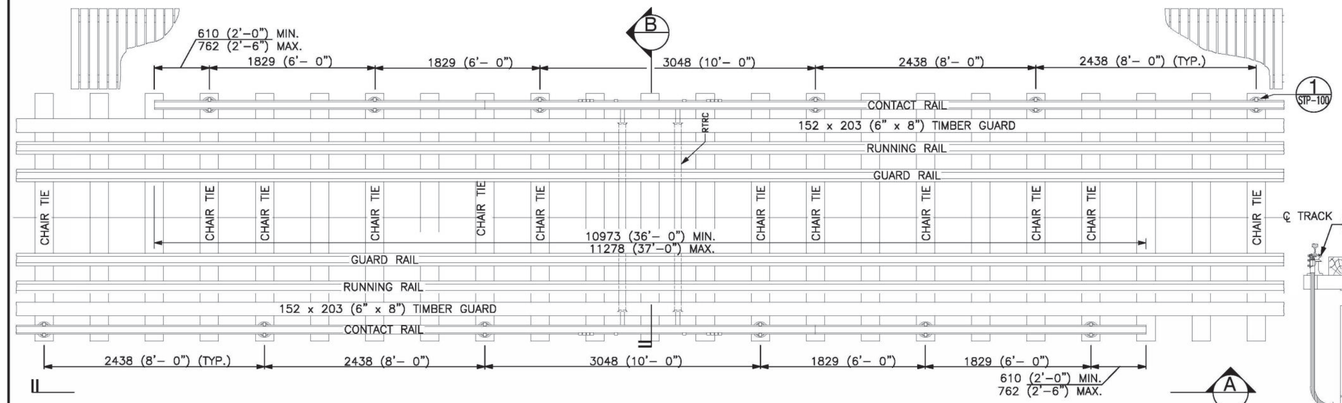
STP-803 ELEVATED TRACK SWITCH PLATFORM FOR TWO ENCLOSURES

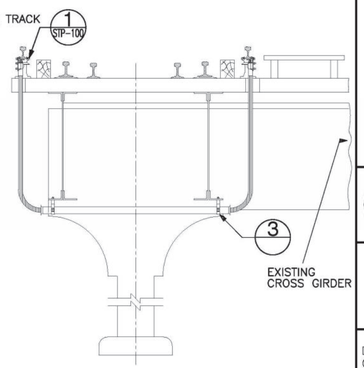
CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE50-29**

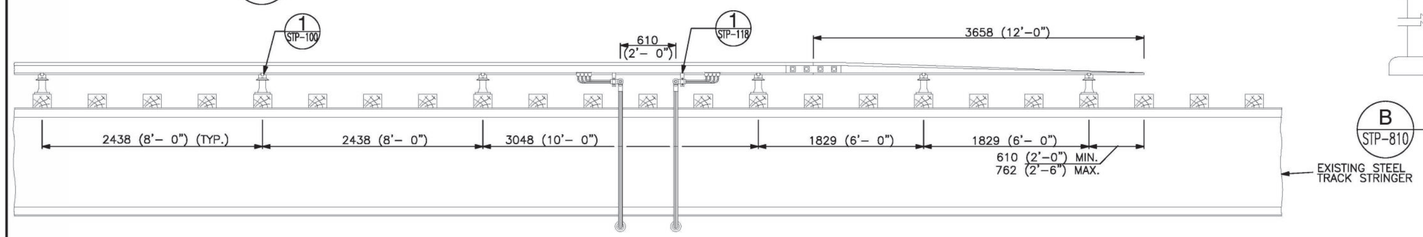
REVISION NO.



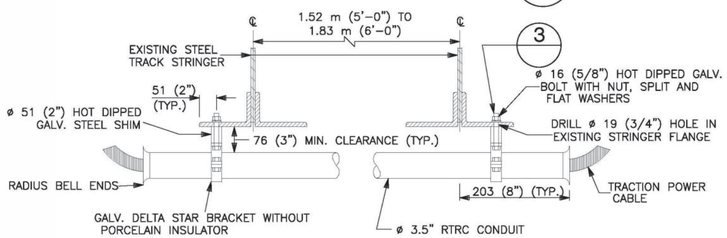


B
STP–810
SECTION

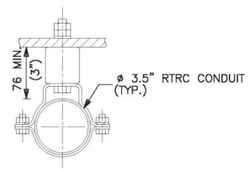
1 STP–810 DETAIL OF CONTACT RAIL TRANSPOSITION WITH 3.66 m (12') INCLINE



A
STP–810
SECTION



2
STP–810
DETAIL



3
STP–810
DETAIL

NOTES:

1. BASE CONTACT RAIL SHOWN (ALSO APPLICABLE TO ALUMINUM CONTACT RAIL).
2. FOR CONTACT RAIL INSULATOR CHAIR SPACING SEE SHEET STP–105.
3. ALL HOLES IN EXISTING TRAIN CARRYING MEMBERS SHALL BE DRILLED FULL SIZE. BURNING AND REAMING OF HOLES SHALL NOT BE ALLOWED.
4. IN ALL CASES FEEDER CABLE TAPS SHALL BE INSTALLED ON ℄ OF SPACE BETWEEN TIES AS SHOWN. ALLOW SUFFICIENT SLACK IN FEEDER CABLE TAP FOR CONTACT RAIL MOVEMENTS.
5. RUNNING RAIL AND TIMBER GUARD NOT SHOWN ON SECTION "A" FOR CLARITY PURPOSES ONLY.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

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STANDARD TRACTION POWER
DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK
CONTACT RAIL TRANSPOSITION
12' INCLINES

STP - 810

FOR INFORMATION ONLY

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APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

STP-810 ELEVATED TRACK CONTACT RAIL TRANSPOSITION 12' INCLINES

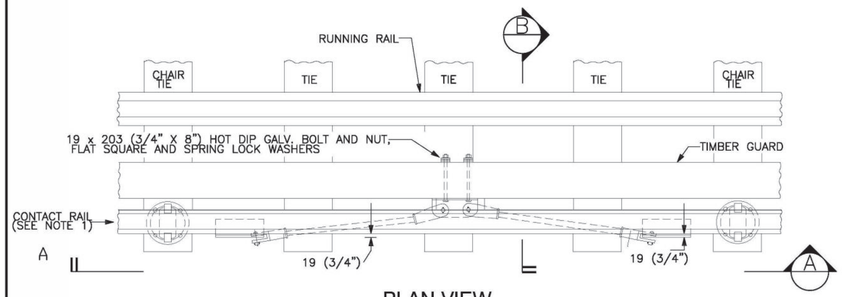
CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

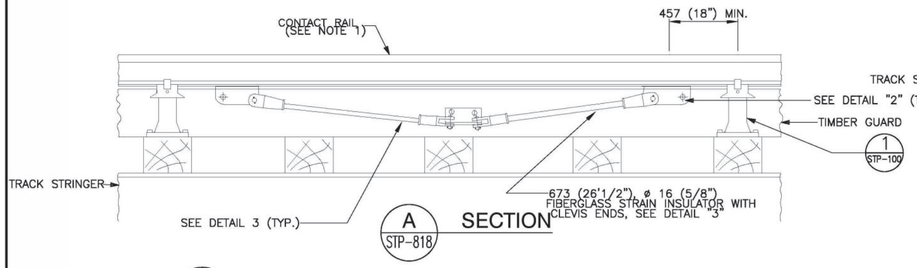
DRAWING NO.
TPE50-30

REVISION NO.

C:\Users\erminabellal\Documents\ELEC-DGL_smathew@facetengineering.net.rvt
1/27/2020 1:27:08 PM

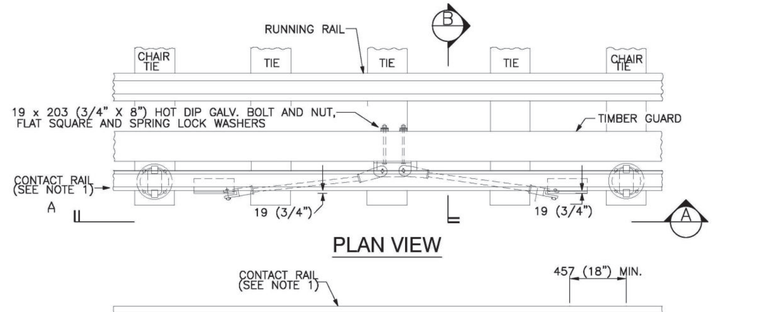


PLAN VIEW

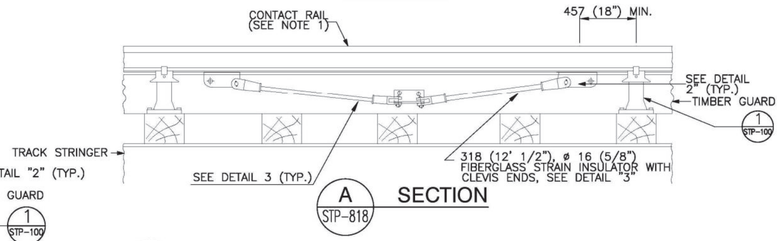


A STP-818 SECTION

1 STP-818 DETAIL OF CONTACT RAIL ANCHOR ASSEMBLY

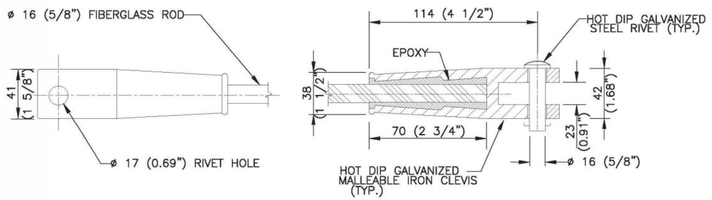


PLAN VIEW



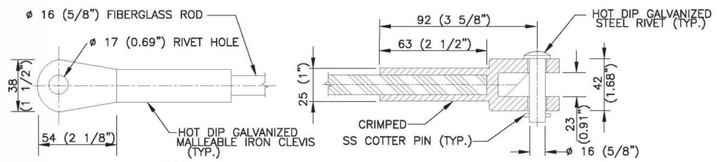
A STP-818 SECTION

5 STP-818 DETAIL OF CONTACT RAIL ANCHOR ASSEMBLY FOR SHORT LENGTH OF RAIL (LESS THAN 25FT)

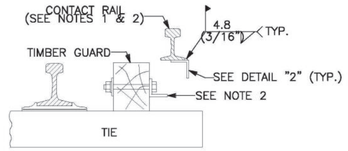


2 STP-818 DETAIL

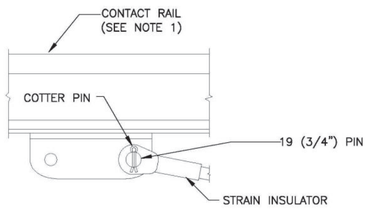
MATERIAL – 76 x 76 x 9.5 (3" x 3" x 3/8") ANGLE



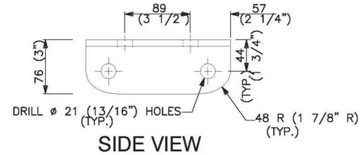
3 STP-818 DETAIL OF CLEVIS END



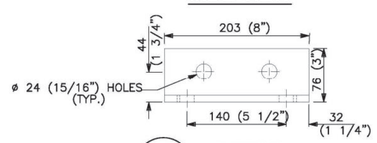
B STP-818 SECTION



4 STP-818 DETAIL OF STRAIN INSULATOR AT MOUNTING ANGLE



SIDE VIEW



NOTES:

1. BASE CONTACT RAIL SHOWN (ALSO APPLICABLE TO ALUMINUM CLAD RAIL).
2. CONTACT RAIL INSULATOR CHAIR AND FIBERGLASS ROD NOT SHOWN ON SECTION "B" FOR CLARITY PURPOSES.
3. CONTACT RAIL ANCHOR TO BE INSTALLED ON CONTACT RAIL AT MIDPOINT BETWEEN POINT OF INCLINES ±610 (±2'-0").
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

ELEVATED TRACK CONTACT RAIL ANCHOR INSTALLATION

STP - 818

FOR INFORMATION ONLY

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

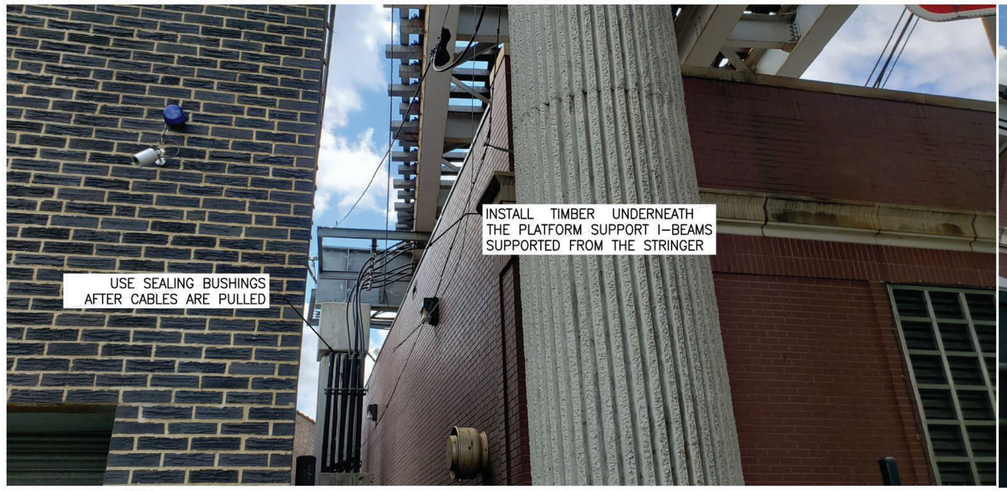
STP-818 ELEVATED TRACK CONTACT RAIL ANCHOR INSTALLATION

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. TPE50-31

REVISION NO.



1 DETAIL – CABLE RISER WASHINGTON SUBSTATION EAST SIDE
SCALE: NTS

2 DETAIL – WASHINGTON SUBSTATION WEST SIDE
SCALE: NTS

NOTES:

1. REFER TO DRAWING TPE10-02 FOR CABLE PLAN IN THIS AREA.

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

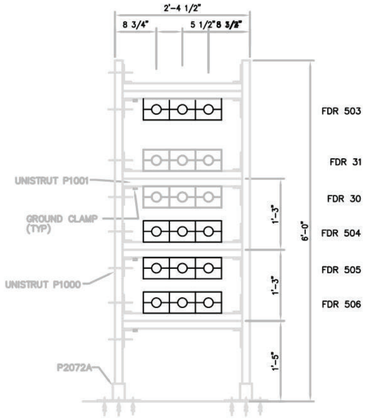
WASHINGTON BLVD SUBSTATION
POSITIVE CABLE RISER DETAILS

DRAWING NO.
TPE50-35

CDOT PROJECT D-7-135

DATE: 11/01/2019

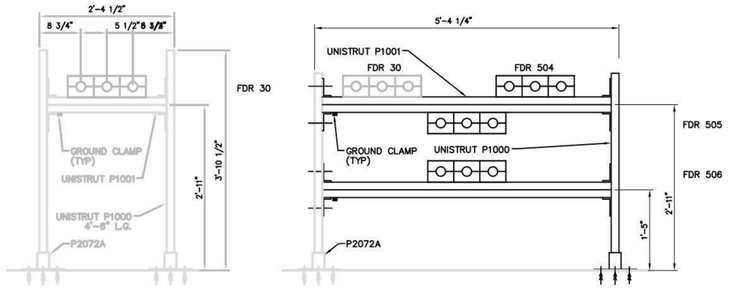
REVISION NO.



1 / * DETAIL OF RACK A

SCALE: 3/4"=1'-0"

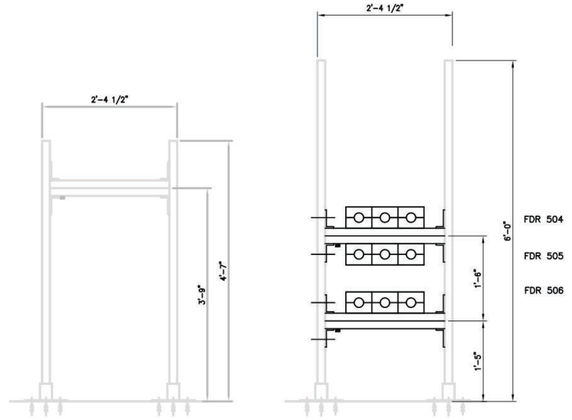
* – DWG TPE10-09



2 / * DETAIL OF RACK B

SCALE: 3/4"=1'-0"

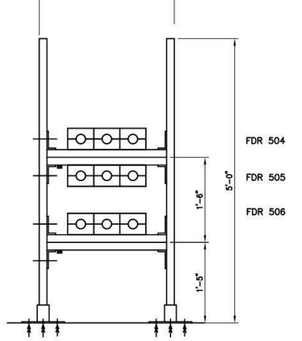
* – DWG TPE10-09



3 / * 4 / * DETAIL OF RACK C & D

SCALE: 3/4"=1'-0"

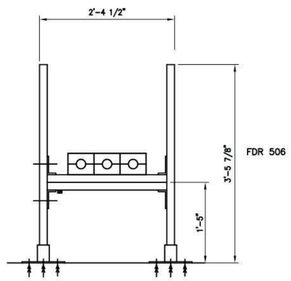
* – DWG TPE10-09



5 / * DETAIL OF NEW RACK E

SCALE: 3/4"=1'-0"

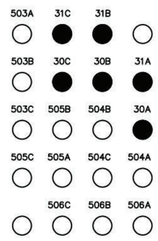
* – DWG TPE10-09



6 / * DETAIL OF NEW RACK F

SCALE: 3/4"=1'-0"

* – DWG TPE10-09



7 / * DETAIL OF WALL SLEEVES

SCALE: NTS

* – DWG TPE10-09

● – EXISTING CABLE

○ – NEW CABLE

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

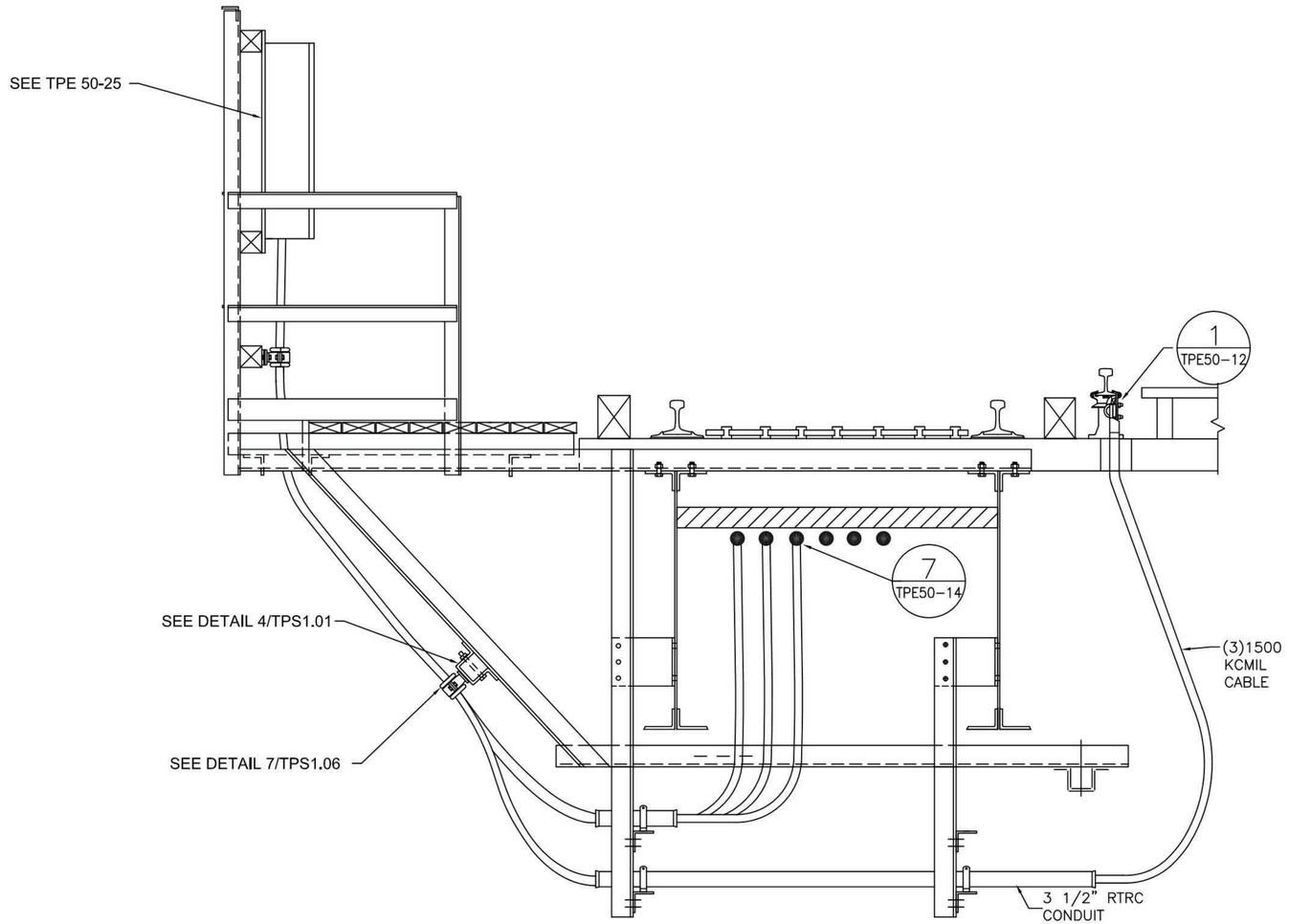
WASHINGTON BLVD SUBSTATION
CABLE LAYOUT SECTIONS AND DETAILS

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE50-40**

REVISION NO.



1 TPE50–41 PLATFORM DETAIL 1

NOTES:

1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOLS LIST SEE DWG TPE50–00.
2. CONNECT NEW STEEL TO EXISTING CTA STRUCTURE WITH 7/8" H.S.BOLTS. ALL OTHER CONNECTIONS SHOULD BE MADE USING 3/4" H.S.BOLTS.
3. ALL CLEARANCES TO GRADE SHALL BE 14'–6" MINIMUM (TYPICAL ALL CASES).
4. HIGH STRENGTH BOLTS SHALL BE USED FOR ALL STRUCTURAL JOINTS. TORQUING AND TESTING THE BOLTS SHALL BE AS PER THE STRUCTURAL STEEL SPECIFICATIONS.

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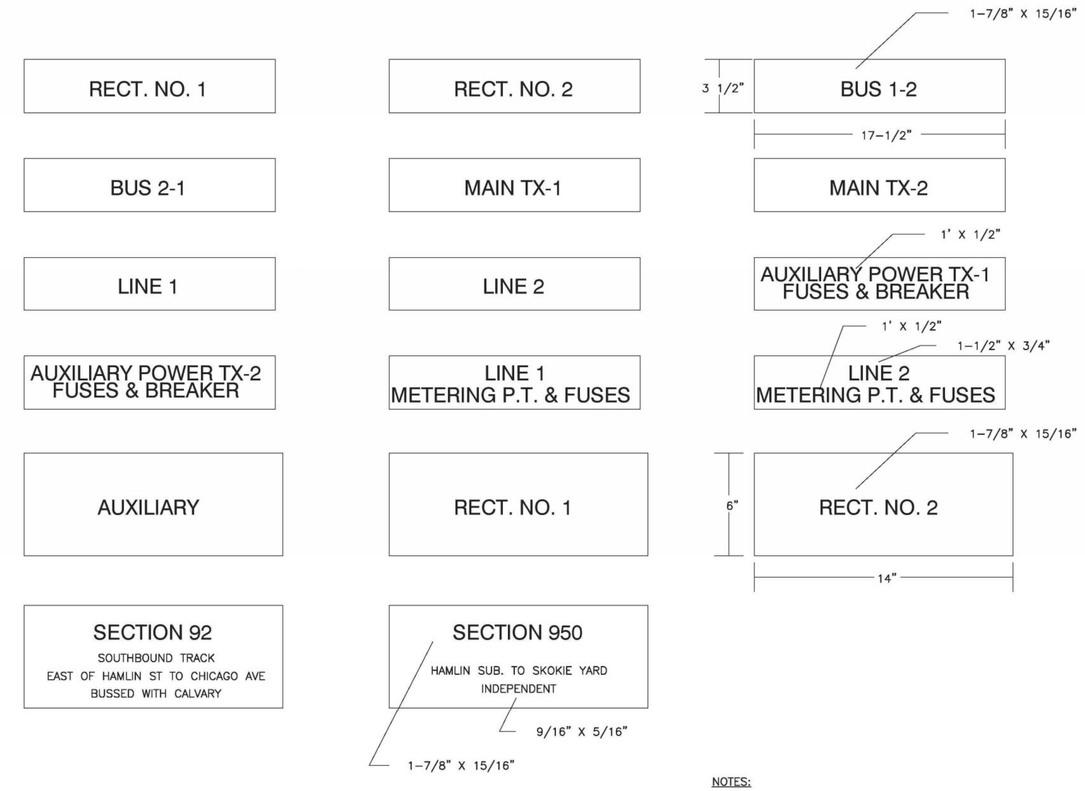
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
TRACTION POWER DETAILS

DRAWING NO.
TPE50-41

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



NOTES:

1. FRONT AND BACK TAGS FOR DC BREAKER SECTIONS, RECTIFIER DC BREAKERS AND RECTIFIERS SHALL BE 14 INCHES BY 6 INCHES BY ⅛ INCH, 3 LAYERS PLASTIC WITH SUNLIGHT YELLOW SURFACE COLOR ON BOTH SIDES AND BLACK CENTER CORE(BLACK LETTERING).

2. FRONT AND BACK TAGS FOR AC SWITCHGEAR UNITS AND RECTIFIER TRANSFORMERS SHALL BE 17 ½ INCHES BY 3 ½ INCHES BY ⅛ INCH, 3 LAYERS PLASTIC WITH CARDINAL RED SURFACE COLOR ON BOTH SIDES AND WHITE CENTER–CORE (WHITE LETTERING).

3. THE TAGS SHALL BE MOUNTED WITH MACHINE SCREWS. USE OF SELF TAPPING SCREWS, RIVITS OR ADHESIVES WILL NOT BE PERMITTED.

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STANDARD TRACTION POWER DRAWINGS

IN CHARGE	S. MATHEW
APPROVED BY	J. HARPER
CHECKED BY	M. PEREZ / R. JAMES
DESIGNED BY	CTA
DRAWN BY	CTA
PROJECT NO	
FILE NAME	

MARK	DATE	DESCRIPTION
01	01 AUG 2013	CAD FORMATTED
00	01 MAR 2013	NEW STANDARD

LOCATION IDENTIFIER:

SUBSTATION NAMETAG STANDARDS

STP - 504

FOR INFORMATION ONLY

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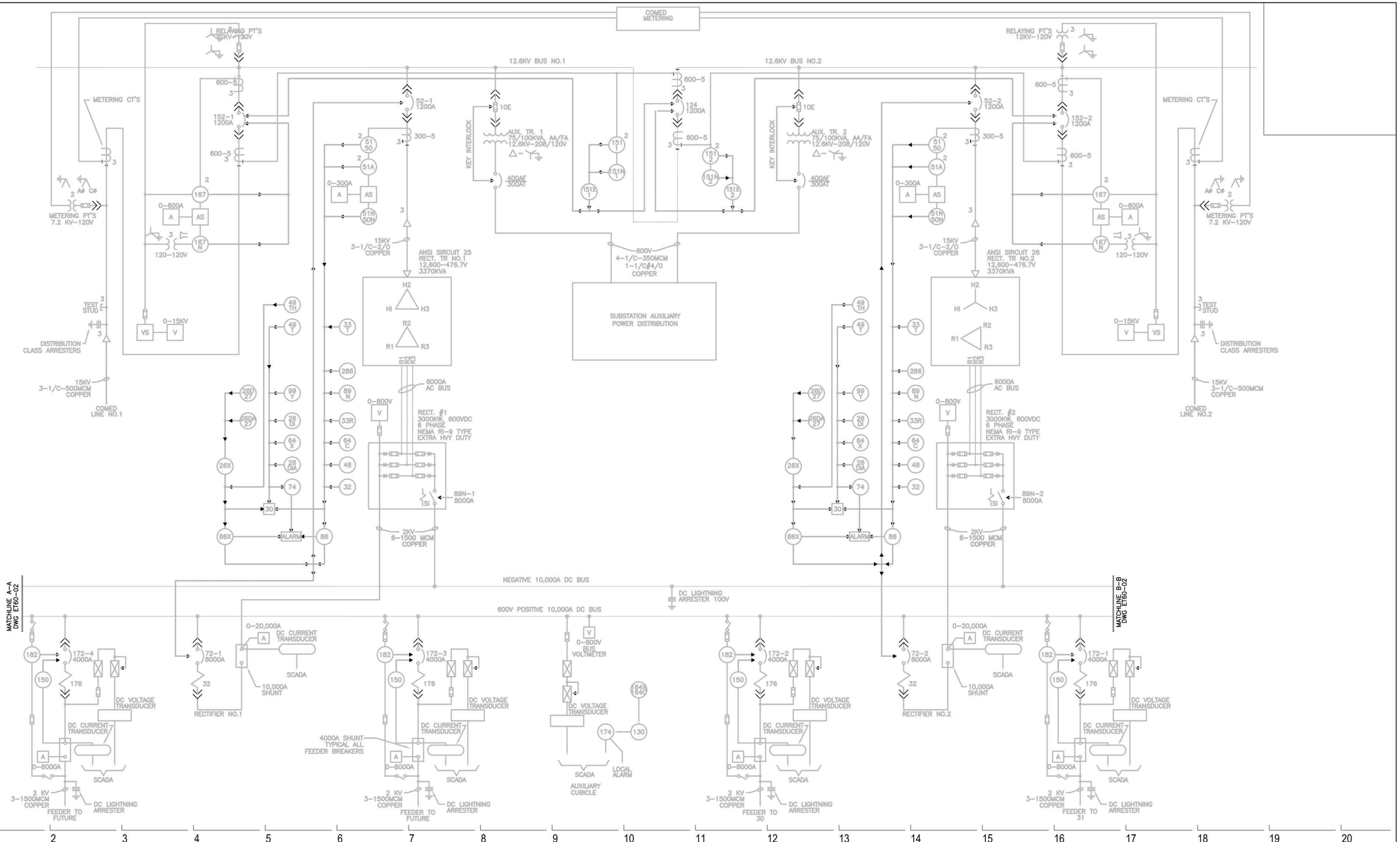
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

STP-504 SUBSTATION NAMETAG STANDARDS

DRAWING NO.
TPE50-42

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.



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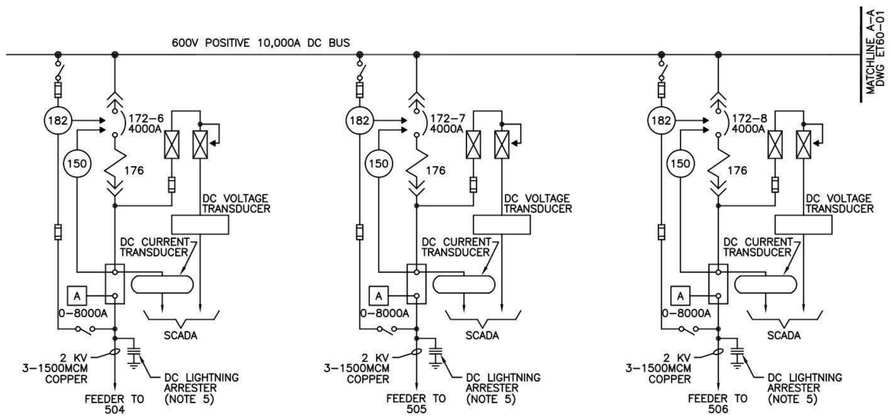
154 N DAMEN AVE - DAMEN GREEN LINE STATION

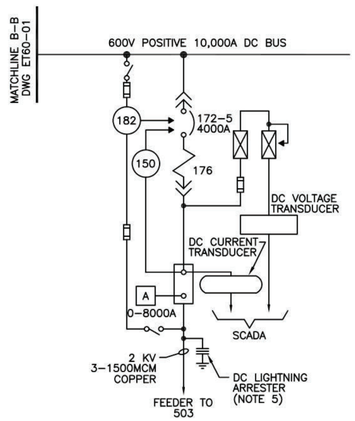
WASHINGTON BLVD SUBSTATION
EXISTING SINGLE LINE DIAGRAM

SPEC. NO.

DRAWING NO.
TPE60-01

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.





NOTES:

1. FOR DEVICE IDENTIFICATION SEE SHEET ET01-01.
2. ALL EQUIPMENT NUMBERING IS PRELIMINARY. CONTRACTOR WILL BE PROVIDED WITH A FINAL NUMBERING SEQUENCE FROM THE AUTHORITY.
3. ALL EQUIPMENT SHOWN IS NEW.
4. DEVICE QUANTITY IS "ONE", UNLESS OTHERWISE SHOWN.
5. DC LIGHTNING ARRESTERS TO BE INSTALLED OUTSIDE OF DC SWITCHGEAR (970V DC ARRESTERS, UNLESS OTHERWISE INDICATED).

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

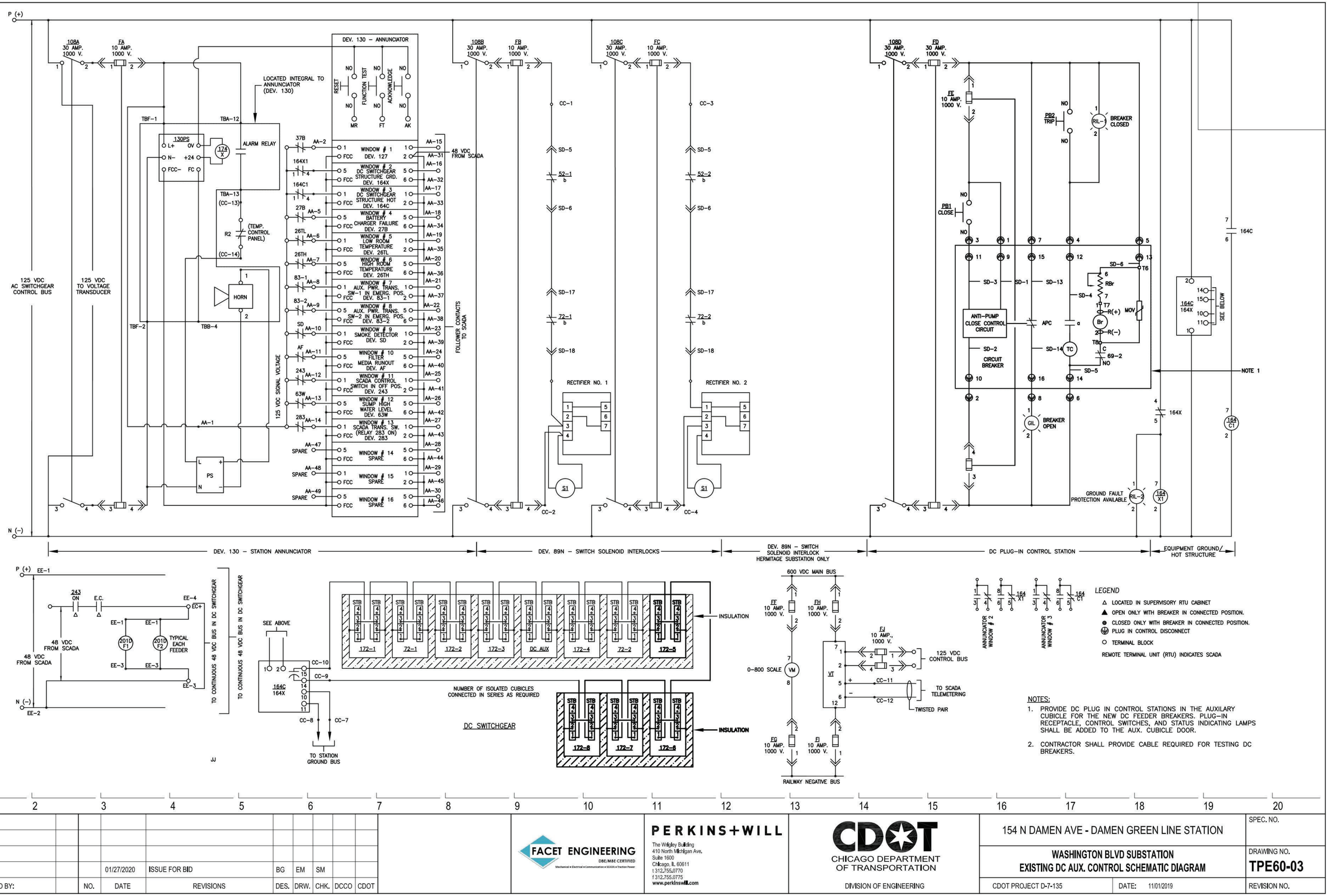
WASHINGTON BLVD SUBSTATION
EXISTING SINGLE LINE DIAGRAM MODIFICATION

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO.
TPE60-02

REVISION NO.



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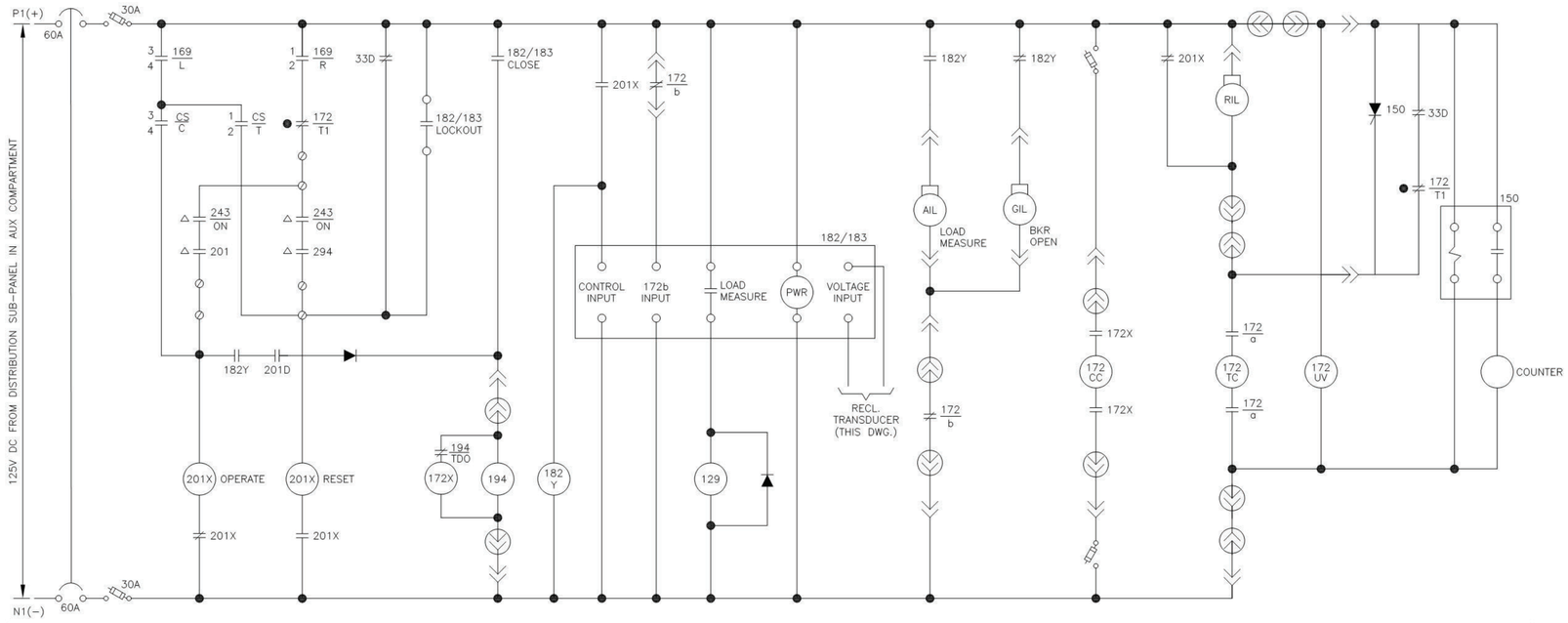
154 N DAMEN AVE - DAMEN GREEN LINE STATION

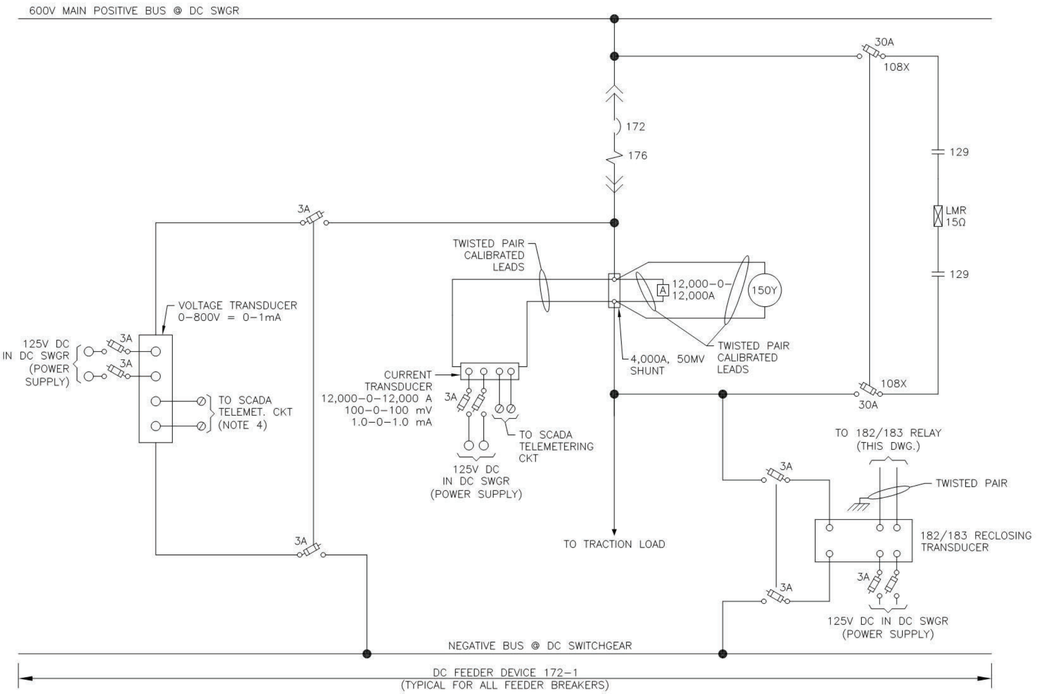
SPEC. NO.

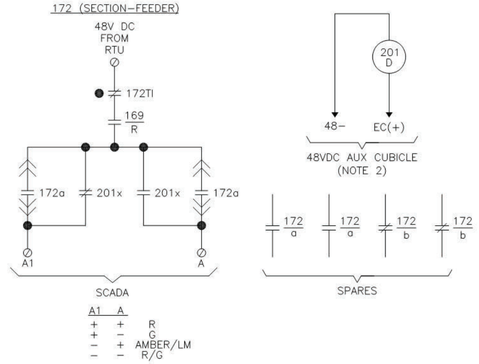
WASHINGTON BLVD SUBSTATION
EXISTING DC AUX. CONTROL SCHEMATIC DIAGRAM

DRAWING NO.
TPE60-03

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.







SELECTOR SWITCH
DEVICE-43

CONTACTS		POSITION	
		REMOTE	LOCAL
1-2	R	X	
3-4	L		X
5-6	R	X	
7-8	L		X
9-10	R	X	
11-12	L		X

NON-SPRING RETURN.
REMOTE POSITION AT 12 O' CLOCK.
LOCAL POSITION CLOCKWISE WHEN FACING FRONT OF SWITCH.

CONTROL SWITCH
DEVICE-CS

CONTACTS		POSITION			
		TRIP	OFF AFTER TRIP	OFF AFTER CLOSE	CLOSE
1-2	T	X			
3-4	C				X

SPRING RETURN TO "OFF"

NOTE:

1. FOR NOTES SEE DWG TPE01-01.
2. THE EMERGENCY CLOSE CIRCUIT FROM RTU ARE WIRED THROUGH THE AUX CUBICLE.

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DRAWN BY:									
CHECKED BY:									
APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
SCHEMATIC DIAGRAM FEEDER BREAKER

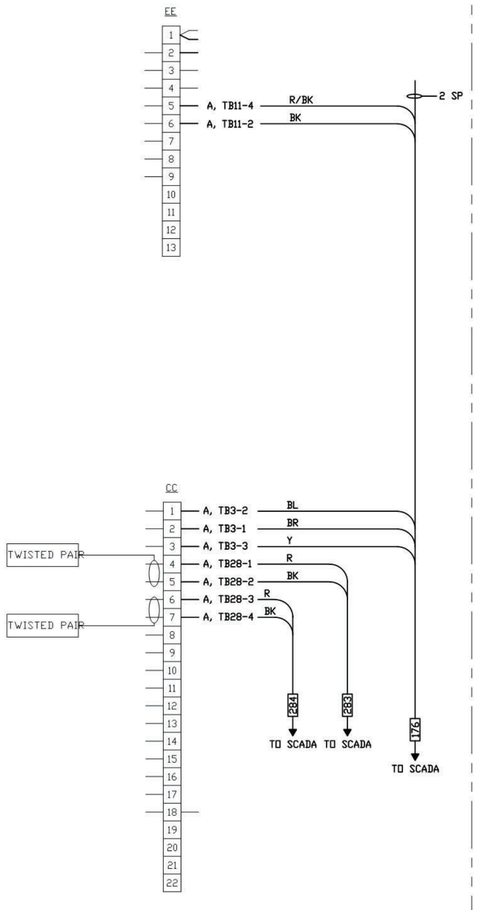
DRAWING NO.
TPE60-04

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

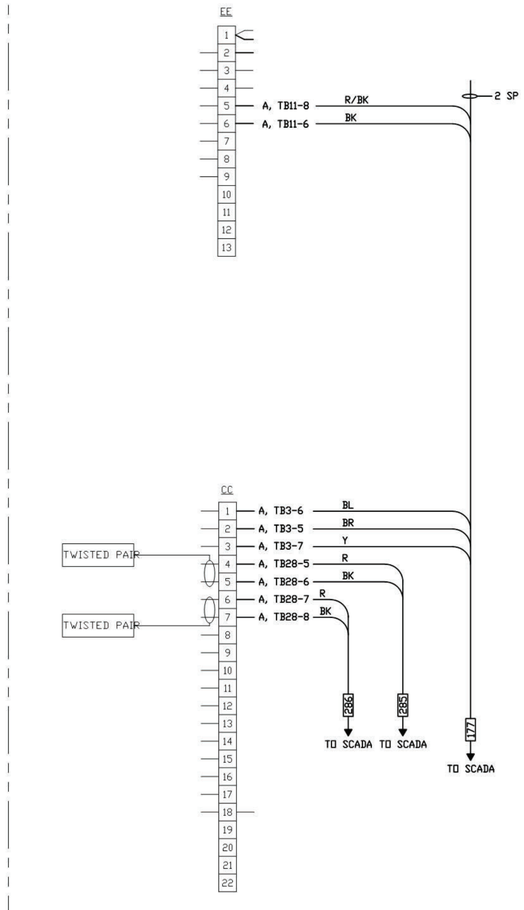
NOTES:

1. INTERCONNECTION DRAWING PROVIDED IS FOR GENERAL REFERENCE ONLY. THE EQUIPMENT MANUFACTURER SHALL MODIFY AS NEEDED ACCORDING TO THE ACTUAL EQUIPMENT AND TERMINAL BLOCKS SUPPLIED.

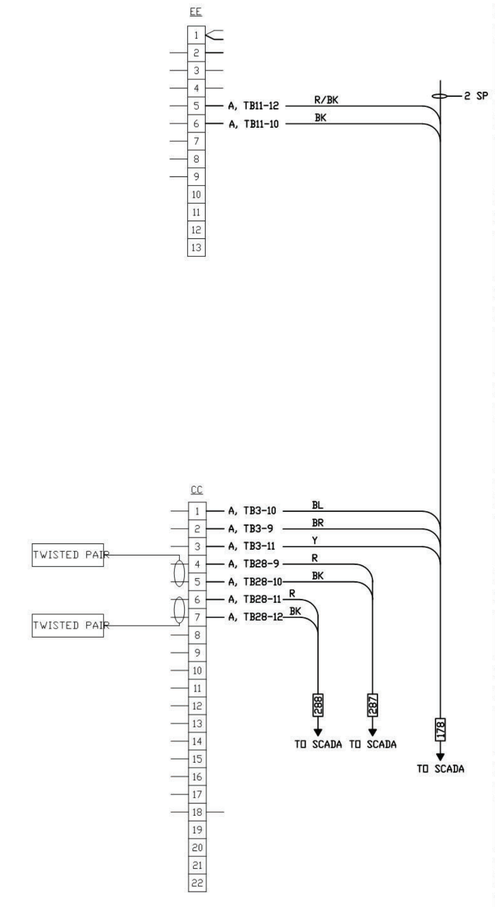
NEW DC FEEDER BREAKER 172-5
DC-8
FEEDER 503



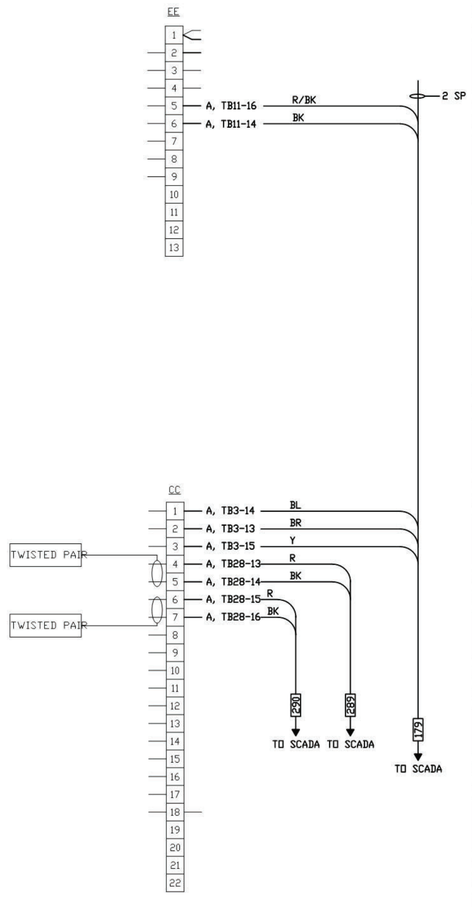
NEW DC FEEDER BREAKER 172-6
DC-9
FEEDER 504



NEW DC FEEDER BREAKER 172-7
DC-10
FEEDER 505



NEW DC FEEDER BREAKER 172-8
DC-11
FEEDER 506



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154 N DAMEN AVE - DAMEN GREEN LINE STATION

WASHINGTON BLVD SUBSTATION
INTERCONNECTION DIAGRAM FOR NEW DC SWGR CUBICLES

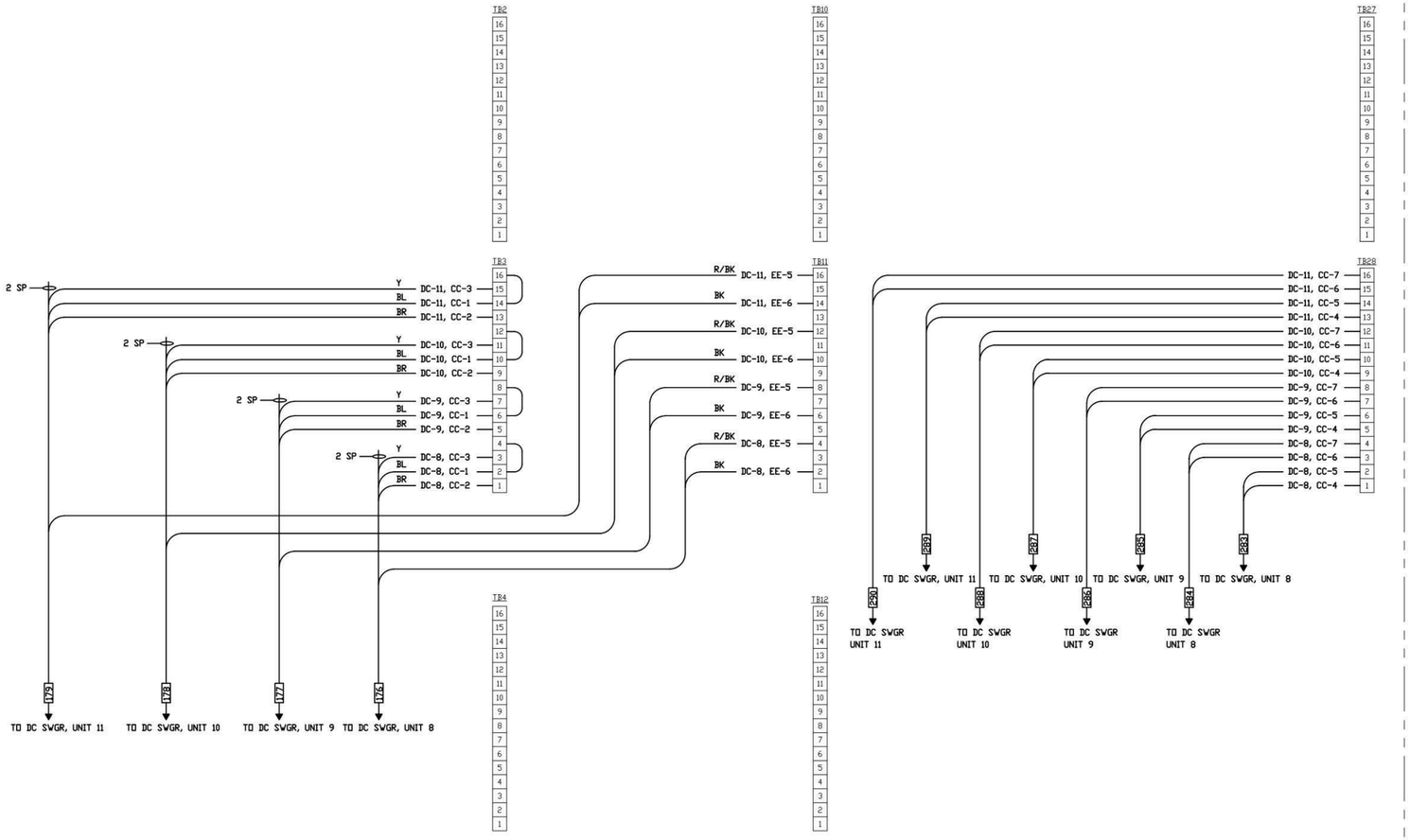
CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO. **TPE60-05**

REVISION NO.

SCADA-A



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154 N DAMEN AVE - DAMEN GREEN LINE STATION

WASHINGTON BLVD SUBSTATION
INTERCONNECTION DIAGRAM SCADA CABINET DRAWING

CDOT PROJECT D-7-135 | DATE: 11/01/2019

SPEC. NO.

DRAWING NO.
TPE60-06

REVISION NO.

NOTES:

1. CONTRACTOR SHALL FILL IN CABLE CUTTING LENGTHS AFTER INSTALLATION.
2. VW-1 INDICATES FLAME RETARDANT CABLE.
3. 15KV, EPR INSULATION, WITH OVERALL PVC JACKET, SHIELDED, 100% INSULATION LEVEL, OKOGUARD, OKOSEAL,TYPE MV90.
4. RUN GROUND WIRES TO CABLE TRAY AND CONNECT TO 500KCMIL BARE COPPER CABLE IN TRAY AT SEPARATE LOCATIONS 1'-0" OR MORE APART.

CABLE NO.	FUNCTION	CABLE SCHEDULE FROM	CABLE SCHEDULE TO	DESCRIPTION NO.&SIZE OF CABLE	DESCRIPTION INSUL. & COVER	DESCRIPTION RATED VOLT.	LENGTH APPROX (NOTE 2)
1	STATION COMED SUPPLY	LINE 1	AC SWGR UNIT #1	650 MCM 02-3	XLPE	15KV	
2	STATION COMED SUPPLY	LINE 2	AC SWGR UNIT #9	650 MCM 02-3	XLPE	15KV	
3	RECT. #1 SUPPLY	AC SWGR UNIT #3	RECT. TRANSFORMER #1	3-1/C#2/0	EPR/PVC NOTE 4	15KV	56
4	RECT. #2 SUPPLY	AC SWGR UNIT #7	RECT. TRANSFORMER #2	3-1/C#2/0	EPR/PVC NOTE 4	15KV	61
5	NOT USED						
6	RECT.#1 POSITIVE	RECTIFIER #1	DC SWGR UNIT #2	6-1/C 1500KCM	RHW-2	2KV	45
7	RECT.#1 NEGATIVE	RECTIFIER #1	STATION NEGATIVE BUS	6-1/C 1500KCM	RHW-2	2KV	30
8	RECT.#2 POSITIVE	RECTIFIER #2	DC SWGR UNIT #6	6-1/C 1500KCM	RHW-2	2KV	48
9	RECT.#2 NEGATIVE	RECTIFIER #2	STATION NEGATIVE BUS	6-1/C 1500KCM	RHW-2	2KV	16
10	NOT USED						
11	NOT USED						
12	NOT USED						
13	NOT USED						
14	NOT USED						
15	NOT USED						
16	FEEDER POS. (30)	DC SWGR UNIT #5	SWITCH ENCLOSURE 30	3-1/C 1500KCM	RHW-2	2KV	95
17	FEEDER POS. (30)	SWITCH ENCLOSURE 30	CONTACT RAIL	3-1/C 1500KCM	RHW-2	2KV	20
18	FEEDER POS. (31)	DC SWGR UNIT #7	SWITCH ENCLOSURE 31	3-1/C 1500KCM	RHW-2	2KV	95
19	FEEDER POS. (31)	SWITCH ENCLOSURE 31	CONTACT RAIL	3-1/C 1500KCM	RHW-2	2KV	17
20	FEEDER POS. (503)	DC SWGR UNIT #503	SWITCH ENCLOSURE 503	3-1/C 1500KCM	RHW-2	2KV	
21	FEEDER POS. (503)	SWITCH ENCLOSURE 503	CONTACT RAIL	3-1/C 1500KCM	RHW-2	2KV	
22	FEEDER POS. (504)	DC SWGR UNIT #504	SWITCH ENCLOSURE 504	3-1/C 1500KCM	RHW-2	2KV	
23	FEEDER POS. (504)	SWITCH ENCLOSURE 504	CONTACT RAIL	3-1/C 1500KCM	RHW-2	2KV	
24	FEEDER POS. (505)	DC SWGR UNIT #505	SWITCH ENCLOSURE 505	3-1/C 1500KCM	RHW-2	2KV	
25	FEEDER POS. (505)	SWITCH ENCLOSURE 505	CONTACT RAIL	3-1/C 1500KCM	RHW-2	2KV	
26	FEEDER POS. (506)	DC SWGR UNIT #506	SWITCH ENCLOSURE 506	3-1/C 1500KCM	RHW-2	2KV	
27	FEEDER POS. (506)	SWITCH ENCLOSURE 506	CONTACT RAIL	3-1/C 1500KCM	RHW-2	2KV	
28	NOT USED						
29	NOT USED						
30	NOT USED						
31	NOT USED						
32	NEG.FEEDERS (N1 TO N9)	STATION NEGATIVE BUS	TRACK STRINGERS	9-1/C1500KCM	RHW-2	2KV	35
33	NOT USED						
34	NOT USED						
35	NOT USED						
36	NOT USED						
37	NOT USED						
38	NOT USED						
39	NOT USED						
40	NOT USED						

CABLE NO.	FUNCTION	CABLE SCHEDULE FROM	CABLE SCHEDULE TO	DESCRIPTION NO.&SIZE OF CABLE	DESCRIPTION INSUL. & COVER XHHW	DESCRIPTION RATED VOLT.	LENGTH APPROX (NOTE 2)
41	AC AUX.POWER-NORMAL	AC SWGR UNIT #4	PP1 NORMAL BUS	4-1/C350KCM 1-1/C #3/0	XHHW	600V	50
42	AC AUX.POWER-NORMAL	PP1 NORMAL BUS	AUTO TRANS.SW.ATS-1	4-1/C #3/0 1-1/C #2	XHHW	600V	20
43	AC AUX.POWER-NORMAL	AUTO TRANS.SW.ATS-1	PP1A EMERGENCY BUS	4-1/C #3/0 1-1/C #2	XHHW	600V	15
44	AC AUX.POWER-EMERG.	PP1 NORMAL BUS	AUTO TRANS,SW.ATS-2	4-1/C #3/0 1-1/C #2	XHHW	600V	18
45	AC AUX.POWER-NORMAL	AC SWGR UNIT #6	PP2 NORMAL BUS	4-1/C350KCM 1-1/C #3/0	XHHW	600V	60
46	AC AUX.POWER-NORMAL	PP2 NORMAL BUS	AUTO TRANS.SW.ATS-2	4-1/C #3/0 1-1/C #2	XHHW	600V	20
47	AC AUX.POWER-NORMAL	AUTO TRANS.SW.ATS-2	PP2A EMERGENCY BUS	4-1/C #3/0 1-1/C #2	XHHW	600V	25
48	AC AUX.POWER-EMERG	PP2 NORMAL BUS	AUTO TRANS.SW.ATS-1	4-1/C #3/0 1-1/C #2	XHHW	600V	25
49	125V BATTERY	PP1A EMERGENCY BUS	BATT. CHGR. DISC. SW.	2-1/C #4 1-1/C #6	XHHW	600V	80
50	125V DC PANEL FEED	125V BATTERY TERM (POS.)	DC PANEL	1-1/C #2	XHHW	600V	15
51	125V DC PANEL FEED	125V BATTERY TERM (NEG.)	DC PANEL	1-1/C #2	XHHW	600V	28
52	BATT. CHARGER POS.	BATTERY DISC. SW.	125V BATTERY TERM (POS)	1-1/C #2	XHHW	600V	12
53	BATT. CHARGER. NEG.	BATTERY DISC. SW.	125V BATTERY TERM (NEG)	1-1/C #2	XHHW	600V	25
54	BATT. CHARGER POS.	BATTERY DISC. SW.	BATTERY CHARGER (POS)	1-1/C #2	XHHW	600V	5
55	BATT. CHARGER NEG.	BATTERY DISC. SW.	BATTERY CHARGER (NEG)	1-1/C #2	XHHW	600V	5
56	AC SWGR DC FEED	DC PANEL	AC SWGR UNIT #5	2-1/C #6	XHHW	600V	52
57	DC SWGR DC FEED	DC PANEL	DC SWGR UNIT #4	2-1/C #6	XHHW	600V	34
58	AC TEST CAB.D.C.FEED	DC PANEL	AC BKR TEST CAB.	1-2/C #10	TC(VW-1/XHHW) NOTE 3 (TYP)	600V	85
59	EMERG.LTG.FEED	DC PANEL	EMERG.LTG.CONTACTOR	1-2/C #10	TC(VW-1/XHHW) NOTE 3 (TYP)	600V	5
60	RECTIFIER#1 DC POWER	DC PANEL	RECTIFIER #1	1-2/C #10	TC(VW-1/XHHW) NOTE 3 (TYP)	600V	20
61	RECTIFIER#2 DC POWER	DC PANEL	RECTIFIER #2	1-2/C #10	TC(VW-1/XHHW) NOTE 3 (TYP)	600V	45
62	NOT USED						
63	RECTIFIER #1 CONTROL	RECTIFIER #1	GROUND BUS (SEE NOTE 5)	2-1/C #10	XHHW	2KV	21
64	RECTIFIER #2 CONTROL	RECTIFIER #2	GROUND BUS (SEE NOTE 5)	2-1/C #10	XHHW	2KV	18
65	NOT USED						
66	SCADA DC FEED	DC PANEL	SCADA CABINET	1-2/C #10	TC(VW-1/XHHW) NOTE 3 (TYP)	600V	
67	NOT USED						
68	NOT USED						
69	NOT USED						
70	U.H.#1-AC FEED	PP1 NORMAL BUS	U.H. #1 DISCONNECT SW.	3-1/C #8 1-1/C #12	XHHW	600V	85
71	U.H.#1-HEATER UNIT	U.H.#1 DISCONNECT SW.	UNIT HEATER #1	3-1/C #8 1-1/C #12	XHHW	600V	15
72	U.H.#1-CONTROL	UNIT HEATER #1	TEMP.CONTROL PANEL	2-1/C #12	XHHW	600V	82
73	U.H.#3-AC FEED	PP1 NORMAL BUS	U.H. #3 DISCONNECT SW.	3-1/C #8 1-1/C #12	XHHW	600V	85
74	U.H.#3-HEATER UNIT	U.H.#3 DISCONNECT SW.	UNIT HEATER #3	3-1/C #8 1-1/C #12	XHHW	600V	15
75	U.H.#3-CONTROL	UNIT HEATER #3	TEMP.CONTROL PANEL	2-1/C #12	XHHW	600V	25
76	U.H.#5-AC FEED	PP1 NORMAL BUS	U.H. #5 DISCONNECT SW.	3-1/C #8 1-1/C #12	XHHW	600V	75
77	U.H.#5-HEATER UNIT	U.H.#5 DISCONNECT SW.	UNIT HEATER #5	3-1/C #8 1-1/C #12	XHHW	600V	15
78	U.H.#5-CONTROL	UNIT HEATER #5	TEMP.CONTROL PANEL	2-1/C #12	XHHW	600V	59
79	U.H.#2-AC FEED	PP2 NORMAL BUS	U.H. #2 DISCONNECT SW.	3-1/C #8 1-1/C #12	XHHW	600V	85
80	U.H.#2-HEATER UNIT	U.H.#2 DISCONNECT SW.	UNIT HEATER #2	3-1/C #8 1-1/C #12	XHHW	600V	15

CABLE NO.	FUNCTION	CABLE SCHEDULE FROM	CABLE SCHEDULE TO	DESCRIPTION NO.&SIZE OF CABLE	DESCRIPTION INSUL. & COVER	DESCRIPTION RATED VOLT.	LENGTH APPROX (NOTE 2)
81	U.H. #2-CONTROL	UNIT HEATER #2	TEMP. CONTROL PANEL	2-1/C #12	XHHW	600V	67
82	U.H. #4-AC FEED	PP2 NORMAL BUS	U.H. #4 DISCONNECT SW.	3-1/C #8 1-1/C #12	XHHW	600V	75
83	U.H. #4-HEATER UNIT	U.H. #4 DISCONNECT SW.	UNIT HEATER #4	3-1/C #8 1-1/C #12	XHHW	600V	15
84	U.H. #4-CONTROL	UNIT HEATER #4	TEMP. CONTROL PANEL	2-1/C #12	XHHW	600V	81
85	NOT USED						
86	NOT USED						
87	NOT USED						
88	TOILET ROOM HEATER FEED	PP2 NORMAL BUS	TOILET ROOM HTR. DISC. SW.	4-1/C #12	XHHW	600V	80
89	TOILET ROOM HEATER	TOILET ROOM HTR. DISC. SW.	TOILET ROOM HEATER	3-1/C #12	XHHW	600V	21
90	NOT USED						
91	NOT USED						
92	NOT USED						
93	EXH. FAN #1 FEED	PPIA EMERGENCY BUS	EXH. FAN #1 STARTER	4-1/C #12	XHHW	600V	69
94	EXH. FAN #1 MOTOR	EXH. FAN #1 STARTER	EXH. FAN #1 MOTOR	3-1/C #12	XHHW	600V	10
95	EXH. FAN #1 CONTROL	EXH. FAN #1 STARTER	DAMPER M2 END SW. E-2	2-1/C #12	XHHW	600V	14
96	EXH. FAN #2 FEED	PP2A EMERGENCY BUS	EXH. FAN #2 STARTER	4-1/C #12	XHHW	600V	98
97	EXH. FAN #2 MOTOR	EXH. FAN #2 STARTER	EXH. FAN #2 MOTOR	3-1/C #12	XHHW	600V	8
98	EXH. FAN #2 CONTROL	EXH. FAN #2 STARTER	DAMPER M4 END SW. E-4	2-1/C #12	XHHW	600V	14
99	NOT USED						
100	NOT USED						
101	NOT USED						
102	NOT USED						
103	NOT USED						
104	NOT USED						
105	RECT. #1 CONTROL	RECTIFIER #1	DC SWGR UNIT #2	1-7/C #12	TC(VW-1/XHHW)	600V	40
106	RECT. #1 CONTROL	RECTIFIER #1	DC SWGR UNIT #2	1-7/C #12	TC(VW-1/XHHW)	600V	40
107	RECT. #1 CONTROL	RECTIFIER #1	DC SWGR UNIT #2	1-7/C #12	TC(VW-1/XHHW)	600V	40
108	RECT. #1 CONTROL	RECTIFIER #1	RECT. TRANSFORMER #1	1-9/C #12	TC(VW-1/XHHW)	600V	38
108A	RECT. #1 CONTROL	RECTIFIER #1	RECT. TRANSFORMER #1	1-7/C #12	TC(VW-1/XHHW)	600V	38
109	RECT. #1 CONTROL	RECTIFIER #1	AC SWGR UNIT #3	1-7/C #12	TC(VW-1/XHHW)	600V	41
110	RECT. #1 CONTROL	DC SWGR UNIT #2	AC SWGR UNIT #3	1-7/C #12	TC(VW-1/XHHW)	600V	52
111	RECT. #1 CONTROL	RECTIFIER #1	AC SWGR UNIT #3	1-7/C #12	TC(VW-1/XHHW)	600V	41
112	SUPV. & CONTROL	RECTIFIER #1	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	55
113	SUPV. & CONTROL	RECTIFIER #1	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	55
114	SUPV. & CONTROL	RECTIFIER #1	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	55
115	RECT. #1 INTERLOCK	RECTIFIER #1	RECTIFIER #2	1-7/C #12	TC(VW-1/XHHW)	600V	45
116	RECT. #1 CONTROL	RECTIFIER #1	DC SWGR UNIT #4	1-7/C #12	TC(VW-1/XHHW)	600V	40
117	RECT. #1 AC POWER	PPIA EMERGENCY BUS	RECTIFIER #1	1-2/C #10	TC(VW-1/XHHW)	600V	47
118	NOT USED						
119	NOT USED						
120	NOT USED						

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
CABLE SCHEDULE FROM CA.1 TO CA.120

DRAWING NO.
TPE60-11

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

NOTES:

1. CONTRACTOR SHALL FILL IN CABLE CUTTING LENGTHS AFTER INSTALLATION.
2. VW-1 INDICATES FLAME RETARDANT CABLE.
3. 15KV, EPR INSULATION, WITH OVERALL PVC JACKET, SHIELDED, 100% INSULATION LEVEL, OKOGUARD, OKOSEAL,TYPE MV90.
4. RUN GROUND WIRES TO CABLE TRAY AND CONNECT TO 500KCMIL BARE COPPER CABLE IN TRAY AT SEPARATE LOCATIONS 1'-0" OR MORE APART.

CABLE NO.	FUNCTION	CABLE SCHEDULE FROM	CABLE SCHEDULE TO	DESCRIPTION NO.&SIZE OF CABLE	DESCRIPTION INSUL. & COVER	DESCRIPTION RATED VOLT.	LENGTH APPROX (NOTE 2)
121	RECT. #2 CONTROL	RECTIFIER #2	DC SWGR UNIT #2	1-7/C #12	TC(VW-1/XHHW)	600V	41
122	RECT. #2 CONTROL	RECTIFIER #2	DC SWGR UNIT #2	1-7/C #12	TC(VW-1/XHHW)	600V	41
123	RECT. #2 CONTROL	RECTIFIER #2	DC SWGR UNIT #2	1-7/C #12	TC(VW-1/XHHW)	600V	41
124	RECT. #2 CONTROL	RECTIFIER #2	RECT. TRANSFORMER #2	1-9/C #12	TC(VW-1/XHHW)	600V	36
124A	RECT. #2 CONTROL	RECTIFIER #2	RECT. TRANSFORMER #2	1-7/C #12	TC(VW-1/XHHW)	600V	36
125	RECT. #2 CONTROL	RECTIFIER #2	AC SWGR UNIT #7	1-7/C #12	TC(VW-1/XHHW)	600V	51
126	RECT. #2 CONTROL	DC SWGR UNIT #2	AC SWGR UNIT #7	1-7/C #12	TC(VW-1/XHHW)	600V	48
127	RECT. #2 CONTROL	RECTIFIER #2	AC SWGR UNIT #7	1-7/C #12	TC(VW-1/XHHW)	600V	51
128	SUPV. & CONTROL	RECTIFIER #2	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	71
129	SUPV. & CONTROL	RECTIFIER #2	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	71
130	SUPV. & CONTROL	RECTIFIER #2	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	71
131	NOT USED						
132	RECT. #2 CONTROL	RECTIFIER #2	DC SWGR UNIT #2	1-7/C #12	TC(VW-1/XHHW)	600V	60
133	RECT. #2 AC POWER	PP2A EMERGENCY BUS	RECTIFIER #2	1-2/C #10	TC(VW-1/XHHW)	600V	63
134	NOT USED						
135	NOT USED						
136	NOT USED						
137	NOT USED						
138	NOT USED						
139	NOT USED						
140	NOT USED						
141	NOT USED						
142	NOT USED						
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151	NOT USED						
152	NOT USED						
153	NOT USED						
154	NOT USED						
155	NOT USED						
156	NOT USED						
157	NOT USED						
158	NOT USED						
159	NOT USED						
160	NOT USED						

CABLE NO.	FUNCTION	CABLE SCHEDULE FROM	CABLE SCHEDULE TO	DESCRIPTION NO.&SIZE OF CABLE	DESCRIPTION INSUL. & COVER	DESCRIPTION RATED VOLT.	LENGTH APPROX (NOTE 2)
161	COMED LINE #1 METERING	AC SWGR UNIT #1	METER CABINET CT'S	4-1/C #10	XHHW	600V	34
162	COMED LINE #1 METERING	AC SWGR UNIT #1	METER CABINET PT'S	3-1/C #12	XHHW	600V	34
163	COMED LINE #2 METERING	AC SWGR UNIT #9	METER CABINET CT'S	4-1/C #10	XHHW	600V	22
164	COMED LINE #2 METERING	AC SWGR UNIT #9	METER CABINET PT'S	3-1/C #12	XHHW	600V	22
165	NOT USED						
166	NOT USED						
167	NOT USED						
168	SUPV. & CONTROL	AC SWGR UNIT #2	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	50
169	SUPV. & CONTROL	AC SWGR UNIT #5	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	40
170	SUPV. & CONTROL	AC SWGR UNIT #8	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	29
171	NOT USED						
172	SUPERVISE FDR 69	DC SWGR UNIT #1	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	29
173	SUPERVISE FDR 70	DC SWGR UNIT #3	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	33
174	SUPERVISE FDR 71	DC SWGR UNIT #5	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	38
175	SUPERVISE FDR 72	DC SWGR UNIT #7	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	41
176	SUPERVISE FDR 503	DC SWGR UNIT #503	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	
177	SUPERVISE FDR 504	DC SWGR UNIT #504	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	
178	SUPERVISE FDR 505	DC SWGR UNIT #505	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	
179	SUPERVISE FDR 506	DC SWGR UNIT #506	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	
180	NOT USED						
181	NOT USED						
182	NOT USED						
183	NOT USED						
184	SUPV. & CONTROL	DC SWGR AUX. UNIT #4	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	36
185	NOT USED						
186	GROUND DETECTION	DC SWGR AUX. UNIT #4	GROUND BUS (SEE NOTE 5)	1-2/C #10	XHHW	2KV	40
187	NEGATIVE	DC SWGR AUX. UNIT #4	NEGATIVE BUS	1-2/C #2	XHHW	2KV	45
188	SCADA AC FEED	PP1A EMERGENCY BUS	SCADA CABINET	1-2/C #10	TC(VW-1/XHHW)	600V	55
189	ANN. ALARM-BATT. CHGR	BATTERY CHAR GER	DC SWGR UNIT #4 (DEVICE 130)	1-2/C #10	TC(VW-1/XHHW)	600V	40
190	ANN. ALARM-ATS-1	AUTO TRANS. SW. ATS-1	DC SWGR UNIT #4 (DEVICE 130)	1-2/C #10	TC(VW-1/XHHW)	600V	50
191	NOT USED						
192	ANN. ALARM-ATS-2	AUTO TRANS. SW. ATS-2	DC SWGR UNIT #4 (DEVICE 130)	1-2/C #10	TC(VW-1/XHHW)	600V	54
193	NOT USED						
194	NOT USED						
195	AIR COMPRESSOR FEED	PP1 NORMAL BUS	AIR COMP. RECEPTACLES	2-1/C #10 1-1/C #12	XHHW	600V	154
196	WATER HEATER FEED	PP2 NORMAL BUS	WATER HTR. CONTACTOR	4-1/C #12	XHHW	600V	59
197	WATER HEATER UNIT	WATER HTR. CONTACTOR	WATER HEATER	5-1/C #12	XHHW	600V	8
198	WATER HEATER CONTROL	WATER HTR. CONTACTOR	TEMP. CONTROL PANEL	2-1/C #12	XHHW	600V	47
199	NOT USED						
200	NOT USED						

CABLE NO.	FUNCTION	CABLE SCHEDULE FROM	CABLE SCHEDULE TO	DESCRIPTION NO.&SIZE OF CABLE	DESCRIPTION INSUL. & COVER	DESCRIPTION RATED VOLT.	LENGTH APPROX (NOTE 2)
201	TEMP. CONT. PNL FEED	PP2A EMERGENCY BUS	TEMP. CONTROL PANEL	1-2/C #10	TC(VW-1/XHHW)	600V	84
202	NOT USED						
203	SUMP PUMP #1 FEED	PP1A EMERGENCY BUS	DPLX SMP PMP CONTROLLER	4-1/C #12	XHHW	600V	74
204	SUMP PUMP #1 MOTOR	DPLX SMP PMP CONTROLLER	SUMP PUMP #1 MOTOR	4-1/C #12	XHHW	600V	10
205	HIGH LEVEL SWITCHES	DPLX SMP PMP CONTROLLER	FLOAT SW. HIGH LEVEL	7-1/C #12	XHHW	600V	10
206	SUMP PUMP #2 FEED	PP2A EMERGENCY BUS	DPLX SMP PMP CONTROLLER	4-1/C #12	XHHW	600V	64
207	SUMP PUMP #2 MOTOR	DPLX SMP PMP CONTROLLER	SUMP PUMP #2 MOTOR	4-1/C #12	XHHW	600V	10
208	HIGH HIGH LEVEL SWITCHES	DPLX SMP PMP CONTROLLER	FLOAT SW. HI-HI LEVEL	1-7/C #12	XHHW	600V	10
209	HIGH WATER ALARM	DPLX SMP PMP CONTROLLER	TEMP CONTROL PANEL	1-3/C #12	TC(VW-1/XHHW)	600V	48
210	LOW LEVEL SWITCHES	DPLX SMP PMP CONTROLLER	FLOAT SW. LOW LEVEL	7-1/C #12	XHHW	600V	10
211	SMP PMP DUPLEX CONTROL	DPLX SMP PMP CONTROLLER	SMP PMP MECH ALTERNATOR	4-1/C #12	XHHW	600V	10
212	NOT USED						
213	NOT USED						
214	NOT USED						
215	NOT USED						
216	SUPV. & CONTROL	RECTIFER #1	DC SWGR #4	1-7/C #12	TC(VW-1/XHHW)	600V	40
217	LIGHTING PANEL LP-1 FEED	PP1A EMERGENCY BUS	LIGHTING PANEL LP-1	4-1/C #2 1-1/C #4	XHHW	600V	5
218	LIGHTING PANEL LP-2 FEED	PP2A EMERGENCY BUS	LIGHTING PANEL LP-2	4-1/C #2 1-1/C #4	XHHW	600V	5
219	NOT USED						
220	NOT USED						
221	DRAIN EQUIP. AC FEED	PP1A EMERGENCY BUS	3-GANG SWITCH BOX	1-2/C #10	TC(VW-1/XHHW)	600V	56
222	COMED DRAIN FEED	3-GANG SW. BOX (SW.#1)	SOLID STATE CONT. CAB	1-2/C #12	TC(VW-1/XHHW)	600V	6
223	GAS CO. DRAIN FEED	3-GANG SW. BOX (SW.#2)	PEOPLES ENERGY CABINET	1-2/C #12	TC(VW-1/XHHW)	600V	
224	SBC DRAIN FEED	3-GANG SW. BOX (SW.#3)	SBC DRAIN EQUIP.	1-2/C #12	TC(VW-1/XHHW)	600V	
225	STATION DRAIN EQUIP.	DRAIN BUS	NEGATIVE BUS	1-1500KCM	RHW-2	2KV	60
226	COMED DRAIN	DRAIN BUS	COMED DRAIN CONT.	1-750KCM	XLPE	600V	3
227	COMED DRAIN	COMED DRAIN CONT.	COMED FUSE CAB.	1-750KCM	XLPE	600V	8
228	COMED DRAIN	COMED FUSE CAB.	COMED MANHOLE	1-750KCM	XLPE	600V	
229	COMED DRAIN	DRAIN BUS	BY-PASS KNIFE SW.	1-750KCM	XLPE	600V	8
230	COMED DRAIN	BY-PASS KNIFE SW.	DRAIN CABLE 228	1-750KCM	XLPE	600V	
231	COMED DRAIN	SOLID STATE CONT. CAB.	COMED DRAIN CONT.	3-1/C #10	XHHW	600V	5
232	SBC DRAIN	DRAIN BUS	SBC DRAIN SWITCH	1-750KCM	XLPE	600V	
233	SBC DRAIN	SBC DRAIN SWITCH	SBC MANHOLE	1-750KCM	XLPE	600V	
234	COMED DRAIN	SOLID STATE CONT. CAB.	COMED FUSE CAB.	3-1/C #10	XHHW	600V	5
235	AC SWGR AC FEED	PP1A EMERGENCY BUS	AC SWGR UNIT #5	1-2/C #12	TC(VW-1/XHHW)	600V	42
236	DC SWGR AC FEED	PP2A EMERGENCY BUS	DC SWGR AUX. UNIT #4	1-2/C #12	TC(VW-1/XHHW)	600V	50
237	NOT USED						
238	NOT USED						
239	O.H. DOOR #2 AC FEED	PP2A EMERGENCY BUS	O.H. DOOR #2 CONT. PNL.	1-2/C #10	TC(VW-1/XHHW)	600V	81
240	FILTER MEDIA AC FEED	PP2A EMERGENCY BUS	INLET DAMPER TERM. BOX	1-2/C #12	TC(VW-1/XHHW)	600V	48

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APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
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DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
CABLE SCHEDULE FROM CA.121 TO CA.240

DRAWING NO.
TPE60-12

CDOT PROJECT D-7-135 | DATE: 11/01/2019 | REVISION NO.

NOTES:

1. CONTRACTOR SHALL FILL IN CABLE CUTTING LENGTHS AFTER INSTALLATION.
2. VW-1 INDICATES FLAME RETARDANT CABLE.
3. 15KV, EPR INSULATION, WITH OVERALL PVC JACKET, SHIELDED, 100% INSULATION LEVEL, OKOGUARD, OKOSEAL,TYPE MV90.
4. RUN GROUND WIRES TO CABLE TRAY AND CONNECT TO 500KCMIL BARE COPPER CABLE IN TRAY AT SEPARATE LOCATIONS 1'-0" OR MORE APART.

CABLE NO.	FUNCTION	CABLE SCHEDULE		DESCRIPTION			LENGTH APPROX (NOTE 2)
		FROM	TO	NO.&SIZE OF CABLE	INSUL. & COVER	RATED VOLT.	
241	STATION SECURITY	TEMP. CONTROL PANEL	DOOR SW. #1	2-1/C #12	XHHW	600V	81
242	STATION SECURITY	TEMP. CONTROL PANEL	DOOR SW. #2	2-1/C #12	XHHW	600V	67
243	STATION SECURITY	TEMP. CONTROL PANEL	DOOR SW. #3	2-1/C #12	XHHW	600V	86
244	NOT USED						
245	NOT USED						
246	CONTROL O.H. DOOR#2	O.H. DOOR#2 CONTROL PNL.	O.H. DOOR#2 OPERATOR	1-2/C #12	TC(VW-1/XHHW)	600V	9
247	NOT USED						
248	TEMP. CONTROL	TEMP. CONTROL PANEL	STAGE 1 THERMOSTAT T1	2-1/C #12	XHHW	600V	5
249	TEMP. CONTROL	TEMP. CONTROL PANEL	STAGE 2 THERMOSTAT T2	2-1/C #12	XHHW	600V	5
250	TEMP. CONTROL	TEMP. CONTROL PANEL	ATTEND THERMOSTAT T3	2-1/C #12	XHHW	600V	5
251	TEMP. CONTROL	TEMP. CONTROL PANEL	UNATTEND THERMOSTAT T4	2-1/C #12	XHHW	600V	5
252	INLET DAMPER CONTROL	TEMP. CONTROL PANEL	INLET DAMPER TERM. BOX	14-1/C #12	XHHW	600V	68
253	INLET DAMPER CONTROL	FILTER DRIVE CONT. PANEL	INLET DAMPER TERM. BOX	2-1/C #12	XHHW	600V	12
254	INLET DAMPER CONTROL	INLET DAMPER TERM. BOX	DAMP. MOT. M1 END SW. E1	6-1/C #12	XHHW	600V	5
255	INLET DAMPER CONTROL	INLET DAMPER TERM. BOX	DAMP. MOT. M3 END SW. E3	6-1/C #12	XHHW	600V	28
256	FILTER DRIVE	INLET DAMPER TERM. BOX	FILTER DRIVE	4-1/C #12	XHHW	600V	5
257	BACKDRAFT DAMP. CONT.	TEMP. CONTROL PANEL	BACKDRAFT DAMP. MOT. M2	2-1/C #12	XHHW	600V	84
258	BACKDRAFT DAMP. CONT.	TEMP. CONTROL PANEL	BACKDRAFT DAMP. MOT. M4	2-1/C #12	XHHW	600V	64
259	STATION CONTROL	TEMP. CONTROL PANEL	ATTEND-UNATTEND SW.	10-1/C #12	XHHW	600V	5
260	STATION CONTROL	TEMP. CONTROL PANEL	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	50
261	SUMP PUMP ALARM	SUMP PUMP CONTROLLER	DX SWGR AUX. UNIT #4	1-7/C #10	TC(VW-1/XHHW)	600V	40
262	STA. ANN. ALM-STA.TEMP. ATTD.	TEMP. CONTROL PANEL	DC SWGR AUX. UNIT #4	1-7/C #12	TC(VW-1/XHHW)	600V	40
263	STA. ANN. ALM-FD & AF	TEMP. CONTROL PANEL	DC SWGR AUX. UNIT #4	1-7/C #12	TC(VW-1/XHHW)	600V	40
264	STA. ANN. ALM-HI STA. TEMP.	TEMP. CONTROL PANEL	HI-TEMP THERM. T5	2-1/C #12	XHHW	600V	5
265	SMOKE DETECTION	TEMP. CONTROL PANEL	SMOKE DETECTOR #1	1-9/C #12	TC(VW-1/XHHW)	600V	61
266	SMOKE DETECTION	SMOKE DETECTOR #1	SMOKE DETECTOR #2	1-8/C #12	TC(VW-1/XHHW)	600V	28
267	SMOKE DETECTION	SMOKE DETECTOR #2	SMOKE DETECTOR #3	1-8/C #12	TC(VW-1/XHHW)	600V	16
268	EM. LIGHTING INTERLOCK	TEMP. CONTROL PANEL	EM. LIGHTING CONTACTOR	1-7/C #12	TC(VW-1/XHHW)	600V	43
269	NOT USED						
270	NOT USED						
271	SUPERVISORY	DC SWGR UNIT #6 (RECT. #1)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	37
272	SUPERVISORY	DC SWGR UNIT #2 (RECT. #2)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	28
273	NOT USED						
274	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #1 (FDR 69)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	25
275	SUPERVISORY (CURRENT)	DC SWGR UNIT #1 (FDR 69)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	25
276	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #3 (FDR 70)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	31
277	SUPERVISORY (CURRENT)	DC SWGR UNIT #3 (FDR 70)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	31
278	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #5 (FDR 71)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	35
279	SUPERVISORY (CURRENT)	DC SWGR UNIT #5 (FDR 71)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	35
280	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #7 (FDR 72)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	39

CABLE NO.	FUNCTION	CABLE SCHEDULE		DESCRIPTION			LENGTH APPROX (NOTE 2)
		FROM	TO	NO.&SIZE OF CABLE	INSUL. & COVER XHHW	RATED VOLT.	
281	SUPERVISORY (CURRENT)	DC SWGR UNIT #7 (FDR 72)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	39
282	SUPERVISORY	DC SWGR AUX. UNIT #4	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	60
283	SUPERVISORY (CURRENT)	DC SWGR UNIT (FDR 503)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
284	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #503	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
285	SUPERVISORY (CURRENT)	DC SWGR UNIT (FDR 504)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
286	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #504	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
287	SUPERVISORY (CURRENT)	DC SWGR UNIT (FDR 505	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
288	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #505	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
289	SUPERVISORY (CURRENT)	DC SWGR UNIT (FDR 506)	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
290	SUPERVISORY (VOLTAGE)	DC SWGR UNIT #506	SCADA CABINET	1-2/C #12 TWSH & DRAIN	PVC/PVC-SHLD(VW-1)	600V	
291	NOT USED						
292	NOT USED						
293	NOT USED						
294	NOT USED						
295	NOT USED						
296	NOT USED						
297	SUPERVISORY (STATUS)	DC SWGR UNIT #1 (FDR 69)	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	30
298	SUPERVISORY (STATUS)	DC SWGR UNIT #3 (FDR 70)	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	34
299	SUPERVISORY (STATUS)	DC SWGR UNIT #5 (FDR 71)	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	39
300	SUPERVISORY (STATUS)	DC SWGR UNIT #7 (FDR 72)	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	35
301	NOT USED						
302	NOT USED						
303	NOT USED						
304	NOT USED						
305	NOT USED						
306	NOT USED						
307	NOT USED						
308	SUPV. & CONTROL	DC SWGR AUX. UNIT #4	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	60
309	SUPV. & CONTROL	DC SWGR AUX. UNIT #4	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	60
310	SUPV. & CONTROL	DC SWGR AUX. UNIT #4	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	60
311	SUPV. & CONTROL	DC SWGR AUX. UNIT #4	SCADA CABINET	1-7/C #12	TC(VW-1/XHHW)	600V	50
312	NOT USED						
313	NOT USED						
314	NOT USED						
315	NOT USED						
316	NOT USED						
317	SMOKE DETECTION	SMOKE DETECTOR #3	EOL RESISTOR UNIT	1-2/C #12	TC(VW-1/XHHW)	600V	19
318	SMOKE DETECTION	FIRE ALARM CONT. PNL.	SMOKE DETECTOR #1	1-2/C #12	TC(VW-1/XHHW)	600V	43
319	NOT USED						
320	NOT USED						

CABLE NO.	FUNCTION	CABLE SCHEDULE		DESCRIPTION			LENGTH APPROX (NOTE 2)
		FROM	TO	NO.&SIZE OF CABLE	INSUL. & COVER	RATED VOLT.	
321	SBC PHONE	SBC TTC TERM. CAB.	DESK PHONE	1-4/C #22	PE		30
322	PHONE EXT. RINGERS	SBC TTC TERM. CAB.	RINGERS ON SCADA CAB.	1-2PR #22	PE		30
323	CTA PHONE	CTA TTC TERM. CAB.	DESK PHONE	1-4/C #22	PE		30
324	SUPERVISORY CTA	CTA TTC TERM. CAB.	SCADA CABINET	2-1PR #19TW	PE		30
325	CTA TEL. LINES	OUTSIDE	CTA TTC TERM. CAB.	1-12PR #19	COMPOUND FILLED		
326	SBC SERV. & GRD.	CTA TTC TERM. CAB.	SBC TTC TERM. CAB.	1-4/C #22 1-1/C #10	PE		7 7
327	NOT USED						
328	NOT USED						
329	NOT USED						
330	NOT USED						
331	NOT USED						
332	NOT USED						
333	NOT USED						
334	NOT USED						
335	NOT USED						
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DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

WASHINGTON BLVD SUBSTATION
CABLE SCHEDULE FROM CA.241 TO CA.360

CDOT PROJECT D-7-135

DATE: 11/01/2019

SPEC. NO.

DRAWING NO.
TPE60-13

REVISION NO.

POINT ASSIGNMENT CHART CONTROL POINTS

STATION ASSY NO: 40-005073-002 RTU TYPE: QUICS 4150 COMM LINE 13
INTERFACE PANEL: CNTRL OUT ENG: PM STATION ADDRESS 25
LOCATION.....: D4

> A/TB4 NO, C, NC	(PANEL & RLY. LOC)	POINT ADDRESS	FUNCTION*	DESCRIPTION	STA NAME	POINT NAME
1 2	D4/K1	24	A	SECTION 503	WASH	
3 4	K2		B			
5 6	K3	25	A	SECTION 504		
7 8	K4		B			
9 10	K5	26	A	SECTION 505		
11 12	K6		B			
13 14	K7	27	A	SECTION 506		
15 16	K8		B			
> A/TB3						
1 2	K9	28	A			
3 4	K10		B			
5 6	K11	29	A			
7 8	K12		B			
9 10	K13	30	A			
11 12	K14		B			
13 14	K15	31	A	DLC-3 HEAT TAPES ON	WASH	DL3CON
15 16	K16		B	OFF		

NOTES: RELAYS ARE POTTER & BRUMFIELD PRD11DJ0 24VDC (MOMENTARY), OR EQUAL.

CONTACT RATING IS 12 AMPS RESISTIVE @ 125VDC OR 240VAC
* A = CLOSE, RUN, ON B = OPEN, TRIP, STOP, OFF
C = OFF/ON (LATCH) NE = NOT EQUIPPED

DESCRIPTION IS 24 CHARACTERS MAX.
STATION NAME IS 4 CHARACTERS MAX.
POINT NAME IS 6 CHARACTERS MAX.

POINT ASSIGNMENT CHART STATUS POINTS

STATION ASSY NO: 40-005073-002 RTU TYPE: QUICS 4150 COMM LINE 13
INTERFACE PANEL: 6SIP1 ENG: PM STATION ADDRESS 25
LOCATION.....: B7 PANEL ADDR.....: 4

> A/TB13	POINT ADDRESS	INPUT	FUNCTION*	DESCRIPTION	STA NAME	POINT NAME
1, 2	0	DRY CONT	STATUS		WASH	
3, 4	1	DRY CONT	STATUS			
5, 6	2	DRY CONT	STATUS			
7, 8	3	DRY CONT	STATUS			
9, 10	4	DRY CONT	STATUS	SECTION 30 A		S30
11, 12	5	DRY CONT	STATUS	SECTION 30 A1		
13, 14	6	DRY CONT	STATUS	SECTION 31 A		S31
15, 16	7	DRY CONT	STATUS	SECTION 31 A1		
> A/TB12						
1, 2	8	DRY CONT	STATUS	SECTION 503 A		S503
3, 4	9	DRY CONT	STATUS	SECTION 503 A1		
5, 6	10	DRY CONT	STATUS	SECTION 504 A		S504
7, 8	11	DRY CONT	STATUS	SECTION 504 A1		
9, 10	12	DRY CONT	STATUS	SECTION 505 A		S505
11, 12	13	DRY CONT	STATUS	SECTION 505 A1		
13, 14	14	DRY CONT	STATUS	SECTION 506 A		S506
15, 16	15	DRY CONT	STATUS	SECTION 506 A1		

NOTES: STATUS KEYING VOLTAGE IS 48 VOLTS DC.
TBs ODD-NUMBERED TERMINALS FROM 1 TO 15 ARE CONNECTED TO STATUS KEYING VOLTAGES COMMON (+48 VOLTS DC).

* STATUS, ALARM, ACCUMULATORS, PDM, MAKE AN ENTRY IN THIS COLUMN.

DESCRIPTION IS 24 CHARACTERS MAX.
STATION NAME IS 4 CHARACTERS MAX.
POINT NAME IS 6 CHARACTERS MAX.

POINT ASSIGNMENT CHART ANALOG POINTS

STATION ASSY NO: 40-005073-002 RTU TYPE: QUICS 4150 COMM LINE 13
INTERFACE PANEL: 6AIP1 ENG: PM STATION ADDRESS 25
LOCATION.....: B2

> A/TB29	POINT ADDRESS	INPUT	ENG UNIT SPAN	DESCRIPTION	STA NAME	POINT NAME
1, 2	16	0-1 MA			WASH	
3, 4	17	0-1 MA				
5, 6	18	0-1 MA				
7, 8	19	0-1 MA				
9, 10	20	0-1 MA	0-1000VDC	SECTION 30 DC VOLTS		S30DV
11, 12	21	0-1 MA	0-16KADC	SECTION 30 DC AMPS		S30DA
13, 14	22	0-1 MA	0-1000VDC	SECTION 31 DC VOLTS		S31DV
15, 16	23	0-1 MA	0-16KADC	SECTION 31 DC AMPS		S31DA
> A/TB28						
1, 2	24	0-1 MA		SECTION 503		
3, 4	25	0-1 MA		SECTION 503		
5, 6	26	0-1 MA		SECTION 504		
7, 8	27	0-1 MA		SECTION 504		
9, 10	28	0-1 MA		SECTION 505		
11, 12	29	0-1 MA		SECTION 505		
13, 14	30	0-1 MA		SECTION 506		
15, 16	31	0-1 MA		SECTION 506		

NOTES: THE INPUT ACCEPT DIFFERENTIAL SIGNALS, MAXIMUM +/-5 VOLTS.
SIGNALS INPUT: ODD NUMBERED TERMINALS FROM 1 TO 15 IS POSITIVE (+),
EVEN NUMBERED TERMINALS FROM 2 TO 16 IS NEGATIVE (-).

* STATUS, ALARM, ACCUMULATORS, PDM, MAKE AN ENTRY IN THIS COLUMN.

DESCRIPTION IS 24 CHARACTERS MAX.
STATION NAME IS 4 CHARACTERS MAX.
POINT NAME IS 6 CHARACTERS MAX.

NOTES:

1. SEE DWG ET01–01 FOR GENERAL NOTES, SYMBOLS, ABBREVIATIONS, AND DEVICE LIST.

DESIGN BY:									
DRAWN BY:									
CHECKED BY:									
APPROVED BY:			01/27/2020	ISSUE FOR BID	BG	EM	SM		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

WASHINGTON BLVD SUBSTATION
SCADA POINT LIST

DRAWING NO.
TPE60-14

CDOT PROJECT D-7-135 DATE: 11/01/2019 REVISION NO.

SYMBOLS

- SHUTOFF VALVE (GATE VALVE FOR 2 1/2" AND LARGER. BALL VALVE FOR 2" AND SMALLER)
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- BALL VALVE
- STRAINER
- STRAINER WITH BLOWDOWN
- BALANCING VALVE
- UNION
- FLANGE
- PRESSURE GAGE (WITH GAUGE VALVE)
- PIPE ANCHOR
- SLEEVE
- PIPE GUIDE
- PIPE FLEXIBLE CONNECTION
- FILTER
- MANUAL AIR VENT
- AUTOMATIC AIR VENT
- THERMOSTATIC AIR VET
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- DIRECTION OF FLOW
- PUMP
- PIPE ELBOW UP
- PIPE ELBOW DOWN
- PIPE TEE UP
- PIPE TEE DOWN
- CONNECT TO EXISING
- KEY NOTE SYMBOL

- SUPPLY DUCT UP
- SUPPLY DUCT DOWN
- RETURN DUCT UP
- RETURN DUCT DOWN
- EXHAUST DUCT UP
- EXHAUST DUCT DOWN
- SUPPLY AIR TERMINAL
- RETURN AIR TERMINAL
- SQUARE ELBOW WITH TURNING VANES AND ACCESS DOOR ON INLET SIDE
- FLEXIBLE DUCT
- BOOSTER COIL, DUCT MOUNTED
- DUCT SHOE WITH DAMPER
- VOLUME DAMPER (VD)
- MOTORIZED DAMPER (MD)
- SMOKE DAMPER (SD)
- FIRE DAMPER (FD)
- COMBINATION FIRE/SMOKE DAMPER (FSD)
- TRANSFER DUCT W/REGISTERS
- DOOR TRANSFER GRILLE
- THERMOSTAT / TEMPERATURE SENSOR (T)
- HVAC TERMINAL TAG (1 | 2 - 3)
  1. TERMINAL TYPE
  2. AIRFLOW CFM
  3. TERMINAL FUNCTION
     S-SUPPLY
     R-RETURN
     E-EXHAUST
     T-TRANSFER
- MECHANICAL EQUIPMENT TAG (1 / 2)
  1. MECHANICAL EQUIPMENT TYPE
  2. EQUIPMENT NUMBER

2 RJH 03/13/20

CHICAGO ENERGY NOTES

1. MINIMUM EQUIPMENT COOLNG EFFICIENCIES SHALL MEET ASHRAE 90.1-2013.
2. ALL ROOFTOP UNITS AND AIR HANDLERS SHALL BE FURNISHED WITH ECONOMIZERS.
3. MOTORIZED DAMPERS SHALL BE INSTALLED ON ALL INTAKES AND EXHAUST OPENINGS UNLESS NOTED OTHERWISE.
4. MAXIMUM FAN NAMEPLATE HORSEPOWER SHALL NOT EXCEED ASHRAE 90.1-2013.
5. LOAD CALCULATIONS WERE BASED ON ASHRE 2001 FUNDAMENTALS.
6. ALL PROGRAMMABLE THERMOSTATS SHALL HAVE 5 DEGREE DEADBAND AND SHALL HAVE 7-DAY CLOCK, 2-HOUR MANUAL OVERRIDE, 10 HOUR BACKUP AND SETBACK CAPABLE OF 55 DEGREES HEATING AND 85 DEGREES COOLING. (EXCEPT CONTINUOUS OPERATING ZONES)
7. DUCT INSULATION AS SPECIFIED WITH MINIMUM VALUES AS FOLLOWS:
   A. R-6 SUPPLY AND RETURN DUCT INSULATION IN UNCONDITIONED SPACES.
   B. R-8 SUPPLY AND RETURN DUCT INSULATION FOR EXTERIOR DUCTS.
   C. R-3 SUPPLY AND RETURN DUCT INSULATION UNDERGROUND.
8. ALL DUCTWORK SHALL BE SEALED. PRESSURE SENSITIVE TAPE IS NOT USED AS THE PRIMARY SEALANT.

CITY OF CHICAGO PERMITTING NOTES

1. ALL WORK PERFORMED AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CITY OF CHICAGO CODES.
2. ALL NEW DUCTWORK SHALL BE FABRICATED FROM PRIME FIRST QUALITY GALVANIZED SHEET METAL, UNLESS OTHERWISE NOTED. GAUGES OF METAL, HANGER SPACING, ETC. SHALL CONFORM TO THE LATEST EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS FOR DUCT CONSTRUCTION (18-28-603.3).
3. PROVIDE MANUAL LOCKING TYPE VOLUME DAMPERS IN ALL BRANCH DUCTWORK TO AIR DIFFUSERS, REGISTERS AND GRILLES. (13-184-080(15))
4. ALL FLEXIBLE LOW-PRESSURE DUCTWORK SHALL BE INSULATED, CHICAGO APPROVED AND NOT EXCEED 5'-0" IN LENGTH. MANUFACTURER TO BE WIREMOLD, TYPE WK UL-181, CLASS 1.
5. PROVIDE TURNING VANES IN ALL LOW-PRESSURE 90-DEGREE DUCT TURNS.
6. TRANSFER DUCTS SHALL NOT EXCEED 5'-0" IN LENGTH.
7. ALL AIR MOVING EQUIPMENT SHALL BE INSTALLED WITH VIBRATION ISOLATORS AND PROVIDED WITH FLEXIBLE DUCT CONNECTIONS.
8. ALL EQUIPMENT SHALL HAVE TOTALLY ENCLOSED MOTORS AND BE RATED TO OPERATE IN PLENUM CEILINGS, INCLUDING ALL SUPPLY AIR AND RETURN AIR FAN MOTORS EXPOSED TO THE AIR STREAM.
9. THE CONTRACTOR SHALL GUARANTEE THAT THE PLENUM CHAMBER USED FOR RECIRCULATION OF AIR WILL BE OF TIGHT CONSTRUCTION AND THAT ALL SOURCES OF AIR CONTAMINATION FROM TRAPS, SOIL STACKS, DOWN SPOUTS, VENTS, EXHAUST DISCHARGES AND OTHER SOURCES WILL BE ENCLOSED SO THAT NO CONTAMINATED AIR WILL BE RECIRCULATED.
10. THE MAXIMUM SOUND PRESSURE LEVEL, "A-SCALE LEVELS", AT THE PROPERTY LINE BORDERING RESIDENTIAL AREAS SHALL NOT EXCEED 55 DECIBELS (dB) FOR HVAC EQUIPMENT INSTALLED UNDER THIS CONTRACT.
11. OUTSIDE AIR INTAKES SHALL BE AT LEAST 10'-0" ABOVE GRADE AND A MINIMUM OF 15'-0" FROM ALL EXHAUST AIR AND SOURCES OF CONTAMINATION. MAXIMUM VELOCITY THROUGH OUTSIDE AIR LOUVERS AND DUCTWORK SHALL NOT EXCEED 1000 FPM.
12. ALL FLUES SHALL TERMINATE 6'-0" ABOVE THE ROOFLINE.
13. STRAINERS, ISOLATION VALVES AND BALANCE VALVES SHALL BE LINE SIZE UNLESS NOTED OTHERWISE.
14. PROVIDE MANUAL AIR VENTS TO ALL HIGH POINTS IN PIPING.
15. ALL EXPANSION VALVES, DEVICES AND CONNECTIONS SHALL BE REMOVED FROM THE AIRSTREAM OF ALL MECHANICAL EQUIPMENT AS PER CITY OF CHICAGO CODE. (13-192-380)
16. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL A SAFETY RELIEF VALVE DESIGNED TO RELIEVE AND/OR PREVENT THE BUILD-UP OF EXCESSIVE REFRIGERANT PRESSURE WITHIN THE DIRECT-EXPANSION SYSTEM. THE PRESSURE RELIEF DEVICE SHALL BE SET AT 400 psi AND SHALL BE INSTALLED ON THE HIGH PRESSURE SIDE AT THE DISCHARGE OF THE COMPRESSOR AND UPSTREAM OF THE COMPRESSOR SHUT-OFF (STOP) VALVE. (13-192-520 thru 560)
17. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL A REFRIGERANT-RELIEF DISCHARGE PIPE. THE DISCHARGE PIPE OUTLET SHALL BE INSTALLED A MINIMUM OF 12'-0" ABOVE THE GROUND AND A MINIMUM OF 10'-0" FROM ANY OPENING, AND 20'-0" FROM ANY FIRE ESCAPE AND SHALL DISCHARGE THROUGH A TURNED DOWN ELBOW. (18-28-1106.13).
18. REFRIGERATION PIPING SHALL BE TYPE K COPPER WITH BRAZED SOCKET TYPE FITTINGS. (18-28-1107.4.4).

GENERAL NOTES

1. THE DRAWINGS INDICATE DIAGRAMMATICALLY THE EXTENT, GENERAL CHARACTER AND LOCATION OF WORK INCLUDED. WORK INDICATED, BUT HAVING MINOR DETAILS OMITTED, SHALL BE PROVIDED INCLUDING THESE DETAILS AT NO ADDITIONAL COST TO OWNER. ALL DIMENSIONS SHALL BE FIELD VERIFIED.
2. ALL PERMITS, LICENSES, APPROVALS AND OTHER ARRANGEMENTS FOR WORK SHALL BE OBTAINED BY THE CONTRACTOR AT HIS OWN EXPENSE.
3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF EQUIPMENT, PARTITIONS, WALLS AND GENERAL CONSTRUCTION.
4. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY FOR THE WORK, COMPLETE AS SHOWN ON THE DRAWINGS AND AS SPECIFIED.
5. CONTRACTOR SHALL COORDINATE DIFFUSER LOCATIONS WITH REFLECTED CEILING PLANS.
6. CONTRACTOR SHALL IDENTIFY AND INCLUDE ALL ITEMS NECESSARY FOR PROPER OPERATION OF INDICATED MECHANICAL HVAC SYSTEMS.
7. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES.
8. CONTRACTOR SHALL RELOCATE ANY MINOR INTERFERENCES, INCLUDING CONDUIT, HANGERS, ETC., AT NO ADDITIONAL COST TO OWNER.
9. VOLTAGE FOR ALL EQUIPMENT IS TO BE COORDINATED WITH ELECTRICAL CONTRACTOR.
10. ALL WORK SHALL COMPLY OR EXCEED ALL APPLICABLE CODES.
11. ANY CUTTING AND PATCHING THRU RATED WALLS SHALL BE DONE AND COMPLETED AS REQUIRED TO COMPLY WITH U.L. PENETRATION RATING REQUIREMENTS.
12. PROVIDE ALL CUTTING AND PATCHING OF BUILDING MATERIALS AS REQUIRED FOR INSTALLATION OF THIS WORK.
13. PROVIDE ALL HOLES AND SLEEVES FOR INSTALLATION OF MECHANICAL WORK.
14. PROVIDE SPRING TYPE VIBRATION ISOLATORS FOR ALL SUSPENDED MECHANICAL EQUIPMENT.
15. VENTILATION CONTRACTOR SHALL PROVIDE ALL NECESSARY RISE AND DROPS IN DUCTWORK TO SATISFY FIELD CONDITIONS.
16. PROVIDE VOLUME DAMPERS ON ALL BRANCH TAKE-OFFS.
17. ALL DUCT TURNS, ELBOWS, ETC., SHALL BE INSTALLED WITH TURNING VANES OR SHALL BE MINIMUM 1-1/2 RADIUS ELBOW.
18. SIZE OF BRANCH DUCT TAKE-OFF TO DIFFUSER SHALL BE EQUAL TO NECK SIZE OF THE DIFFUSER UNLESS NOTED OTHERWISE.
19. FLEXIBLE DUCT CONNECTIONS SHALL NOT EXCEED 5'-0" IN LENGTH. CONNECTIONS IN AREAS WITHOUT SUSPENDED CEILINGS SHALL BE SHEET METAL. PROVIDE SMART ELBOW WHERE BEND CAN NOT BE PROVIDED.
20. ALL TRANSFER AND EXHAUST FAN DUCTS SHALL HAVE SOUND LINING OF 1" THICKNESS. TRANSFER DUCTS SHALL NOT EXCEED 5'-0" IN LENGTH.
21. PROVIDE SHEAVE CHANGES AS REQUIRED TO MEET FINAL TEST AND BALANCE CONDITIONS AND OPERATE SYSTEMS IN A QUIET AND EFFICIENT MANNER.
22. SMOKE DETECTORS SHALL BE INSTALLED IN SUPPLY OR RETURN AIR SYSTEMS WITH A DESIGN CAPACITY GREATER THAN 2,000 CFM TIED TO THE FIRE ALARM SYSTEM.
23. INSULATE ALL CONDENSATE PIPING. SEE SPEC.
24. ALL CONDENSATE FROM HVAC EQUIPMENT SHALL BE PIPED TO TO THE NEAREST FLOOR DRAIN.
25. ALL DUCT DIMENSIONS INDICATED ARE FREE AREA DIMENSIONS.

ABBREVIATIONS

FCU	- FAN COIL UNIT
SST	- STAINLESS STEEL
EF	- EXHAUST FAN
EUH	- ELECTRIC UNIT HEATER
IH	- INFRARED HEATER
EWH	- ELECTRIC WALL HEATER
AC	- AIR CONDITIONER
CU	- CONDENSING UNIT
RL	- REFRIGERANT LIQUID
RS	- REFRIGERANT SUCTION

CITY OF CHICAGO REFRIGERATION SCHEDULE

RJH 01/27-20

TAG	SERVICE	LOCATION	NO. COMP.	COMP/TON	REFRIGERANT QUANT (LBS)	REFRIGERANT TYPE	SELF CONTAINED	AIR COOLED	WATER COOLED
AC-2	CAK 112	CAK 112 ROOF	1	1	1.1	R-410A	●	●	
AC-1	SUPERVISOR'S BOOTH	SUPERVISER STATION ROOF	1	1	1.1	R-410A	●	●	
AC-3	ELEV MACH RM2	ELEV MACH RM2	1	1	1.1	R-410A	●	●	
CU-1	FCU'S	SOUTH TOWER	1	8	R410A	R-410A		●	

NOTES:

1. INSTALL PRESSURE RELIEF VALVE ON HIGH PRESSURE SIDE OF SYSTEM, UPSTREAM OF ANY INTERVENING VALVES.
2. REMOVE EXPANSION VALVES, DEVICES, & CONNECTIONS FROM AIR STREAM.
3. REFRIGERATION PIPING TO BE TYPE "K" OR ACR.
4. ALL CONNECTIONS AND DEVICES TO BE BRAZED.

CHICAGO VENTILATION SCHEDULE

ROOM TAG	ROOM NAME	NET FLOOR AREA (SQFT)	ORDINANCE REQUIREMENTS: ROOM PURPOSE PER TABLES	ORDINANCE REQUIREMENTS: NATURAL LIGHT & VENT GLASS (SQFT)	ORDINANCE REQUIREMENTS: NATURAL LIGHT & VENT VENT (SQFT)	ORDINANCE REQUIREMENTS: MECHANICAL VENT SUP. (CFM)	ORDINANCE REQUIREMENTS: MECHANICAL VENT EXH. (CFM)	ACTUAL PROVIDED: NATURAL LIGHT & VENT GLASS (SQFT)	ACTUAL PROVIDED: NATURAL LIGHT & VENT VENT (SQFT)	ACTUAL PROVIDED: MECHANICAL VENT SUP. (CFM)	ACTUAL PROVIDED: MECHANICAL VENT EXH. (CFM)	ACTUAL PROVIDED: EQUIPMENT SERVING SUP.	ACTUAL PROVIDED: EQUIPMENT SERVING EXH.	REMARKS
S101	UNPAID	1022	CORRIDOR	1450	58	NR	NR	1450	58		4500		EF-7	
S102	PAID	1386	CORRIDOR	2434	98	NR	NR	2434	98		24000		EF-8	
S103	SURGE	109	CORRIDOR			NR	NR							
M017	TOILET	51	TOILET			0	102				110		TEF-1	
M004	ELECTRICAL	420	STORAGE INACTIVE	34	17	NR	NR	0	0		5,000		EF-4/EF-5	EXHAUST ONLY
M002	COMMUNICATIONS	144	STORAGE INACTIVE	12	6	NR	NR	0	0			FCU-3	N/A	COOLING ONLY
M006	UPS	84	STORAGE INACTIVE	7	3	NR	NR	0	0			FCU-2	EF-1	COOLING ONLY
M003	MAINTENANCE	112	STORAGE INACTIVE	9	4	NR	NR	0	0		200		TEF-1	EXHAUST ONLY
M008	CONTROL ROOM	98	STORAGE INACTIVE	8	4	NR	NR	0	0			FCU-1	N/A	COOLING ONLY
S003	CAK	32	OFFICE	120	5	NR	NR	120	8			AC-1	N/A	COOLING ONLY
	SUPERVISOR KIOSK	32	OFFICE	120	5	NR	NR	120	8			AC-2	NA	COOLING ONLY
				-	-	-	-							
				-	-	-								

DESIGN BY:	TO								
DRAWN BY:	TO	2	03/18/2020	BUILDING PERMIT CORRECTIONS 2	TO	TO	RH		
CHECKED BY:	RH	1	01/27/2020	BUILDING PERMIT CORRECTIONS 1	TO	TO	RH		
APPROVED BY:	RH		06/14/2019	ISSUE FOR PERMIT	TO	TO	RH		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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CDOT CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

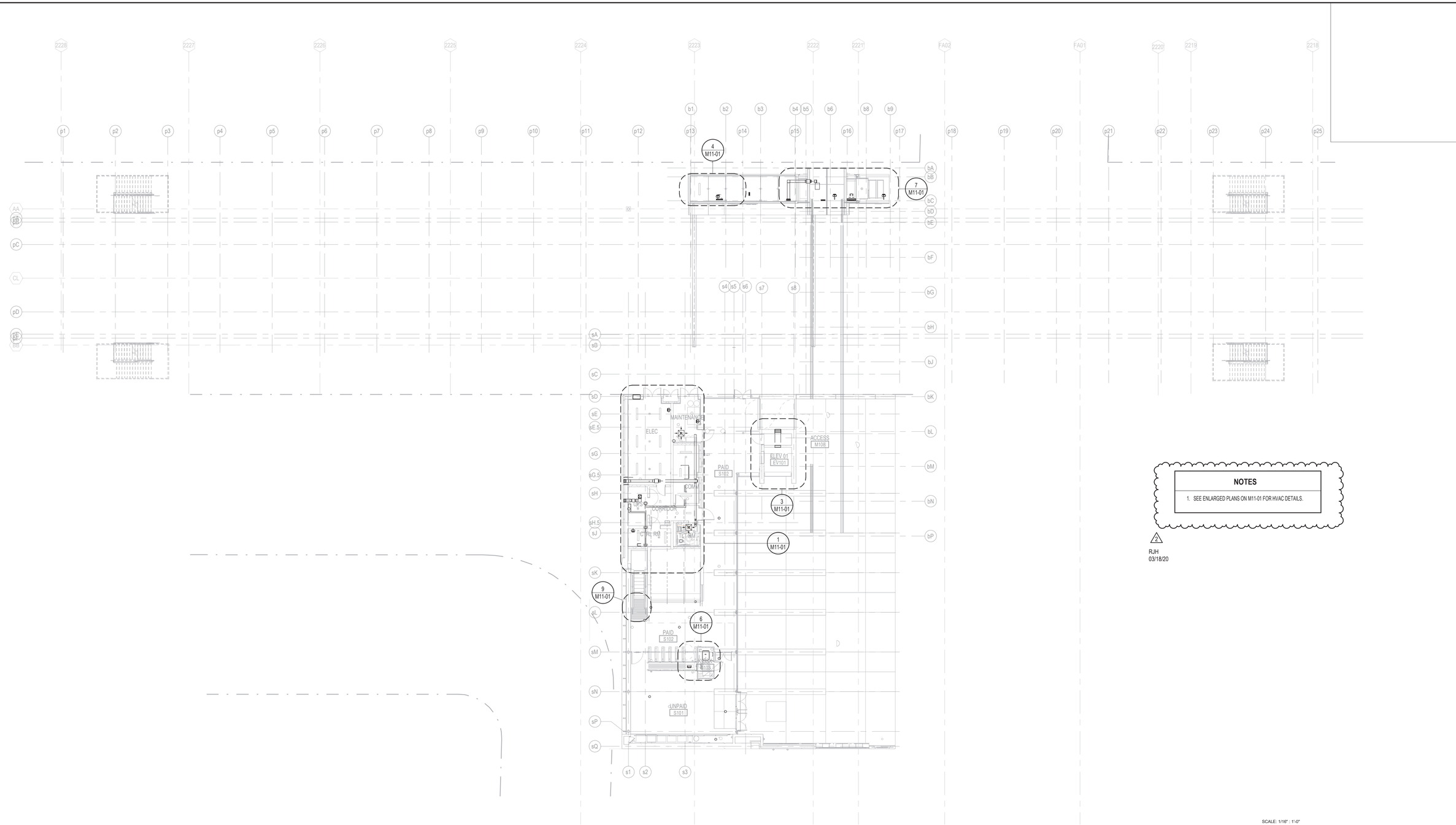
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

MECHANICAL GENERAL NOTES, SYMBIOLS AND ABBREVIATIONS

DRAWING NO. M00-01

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



1 OVERALL LEVEL 01 PLAZA PLAN

1/16" = 1'-0"

NOTES

1. SEE ENLARGED PLANS ON M11-01 FOR HVAC DETAILS.

2 RJH 03/18/20

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

0' 8' 16' 32' 64'

DESIGN BY:	TO									
DRAWN BY:	TO	2	03/18/2020	BUILDING PERMIT CORRECTIONS 2	TO	TO	RH			
CHECKED BY:	RH	1	01/27/2020	BUILDING PERMIT CORRECTIONS 1	TO	TO	RH			
APPROVED BY:	RH		06/14/2019	ISSUE FOR PERMIT	TO	TO	RH			
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT	

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DIVISION OF ENGINEERING

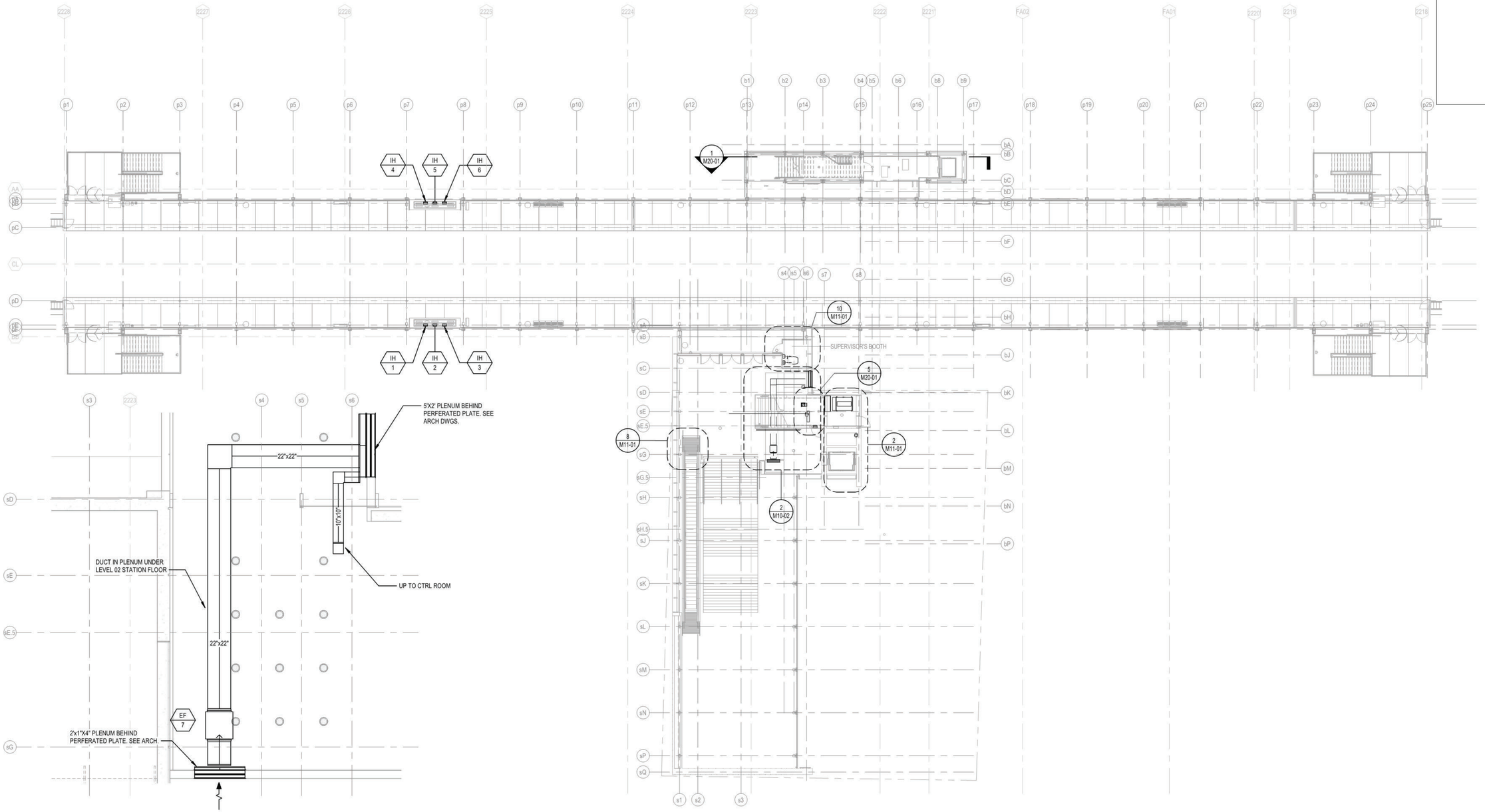
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

OVERALL LEVEL 01 - MECHANICAL PLAN

DRAWING NO. **M10-01**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



2 ENLARGED PLAN - UNDER LEVEL 2 FLOOR
1/4" = 1'-0"

SCALE: 1/4" : 1'-0"
0' 4' 8' 16' 32'

1 OVERALL LEVEL 02 PLATFORM PLAN
1/16" = 1'-0"

SCALE: 1/16" : 1'-0"
0' 8' 16' 32' 64'

DESIGN BY:	TO								
DRAWN BY:	TO								
CHECKED BY:	RH								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	TO	TO	RH		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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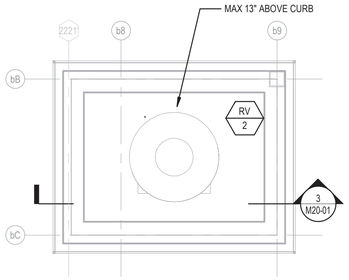
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

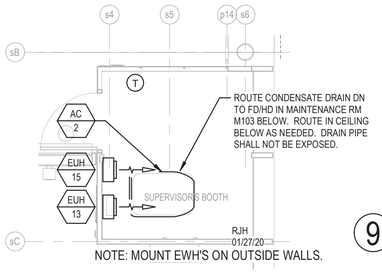
OVERALL LEVEL 02 - PLATFORM MECHANICAL PLAN

DRAWING NO. **M10-02**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.

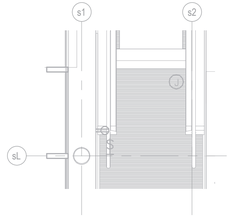


11 ENLARGED PLAN - ELEVATOR 2 ROOF
1/4" = 1'-0"

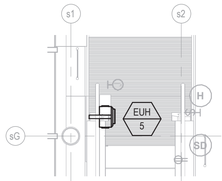


NOTE: MOUNT EWH'S ON OUTSIDE WALLS.

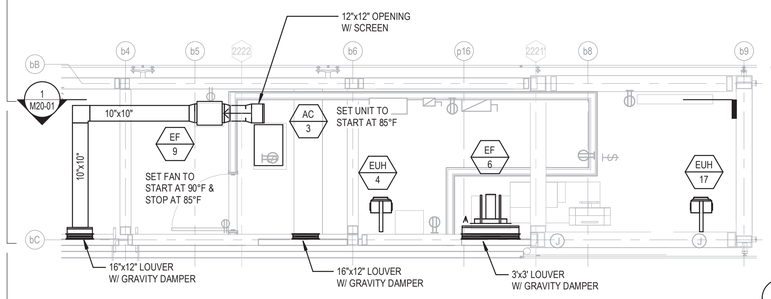
10 ENLARGED SUPERVISOR'S BOOTH
1/4" = 1'-0"



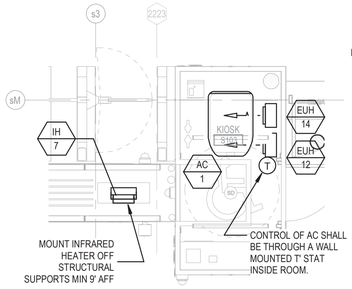
9 ENLARGED ESCALATOR PIT BOTTOM
1/4" = 1'-0"



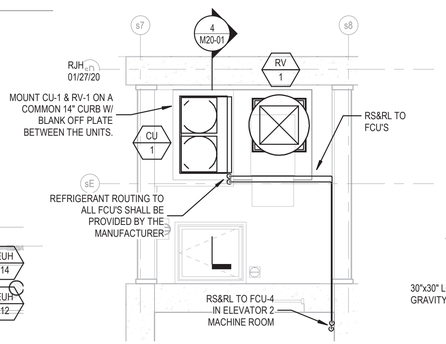
8 ENLARGED ESCALATOR PIT TOP
1/4" = 1'-0"



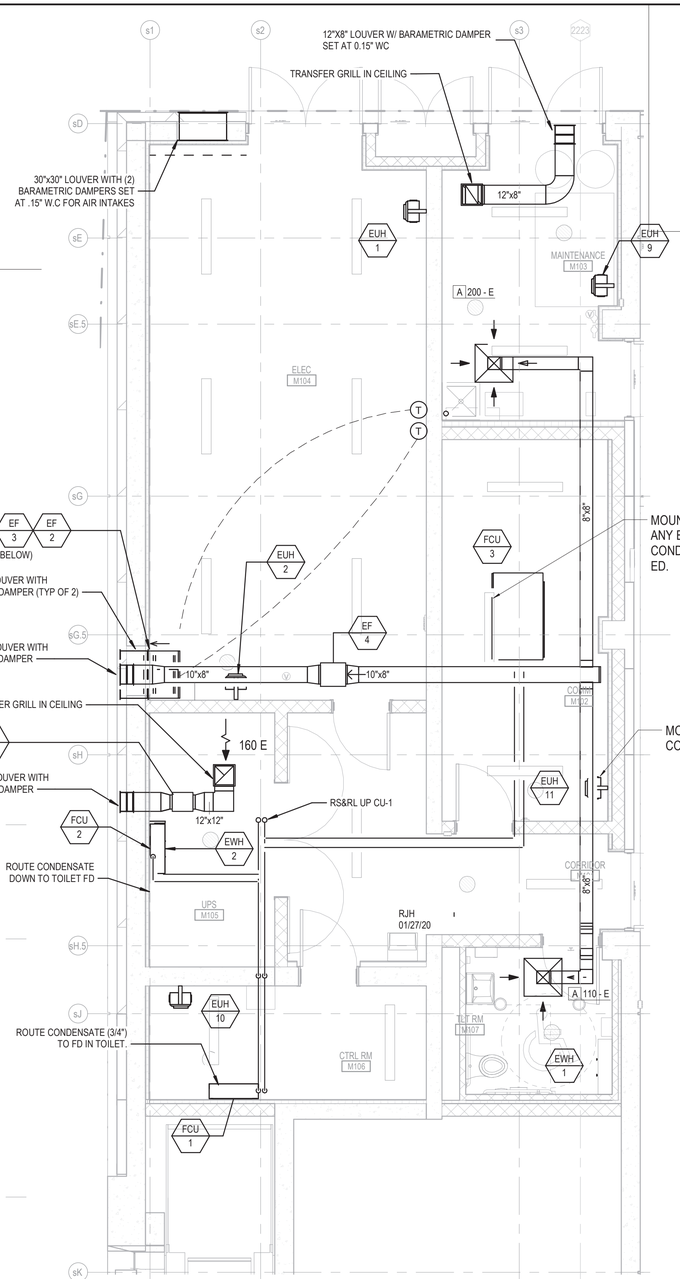
7 ENLARGED PLAN - ELEVATOR 2 MACHINE ROOM
1/4" = 1'-0"



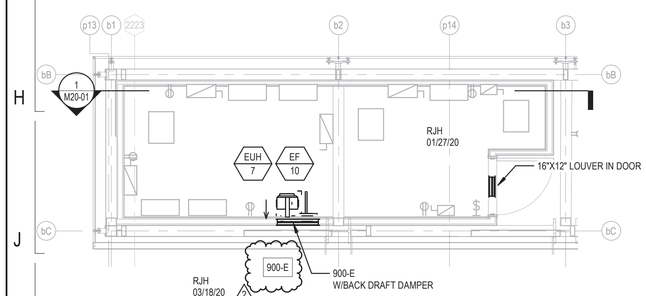
6 ENLARGED PLAN - CAK RM 112 PLAN
1/4" = 1'-0"



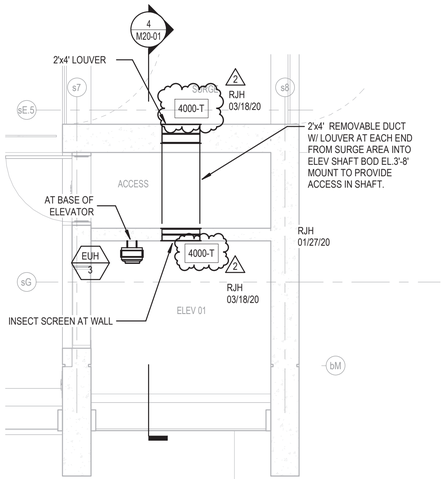
5 ENLARGED PLAN - ELEVATOR 1 ROOF 4.5
1/4" = 1'-0"



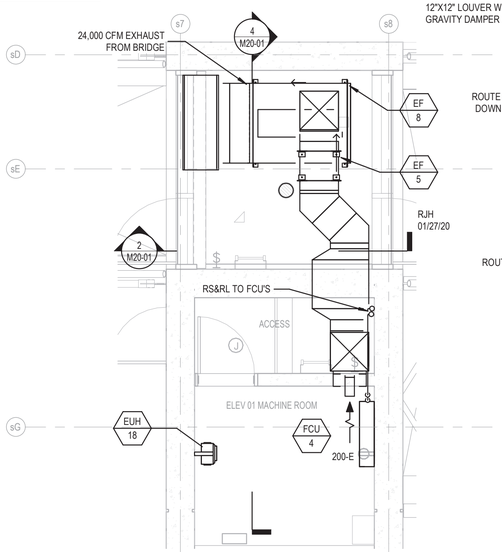
1 ENLARGED LEVEL 01 - MECHANICAL PLAN
1/4" = 1'-0"



4 ENLARGED PLAN - ELECTRICAL ROOM
1/4" = 1'-0"



3 ENLARGED PLAN - ELEVATOR 1 BOTTOM OF SHAFT
1/4" = 1'-0"



2 ENLARGED PLAN - ELEVATOR 1 TOP OF SHAFT
1/4" = 1'-0"

N

SCALE: 1/4" : 1'-0"
0' 4' 8' 16' 32'

DESIGN BY:	TO								
DRAWN BY:	TO	2	03/18/2020	BUILDING PERMIT CORRECTIONS 2	TO	TO	RH		
CHECKED BY:	RH	1	01/27/2020	BUILDING PERMIT CORRECTIONS 1	TO	TO	RH		
APPROVED BY:	RH		06/14/2019	ISSUE FOR PERMIT	TO	TO	RH		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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DIVISION OF ENGINEERING

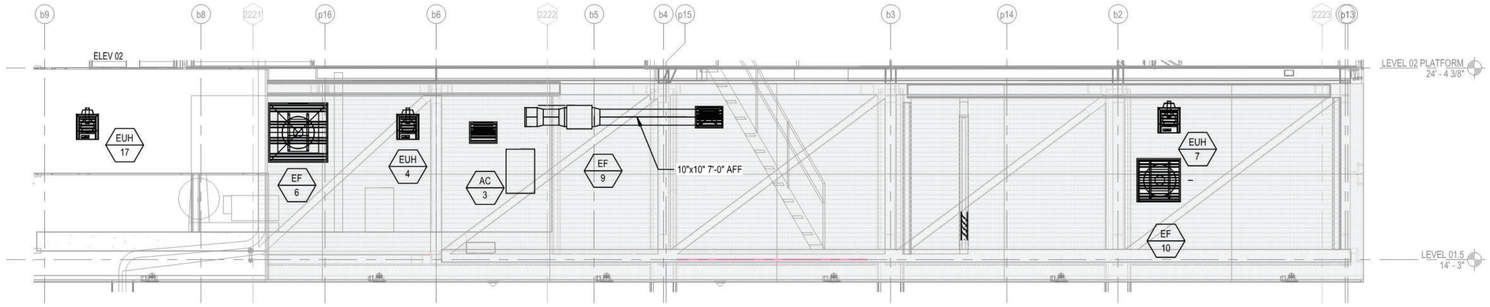
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

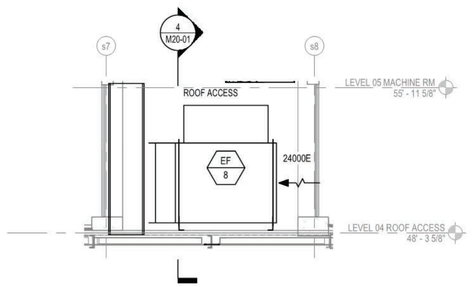
ENLARGED - MECHANICAL PLAN

DRAWING NO.
M11-01

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.

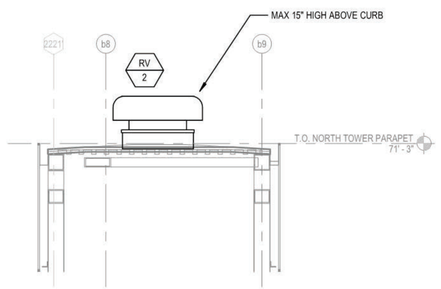


1 SECTION - BOTTOM OF ELEVATOR 2 SHAFT
1/4" = 1'-0"

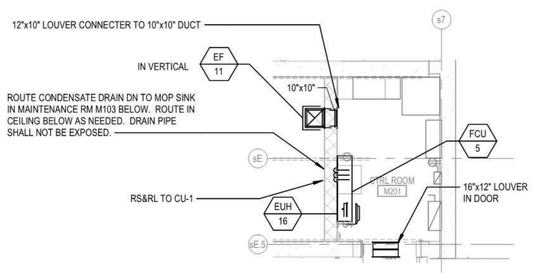


2 SECTION - BRIDGE EXHAUST FAN
1/4" = 1'-0"

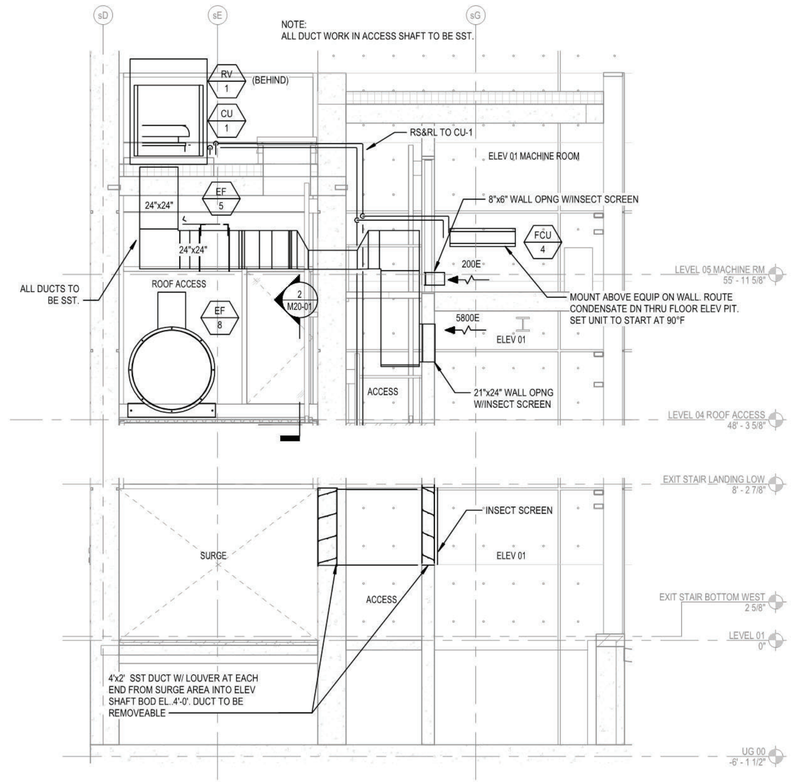
NOTE:
DOOR LOUVER SHALL HAVE A MIN 69% FREE AREA TO MAINTAIN REQ'D SYSTEM AIRFLOW



3 SECTION - TOP OF ELEVATOR 2 SHAFT
1/4" = 1'-0"



5 ENLARGED CTRL ROOM
1/4" = 1'-0"



4 SECTION - ELEVATOR 1 SHAFT
1/4" = 1'-0"

NOTE:
ALL DUCT WORK IN ELEVATOR SHAFT TO BE ACCESSIBLE.

SCALE: 1/4" : 1'-0"
0' 4' 8' 16' 32'

DESIGN BY:	TO								
DRAWN BY:	TO								
CHECKED BY:	RH								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	TO	TO	RH		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

MECHANICAL SECTIONS AND ENLARGED PLANS

DRAWING NO.
M20-01

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.

PACKAGED ELECTRIC DX COOLING AIR HANDLING UNIT SCHEDULE

TAG	LOCATION	ASSOCIATED EQUIPMENT	NOMINAL TONS	BLOWER SECTION		DX COIL		L.A.T. WB °F	DX COIL	ELECTRICAL DATA			FILTER DATA		WEIGHT	MANUFACTURER	MODEL	REMARKS
				CFM	ESP (" WC)	REFRIG TYPE	E.A.T. DB °F		MBH	VOLT/HZ/PH	MIN. OPERATING AMPS	OVER CURRENT PROTECTION	MERV	TYPE				
FCU-1	ELEV/ESCL CTRL RM M008	CU-1	1.5	710	0	R-410A	95	54.5	18000	208/60/1	1.9	15	7	THROW AWAY	31	DAIKEN	FXAQ18PVJU	1,2
FCU-2	UPS M006	CU-1	1.5	710	0	R-410A	95	54.5	18000	208/60/1	1.9	15	7	THROW AWAY	31	DAIKEN	FXAQ18PVJU	1,2
FCU-3	COMM M015	CU-1	1.5	710	0	R-410A	95	54.5	18000	208/60/1	1.9	15	7	THROW AWAY	31	DAIKEN	FXHQ18MVJU	1,2
FCU-4	ELEV 1 MACH RM	CU-1	1.5	710	0	R-410A	95	54.5	18000	208/60/1	1.9	15	7	THROW AWAY	31	DAIKEN	FXAQ18PVJU	1,2,3,4
FCU-5	CTRL RM	CU-1	1.5	710	0	R-410A	95	54.5	18000	208/60/1	1.9	15	7	THROW AWAY	31	DAIKEN	FXAQ18PVJU	1,2,3,4

NOTES:
1. UNITS TO INCLUDE REMOTE T'STATS FOR CONTROL WITH ADJUSTABLE SETPOINTS.
2. CONNECT FCUS TO CU-1.
3. ELEVATOR UNIT TO BE INSTALLED VERTIALLY FACING DOWNWARD.
4. NO WINTER OPERATION

VARIABLE AIR VOLUME CONTROL
1. UNITS SHALL BE CONTROLLED FROM THERMOSTATS MOUNTD IN THE SPACES TO MAINTAIN TEMPERATURE IN SUMMER (85F) AND WINTER (65F).
2. FCU-4 SHALL ONLY OPERATE BETWEEN THE MONTHS OF MAY THROUGH OCTOBER (ADJUSTABLE). DURING THE BALANCE OF THE COLD WEATHER, THIS UNITS SHALL REMAIN OFF.

EXHAUST FAN SCHEDULE

TAG	AREA SERVED	LOCATION	CFM	S.P.	RPM	ELECTRICAL				WEIGHT (LBS)	SIZE (WxHxL)	MANUFACTURER	MODEL	REMARKS
						HP	VOLTS	PHASE	DRIVE					
EF-1	UPS M006	UPS M006	160	0.375	1725	1/15	115	1	DIRECT	26	16x12x12	GREENHECK	SQ70VG	1
EF-2	ELEC M104	ELEC M104	2500	0.5	1750	0.5	115	1	DIRECT	71	26x26x20	GREENHECK	SBE-2H20-5	1
EF-3	ELEC M104	ELEC M104	2500	0.5	1750	0.5	115	1	DIRECT	71	26x26x20	GREENHECK	SBE-2H20-5	2
EF-4	M003 & TOILET	CONTROL RM	310	0.375	1729	1/10	115	1	DIRECT	57		GREENHECK	SQ-80-VG	
EF-5	SOUTH TOWER	MECH SPACE	6000	.5	1725	1.5	208	1	DIRECT	130	30x15	GREENHECK	TDI-3-20-429-A15	2
EF-6	NORTH TOWER	MECH SPACE	12,000	.5	1750	3	208	1	DIRECT	100	26X24	GREENHECK	AER-E30C-317-A30	2
EF-7	MAIN BUILDING	MAIN BUILDING	4500	.5	1725	2	208	1	DIRECT	100	26x26x29	GREENHECK	SQ-160-VG	2
EF-8	BRIDGE	SOUTH TOWER	25000	.5	715	5	208	1	BELT	300	54x64	GREENHECK	QEI-40-I-50	2
EF-9	ELEV CTRL RM	NORTH TOWER	425	.25	550	1/10	115	1	DIRECT	60	19X15	GREENHECK	SQ90VG	2
EF-10	N. ELEC RM	N. ELEC RM	1100	0.38	1750	1/6	115	1	DIRECT	71	26x26	GREENHECK	AER-E20C-302-A	2
EF-11	CTRL RM	CTRL RM	300	0.375	1550	1/10	115	1	DIRECT	41	15x15x19	GREENHECK	SQ-80-D	2

NOTES:
1. EF TO START WHEN T-STAT REACHES 85° AND STOPS WHEN T-STAT REACHES 80° F.
2. EF TO START WHEN T-STAT REACHES 90° DEG AND STOPS WHEN T-STAT REACHES 80° F.

AIR COOLED CONDENSING/CONDENSER UNIT SCHEDULE

TAG	LOCATION	Cooling BTUH	EER	Heating BTUH	ELECTRICAL				WEIGHT (LBS)	SIZE (WxHxL)	MANUFACTURER	MODEL	REMARKS
					MCA	MOP	VOLTS	PHASE					
CU-1	SOUTH TOWER	96000	15/12.3	103000	38.1	45	208	3	1280	48x31x66	DAIKEN	REYQ96XAYJA	1

NOTES:
1. ALL EXTERIOR PIPING TO INCLUDE SST COVERS.

GRILLE SCHEDULE

EQUIPMENT TYPE	DESIGNATION	MODULE SIZE	NECK SIZE	CFM RANGE	MAX NC.	MAX PD	MOUNTING TYPE	MODEL	THROW DIRECTION	MANUFACTURER	SUPPLY/RETURN	ROOM NAME
A		24x24	10	100-250	40	0.04	CEILING	R300F	NA	TITUS	RETURN	SEE PLANS

NOTES:

1. BORDER TYPES SHALL BE IN ACCORDANCE WITH LATEST APPROVED ARCHITECTURAL REFLECTED CEILING PLAN FOR THE ROOM IN WHICH THE DEVICE IS LOCATED.
2. SEE PLANS FOR LOCATION AND AIR QUANTITIES OF EACH AIR DEVICE.
3. ALL AIR DEVICES SHALL BE TESTED IN ACCORDANCE WITH ASHRAE STANDARD 70-91.
4. FINISH SHALL BE PAINT EXTRUDED ALUMINUM CONSTRUCTION TO MATCH GRID (COORDINATE WITH ARCHITECT) AND ARCHITECTURAL DRAWINGS.

AC UNIT SCHEDULE

TAG	AREA SERVED	LOCATION	CFM	CAPACITY (BTH)	ELECTRICAL			WEIGHT (LBS)	SIZE (WxHxL)	MANUFACTURER	MODEL	REMARKS
					AMPS	VOLTS	PHASE					
AC-1	CAK 112	CAK 112 ROOF	300	13,500	13.6	115	1	95	26.2x11.8x38	COLEMAN MACH 10	452X3*8XX	1,2
AC-2	SUPERVISOR'S BOOTH	SUPERVISER STATION ROOF	300	13,500	13.6	115	1	95	26.2x11.8x38	COLEMAN MACH 10	452X3*8XX	1,2
AC-3	ELEV MACH RM2	ELEV MACH RM2	300	15,000	11.8	115	1	112	26x18x28	LG	LW1516ER	3

NOTES:
1. MOUNT ON CAK ROOF & ROUTE CONDESATE DRAIN (3/4") TO FD IN KIOSK.
2. EQUIP UNIT WITH NO HEATER
3. PROVIDE WALL SLEEVE W/UNIT.

INFRARED HEATING EQUIPMENT

TAG	TYPE	AREA SERVED	LOCATION	BTU'S	ELECTRICAL			SIZE (LxWxD)	MANUFACTURER	MODEL	REMARKS
					KW	VOLTS	PHASE				
IH-1	2-LAMP	PLATFORM WIND BREAK	PLATFORM	10230	3	208	3	32.25x9x12.45	MARKEL	MARKEL 222-30-THSS-208V	
IH-2	2-LAMP	PLATFORM WIND BREAK	PLATFORM	10230	3	208	3	32.25x9x12.45	MARKEL	MARKEL 222-30-THSS-208V	
IH-3	2-LAMP	PLATFORM WIND BREAK	PLATFORM	10230	3	208	3	32.25x9x12.45	MARKEL	MARKEL 222-30-THSS-208V	
IH-4	2-LAMP	PLATFORM WIND BREAK	PLATFORM	10230	3	208	3	32.25x9x12.45	MARKEL	MARKEL 222-30-THSS-208V	
IH-5	2-LAMP	PLATFORM WIND BREAK	PLATFORM	10230	3	208	3	32.25x9x12.45	MARKEL	MARKEL 222-30-THSS-208V	
IH-6	2-LAMP	PLATFORM WIND BREAK	PLATFORM	10230	3	208	3	32.25x9x12.45	MARKEL	MARKEL 222-30-THSS-208V	
IH-7	2-LAMP	UNPAID S101	CAK 112	10230	3	208	3	32.25x9x12.45	MARKEL	MARKEL 222-30-THSS-208V	

NOTES:
1. MANUAL START-STOP WITH 0-15 MINUTE TIMER.
2. MOUNT ALL IH'S MINIMUM 9' ABOVE FINISHED FLOOR.

ELECTRIC HEATING EQUIPMENT SCHEDULE

TAG	Location	Actual Supply Air Flow	BTU/HR	ELECTRICAL			BLOW	WEIGHT (LBS)	SIZE (WxHxD)	MANUFACTURER	MODEL	MOUNTING	REMARKS
				KW	VOLTS	PHASE							
EUH-1	ELEC M104	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	10'	1,2,3
EUH-2	ELEC M104	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	7'	1,2,3
EUH-3	ELEV 01	350	10230	5	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA520	NA	1,2,3
EUH-4	ELEV 02	350	10230	5	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA520	NA	1,2,3
EUH-5	ESC PIT	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	NA	1,2,3,4
EUH-6	ESC PIT	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	NA	1,2,3,4
EUH-7	N ELEC RM	350	10230	5	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA520	7'	1,2,3
EUH-9	MAIN	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	NA	1,2,3
EUH-10	CTRL RM	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	NA	1,2,3
EUH-11	COM	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	NA	1,2,3
EUH-12	CAK RM 112		6824	2	208	1	HORIZONTAL	130	9"x2'-11"x2'	QMARK	MUH03-81	WALL	1,2,3
EUH-13	SUPER BOOTH		6824	2	208	1	HORIZONTAL	130	9"x2'-11"x2'	QMARK	MUH03-81	WALL	1,2,3
EUH-14	CAK RM 112		6824	2	208	1	HORIZONTAL	130	9"x2'-11"x2'	QMARK	MUH03-81	WALL	1,2,3
EUH-15	SUPER BOOTH		6824	2	208	1	HORIZONTAL	130	9"x2'-11"x2'	QMARK	MUH03-81	WALL	1,2,3
EUH-16	CTRL RM	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	WALL	1,2,3
EUH-17	ELEV 02 PIT	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	WALL	1,2,3
EUH-18	ELEV 1 MACH RM	350	10230	3	208	1	HORIZONTAL	24	1'-2"x1'-4"x8"	BERKO	HUHAA320	WALL	1,2,3
EWH-1	TLT RM M107	200	6824	2	208	1	HORIZONTAL	130	9"x2'-11"x2'	BERKO	CUH935	FL	1,2,3
EWH-2	UPS M105	200	6824	2	208	1	HORIZONTAL	130	9"x2'-11"x2'	BERKO	CUH935	FL	1,2,3

NOTES:
1. UNITS TO HAVE INTEGRAL THERMOSTATS AND BE WASHDOWN TYPE UNITS.
2. MOUNT OFF WALL.
3. UNITS SHALL BE WEATHER TIGHT AND BE LOCATED NOT TO INTERFERE WITH SYSTEM OPERATIONS.
4. UNITS SHALL BE AS REQUIRED BY THE ESCALATOR SUPPLIER.

RELIEF VENT SCHEDULE

TAG	CFM	SIZE	MANUFACTURER	MODEL	NOTE
RV-1	4600	38 DIA X 2	GREENHECK	GRSI-24	
RV-2	9600	36x36x18	GREENHECK	GRSI-36	1

1. UNIT REQ'D TO BE MAX 15" HT ABOVE CURB.

BUILDING AUTOMATION SYSTEM (BAS)

1) THE BUILDING AUTOMATION SYSTEM SHALL BE AN OPEN BACK NET DDC TYPE SYSTEM WITH A CENTRAL CONTROLLER LOCATED IN THE INTERIOR KIOSK.
2) THE SYSTEM SHALL OPERATE, MONITOR AND ALARM AS NECESSARY FOR ALL VENTILATION, HEATING AND COOLING EQUIPMENT IN THE BUILDING.
3) ALL THERMOSTATS AND LOW LIMIT MONITOR DEVICES SHALL TRANSMIT TO THE BAS FOR ALL OPERATIONS.
4) THE ALARM PORTION OF THE SYSTEM SHALL BE CAPABLE OF SENDING EMAILS TO UP TO 10 INDIVIDUALS FOR ANY AND ALL ALARMS GENERATED BY THE SYSTEM, IN ADDITION TO PROVIDING A LOCAL ALARM AT THE MAIN CONTROL PANEL.
5) THE CONTROLLER SHALL INCLUDE A TOUCH SCREEN AND MENU SYSTEM TO ALLOW THE OPERATOR ACCESS TO ALL OPERATIONS. IN ADDITION, THE CONTROLLER SHALL RETAIN 1 MONTH'S WORTH OF INFORMATION FOR EACH SYSTEM.

CONTROL SEQUENCES OF OPERATION

1) ELEVATOR SHAFT & BRIDGE VENTILATION SYSTEMS
   a) FANS SHALL BE ENERGIZED WHEN THE OUTSIDE AIR TEMPERATURE RISES TO ABOVE 60°F FOR MORE THAN 4 HOURS (ADJUSTABLE) AND BE DE-ENERGIZED WHEN THE OUTSIDE AIR TEMPERATURE DROPS BELOW 55°F FOR MORE THAN 4 HOURS (ADJUSTABLE).
   b) WHEN ENERGIZED, THE FAN SHALL START AT 40% SPEED WHEN THE TEMPERATURE IN THE ELEVATOR SHAFT RISES ABOVE 75°F (ADJUSTABLE) AND REMAIN IN OPERATION UNTIL THE TEMPERATURE IN THE SHAFT FALLS BELOW 70°F FOR 2 HOURS (ADJUSTABLE).
2) VARIABLE REFRIGERANT SYSTEM
   a) SYSTEM SHALL BE ENERGIZED WHEN THE OUTSIDE AIR TEMPERATURE RISES TO ABOVE 60°F FOR MORE THAN 4 HOURS (ADJUSTABLE) AND BE DE-ENERGIZED WHEN THE OUTSIDE AIR TEMPERATURE DROPS BELOW 55°F FOR MORE THAN 4 HOURS (ADJUSTABLE).
   b) INDIVIDUAL COOLING UNITS INSIDE THE FACILITY SHALL OPERATE AS NECESSARY TO MAINTAIN THE SETPOINT TEMPERATURE FOR THE SPACE. THE SETPOINT SHALL BE 80°F (ADJUSTABLE).
   c) THE CONDENSER UNIT SHALL OPERATE AS REQUIRED TO PROVIDE COOLING TO THE INDIVIDUAL UNITS.
3) HEAT REMOVAL EXHAUST FANS
   a) COOLING EXHAUST FANS SHALL OPERATE WHEN THE LOCAL THERMOSTAT CALLS FOR REMOVAL OF EXCESSIVE HEAT FROM THE SPACE. THE SYSTEM SHALL OPEN THE LOUVER/DAMPER FOR THE FAN AND START THE FAN.
   b) WHEN THE COOLING SYSTEM HAS SATISFIED THE SPACE NEEDS FOR A PERIOD OF 1 HOUR, THE FANS SHALL STOP AND THE LOUVER/DAMPER SHALL CLOSE.
4) TOILET/TRASH ROOM FAN
   a) THE TOILET/TRASH ROOM FAN SHALL BE OPERATED FROM A SWITCH IN EITHER THE TRASH ROOM OR THE TOILET ROOM.
   b) THE EXHAUST LOUVER/DAMPER SHALL OPEN WHEN THE FAN IS IN OPERATION.
5) ALARMS
   a) THE CONTROL SYSTEM SHALL MONITOR THE OPERATION OF ALL CONNECTED EQUIPMENT AND SHALL SEND A LOCAL ALARM AND REMOTE EMAIL ALARM BASED ON:
      i) FAILURE OF A PIECE OF EQUIPMENT TO START WHEN COMMANDED TO OPERATE.
      ii) WHERE UNIT HEATERS ARE INSTALLED, THERE SHALL BE A LOW TEMPERATURE ALARM UNIT TO INDICATE THAT THE SPACE TEMPERATURE HAS DROPPED BELOW THE UNIT SETPOINT. THE SETPOINT SHALL BE 40°F (ADJUSTABLE).
      iii) STOPPAGE OF A PIECE OF EQUIPMENT WHEN IN THE OPERATING MODE.
      iv) THE EQUIPMENT TO BE ALARMED INCLUDES:
         (1) THE VRF CONDENSER
         (2) THE VRF COOLING UNITS (3)
         (3) THE TRASH/TOILET ROOM EXHAUST FAN
         (4) THE HEAT REMOVAL EXHAUST FANS
         (5) EACH ELEVATOE SHAFT AND BRIDGE VENTILATION FAN

DESIGN BY:	TO								
DRAWN BY:	TO								
CHECKED BY:	RH								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	TO	TO	RH		
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SPEC. NO.

MECHANICAL SCHEDULES

DRAWING NO. M60-01

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.

SHUTOFF VALVE (REFER TO SPEC. FOR TYPE)

OS & Y VALVE

GATE VALVE

GLOBE VALVE

CHECK VALVE

BUTTERFLY VALVE

BALL VALVE

STRAINER

STRAINER WITH BLOWDOWN

BALANCING VALVE

UNION

FLANGE

2" AND SMALLER, CAP OR PLUG, 2-1/2" AND LARGER, BLIND FLANGE

PRESSURE REDUCING/REGULATING VALVE

SOLENOID VALVE

CONTROL VALVE (2-WAY)

CONTROL VALVE (3-WAY)

SAFETY RELIEF VALVE

THERMOMETER

PRESSURE GAGE (WITH GAUGE VALVE)

PIPE ANCHOR

SLEEVE

PIPE GUIDE

FILTER

PIPE FLEXIBLE CONNECTION

MANUAL AIR VENT

AUTOMATIC AIR VENT

ELECTRIC HEAT TRACING INDICATOR

BACKFLOW PREVENTER

CONCENTRIC OR ECCENTRIC REDUCER

CONCENTRIC REDUCER

ECCENTRIC REDUCER

DIRECTION OF FLOW

PUMP

DISCONNECT TO EXISING

CONNECT TO EXISING

KEY NOTE SYMBOL

PIPE ELBOW UP

PIPE ELBOW DOWN

PIPE TEE UP

PIPE TEE DOWN

P TRAP

CLEANOUT/ WALL CLEANOUT

FLOOR CLEANOUT / YARD CLEANOUT

FLOOR DRAIN / HUB DRAIN

FLOOR DRAIN / HUB DRAIN

TRENCH DRAIN

ROOF DRAIN

HOSE BIBB

HYDRANT

WATER METER

THERMOSTATIC MIXING VALVE

VACUUM BREAKER

WATER HAMMER ARRESTOR

FIXTURE SUPPLY AIR CHAMBER

COLD WATER

HOT WATER

VENT

SANITARY

PLUMBING SYMBOLS

AC	AIR COMPRESSOR
AD	AREA DRAIN
AFCO	ACID FLOOR CLEAN OUT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AP	ACCESS PANEL
ARCH	ARCHITECTURAL, ARCHITECTURE
ASSY	ASSEMBLY
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AV	ACID VENT
AUX	AUXILIARY
AVTR	ACID VENT THRU ROOF
AW	ACID WASTE
B/W	BETWEEN
BFP	BACKFLOW PREVENTER
BOB	BOTTOM OF BEAM
BOP	BOTTOM OF PIPE
BP	BOOSTER PUMP
BC	BALANCING COCK OR VALVE
BHP	BRAKE HORSEPOWER
BV	BALL VALVE
BWV	BACKWATER VALVE
BTU	BRITISH THERMAL UNITS
BTUH	BRITISH THERMAL UNITS/HOUR
CA	COMPRESSED AIR
CALC	CALCULATIONS
CB	CATCH BASIN
CD	CONDENSATE DRAIN
CAP	CAPACITY
CI	CAST IRON
CONN	CONNECTION
CFS	CUBIC FEET PER SECOND
CLG	CEILING
CO	CLEAN OUT
COL	COLUMN
CONT	CONTINUATION
COMP	COMPRESSOR
CONC	CONCRETE
CG	COMPOUND GAUGE
CV	CHECK VALVE
CS	CUP SINK
DC	DUAL CHECK VALVE
DCV	DOUBLE CHECK VALVE
DCW	DOMESTIC COLD WATER
DDCA	DOUBLE-DETECTOR DOUBLE ASSEMBLY
DEG	DEGREE
DHW	DOMESTIC HOT WATER
DHR	DOMESTIC HOT WATER RETURN
DIM	DIMENSION
DIA	DIAMETER
DS	DOWNSPOUT
DF	DRINKING FOUNTAIN
DWG	DRAWING
DI	DEIONIZED WATER
DIR	DEIONIZED WATER RETURN
DWH	DOMESTIC WATER HEATER
DN	DOWN
DR	DRAIN
DS	DOWNSPOUT
EX OR (E)	EXISTING
EA	EACH
EL	ELEVATION
EQUIP	EQUIPMENT
EFF	EFFICIENCY
EM	EMERGENCY
EWC	ELECTRIC WATER COOLER
ET	EXPANSION TANK
EXP	EXPANSION
EW	EYE WASH
EWH	ELECTRIC WATER HEATER
FBO	FURNISHED BY OTHERS
FD	FLOOR DRAIN
FCO	FLOOR CLEANOUT
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FPM	FEET PER MINUTE
FFE	FINISHED FLOOR ELEVATION
FPS	FEET PER SECOND
FL	FLOOR
FV	FLUSH VALVE
FS	FLOOR SINK
FIXT	FIXTURE
FT	FEET
FW	FACE WASH
G	NATURAL GAS
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
GC	GENERAL CONTRACTOR
GI	GREASE INTERCEPTOR
GW	GREASE WASTE
HP	HORSE POWER
HB	HOSE BIBB
HZ	HERTZ
GWH	GAS FIRED WATER HEATER
H.PT.	HIGH POINT
ID	INSIDE DIAMETER
INV. EL.	INVERT ELEVATION
IM	ICE MAKER
IN	INCH
INSUL	INSULATION
IW	INDIRECT WASTE
L OR LAV	LAVATORY
LA	LAB AIR
LBS	POUNDS
LP	LOW POINT
LPG	LIQUID PROPANE GAS
LV	LAB VENT
LVAC	LAB VACUUM
LWH	LAB WATER HEATER
MAX	MAXIMUM
MH	MAN HOLE
MIN	MINIMUM
MECH	MECHANICAL
MINS	MINUTES
MB	MOP BASIN
MBH	1000 BRITISH THERMAL UNITS
N/A	NOT APPLICABLE
NFWH	NON-FREEZE WALL HYDRANT
NIC	NOT IN CONTRACT
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
O	OXYGEN
O.C.	ON CENTER
OI	OIL INTERCEPTOR
OHD	OPEN HUB DRAIN
OS & Y	OUTSIDE SCREW AND YOKE
OD	OVERFLOW DRAIN
OSD	OPEN SITE DRAIN
PD	PUMP DISCHARGE
PH	PHASE
PG	PRESSURE GAUGE
PLBG	PLUMBING
POC	POINT OF CONNECTION
PPM	PARTS PER MILLION
PRV	PRESSURE REDUCING VALVE
PBV	PRESSURE BALANCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PWC	POTABLE WATER CABINET
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
S OR SAN	SANITARY
SE	SEWAGE EJECTOR
SB	SETTLING BASIN
SH	SHOWER
SI	SOLIDS INTERCEPTOR
SK	SINK
SPKLR	SPRINKLER
SF or SQ.FT.	SQUARE FEET
SS	SERVICE SINK
ST	STORM
SSD	SUB-SOIL DRAIN
ST	STORM
SUB	SUBCONTRACTOR
SCV	SUPERVISED CONTROL VALVE
SYS	SYSTEM
T	THERMOMETER
TD	TRENCH DRAIN
TEMP	TEMPERATURE
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TMV	THERMOSTATIC MIXING VALVE
T.O.P.	TOP OF PIPE
T&P	TEMPERATURE & PRESSURE
TW	TEMPERED WATER
TYP	TYPICAL
UR	URINAL
UNO	UNLESS NOTED OTHERWISE
V	VENT
VAC	VACUUM
VACV	VACUUM
VB	VACUUM BREAKER
VEL	VELOCITY
VERT.	VERTICAL
VTR	VENT THRU ROOF
W	WASTE
W/	WITH
WCO	WALL CLEANOUT
WC	WATER CLOSET
WH	WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
YCO	YARD CLEANOUT

GENERAL NOTES

1) ALL PLUMBING SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE: THE CHICAGO BUILDING CODE, CHICAGO PLUMBING CODE, AND ALL RELATIVE AMENDMENTS.
2) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED PERMITS AND FEES.
3) DRAWINGS ARE GENERALLY DIAGRAMMATIC. ROUTING OF PIPING, DUCTWORK, CONDUITS, RACEWAYS, ETC. AS SHOWN ON THE DRAWINGS DOES NOT INTEND TO SHOW EVERY RISE, DROP, OFFSET, FITTING NOR EVERY STRUCTURAL ELEMENT THAT MAY BE ENCOUNTERED DURING THE INSTALLATION OF THIS WORK. ALL PLUMBING WORK AND ASSOCIATED PIPING SHALL BE CONCEALED FROM PUBLIC VIEW. EXPOSED UTILITIES ARE NOT ACCEPTABLE. PLUMBING CONTRACTOR SHALL MAKE ANY REQUIRED CHANGES FROM THE GENERAL ROUTING SHOWN ON THESE DRAWINGS, SUCH AS OFFSETS, BENDS, OR CHANGES IN ELEVATION DUE TO COORDINATION WITH THE WORK OF OTHER TRADES AND BUILDING CONSTRUCTION. ALL CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE COMMISSIONER OR DELAY IN THE COMPLETION DATE OF THE PROJECT.
4) COORDINATE & VERIFY WITH GENERAL CONTRACTOR AND RELATED DISCIPLINES, PRIOR TO START OF ANY WORK, ALL WORK TO BE PERFORMED OUTSIDE OF THE 5'-0" BUILDING PERIMETER LIMITS OF CONSTRUCTION.
5) ALL PIPING PASSING THRU FLOORS, WALLS, CEILINGS OR ROOF SHALL HAVE A DUCTILE IRON PIPE SLEEVE INSTALLED AROUND THE PIPE AND/OR INSULATION. SLEEVES THROUGH FOUNDATION WALLS SHALL BE AT LEAST 2 PIPE SIZES LARGER THAN THE SERVICE PIPE. PROVIDE AN ESCUTCHEON PLATE AROUND PENETRATIONS EXPOSED TO VIEW. ESCUTCHEON PLATES SHALL BE LARGE ENOUGH TO COVER THE ENTIRE HOLE. ALL PENETRATIONS SHALL BE SEALED TO MAINTAIN THE WALL/FLOOR/ROOF FIRE & INSULATION RATINGS. PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE INSTALLED WITH LINK SEAL TYPE SEALS.
6) ALL FLOOR MOUNTED EQUIPMENT NOT PROVIDED ON A SKID IS TO BE INSTALLED ON 4" THICK CONCRETE HOUSEKEEPING PAD.
7) REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR FINISHED CEILING HEIGHTS, AND LOCATION OF WALL, ROOF, AND FLOOR OPENINGS.
8) PROVIDE HANGERS AND SUPPLEMENTAL SUPPORT STEEL FOR ALL EQUIPMENT AND PIPING. ALL WATER SUPPLY PIPING SHALL BE SUSPENDED WITH CLEVIS AND/OR TRAPEZE PIPE HANGERS. PIPE COVERING PROTECTION SADDLES OR SHEET METAL INSULATION SHIELDS.
9) THE HOT WATER SUPPLY FOR EACH LAVATORY AND SINK IS TO BE INSULATED. THE P-TRAP AND WASTE DRAIN PIPE FOR EACH ADA ACCESSIBLE LAVATORY AND SINK IS TO BE INSULATED.
10) CONTRACTOR SHALL VISIT THE SITE AND VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BID OR DOING ANY WORK. CONTRACTOR SHALL NOTIFY COMMISSIONER OF ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS.
11) PROVIDE ACCESS TO ALL VALVES AND SYSTEM COMPONENTS REQUIRING ACCESS. ALL PIPING ACCESSORIES AND EQUIPMENT IN MECHANICAL ROOMS SUCH AS ISOLATION VALVES, BOOSTER PUMPS, ETC. SHALL BE INSTALLED AT A REASONABLE HEIGHT IN ORDER TO FACILITATE MAINTENANCE.
12) EXCEPT FOR PIPING ASSOCIATED WITH THE SUMP PUMPS, PLUMBING PIPING SHALL NOT BE ROUTED THROUGH OR OVER ANY ELEVATOR SHAFTS, ELEVATOR EQUIPMENT AREAS, ELECTRICAL EQUIPMENT AREAS, OR COMMUNICATIONS AREAS.
13) PLUMBING CONTRACTOR TO GIVE ALL LOCATIONS AND DIMENSIONS OF ALL REQUIRED ACCESS PANELS TO THE GENERAL CONTRACTOR. GENERAL CONTRACTOR WILL SUBMIT TO THE COMMISSIONER FOR APPROVAL ALL FINISH REQUIREMENTS PRIOR TO INSTALLATION.
14) TRENCHING, EXCAVATION, AND BACKFILL OPERATIONS SHALL BE IN ACCORDANCE WITH ARTICLE 3, SECTION 306 OF THE CHICAGO BUILDING CODE.
15) IN ANY CASE WHERE NEW EQUIPMENT IS INSTALLED AND HAS TO BE CONNECTED TO EXISTING SYSTEMS, THE CONTRACTOR SHALL VERIFY THE CAPACITIES AT THE INDICATED POINT OF CONNECTION. SHOULD THE EXISTING CONDITION REQUIRE THE NEW BRANCH TO BE ROUTED TO ANOTHER LOCATION, THE CONTRACTOR SHALL PERFORM THIS WORK AS PART OF HIS CONTRACT.

CONTRACTORS NOTE

1) GENERAL CONTRACTOR'S MEP COORDINATOR TO SUBMIT MEP COORDINATION DRAWINGS FOR 'REVIEW OF DESIGN INTENT' INDICATING COORDINATION OF ALL TRADES PRIOR TO PLACEMENT OF MEP/FP WORK.

DOMESTIC WATER

1) ALL WATER SUPPLIED TO EQUIPMENT BY OTHER TRADES SHALL HAVE AN ISOLATION VALVE AND AN APPROVED BACKFLOW PREVENTER WHICH SHALL BE SUPPLIED AND INSTALLED BY THIS CONTRACTOR.
2) ALL DOMESTIC WATER SUPPLIES TO FIXTURES AND EQUIPMENT SHALL HAVE AIR CHAMBERS.
3) ALL WATER SUPPLY AND RETURN PIPING SHALL BE INSULATED, INCLUDING ALL PIPING ABOVE CEILINGS, IN PIPE CHASES, AND IN WALLS. SEE SPECIFICATIONS FOR TYPE AND THICKNESS OF INSULATION. PROVIDE VALVE HANDLE EXTENSIONS ON ALL INSULATED PIPING.
4) ALL HOT WATER SUPPLY PIPING SHALL BE INSTALLED TO COMPENSATE FOR EXPANSION OF THE PIPE BY INSTALLING PIPE ANCHORS, GUIDES, EXPANSION JOINTS, PIPE OFFSETS, OR LOOPS. EXPANSION JOINTS TO ACCOMMODATE MOVEMENT IN (3) AXIS(S). ALL WORK SHALL BE CONCEALED FROM PUBLIC VIEW.
5) ALL INTERIOR AND EXTERIOR HOSE BIBBS/WALL HYDRANTS SHALL RECEIVE THE WATER SUPPLY DOWNSTREAM OF A STRAINER AND DOUBLE CHECK VALVE TYPE BACKFLOW PREVENTER INSTALLED INSIDE THE BUILDING AT NO MORE THAN 48" ABOVE THE FLOOR AND ACCESSIBLE TO MAINTENANCE.
6) MOP SINKS ONLY WITH HOSE THREADED FAUCETS SHALL HAVE A VACUUM BREAKER ON THE SUPPLY AFTER THE VALVE, LOCATED 7'-6" ABOVE FINISHED FLOOR.
7) EACH GROUP OF FIXTURES SUPPLIED WITH A BRANCH FROM THE MAIN SHALL HAVE AN ISOLATION VALVE NEAR THE POINT OF CONNECTION TO THE MAIN. ALL EQUIPMENT SUPPLIED BY COLD AND/OR HOT WATER SHALL HAVE AN ISOLATION VALVE ON THE WATER SUPPLY.
8) PITCH ALL SUPPLY AND RETURN LINES TO DRAIN COMPLETELY THROUGH LOWER EQUIPMENT FIXTURES, UNIONS, AND DRAIN VALVES. INSTALL A 1/2" DRAIN VALVE WITH 3/4" HOSE THREAD AND VACUUM BREAKER OUTLET IN ALL MAIN PIPING RUNS WHICH WOULD NOT BE ABLE TO DRAIN THRU A LOWER PIECE OF EQUIPMENT.
9) ALL WATER DISTRIBUTION SYSTEMS, POTABLE AND NONPOTABLE, SHALL BE IDENTIFIED BY COLOR MARKING OR METAL TAGS AS REQUIRED BY ASME A13.1.
10) COPPER PIPE ABOVE GROUND SHALL BE (TYPE L) MINIMUM, SWEAT WITH WROUGHT FITTINGS
11) PROVIDE UNIONS AND/OR FLANGES TO DISCONNECT ALL PERTINENT EQUIPMENT INCLUDING BUT NOT LIMITED TO PUMPS, WATER HEATERS, TANKS, FILTERS AND VALVE TRAINS.

SANITARY, VENT AND STORM

1) ALL SANITARY AND STORM PIPING SHALL SLOPE AT 1/4" PER FOOT FOR 3" AND SMALLER, AT 1/8" PER FOOT FOR 4" AND LARGER".
2) ALL HORIZONTAL DRAINS SHALL BE PROVIDED WITH CLEANOUTS LOCATED NO MORE THAN 100 FEET APART, EXCEPT THAT THE MAXIMUM SHALL BE 50 FEET FOR DRAINS 4" DIA. OR LESS, 150 FEET FOR DRAINS 10" DIA. OR LARGER.
3) INSULATE ALL HORIZONTAL RUNS OF STORM PIPING ADJACENT TO ROOF DRAINS LOCATED WITHIN THE BUILDING. INSULATE AND HEAT TRACE ALL HORIZONTAL STORM PIPING AND GUTTERS LOCATED OUTSIDE OF THE BUILDING.
4) THE DIAMETER OF ALL VENTS SHALL BE AT LEAST ONE-HALF THE DIAMETER OF THE DRAIN LINE SERVED BUT NOT LESS THAN 1-1/2".
5) IN AREAS SUCH AS MECHANICAL/ELECTRICAL ROOMS, WHERE A TRAP SEAL IS SUBJECT TO LOSS BY EVAPORATION, PROVIDE A DEEP SEAL TRAP (CONSISTING OF A 4-INCH SEAL), A TRAP FILLED WITH MINERAL OIL, AND MIFAB MI-GARD FLOOR DRAIN TRAP SEAL. TRAP PRIMERS SHALL NOT BE USED IN UNCONDITIONED SPACE.

MATERIALS

1) UNDERGROUND STORM, DRAINAGE, AND VENT PIPE SHALL BE:
-HEAVY SCHEDULE CAST-IRON PIPE, HUB SPIGOT W/ NEOPRENE GASKET JOINTS: ASTM A-74; ASTM A-888; CISPI 301
-COPPER OR COPPER-ALLOY TUBING (TYPE K OR L): ASTM 75; ASTM B-88; ASTM B-251; ASTM B-306
2) ABOVE-GROUND STORM, DRAINAGE AND VENT PIPE SHALL BE:
-CAST-IRON PIPE, HUB & SPIGOT: ASTM A-74; CISPI 301; ASTM A888
-COPPER OR COPPER-ALLOY TUBING (TYPE K OR L): ASTM 75; ASTM B-88; ASTM B-251; ASTM B-306
3) UNDERGROUND WATER PIPE SHALL BE: COPPER OR COPPER-ALLOY TUBING (TYPE K); ASTM B-74; ASTM B-88; ASTM B-251; ASTM B-447 DUCTILE IRON WATER PIPE (CEMENT LINED); AWWA C-151; AWWA C-115
4) ABOVE-GROUND WATER DISTRIBUTION PIPE SHALL BE: ALL SIZES - COPPER OR COPPER-ALLOY TUBING (TYPE K OR L); ASTM B-74; ASTM B-88; ASTM B-251; ASTM B-4476"
5) GASKETED BELL AND SPIGOT C.I. PIPING IS RESERVED FOR UNDERGROUND USE. ABOVE GROUND SHALL HAVE LEAD AND OAKUM CAULKED JOINTS.

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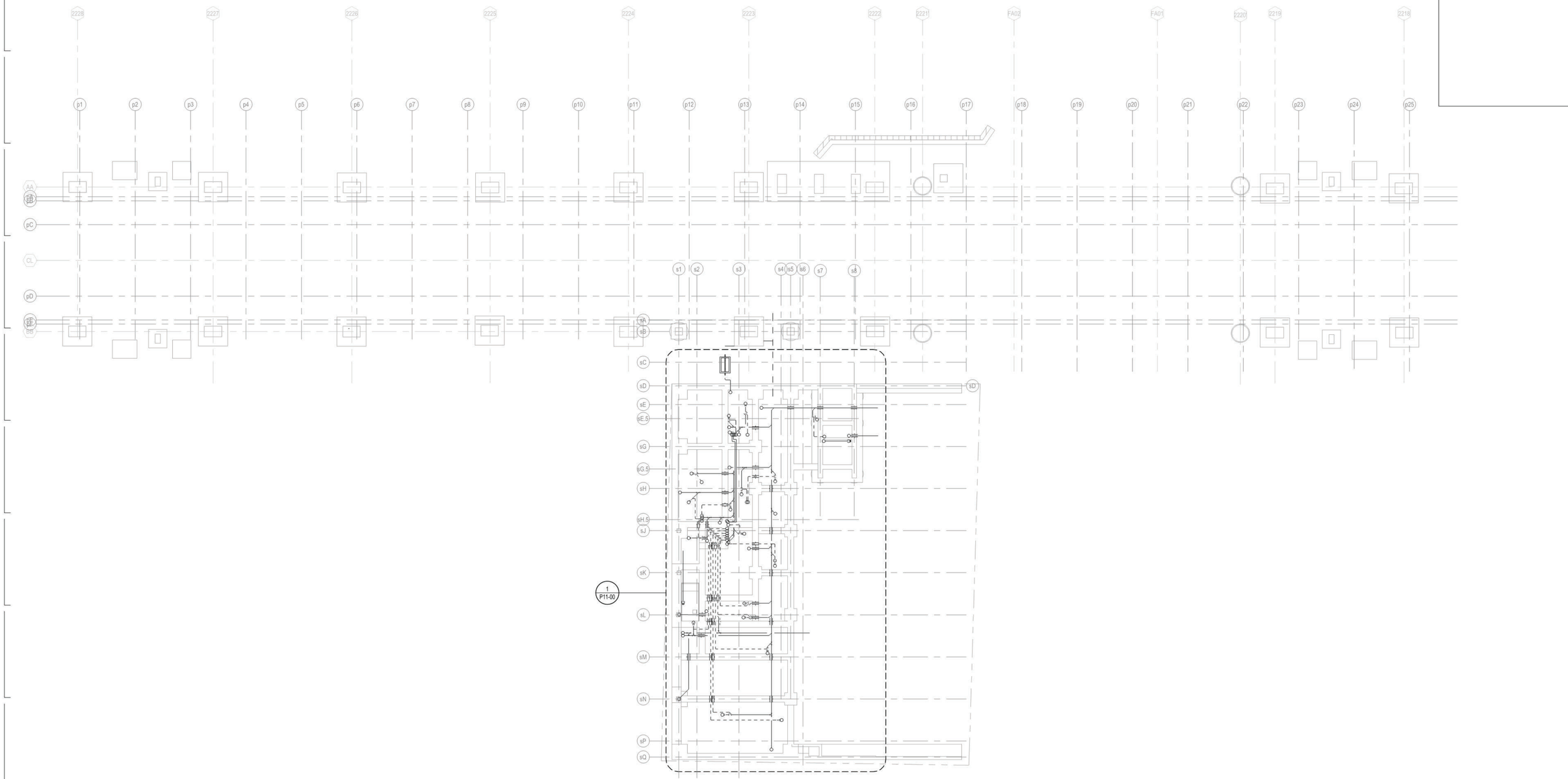
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

PLUMBING GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

DRAWING NO. **P00-01**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



1 OVERALL BELOW GRADE - PLUMBING PLAN

1/16" = 1'-0"

N

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

0' 8' 16' 32' 64'

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OVERALL BELOW GRADE- PLUMBING PLAN

DRAWING NO. **P10-00**

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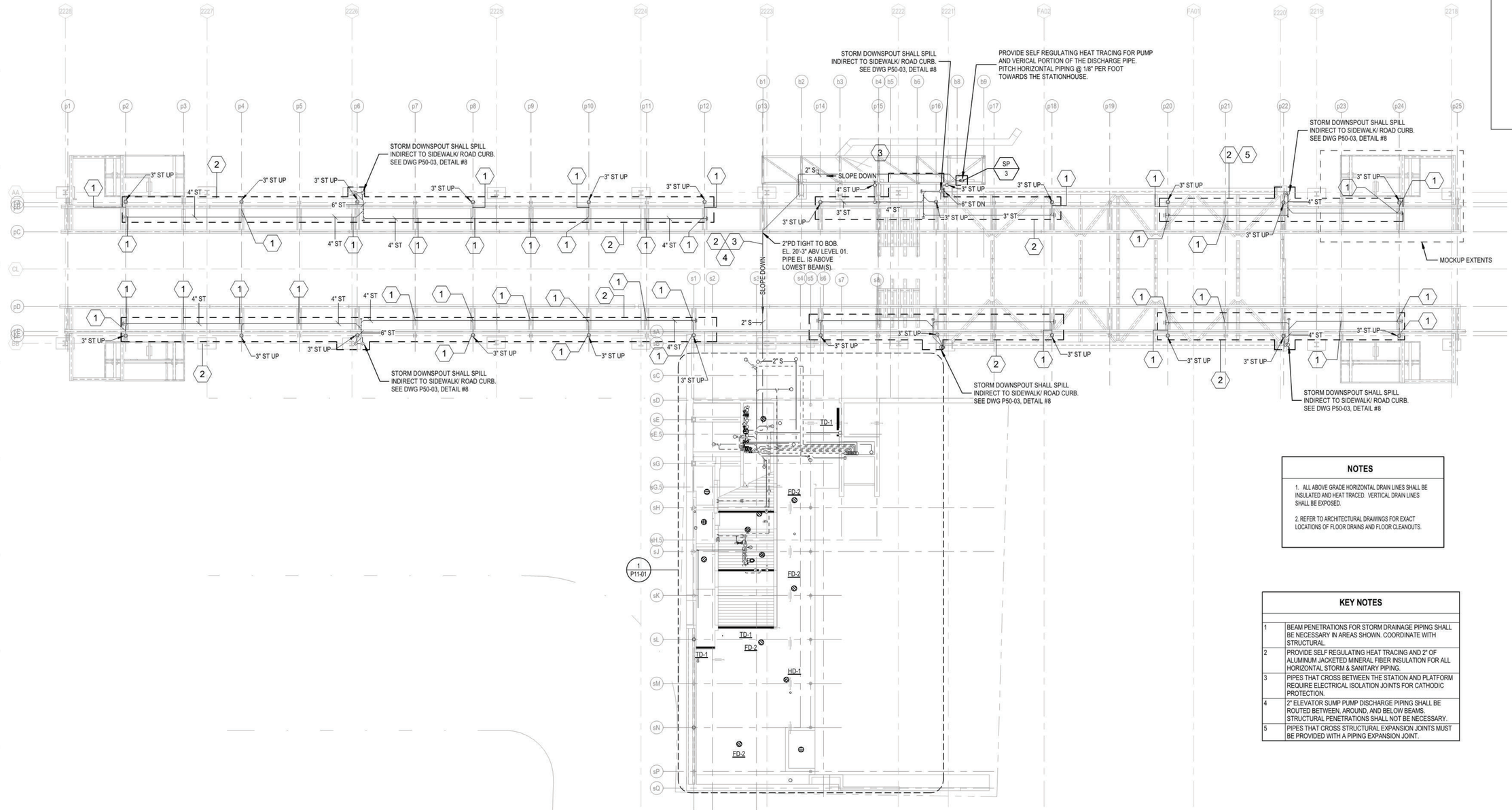

1 OVERALL LEVEL 01 PLUMBING PLAN

1/16" = 1'-0"

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

0' 8' 16' 32' 64'

NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.
2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.

KEY NOTES

1	BEAM PENETRATIONS FOR STORM DRAINAGE PIPING SHALL BE NECESSARY IN AREAS SHOWN. COORDINATE WITH STRUCTURAL.
2	PROVIDE SELF REGULATING HEAT TRACING AND 2" OF ALUMINUM JACKETED MINERAL FIBER INSULATION FOR ALL HORIZONTAL STORM & SANITARY PIPING.
3	PIPES THAT CROSS BETWEEN THE STATION AND PLATFORM REQUIRE ELECTRICAL ISOLATION JOINTS FOR CATHODIC PROTECTION.
4	2" ELEVATOR SUMP PUMP DISCHARGE PIPING SHALL BE ROUTED BETWEEN, AROUND, AND BELOW BEAMS. STRUCTURAL PENETRATIONS SHALL NOT BE NECESSARY.
5	PIPES THAT CROSS STRUCTURAL EXPANSION JOINTS MUST BE PROVIDED WITH A PIPING EXPANSION JOINT.

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SPEC. NO.

OVERALL LEVEL 01 - PLUMBING PLAN

DRAWING NO. **P10-01**

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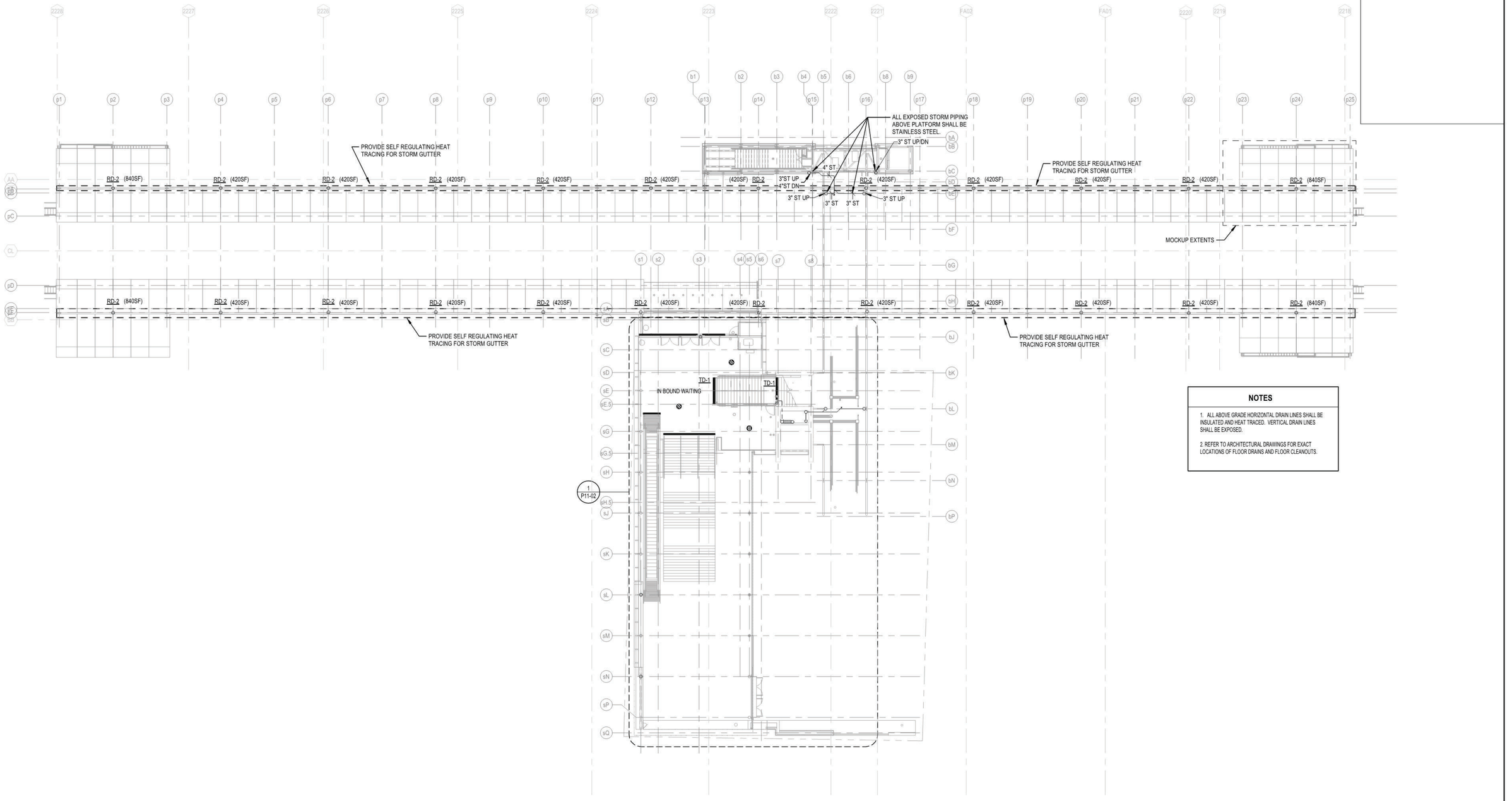

NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.

2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.

1 OVERALL LEVEL 02 PLATFORM PLAN

1/16" = 1'-0"

N

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

0' 8' 16' 32' 64'

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OVERALL LEVEL 02 - PLATFORM PLUMBING PLAN

DRAWING NO. **P10-02**

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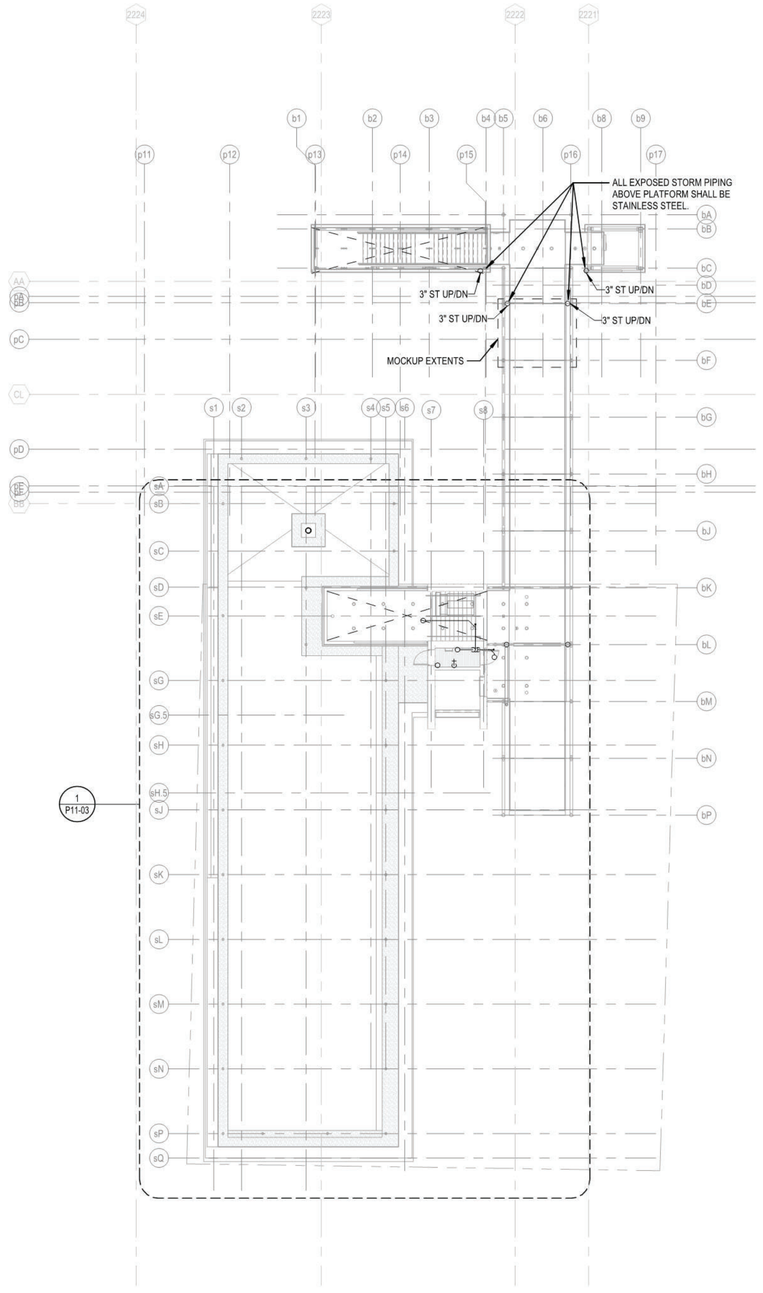

NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.

2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.

1 OVERALL LEVEL 03 BRIDGE PLUMBING PLAN

1/16" = 1'-0"

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

0' 8' 16' 32' 64'

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OVERALL LEVEL 03 - BRIDGE PLUMBING PLAN

DRAWING NO. **P10-03**

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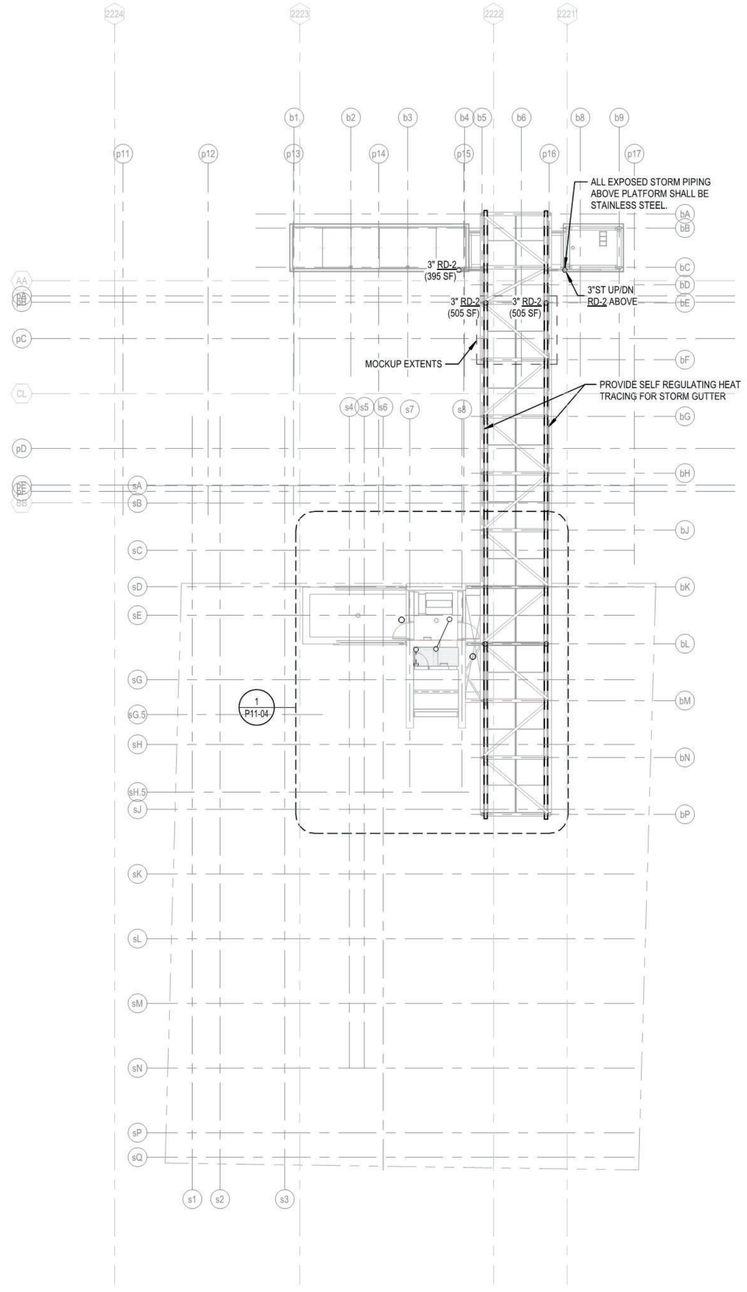

NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.

2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.

1 OVERAL - ROOF PLUMBING PLAN

1/16" = 1'-0"

N

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

0' 8' 16' 32' 64'

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CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

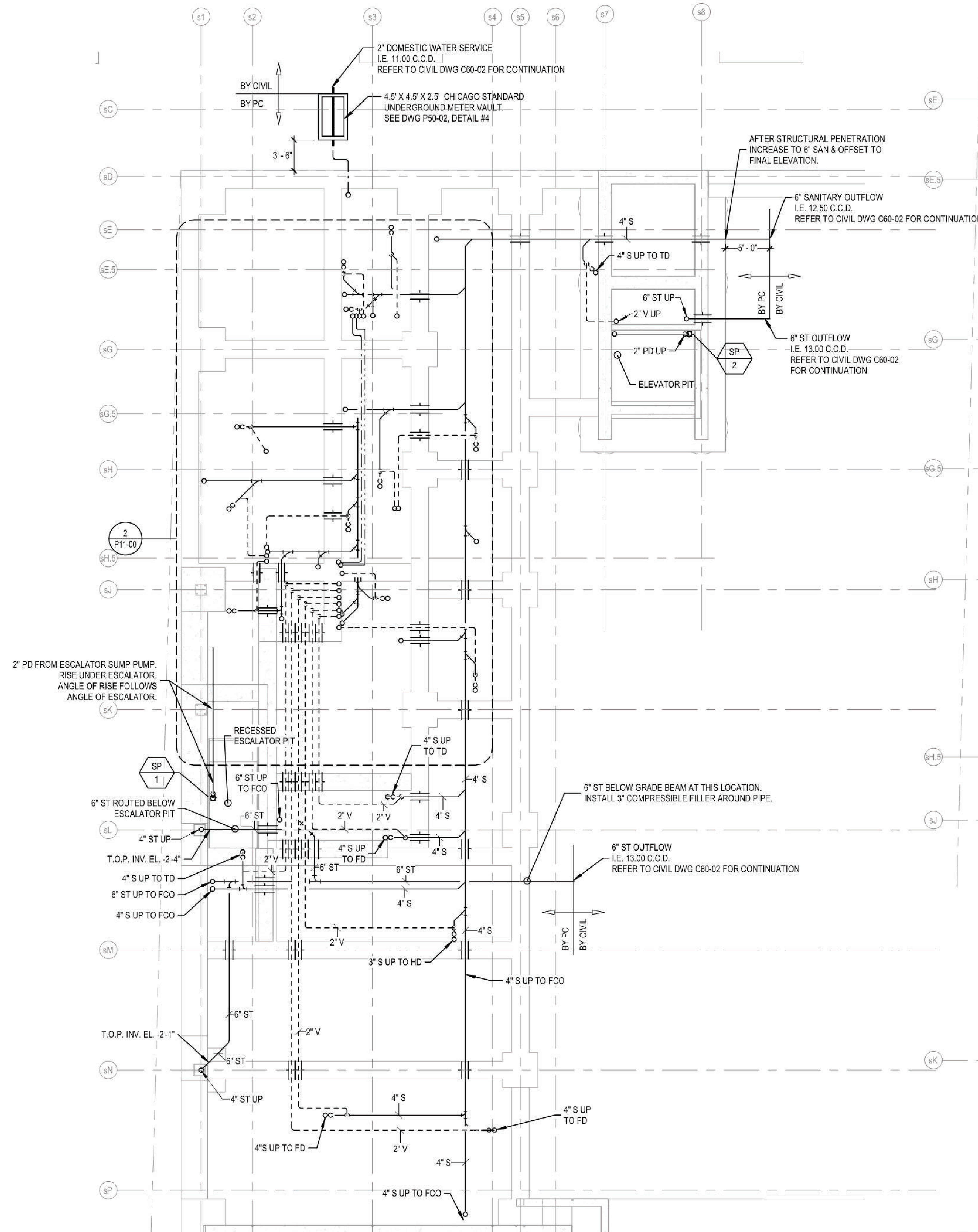
OVERALL LEVEL 04 - PLUMBING PLAN

DRAWING NO.
P10-04

CDOT PROJECT D-7-135

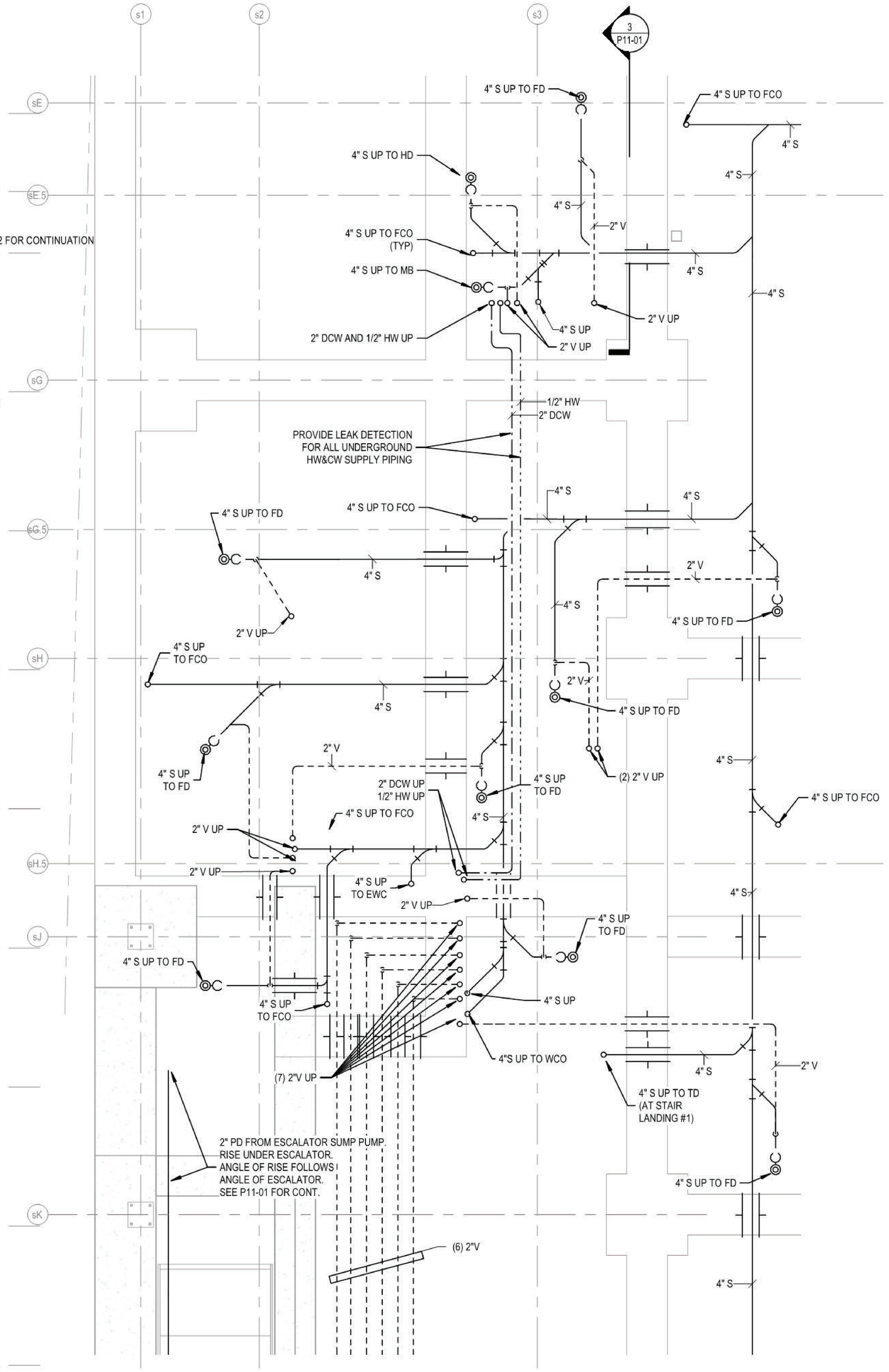
DATE: 01/27/2020

REVISION NO.



1 ENLARGED BELOW GRADE - PLUMBING PLAN - SOUTH
1/8" = 1'-0"

SCALE: 1/8" : 1'-0"



2 ENLARGED BELOW GRADE BUILDING CORE PLUMBING PLAN
1/4" = 1'-0"

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

DESIGN BY:	MB								
DRAWN BY:	MB								
CHECKED BY:	RP								
APPROVED BY:	RH		**01/27/2020**	**ISSUE FOR BID**	MB	MB	RP		
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

ENLARGED BELOW GRADE - PLUMBING PLAN

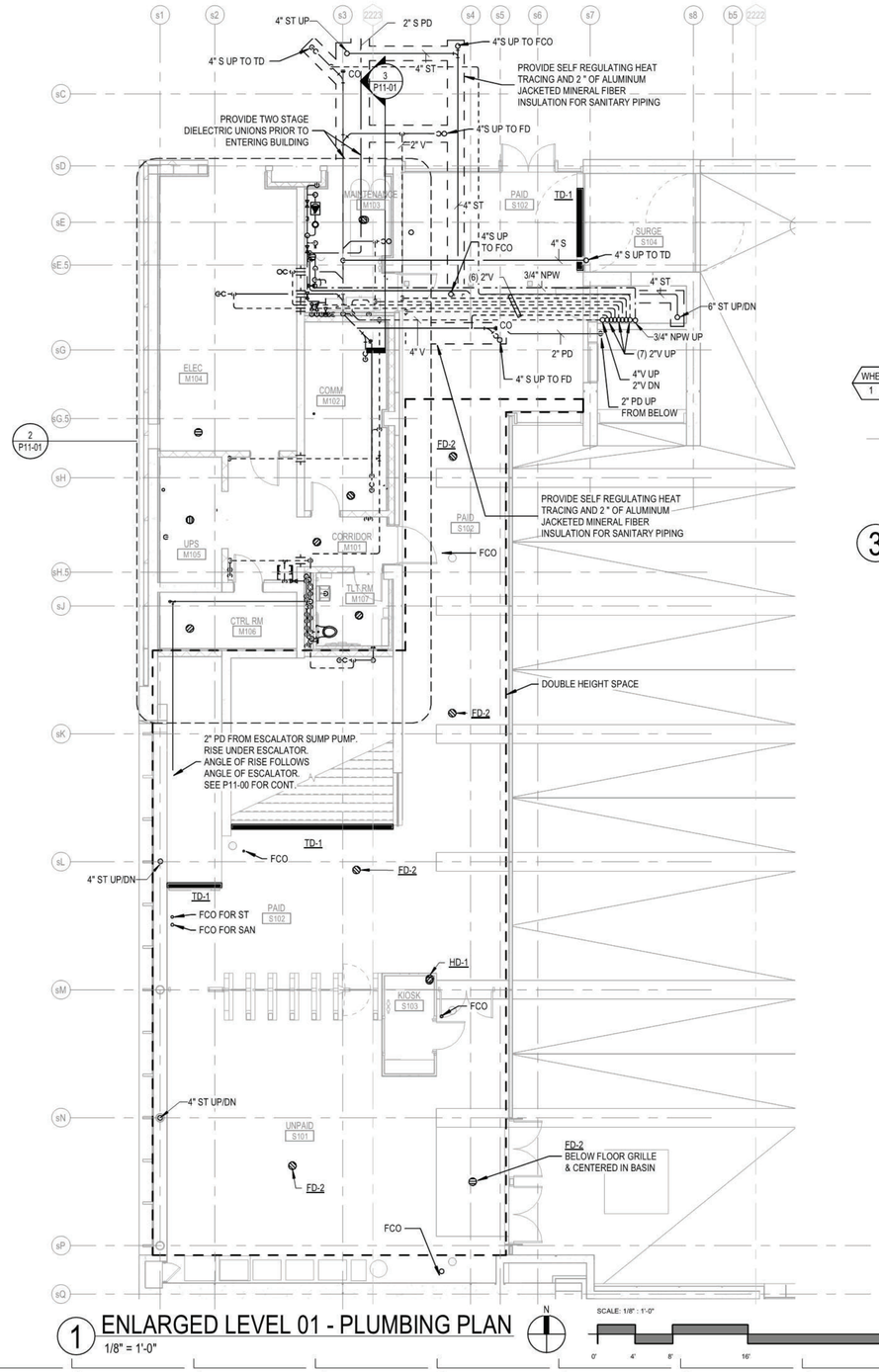
CDOT PROJECT D-7-135

DATE: 01/27/2020

SPEC. NO.

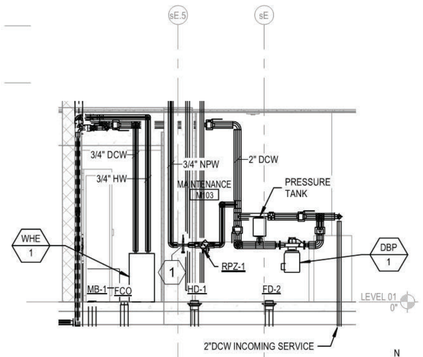
DRAWING NO.
P11-00

REVISION NO.



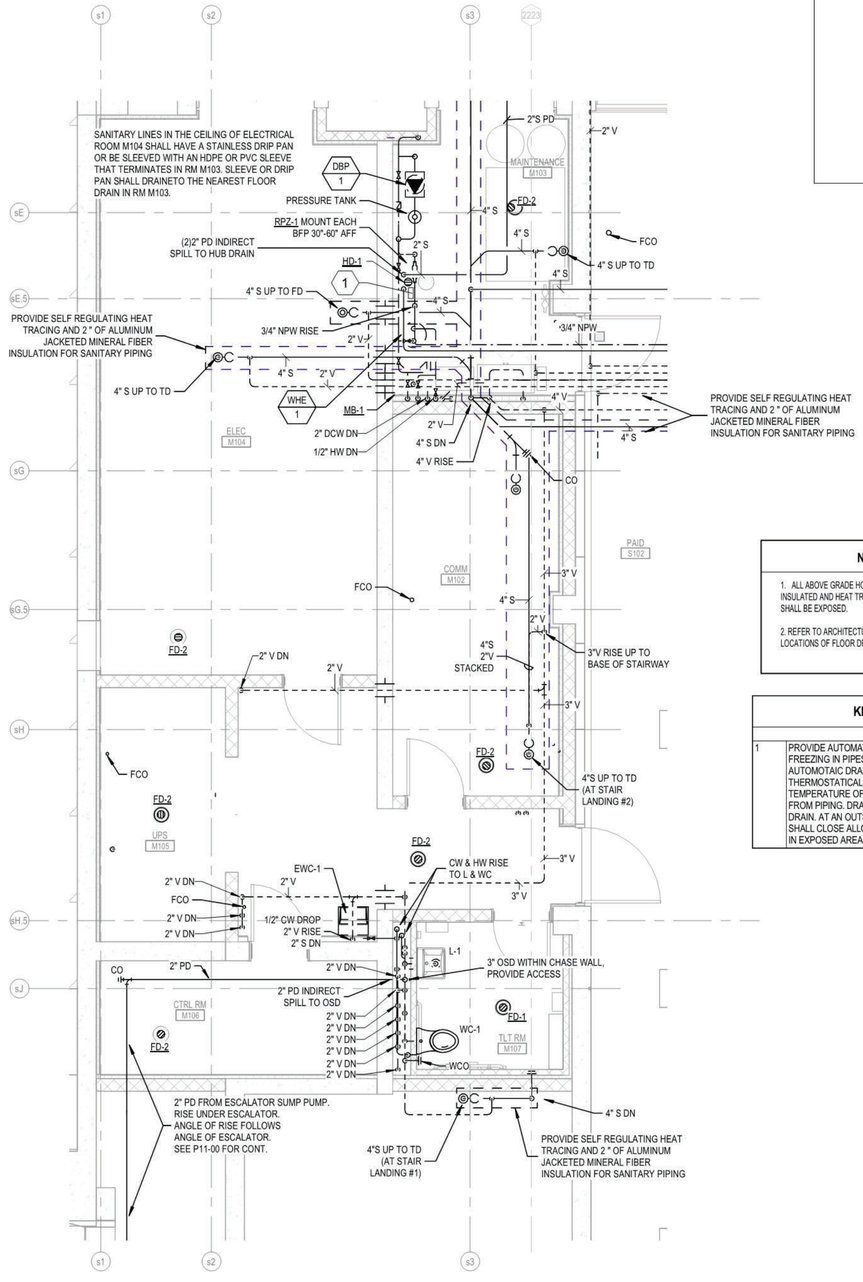
1 ENLARGED LEVEL 01 - PLUMBING PLAN
1/8" = 1'-0"

SCALE: 1/8" : 1'-0"
0' 4' 8' 16' 32'



3 SECTION M103 - PLUMBING
1/4" = 1'-0"

SCALE: 1/4" : 1'-0"
0' 4' 8' 16' 32'



2 ENLARGED LEVEL 01 - BUILDING CORE PLUMBING PLAN
1/4" = 1'-0"

SCALE: 1/4" : 1'-0"
0' 4' 8' 16' 32'

NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.

2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.

KEY NOTES

1	PROVIDE AUTOMATIC DRAIN DOWN AS TO PRVENT FREEZING IN PIPES LOCATED IN EXPOSED AREAS. AUTOMOTAIC DRAIN DOWN SHALL BE THERMOSTATICALLY CONTROLLED. AT AN OUTSIDE TEMPERATURE OF 40°F VALVE SHALL DUMP WATER FROM PIPING. DRAIN SHALL SPILL INDIRECT TO HUB DRAIN. AT AN OUTSIDE TEMPERATURE OF 50°F VALVE SHALL CLOSE ALLOWING WATER TO FLOW INTO PIPING IN EXPOSED AREAS.

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DRAWN BY:	MB									
CHECKED BY:	RP									
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	MB	MB	RP			
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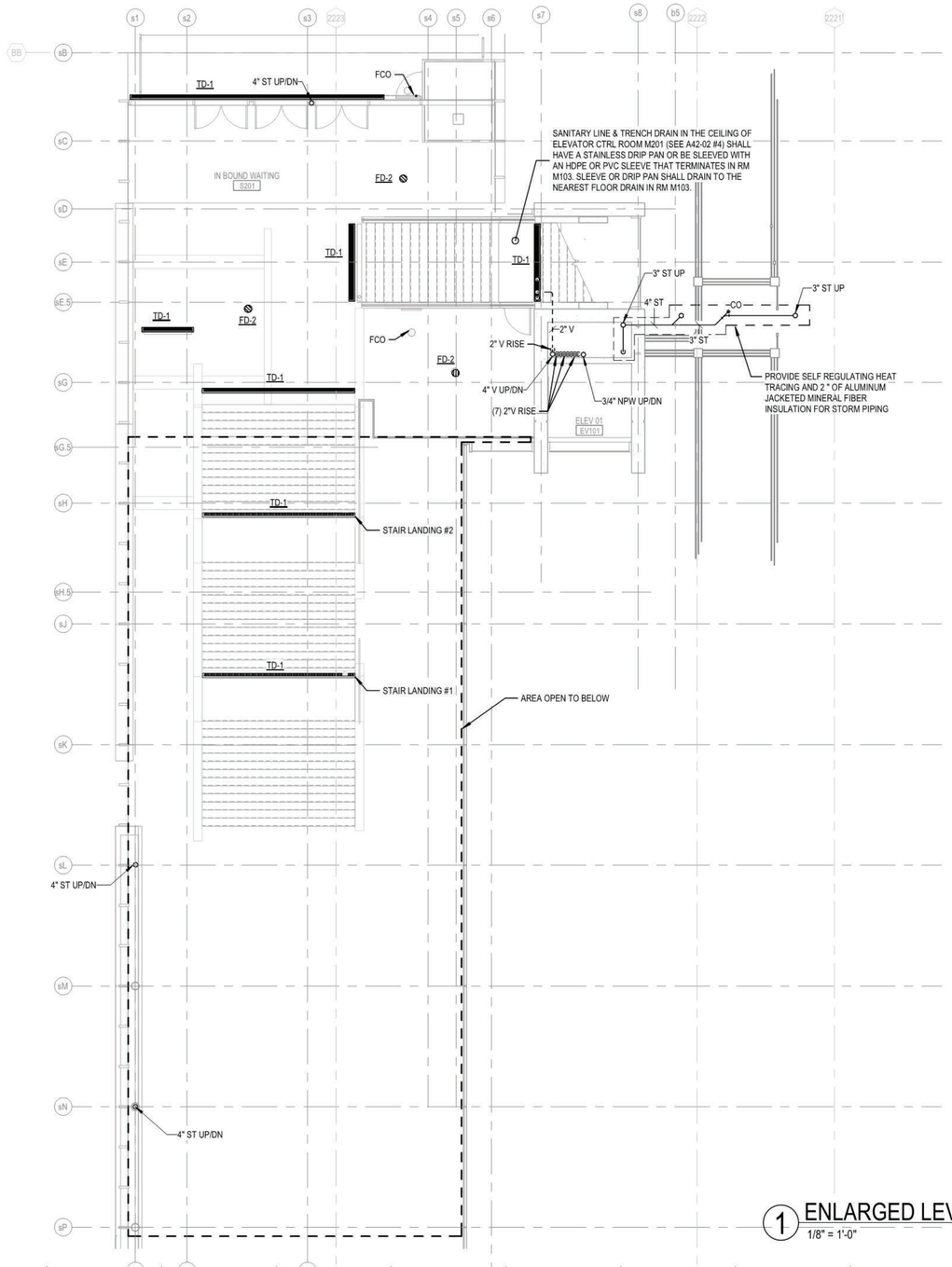
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

ENLARGED LEVEL 01 - PLUMBING PLAN

DRAWING NO. P11-01

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.

2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.

1 ENLARGED LEVEL 02 - PLATFORM PLUMBING PLAN

1/8" = 1'-0"

SCALE: 1/8" : 1'-0"

0' 4' 8' 16' 32'

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DRAWN BY:	MB								
CHECKED BY:	RP								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	MB	MB	RP		
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

ENLARGED LEVEL 02 - PLATFORM PLUMBING PLAN

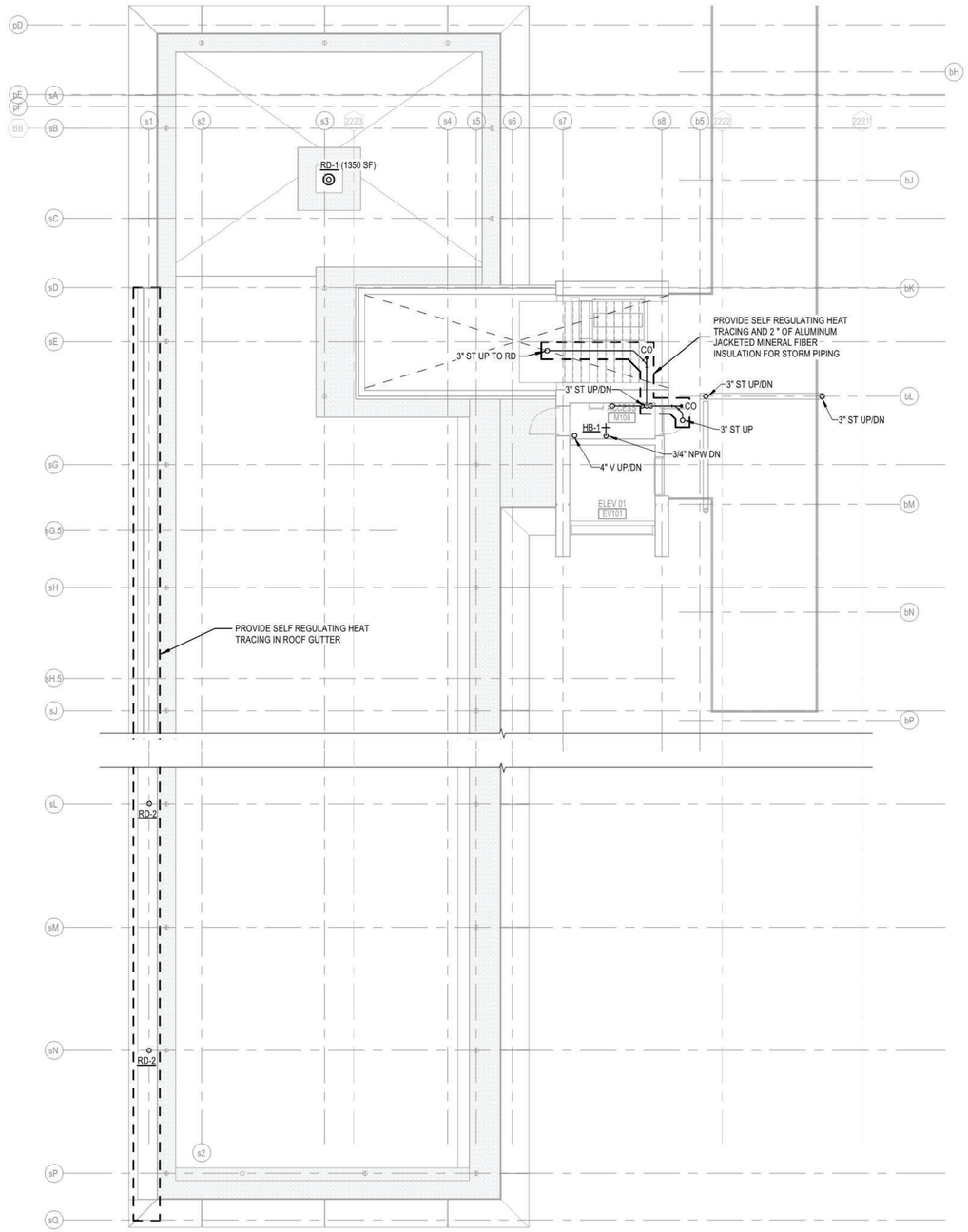
CDOT PROJECT D-7-135

DATE: 01/27/2020

SPEC. NO.

DRAWING NO. **P11-02**

REVISION NO.



1 ENLARGED LEVEL 03 - BRIDGE PLUMBING PLAN
1/8" = 1'-0"

N

SCALE: 1/8" : 1'-0"
0' 4' 8' 16' 32'

NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.

2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.

		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT
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CHECKED BY:	RP								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	MB	MB	RP		
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

ENLARGED LEVEL 03 - BRIDGE PLUMBING PLAN

CDOT PROJECT D-7-135

DATE: 01/27/2020

SPEC. NO.

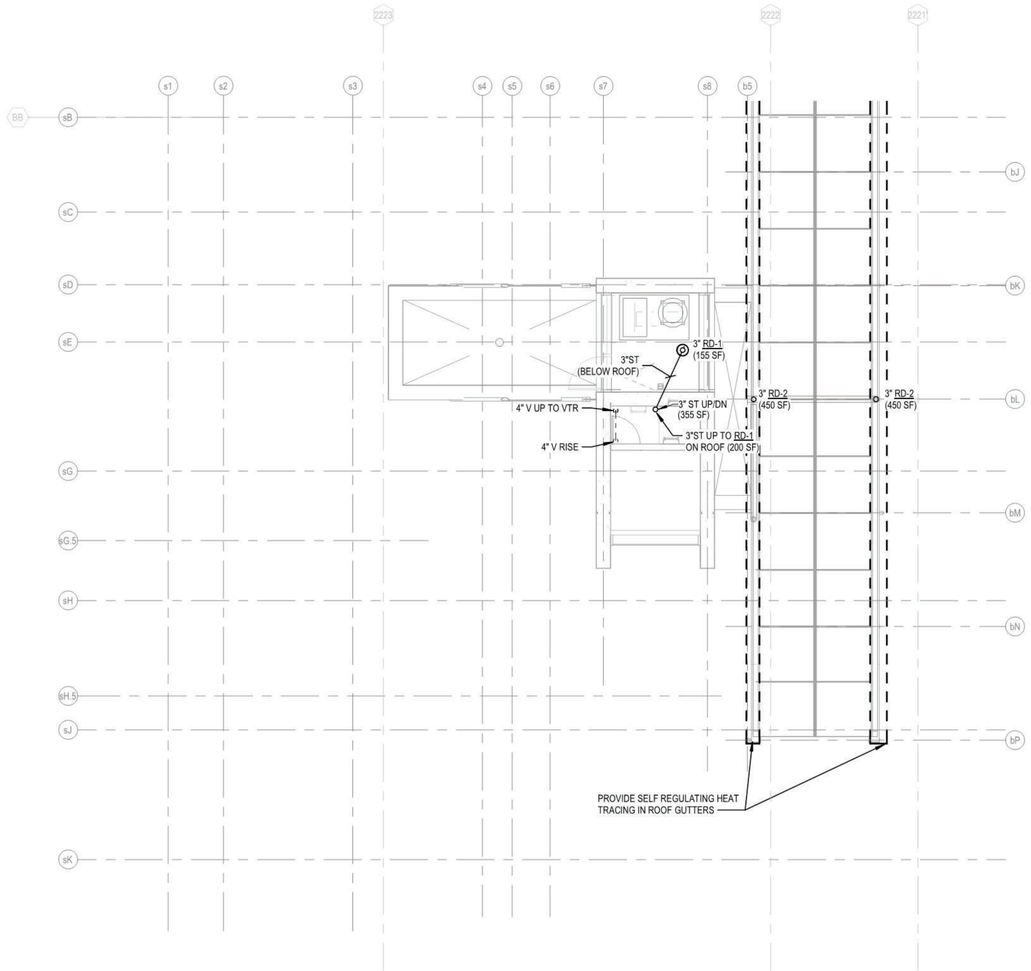
DRAWING NO. **P11-03**

REVISION NO.

NOTES

1. ALL ABOVE GRADE HORIZONTAL DRAIN LINES SHALL BE INSULATED AND HEAT TRACED. VERTICAL DRAIN LINES SHALL BE EXPOSED.

2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR DRAINS AND FLOOR CLEANOUTS.



1 ENLARGED ROOF PLUMBING PLAN

1/8" = 1'-0"

SCALE: 1/8" : 1'-0"

0" 4" 8" 16" 32"

DESIGN BY:	MB								
DRAWN BY:	MB								
CHECKED BY:	RP								
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

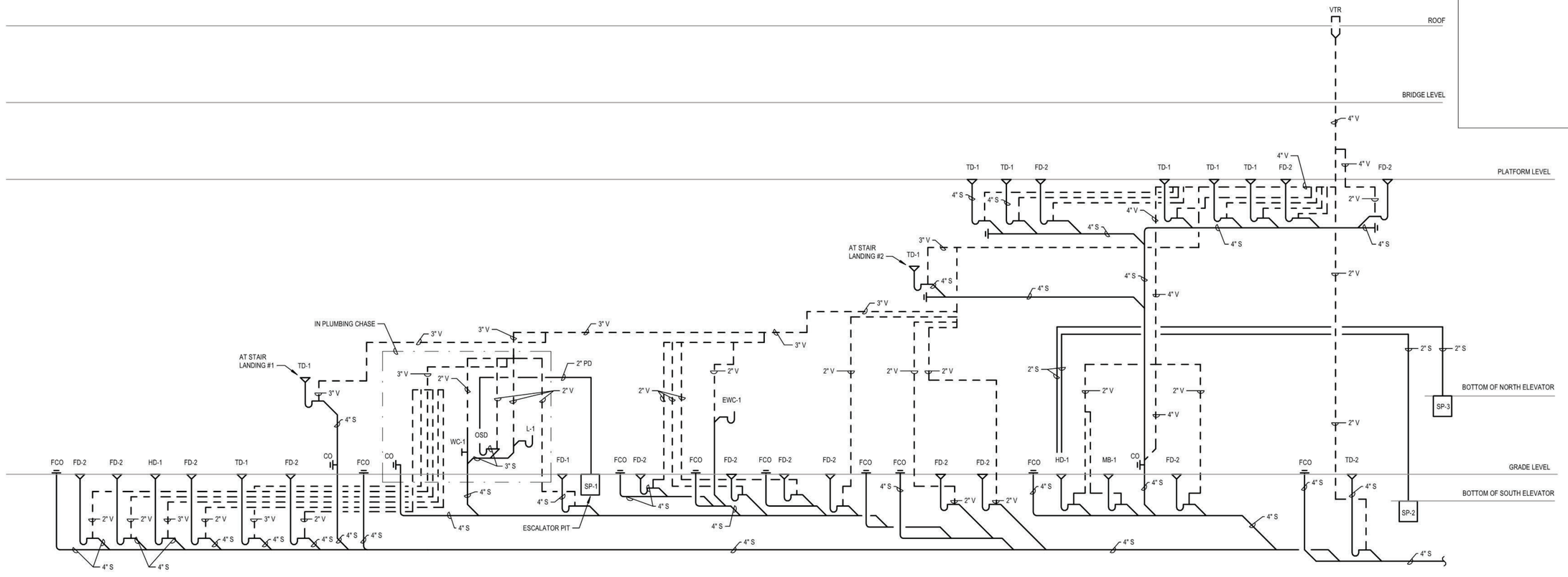
ENLARGED LEVEL 04 - PLUMBING PLAN

CDOT PROJECT D-7-135 | DATE: 01/27/2020

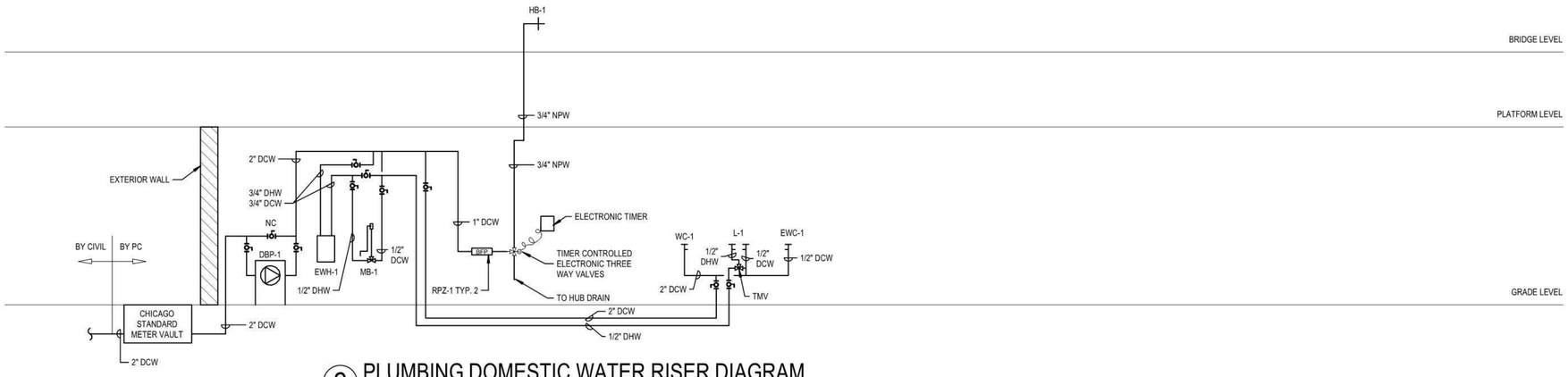
SPEC. NO.

DRAWING NO. **P11-04**

REVISION NO.



1 PLUMBING SANITARY RISER DIAGRAM
12" = 1'-0"



2 PLUMBING DOMESTIC WATER RISER DIAGRAM
12" = 1'-0"

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CHECKED BY:	RP								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	MB	MB	RP		
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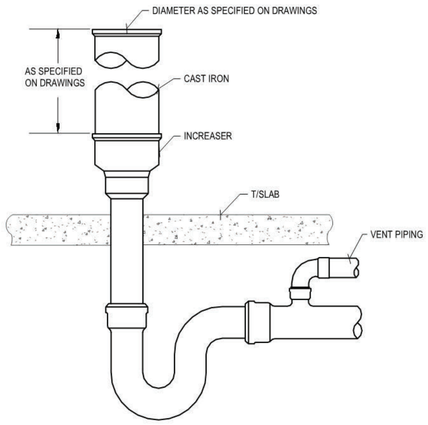
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

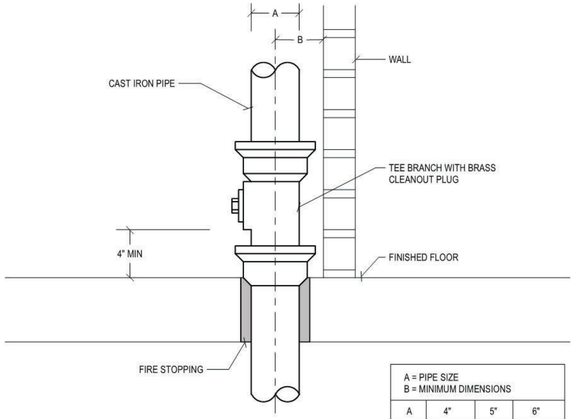
PLUMBING RISER DIAGRAMS

DRAWING NO. **P50-01**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.

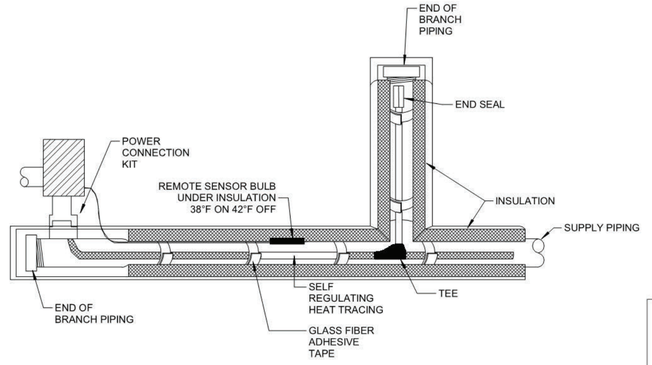


3 HUB DRAIN W/INCREASER
NTS

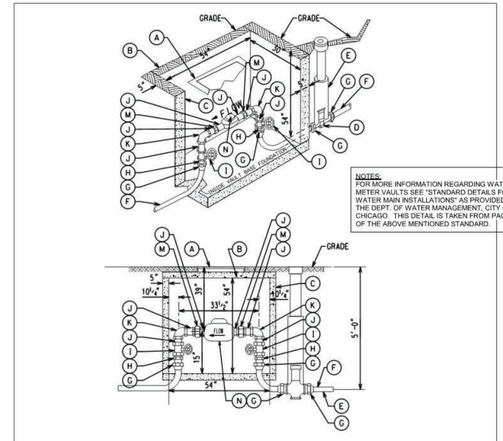


A = PIPE SIZE B = MINIMUM DIMENSIONS			
A	4"	5"	6"
B	3 1/2"	4"	4 1/2"

2 CLEANOUT - BASE OF STACK
NTS



1 HEAT TRACE FOR PIPE
NTS

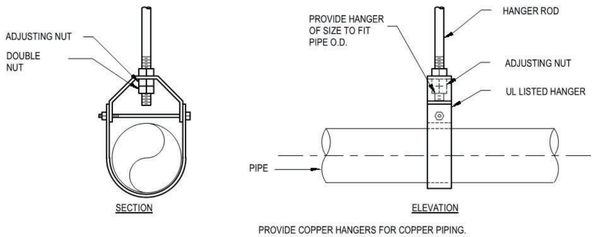


NOTES:
FOR MORE INFORMATION REGARDING WATER METER VAULTS SEE "STANDARD DETAILS FOR WATER MAIN INSTALLATIONS" AS PROVIDED BY THE DEPT. OF WATER MANAGEMENT, CITY OF CHICAGO. THIS DETAIL IS TAKEN FROM PAGE D-24 OF THE ABOVE MENTIONED STANDARD.

A	COVER 25¼"x 25¼" (NEENAH, R6662JP OR EQUAL) CENTERED OVER METER
B	PRECAST CONCRETE TOP
C	SOLID CONCRETE BLOCK OR PRECAST CONCRETE
D	ROUNDWAY
E	SHUT-OFF BOX
F	TYPE K COPPER
G	F.W. FLARED FITTING
H	MALE I.P.T. TO FLARED
I	FULL PORT CONTROL VALVE
J	BRASS NIP.
K	BRASS ELL.
M	BRASS UNION
N	METER

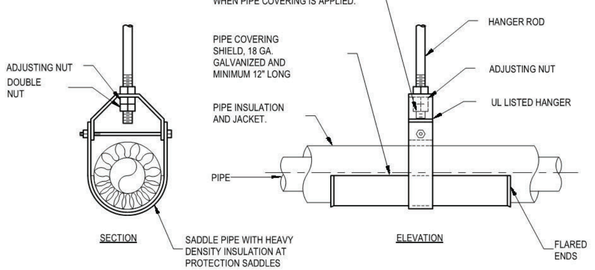
NEW COPPER 1½" & 2" WATER SERVICES
STANDARD METER VAULT D-24
REV:04.07

4 WATER METER VAULT DETAIL
NOT TO SCALE



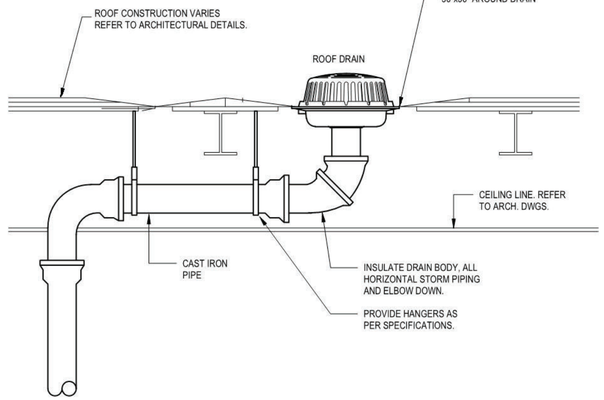
PROVIDE COPPER HANGERS FOR COPPER PIPING.

UN-INSULATED PIPE

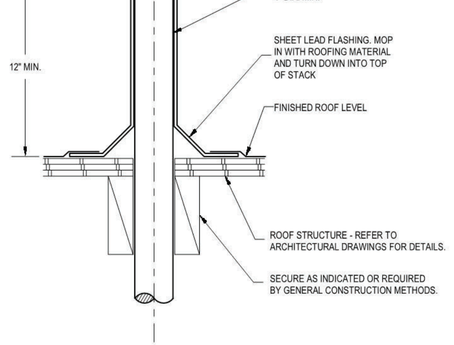


INSULATED PIPE

7 PIPE HANGER DETAIL
NTS



6 ROOF DRAIN PIPING DETAIL
NTS



DESIGNER NOTES:
IF YOU USE THIS DETAIL VERIFY THE TYPE OF ROOFING MATERIAL, AS YOU MAY USE THE SAME MATERIAL, IF APPLICABLE FOR FLASHING AT VENT THROUGH ROOF.

5 VENT THRU ROOF DETAIL
NTS

		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT
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CHECKED BY:	RP								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	MB	MB	RP		
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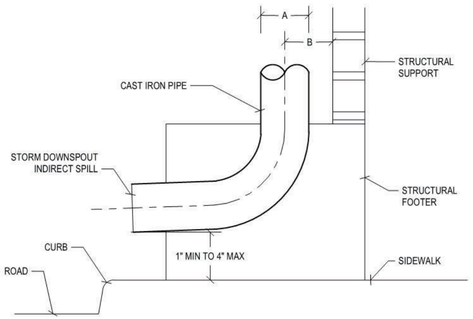
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

PLUMBING DETAILS

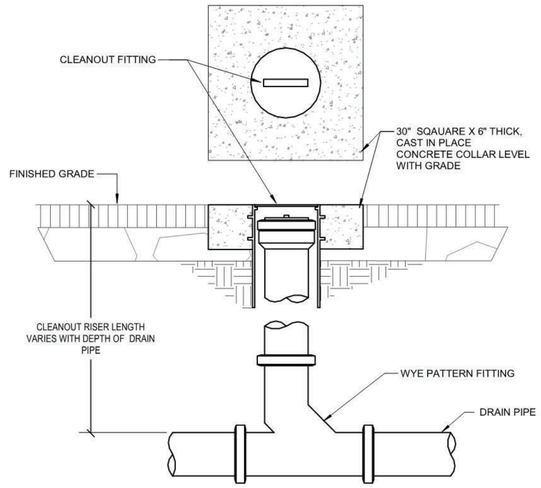
DRAWING NO.
P50-02

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



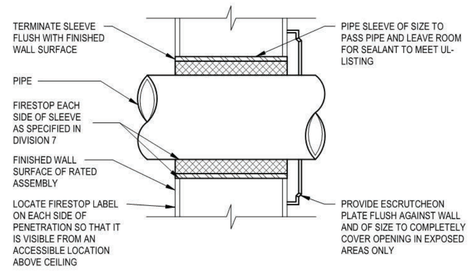
A = PIPE SIZE B = MINIMUM DIMENSIONS				
A	3"	4"	5"	6"
B	3"	3 1/2"	4"	4 1/2"

8 STORM DOWNSPOUT INDIRECT SPILL
NTS



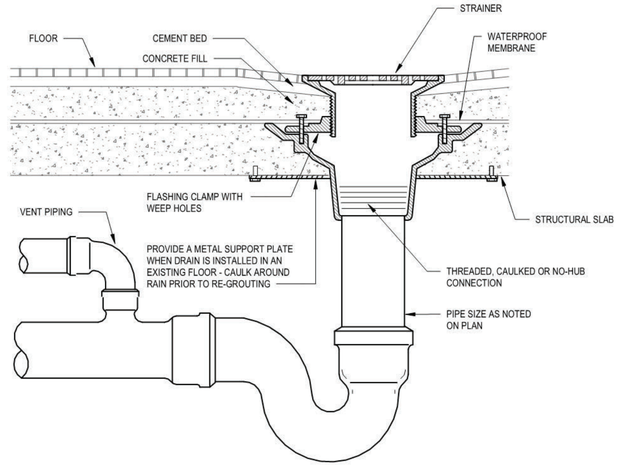
NOTE:
DO NOT USE THIS DETAIL FOR UNPAVED AREAS.

4 CLEANOUT - YARD PAVED AREAS
NTS

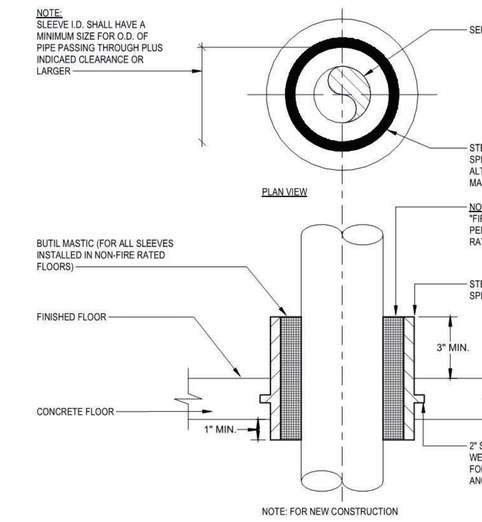


GENERAL NOTE:
INCLUDES FIRE WALLS, FIRE BARRIERS, SMOKE BARRIERS, AND FIRE PARTITIONS.

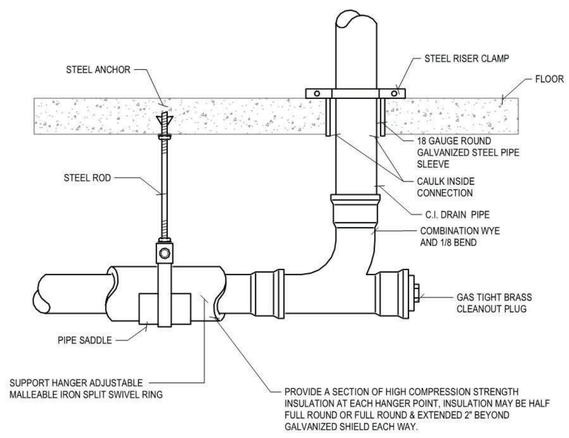
3 UNINSULATED PIPE THROUGH INTERIOR FIRE RATED WALLS
NTS



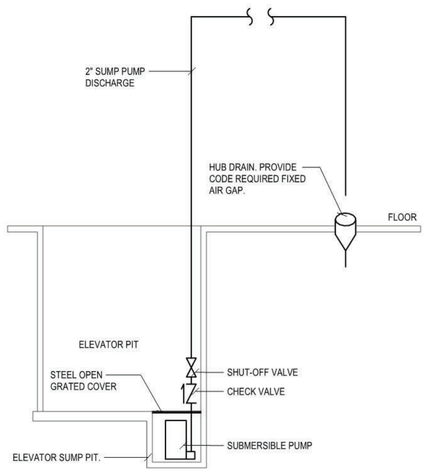
1 TYPICAL FLOOR DRAIN
NTS



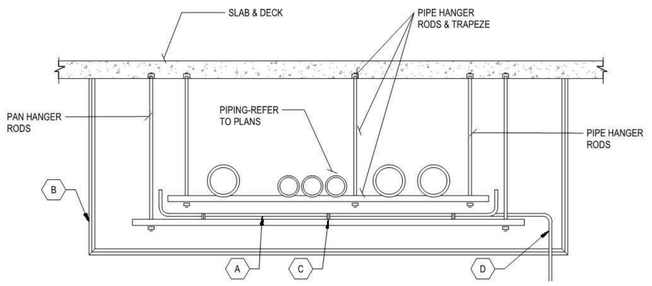
7 FLOOR PIPE SLEEVE DETAIL
NTS



6 CLEANOUT - SUSPENDED, DRAIN PIPE
NTS



2 ELEVATOR/ESCALATOR SUMP PUMP
NTS



A — 20 GAUGE STAINLESS STEEL SHEETMETAL PAN WITH 2" UPTURNED EDGES, HUNG TO WITHIN 1" OF BOTTOM OF PIPE HANGER RODS.

B — RATED GENERAL CONSTRUCTION ENCLOSURE WHERE PIPING IS ABOVE ELECTRICAL ROOMS OR STAIRWELL ACCESS.

C — STIFFENERS FOR ANY PAN THAT IS OVER 12" WIDE IN ANY DIRECTION.

D — PITCH PAN WITH PIPE SLOPE. INCLUDE 1"Ø TELLTALE. TELLTALE TO SPILL INTO HUB DRAIN IN MECHANICAL ROOM.

NOTE:
FOR CLEVIS HANGER MULTIPLE PIPING APPLICATIONS MAINTAIN FLAT PITCHED PAN CONFIGURATION.

5 DRAIN PAN FOR PIPING
NTS

DESIGN BY:	MB								
DRAWN BY:	MB								
CHECKED BY:	RP								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	MB	MB	RP		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

PLUMBING DETAILS

DRAWING NO.
P50-03

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.

PLUMBING FIXTURE SCHEDULE						
TAG	DESCRIPTION	COUNT	MATERIAL	MANUFACTURER	MODEL	NOTES
FD-1	FLOOR DRAIN	1	CAST IRON	JAY R. SMITH	2005	FLOOR DRAIN FOR USE IN AREAS WITH A FINISHED FLOOR.
FD-2	FLOOR DRAIN	14	CAST IRON	JAY R. SMITH	2120	HEAVEY DUTY FLOOR DRAIN FOR USE IN AEARS WITH AN UNFINISHED FLOOR. SEE DWG P00-01; SANITARY, VENT AND STORM; NOTE #5.
HD-1	HUB DRAIN	2	CAST IRON	JAY R. SMITH	2005 w/2645	FLOOR DRAIN W/ HUB ADAPTER.
RD-1	ROOF DRAIN	5	CAST IRON	JAY R. SMITH	1010ERC	COMBINED FLASHING CLAMP GRAVEL STOP W/ POLYETHELENE DOME, EXTENSION, SUMP RECEIVER AND UNDERDECK CLAMP.
RD-2	ROOF DRAIN	32	CAST IRON	JAY R. SMITH	1620T	
TD-1	LINEAR TRENCH DRAIN	10	POLYMER CONCRETE W/ STAINLESS STEEL GRATE	ABT	POLYDRAIN - LB04-04.403C.WB-W41N	PRECAST TRENCH DRAIN 4" ID W/ STAINLESS STEEL GRATE, HINGED COVER AT EVERY DRAIN PIPE LOCATION, AND BUILT IN GRATE LOCKING MECHANISM.

BACKFLOW PREVENTER SCHEDULE					
TAG	DESCRIPTION	MANUFACTURER	MODEL	APPROVALS	REMARKS
RPZ-1	REDUCED PRESSURE ZONE	WATTS	LF009	ANSI/ASSE 1013	

PLUMBING FIXTURE SCHEDULE

TAG	NAME	QTY	GPM/GPF	LOCATION	FIXTURE			VALVE/FAUCET/TRIM			REMARKS
					TYPE	MANUFACTURER	MODEL	TYPE	MANUFACTURER	MODEL	
WC-1	WATER CLOSET	1	1.6	TOILET ROOM	WALL MOUNTED, TOP OUTLET, VITREOUS CHINA	KOHLER	K-4325-0	EXPOSED MANUAL	SLOAN	ROYAL 115	REFER TO ACHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS
L-1	LAVATORY	1	0.5	TOILET ROOM	20" X 18", WALL MOUNTED VITREOUS CHINA	KOHLER	K-2053-N	MANUAL	CHICAGO FAUCET	404-VE2805CP	REFER TO ACHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS
MB-1	MOP BASIN	1	6	JANITORS CLOSET	24" x 24" x 12" PRE-CAT. TERRAZZO BASIN	FIAT	TSB3000	MANUAL	CHICAGO FAUCET	911-ISCP	W/ ELEVATED VACUUM BREAKER 7' 6" AFF MIN, ATTACH ASSEMBLY TO WALL ON UNISTRUT
EWC-1	ELECTRIC WATER COOLER	1	0.25	NEAR BATHROOM	WALL MOUNTED, STAINLESS STEEL	ELKAY	EZS8	-	-	-	SINGLE WATER COOLER. PROVIDE W/ FILTER BY THE SAME MANUFACTURER. PROVIDE 115V, 60HZ ELECTRICAL CONNECTION
HB-1	HOSE BIBB	1	5	LEVEL 03 - HOISTWAY - M108	BENT NOSE HOSE BIBB	NA	NA	-	JAY R. SMITH	5670	

NOTES:
1. ALL FIXTURE SUPPLIES ARE TO BE PROVIDED WITH AIR CHAMBERS SAME SIZE AS THE SUPPLY CONNECTION & MINIMUM 12" TALL
2. ALL LAVATORIESSHALL BE PROVIDED WITH TEMPERING VALVES. PROVIDE LAVATORIES WITH TRAP OFFSETS TO MEET ADA REQUIREMENTS.

PUMP SCHEDULE

TAG	TYPE	DISCHARGE SIZE	TOTAL/MAX GPM	TDH (FT)	MOTOR					BASIN SIZE DIA. x H	MANUFACTURER	MODEL NO.	LOCATION	NOTES
					V	PH	HZ	HP(EA.)	RPM					
SP- 1	SUBMERSIBLE ELEVATOR SUMP PUMP	2"	50	15	115	1	60	0.5	1750	SPECIFIED BY STRUCTURAL	WEIL	1411-538	ESCALATOR PIT	PUMP SHALL INCLUDE INTEGRATED OIL/WATER SENSOR
SP- 2	SUBMERSIBLE ELEVATOR SUMP PUMP	2"	50	35	208	3	60	1	1750	SPECIFIED BY STRUCTURAL	WEIL	1413-575	SOUTH ELEVATOR PIT	PUMP SHALL INCLUDE INTEGRATED OIL/WATER SENSOR
SP- 3	SUBMERSIBLE ELEVATOR SUMP PUMP	2"	50	14	115	1	60	0.5	1750	SPECIFIED BY STRUCTURAL	WEIL	1413-538	NORTH ELEVATOR PIT	PUMP SHALL INCLUDE INTEGRATED OIL/WATER SENSOR
DBP-1	DOMESTIC WATER CONSTANT PRESSURE BOOSTER PUMP	1-1/4"	20	32	208	1	60	1/3	3500	NA	FRANKLIN ELECTRIC / LITTLE GIANT	INLINE 400	LEVEL 01 MAINTENANCE RM - M103	

ELECTRIC WATER HEATER SCHEDULE

TAG	TYPE	STORAGE VOLUME	RECOVERY	ELECTRICAL				MANUFACTURER	MODEL NO.	NOTES
				V	W	PH	HZ			
WHE- 1	TANK TYPE ELECTRIC WATER HEATER	20 GALLONS	13GPH @ 90°F / HR	115	2500	1	60	A.O. SMITH	EJCT 20	

TOTAL FIXTURE UNIT SCHEDULE

Job Name:	Damen Gree Line Station			Job Number:			CDOT: D-7-135B		
Job Location:	154 N Damen Ave			Low Flow Fixtures (Y or N):			N		
Fixture Type	Fixture Count	DFU	Total	WSFU			Totals		
				Cold	Hot	Total	Cold	Hot	Total
Water Closet (FV)	1	6/4	6	10/5		10/5	10		10
Lavatory	1	1	1	1.5	1.5	2	1.5	1.5	2
Mop Basin	1	3	3	2.25	2.25	3	2.25	2.25	3
Water Cooler	1	0.5	0.5	0.25		0.25	0.25	0	0.25
Hose Bibb	1			3		3	3		3
Floor/Trench Drain	27	2	54	-	-	-			
		Total							
		DFU Sanitary	64.5			Total WSFUs	17	3.75	18.25
		Pipe Size	4"			Pipe Sizes	2"	3/4"	2"
								Total Building GPM	35
								Water FPS	3.4
Note: Larger/Smaller used based on Y/N regarding Low Flow Fixtures.									

Elevator Sump Pump Calculations				
Pump #	Static Height	Friction Loss	Total Dynamic Head (TDH)	Pump TDH @ 50 GPM
SP-1	9 FT	4 FT	13 FT	15 FT
SP-2	26 FT	3 FT	29 FT	35 FT
SP-3	10 FT	2 FT	12 FT	14 FT

Note: Elevator Sump Pumps shall remove water at a rate of 50 GPM per ASME/ANSI code section A17.1

Booster Pump Pressure Calculation		
Flow Rate	35	gpm
Incomming Water Pressure	35	psi
Meter Pressure Loss	5	psi
Backflow Preventer Pressure Loss	5	psi
Longest Horizontal Run	50	ft
Height of Highest & Most Demanding Fixture	42	ft
Friction Pressure Loss	4	psi/100ft
Pressure Required at Most Hydraulically Remote Fixture	10	psi
Friction Loss Due to Fittings	25	% of total length
Suction Pressure	25.0	psi
Static Pressure Required	18.2	psi
Piping Friction Loss	3.7	psi
Friction Loss Due to Fittings	0.9	psi
Total Friction Loss	4.6	psi
TDH	32.8	psi
Total Boost Required	**7.8**	**psi**
Boost of Total Dynamic Head (TDH) Required	**18.0**	**FT**

DESIGN BY:	MB								
DRAWN BY:	MB								
CHECKED BY:	RP								
APPROVED BY:	RH		01/27/2020	ISSUE FOR BID	MB	MB	RP		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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CDOT
CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

PLUMBING SCHEDULES & CALCULATIONS

CDOT PROJECT D-7-135 | DATE: 01/27/2020

SPEC. NO.

DRAWING NO. **P60-01**

REVISION NO.

ABBREVIATIONS

#	NUMBER
2W FXO	2 WIRE FORGEIGN EXCHANGE OFFICE
2W FXS	2 WIRE FORGEIGN EXCHANGE SUBSCRIBER
3/C	THREE-CONDUCTOR
4W E&M	4 WIRE E&M
A	AMPHERE
AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
AFC	ABOVE FINISHED COUNTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AH	AMPERE HOUR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ANN	ANNUNCIATOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AT&T	AMERICAN TELEPHONE & TELEGRAPH
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AV	AUDIO VISUAL
AWG	AMERICAN AIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BT.	BENT
C	CONDUIT
CA.	CABLE,CUSTOMER ASSISTANCE
CAB	CABINET
CAP	CAPACITOR
CAS	CUSTOMER ASSISTANT STATION
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER, CHANNEL BANK
CC	CONTROL CENTER
CCTV	CLOSED CIRCUIT TELEVISION
CD	CONSTRUCTION DOCUMENTS
CH	CHILLER
CHWP	CHILLED WATER PUMP
CKT	CIRCUIT
CL	CENTERLINE
CLG	CEILING
CO	CONDUIT ONLY
COMM	COMMUNICATIONS
CONT.	CONTINUOUS, CONTROLLER
CP	CONTROL PANEL
CPT	CONTROL POWER TANSFORMER
CSI	CONSTRUCTION SPECIFICATION INSTITUTE
CT	CURRENT TRANSFORMER
CTA	CHICAGO TRANSIT AUTHORITY
CTR	CTR
CTV	CABLE TELEVISION
CU	COPPER, COPPER CUSTOMER ASSISTANT
CU PBX	CENTRAL UNIT PBX
DACS	DIGITAL ACCESS AND CROSSCONNECT SWITCH
DB	DECIBEL
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DEMO	DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DPP	DATA PATCH PANEL
DPST	DOUBLE POLE, SINGLE THROW
DS-0	DIGITAL SIGNAL RATE 0 (64 Kbps)
DS-1	DIGITAL SIGNAL RATE 1 (1.544 Mbps)
DSX-1	DIGITAL SIGNAL CROSSCONNECT PANEL FOR DS-1 SWITCH
DWG	DRAWING
EA	EACH
EMER	EMERGENCY
EMI	ELECTROMAGNETIC INTERFERENCE
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
ENGR	ENGINEER
EPO	EMERGENCY POWER OFF SWITCH
EQ	EQUIPMENT
EXIST, E	EXISTING TO REMAIN
F	FAHRENHEIT
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FC	FOOTCANDLE
FDP	FIBER DISTRIBUTION PANEL
FDR	FIBER DISTRIBUTION FRAME
FID	FIBER OPTIC CABLE IN INDDERDUCT
FIN. FL	FINISH FLOOR
FL, FLR	FLOOR
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FMC	FLEXIBLE METAL CONDUIT
FO	FIBER OPTIC
FOCS	FIBER OPTIC COMMUNICATION SYSTEM
FRE	FIBER SLACK ENCLOSURE
FSE	FIBERGLASS EPOXY CONDUIT
FTG	FITTING
G	GROUND
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFR	GROUND FAULT RELAY
GRD	GROUND
GRS	GALVANIZED RIGID STEEL
HP	HORSEPOWER
HPT	HELP POINT TELEPHONE
HTR	HEATER
HZ	HERTZ
IB	INBOUND
JB	JUNCTION BOX
LA	LIGHTNING ARRESTER
LBS	POUND(S)
LED	LIGHT EMITTING DIODE
LRA	LOCKED ROTOR AMPS
LTG	LIGHT
MAX	MAXIMUM
MB	MEASURED BUSINESS TELEPHONE LINE SERVICE
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MFD	MAIN DISTRIBUTION FRAME
MFGR	MANUFACTURER
MH	MANHOLE
MIC.	MICROPHONE
MIN	MINIMUM
MM	MULTI-MODE
MOP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MV	MEDIUM VOLTAGE
N	NEW
N.I.C	NOT IN CONTRACT
N.T.S	NOT TO SCALE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NER	NEW LOCATION OF EXIST RELOCATED
NES	NODAL EQUIPMENT SHELTER
NETA	INTERNATIONAL ELECTRICAL TESTING ASSOCIATION
NEUT, N	NEUTRAL
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NOM.	NOMINAL
NTS	NOT TO SCALE
OCP	OVERCURRENT PROTECTION
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OH	OVERHEAD
P	POLE
PB	PULL BOX
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
POC	POINT OF CONNECTION
PVC	POLVINYL CHLORIDE
PWR	POWER
R	REMOVE
RAP	REMOTE ANNUCIATOR PANEL
RE	REMOVE EXIST
REC	RECEPTACLE
RGS	RIGID GALVAIZED STEEL
RL	RELOCATE EXIST
RPM	
RTU	ROOF TOP UNIT
SCADA	
SCH	SCHEDULE
SD	SMOKE DETECTOR
SEC	SECURITY
SF	SUPPLY FAN
SFD	SURGE PROTECTIVE DEVICE
SM	
SONET	SYNCHRONUM OPTICAL NETWORKING
SP	SPEAKER
SPDT	SINGLE POLE, DOUBLE THROW
SPEC	SPECIFICATION
SPST	SINGLE POLE, SINGLE THROW
STD	STANDARD
SVT	
SW	
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
T	TELEPHONE
TB	
TC	TIME CLOCK
TCP	TELEPHONE CONTROL PANEL
TEL	TELEPHONE
TELECOMM	TELECOMMUNICATIONS
TEX	TURNSTYLE, EXIT ONLY
TP	TWISTED PAIR
TPS	TWISTED PAIR SHIELDED
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP	TYPICAL
UC	UNDER COUNTER
UG	UNDERGROUND
UGPS	UNDERGROUND PULL SECTION
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
V	VOLT
VA	VOLT AMPERE
VAR	VOLT AMPERE REACTIVE
VAV	VARIABLE AIR VOLUME
VCB	VACUUM CIRCUIT BREAKER
VD	VOLTAGE DROP
VFD	VARIABLE FREQUENCY DRIVE
VHBG	VENTRA HIGH GATE BARRIER
VR	VOLTAGE REGULATOR
VT	VENTRA TURNSTYLE
VTWA	VENTRA TURNSTYLE, WHEELCHAIR ACCESSIBLE
W	WATT, WALL
W/	WITH
WAN	WIRELESS ACCESS NETWORK
WAP	WIRELESS ACCESS POINT
WH	WATER HEATER
WHM	WATTHOUR METER
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
ZSRG	ZERO SEQUENCE REFERENCE GROUND
217	

SYMBOLS

- EXISTING WORK
- NEW WORK
- NEW UNDERGROUND
- TELEPHONE - CTA PBX SYSTEM
- PUBLIC PAY TELEPHONE
- VOICE/ DATA JACK
- [CH] ELEVATOR CAB CALL PHONE
- [HC] XX ELEVATOR HALL CALL PHONE
- [PA] PA AMPLIFIER & CONTROL EQT
- [MIC] XX MICROPHONE
- [CR] CARD READER
- [DR] DOOR RELEASE
- [PID] PASSENGER INFORMATION DISPLAY
- PA AUDIO/VISUAL SIGN (DOUBLE SIDED)
- [MON] MONITOR
- [EVM] EXPRESS VENDING MACH (VENTRA)
- [TCM] TICKET CARD VENDING MACHINE
- [NS] XX AMBIENT NOISE SENSOR MICROPHONE
- [S] PA SPEAKER-TYPE1
- (S) PA PA SPEAKER-TYPE1 CEILING MOUNTED
- (S) RECESSED HOUSING WITH CONE SPEAKER-TYPE2
- [S] SURFACE MOUNTED HOUSING WITH CONE SPEAKER-TYPE2
- [J] JUNCTION BOX
- [RTU] DATA TRANSMISSION SYSTEM REMOTE TERMINAL UNIT
- XX INDICATES DEVICE NUMBER.

- [PB] PULL BOX
- XX [WAP] WIRELESS ACCESS POINT DIRECTIONAL ANTENNA
- (WAP) XX WIRELESS ACCESS POINT WITH OMNI ANTENNA
- XX (CAM) XX CAMERA, CAM
- [DMS] XX DYNAMIC MESSAGE SIGN
- [HUB] XX COMMUNICATION HUB
- (BL) BLUE LIGHT
- [HPT] XX HELP POINT TELEPHONE
- [T] XX TELEPHONE
- [ITS] INFORMATION TOUCH SCREEN SIGN
- [SVT] XX SECURITY VIDEO TERMINAL
- [AV] AUDIO/VIDEO TERMINAL AUDIO/VIDEO MONITOR
- [CP] COMMUNICATION ROOM ELECT PANEL
- [ITC] INTERFACE TERMINAL CABINET
- [IDF] INTERMEDIATE DISTRIBUTION FRAME
- [IDS] INTRUSION DETECTION SENSOR
- [SONET] SYNCHRONUS OPTICAL NETWORK

DEVICE — DEVICE NUMBER
LLLN-NN
TYPE NUMBER

GENERAL NOTES

1. THE SCOPE OF WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND SERVICES REQUIRED FOR THIS COMPLETE INSTALLATION OF THE TELECOMMUNICATIONS SYSTEMS AS INDICATED AND SPECIFIED.
2. ALL TELECOMMUNICATIONS MATERIAL & EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED. ALL EQUIPMENT SHALL BE U.L. LISTED. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS OF A.N.S.I., N.E.M.A. & N.B.F.U. REPLACE DEFECTIVE OR DAMAGED MATERIALS OR REPAIR IN A MANNER APPROVED BY THE COMMISSIONER. KEEP CONDUITS AND OTHER OPENINGS CLOSED TO PREVENT ENTRY OF FOREIGN MATTER. COVER FIXTURES, EQUIPMENT AND APPARATUS AND PROTECT AGAINST DIRT, WATER, CHEMICAL OR MECHANICAL DAMAGE BEFORE AND DURING THE CONSTRUCTION PERIOD UNTIL FINAL ACCEPTANCE. RESTORE TO ORIGINAL CONDITION ANY FIXTURES, APPARATUS OR EQUIPMENT DAMAGED PRIOR TO FINAL ACCEPTANCE, INCLUDING RESTORATION OF DAMAGED SHOP COAT OF PAINT. DELIVER EQUIPMENT AND STORE AT THE SITE, PROPERLY PACKED AND CRATED, UNTIL FINALLY INSTALLED.
3. ANY INCONSISTENCY OR DISCREPANCY IN THE DRAWINGS OR SPECIFICATIONS SHALL BE CLEARED WITH THE COMMISSIONER. IT IS UNDERSTOOD FURTHER THAT THE CONTRACTOR HAS READ AND UNDERSTANDS FULLY THE PLANS, SPECIFICATIONS AND ALL RELATED DOCUMENTS ON THIS PROJECT.
4. THE CONTRACTOR SHALL UNDERTAKE THE WORK IN ITS ENTIRETY IN ACCORDANCE WITH ITS DESIGN AND PURPOSE. ALL WORK SHALL BE CARRIED OUT IN A PROFESSIONAL MANNER WITH MAXIMUM EFFICIENCY, EXCELLENT WORKMANSHIP AND SHALL MEET THE REQUIREMENTS OF THE FOLLOWING:
   - CHICAGO DEPARTMENT OF TRANSPORTATION (CDOT)
   - CITY OF CHICAGO BUILDING CODE(CCBC) LATEST EDITION
   - CHICAGO ELECTRICAL CODE (CEC) LATEST EDITION
   - NFPA 101 LATEST EDITION
   - ILLINOIS ACCESSIBILITY CODE (IAC)
   - AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG)
   - NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA).
   - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
   - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE).
   - INSTITUTE OF CABLE ENGINEERS ASSOCIATION (ICEA).
   - NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION STANDARDS FOR CONSTRUCTION (NECA).
   - UNDERWRITERS LABORATORIES, INC. (UL).
   - INSTRUMENT SOCIETY OF AMERICA (ISA).
   - NATIONAL ELECTRICAL CODE LATEST EDITION.
   - NFPA 72 LATEST EDITION.
   - STATE INDUSTRIAL ACCIDENT COMMISSION.
   - OCCUPATIONAL SAFETY AND HEALTH APPEALS BOARD (OSHA).
   - INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)
   - BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL (BICSI)
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)
   - INTERNATIONAL TELECOMMUNICATIONS UNION - TELECOMMUNICATIONS (ITU-T)
   - INTERNATIONAL TELECOMMUNICATIONS UNION - RADIO (ITU-R)
   - ASSOCIATION OF AMERICAN RAILROADS (AAR)
   - CHICAGO TRANSIT AUTHORITY (CTA)
   - ELECTRONIC INDUSTRIES ALLIANCE (EIA)
5. THE CONTRACTOR SHALL SECURE AND PAY FOR PERMITS AND FEES NECESSARY FOR EXECUTION AND COMPLETION OF TELECOMMUNICATIONS WORK, INCLUDING ALL CHARGES BY THE LOCAL GOVERNMENT AND CITY AGENCIES. HE SHALL OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK AND DELIVER SAME TO THE COMMISSIONER BEFORE REQUESTING OF ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.
6. CONTRACTOR SHALL CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. STRUCTURAL MEMBERS SHALL NOT BE CUT OR DRILLED WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER AND COMMISSIONER. WHERE SUCH WORK IS NECESSARY, HOWEVER, DO ALL CUTTING, CORING AND PATCHING OF THE CONSTRUCTION WORK WHICH MAY BE REQUIRED FOR THE PROPER INSTALLATION OF THE TELECOMMUNICATIONS WORK. ALL PATCHING SHALL BE OF THE SAME MATERIALS, WORKMANSHIP AND FINISH AND SHALL ACCURATELY MATCH ALL SURROUNDING WORK. AFTER COMPLETION OF WORK, CLEAN UP RESULTANT DEBRIS AND REMOVE FROM SITE.
7. PROVIDE WIRING FOR EQUIPMENT FURNISHED BY OTHERS, AS SHOWN ON DRAWINGS. COORDINATE WITH OTHER TRADES FOR DETAILS BEFORE INSTALLATION. THE TERM "WIRING" AS USED HEREIN, INCLUDES FURNISHING AND INSTALLING CONDUIT, WIRE, JUNCTION BOXES, DISCONNECTS ETC. AND MAKING CONNECTIONS. CHECK ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT TO BE INSTALLED BY OTHERS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER WIRING AND NECESSARY ADJUSTMENTS TO EQUIPMENT TO CONFORM TO SPECIFIED REQUIREMENTS OF THE EQUIPMENT.
8. PROVIDE SUPPORT DEVICES AND APPURTENANCES INCLUDING HANGERS, ANCHORS, SLEEVES, INSERTS, SEALS, AND ASSOCIATED FASTENERS USED FOR MOUNTING RACEWAYS, EQUIPMENT AND OTHER TELECOMMUNICATIONS ITEMS AS REQUIRED.
9. ENCLOSURES, J-BOXES, GUTTERS ETC. INSTALLED OUTSIDE OF BUILDING AND SUBJECT TO WEATHER SHALL BE WEATHER-PROOF TYPE.
10. CONTRACTOR SHALL PROVIDE ACCESS PANELS AS REQUIRED FOR CODE-REQUIRED ACCESS IN HARD CEILING AREAS AND BEHIND WALLS.
11. CONTRACTOR SHALL PROVIDE ALL TELECOMMUNICATIONS FINAL CONNECTIONS AS REQUIRED FOR COMPLETE AND OPERABLE SYSTEM, U.N.O.
12. TELECOMMUNICATIONS DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS, ELBOWS OR OTHER SPECIFIC ELEMENTS WHICH MAY BE REQUIRED FOR PROPER INSTALLATION OF WORK. SIZE AND LOCATION OF EQUIPMENT AND WIRING ARE SHOWN TO SCALE WHERE POSSIBLE BUT MAY BE DISTORTED FOR CLARITY OF THE DRAWINGS. FINAL LOCATIONS OF OUTLETS AND EQUIPMENT SHALL BE SHOWN IN ENLARGED DETAILS OR AS APPROVED BY THE COMMISSIONER OR THE COMMISSIONER'S. IT IS NOT WITHIN THE SCOPE OF DRAWINGS TO SHOW ALL NECESSARY BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. CONTRACTOR SHALL PROVIDE THE INSTALLATION TO MAINTAIN HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS.
13. PENETRATIONS OF WALLS AND WALL MEMBRANES REQUIRED TO HAVE A FIRE-RESISTANCE RATING SHALL BE PROTECTED WITH THROUGH-PENETRATION FIRE STOPS SUITABLE FOR THE METHOD OF PENETRATION. THROUGH-PENETRATION FIRE STOPS SHALL BE TESTED USING CCBC TITLE 15.
14. PROVIDE SEISMIC RESTRAINTS AND ATTACHMENTS FOR TELECOMMUNICATIONS EQUIPMENT AND SYSTEM COMPONENTS AS REQUIRED PER CCBC AND SMACNA.
15. PROVIDE 4" CONCRETE HOUSEKEEPING PAD FOR ALL FLOOR (OR GRADE) MOUNTED EQUIPMENT U.N.O.
16. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE JOB SITE PRIOR TO SUBMITTING HIS PROPOSAL AND TO FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS.
17. PROVIDE ENGRAVED THREE LAYER LAMINATED PLASTIC NAMEPLATES W/ WHITE LETTERS ON A BLACK BACKGROUND. 1/4" LETTERS FOR EQUIPMENT DESIGNATION. NAMEPLATES SHALL BE PROVIDED FOR THE FOLLOWING EQUIPMENT INCLUDING (BUT NOT LIMITED TO): TELECOM RACKS/ CABINETS INCLUDING EACH INDIVIDUAL DEVICE OR PIECE OF EQUIPMENT WITHIN TELECOMM RACK/ CABINETS.
18. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION AND WORK.
19. CONTRACTOR TO REQUEST AND NOTIFY TO CTA IN ANY AND ALL SERVICE INTERRUPTIONS.
20. ALL COMMUNICATIONS EQUIPMENT ON LEVEL 01 TO BE PROVIDED WITH ELECTRICAL ISOLATION FROM BUILDING, FLOOR AND STRUCTURE TO PROTECT AGAINST STRAY CURRENTS FROM CTA TRACK. PROVIDE FIBERGLASS UNISTRUT FOR PANELS AND CONDUIT SUPPORTS.
21. WE RECOMMEND THE CONTRACTOR TO ISOLATE BETWEEN THE BUILDING AND ELEVATION (TRACKS) BY INSTALLING AN EXPANSION DEFECTIVE FITTING NON-BONDING. WE RECOMMEND TO ISOLATE COMM ROOM.
22. CTA WILL RECOMMEND A SPLICE POINT BETWEEN ASHLAND AND CALIFORNIA.
23. CTA COMMUNICATION "SONET" EQUIPMENT WILL BE DECOMMISSIONED. THE CURRENT VERSION SHOULD BE PRICED.
24. MODEL # FOR 12 STRAND MULTI-MODE FIBER OPTIC CABLE : CROSSING 12 STRAND 50/125 MM FIBER OPTIC CABLE, PART# SPH-120TS-12E7H.
25. MODEL # FOR MICROPHONE : IED A528HFM-H.
26. CHANNEL FRAME MODEL NUMBER : CARRIER ACCESS ADIT 600 PART # 770-0009-JE, WITH (3) FXS8C AND (2) OCU-DP OR EQUAL TO, AND OR COORDINATED WITH CTA.
27. BLUE LIGHT MODEL NUMBER : 500L - 1224-B.
28. EXPOSED CONDUIT IS NOT ALLOWED. ANY EXPOSED CONDUIT INSTALLATION REQUIRES COMMISSIONER APPROVAL. IF APPROVED, ALL EXPOSED CONDUIT MUST BE STAINLESS STEEL.

CABLE LEGEND	
A	CAT6 4PR F/UTP
B	CAT6 4PR#22 AWG UTP AND 1PR#18
C	1PR#16 AWG SHIELED
D	3PR#22 AWG SHIELDED
E	1PR#18 AWG
F	2 STRAND MULTIMODE OPTICAL CABLE
G	6 STRAND MULTIMODE OPTICAL CABLE
H	MANHATTAN 2PR#18 AWG CABLE
I	CAT6 4PR F/UTP
J	50PR#22 AWG CAT3

NOTE:
NUMBER PRECEDING LETTER CHARACTER INDICATES NUMBER OF CABLES

DESIGN BY:	JS									
DRAWN BY:	JS									
CHECKED BY:	JS/SA									
APPROVED BY:	LZ		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA			
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT	

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CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

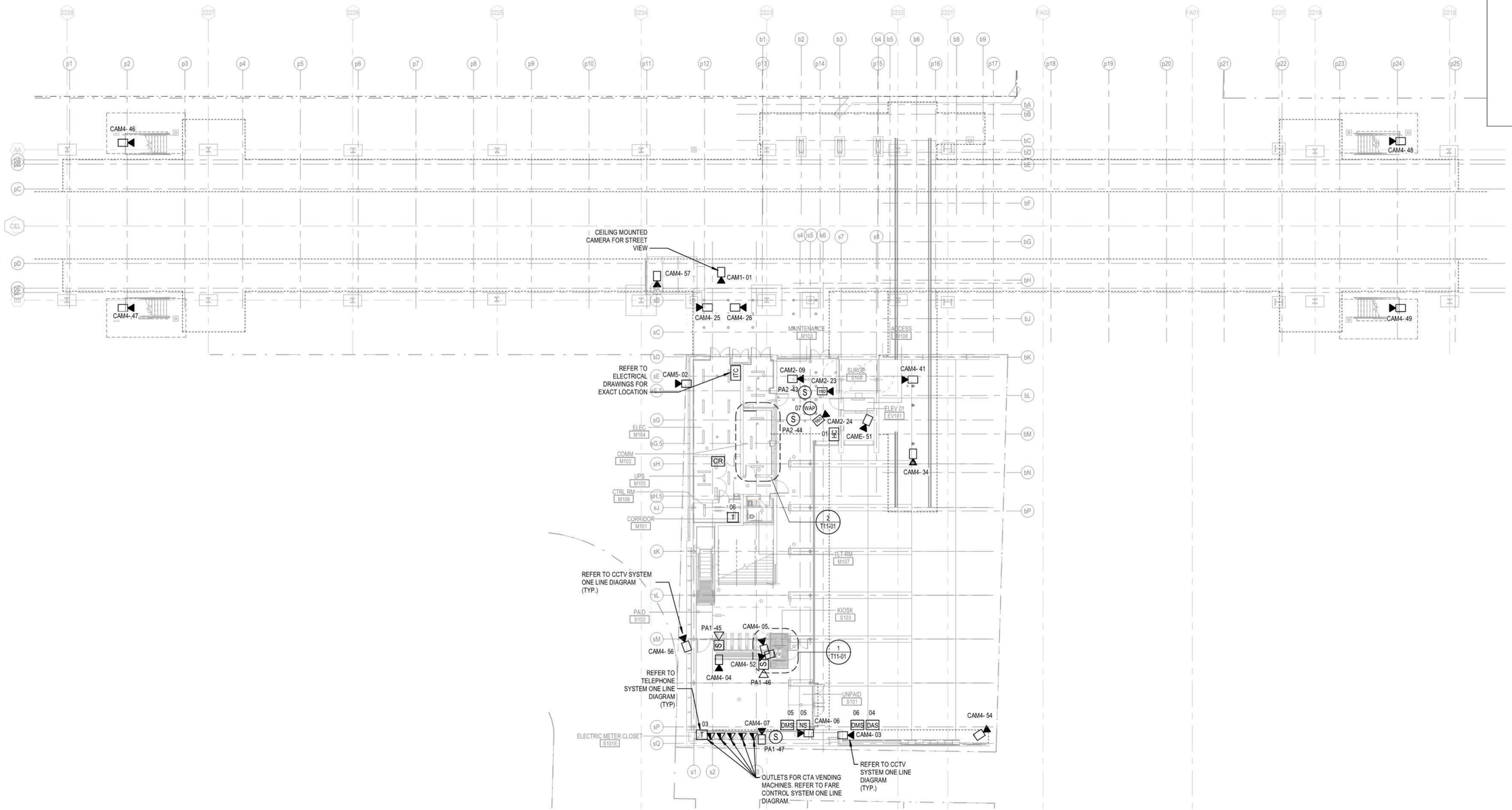
TELECOMM GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

CDOT PROJECT D-7-135 | DATE: 01/27/2020

SPEC. NO.

DRAWING NO. **T00-01**

REVISION NO.



1 OVERALL LEVEL 01 TELECOMMUNICATIONS PLAN

1/16" = 1'-0"

DESIGN BY:	JS								
DRAWN BY:	JS								
CHECKED BY:	JS/SA								
APPROVED BY:	LZ		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

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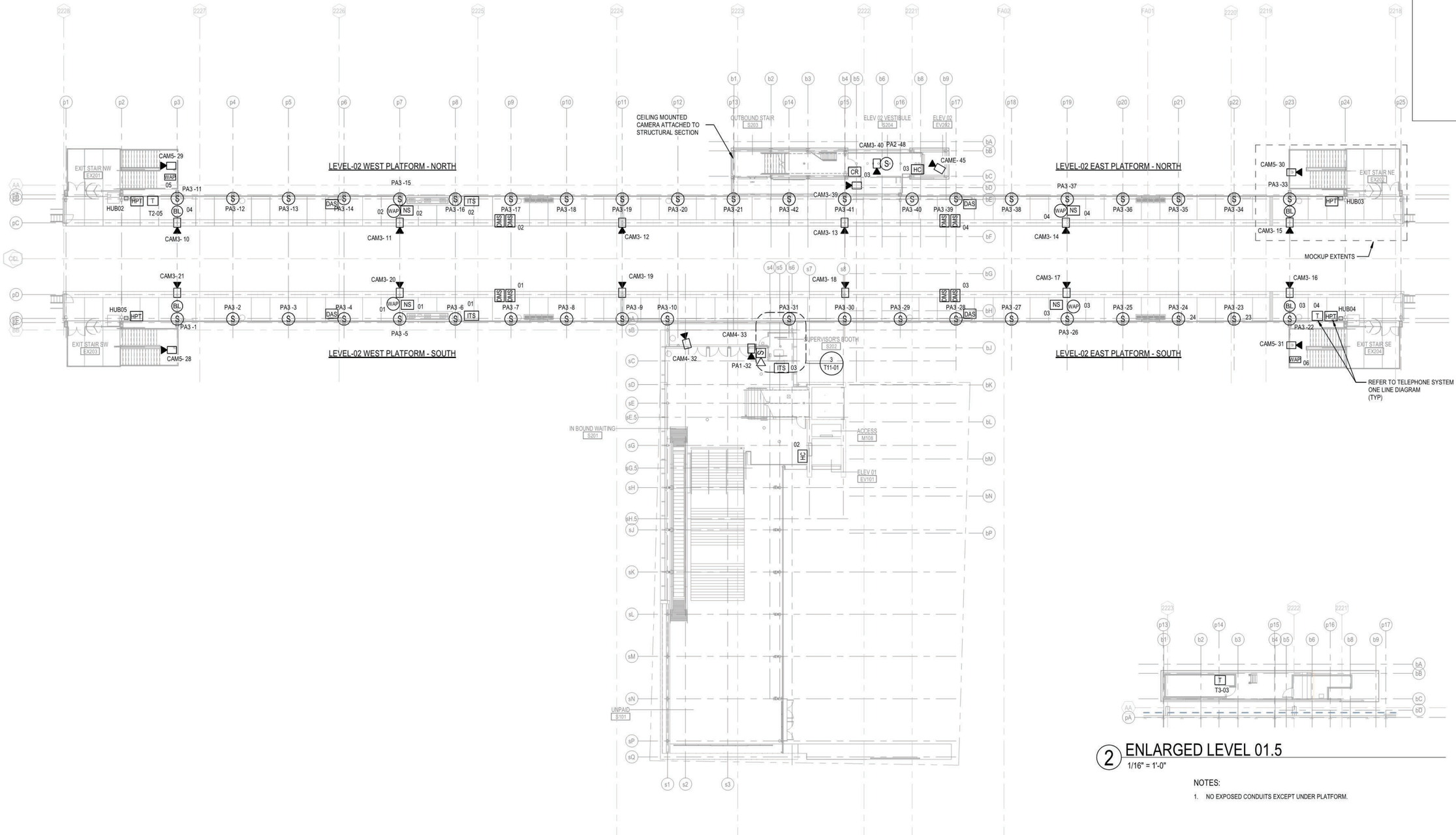
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

OVERALL LEVEL 01 - TELECOMMUNICATIONS PLAN

DRAWING NO. **T10-01**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



1 OVERALL LEVEL 02 - PLATFORM TELECOMMUNICATIONS PLAN
1/16" = 1'-0"

2 ENLARGED LEVEL 01.5
1/16" = 1'-0"

NOTES:

1. NO EXPOSED CONDUITS EXCEPT UNDER PLATFORM.

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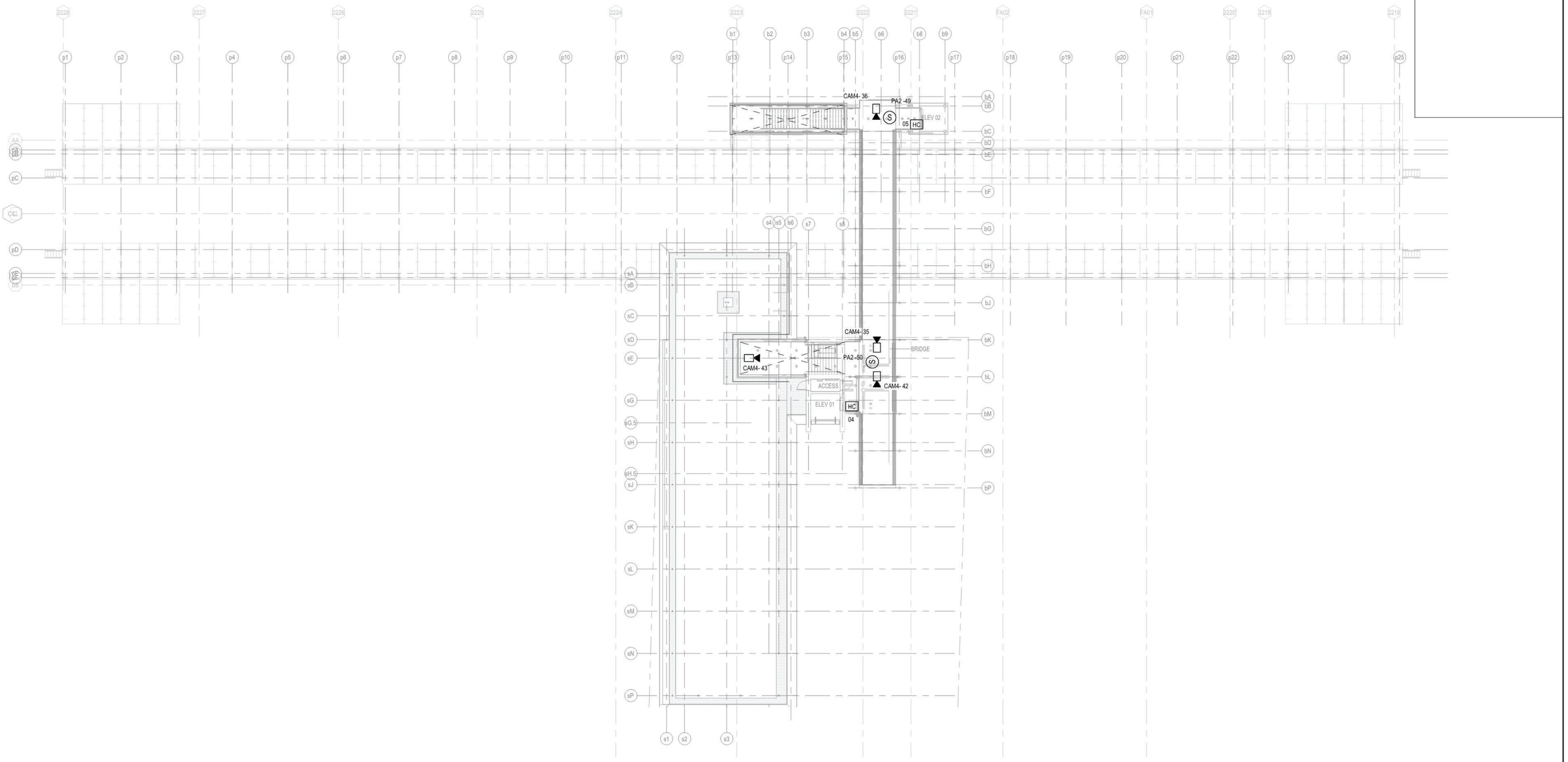
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

OVERALL LEVEL 02 - PLATFORM TELECOMMUNICATIONS PLAN

DRAWING NO. **T10-02**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



1 OVERALL LEVEL 03 - BRIDGE TELECOMMUNICATIONS PLAN

1/16" = 1'-0"

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CHECKED BY:	JS/SA								
APPROVED BY:	LZ		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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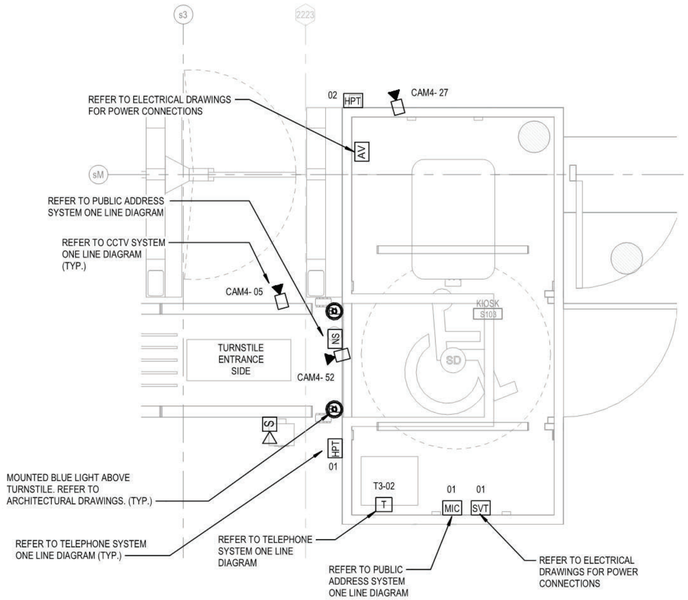
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

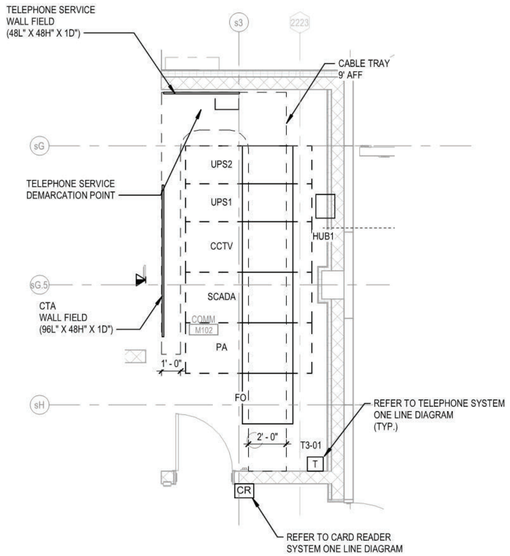
OVERALL LEVEL 03 - BRIDGE TELECOMMUNICATIONS PLAN

DRAWING NO. **T10-03**

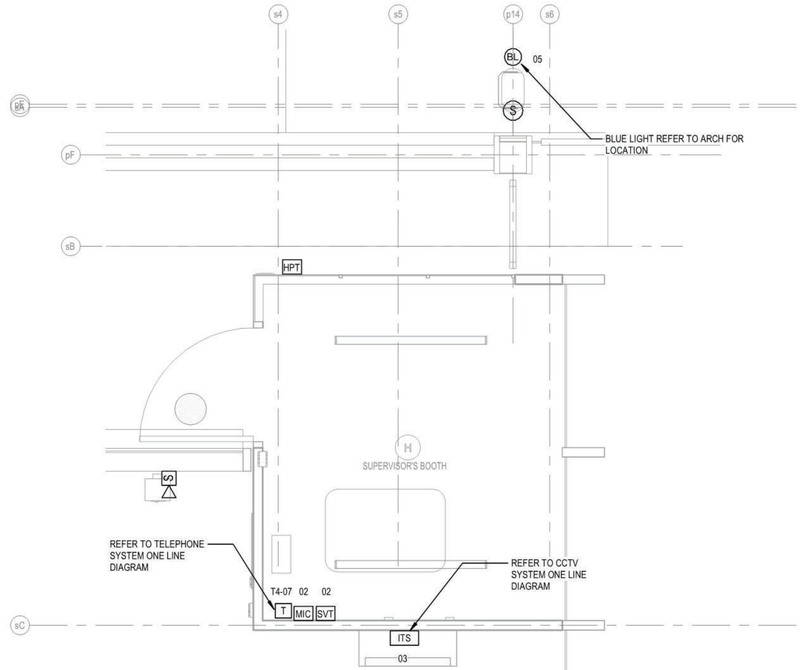
CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



1 ENLARGED LEVEL 01 - KIOSK COMMUNICATIONS PLAN
1/2" = 1'-0"



2 ENLARGED LEVEL 01 - COMM ROOM
1/4" = 1'-0"



3 ENLARGED LEVEL 02 - SUPERVISOR'S BOOTH COMMUNICATIONS PLAN
1/2" = 1'-0"

NOTES:

1. ALL CONDUIT AND JUNCTION BOXES IN THESE AREAS MUST BE CONCEALED.
2. ALL CONDUITS AND JUCNTION BOXES IN PASSANGER AREAS MUST BE CONCEALED.
3. NO EXPOSED CONDUITS.

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

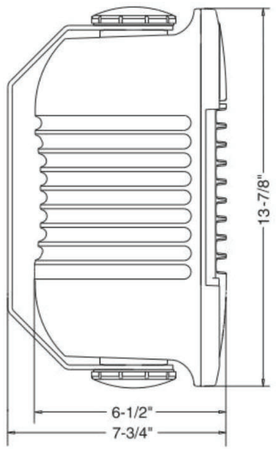
ENLARGED LEVEL 01 - TELECOMMUNICATIONS PLAN

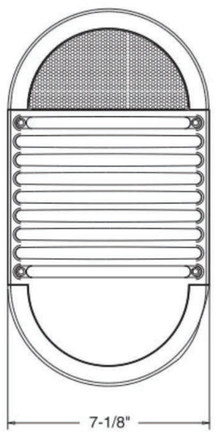
CDOT PROJECT D-7-135 | DATE: 01/27/2020

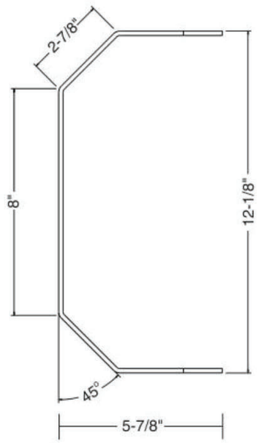
SPEC. NO.

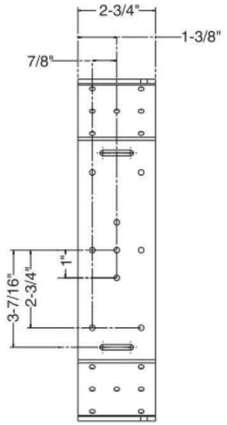
DRAWING NO. **T11-01**

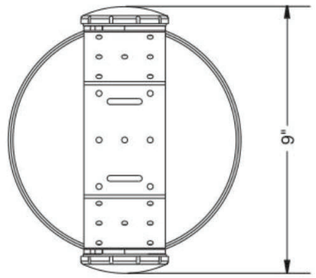
REVISION NO.

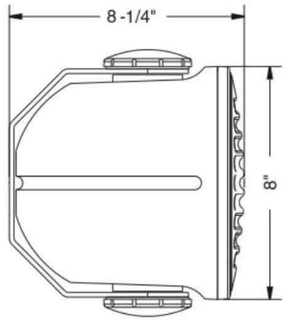


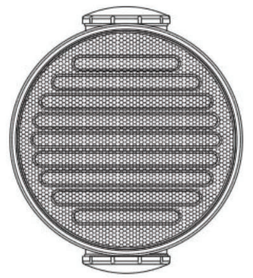


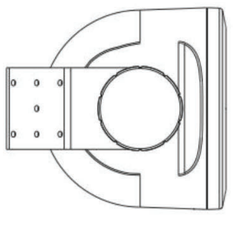


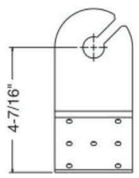


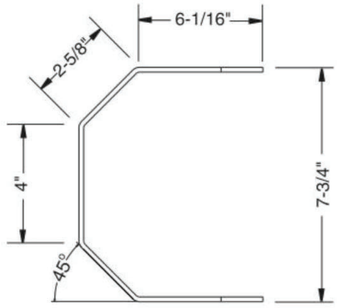


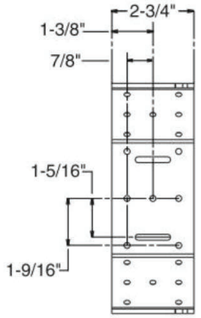


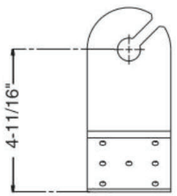








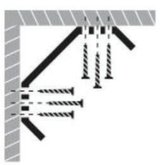




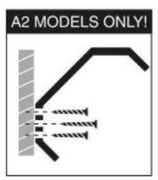
4 TYPE - 3 SPEAKER DETAIL
NOT TO SCALE

BRACKET INSTALLATION

FLAT SURFACE



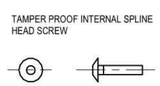
90-DEGREE ADJOINING SURFACES
(secure both ends)



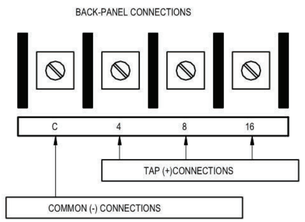
CANTED
A6 and A8 models are too heavy for this type of mounting

5 TYPE - 1 AND 3 - SPEAKER MOUNTING BRACKET DETAIL
NOT TO SCALE

1 TYPE - 1 SPEAKER DETAIL
NOT TO SCALE



3 TAMPER PROOF SCREW
NOT TO SCALE



2 TYPE - 1 AND 3 - SPEAKER TAP DETAIL
NOT TO SCALE

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DRAWN BY:	JS								
CHECKED BY:	JS/SA								
APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

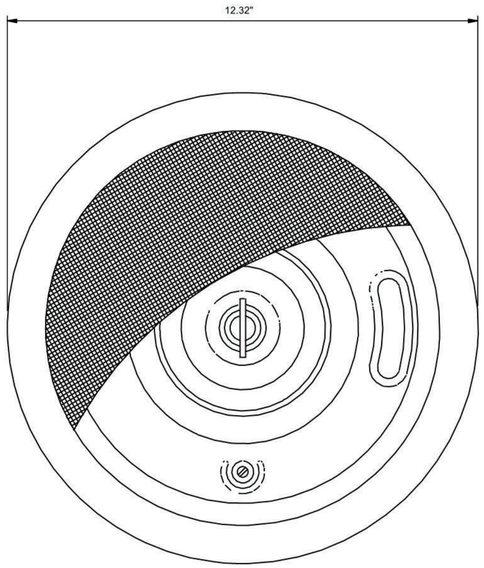
COMMUNICATIONS STANDARDS DETAILS PA SPEAKERS

CDOT PROJECT D-7-135 | DATE: 01/27/2020

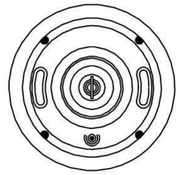
SPEC. NO.

DRAWING NO. **T50-01**

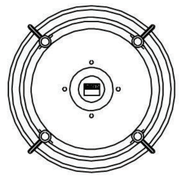
REVISION NO.



(GRILLE SHOWN PARTIALLY REMOVED)

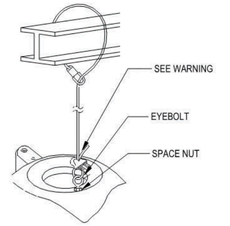


(OCS1 FRONT DRAWING
GRILLE REMOVED)



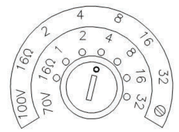
(OCS1 REAR DRAWING)

4 TYPE - 2 SPEAKER FRONT AND REAR DETAIL
NOT TO SCALE

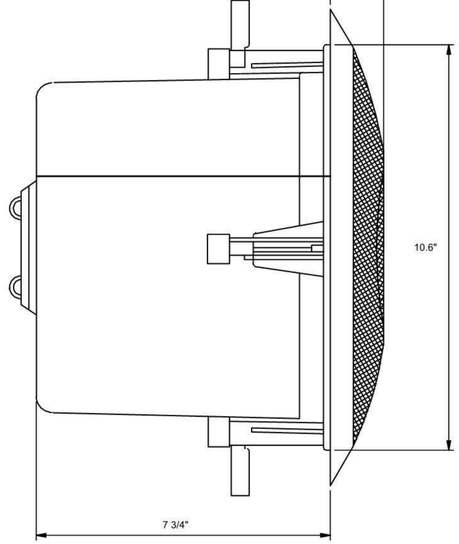


SAFETY TETHER FOR CEILING SPEAKER

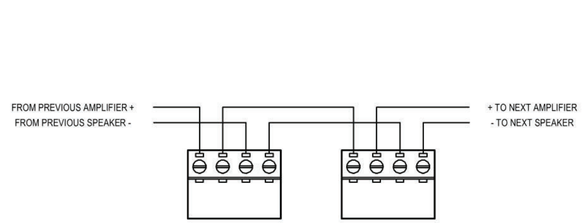
1 SAFETY TETHER DETAIL
NOT TO SCALE

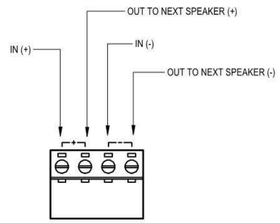


2 TYPE 2 - SPEAKER TAP
NOT TO SCALE



5 TYPE - 2 SPEAKER DETAIL
NOT TO SCALE





3 TYPE 2 - SPEAKER CONNECTION
NOT TO SCALE

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CHECKED BY:	JS/SA								
APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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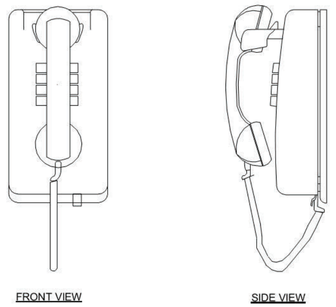
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

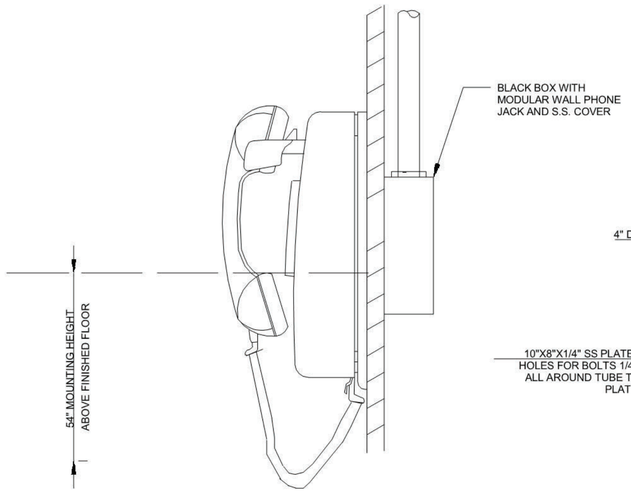
COMMUNICATIONS STANDARD DETAILS PA SPEAKERS

DRAWING NO.
T50-02

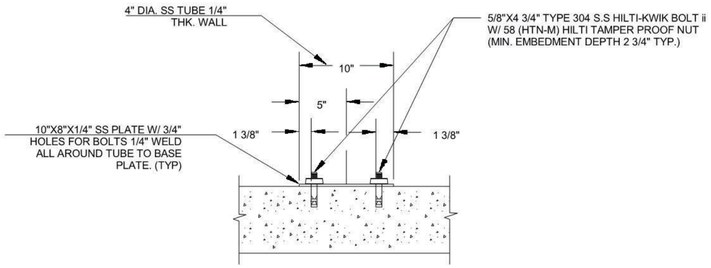
CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



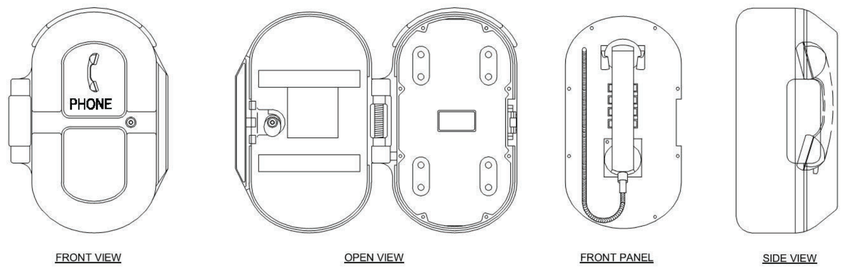
1 TYPE - 1 - INDOOR TELEPHONE WALL INSTALLATION
12" = 1'-0"



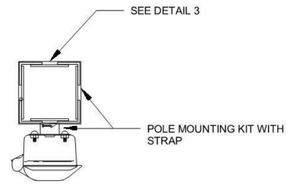
2 TYPE - 1 -TELEPHONE INDOOR WALL INSTALLATION
12" = 1'-0"



3 TYPE - 3 -STAND ALONE PHONE CONCRETE INSTALLATION
12" = 1'-0"



4 TYPE - 2 -OUTDOOR TELEPHONE
12" = 1'-0"



5 TYPE - 2 -OUTDOOR TELEPHONE INSTALLATION
12" = 1'-0"

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DRAWN BY:	JS								
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APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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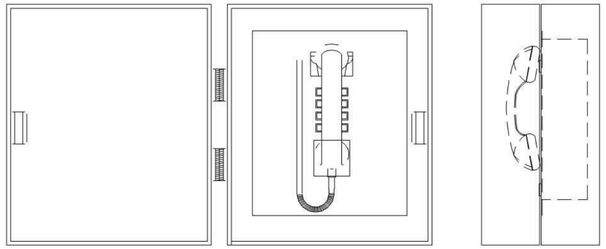
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

COMMUNICATIONS STANDARD DETAILS TELEPHONES

DRAWING NO.
T50-03

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.

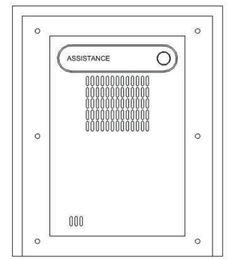


FRONT VIEW WITH FRONT PANEL (OPEN)

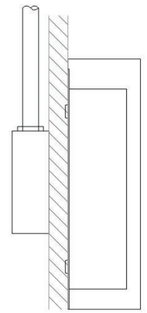
SIDE VIEW

1 TYPE 5 - FARE AREA TELEPHONE
NOT TO SCALE

2 TYPE 3 - INDOOR TELEPHONE
NOT TO SCALE

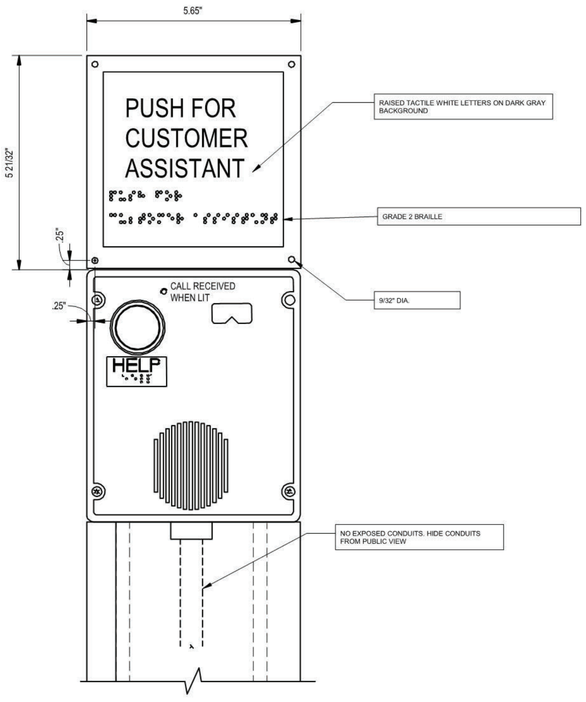


FRONT VIEW



SIDE VIEW

3 TYPE 4 - WALL MOUNT CUSTOMER ASSISTANCE INTERCOM (CA)
NOT TO SCALE



4 TYPE 4 - HELP POINT TELEPHONE INSTALLATION
NOT TO SCALE

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CHECKED BY:	JS/SA								
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

COMMUNICATIONS STANDARD DETAILS TELEPHONES

DRAWING NO.
T50-04

CDOT PROJECT D-7-135

DATE: 01/27/2020

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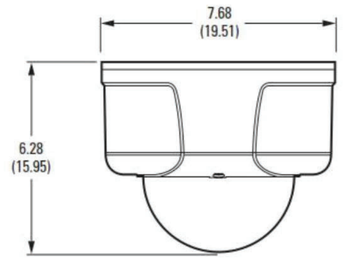
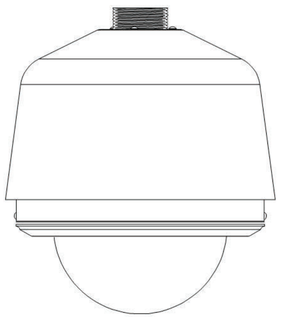
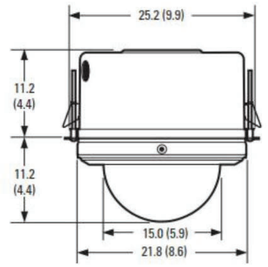


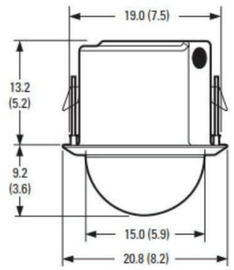
4 FIXED CAMERA DETAIL - SURFACE MOUNTED INDOOR/OUTDOOR CAMERA (TYPE 4)
6" = 1'-0"



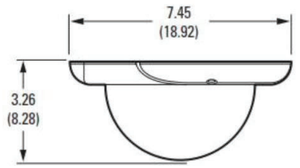
5 PTZ CAMERA DETAIL - MOUNTED INDOOR/OUTDOOR CAMERA (TYPE5)
6" = 1'-0"



1 PTZ CAMERA DETAIL - IN CEILING OUTDOOR CAMERA (TYPE 1)
NOT TO SCALE



2 PTZ CAMERA DETAIL - IN CEILING INDOOR CAMERA (TYPE 2)
NOT TO SCALE



3 FIXED CAMERA DETAIL - IN CEILING INDOOR/OUTDOOR CAMERA (TYPE 3)
NOT TO SCALE

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

COMMUNICATIONS STANDARD DETAILS CAMERAS

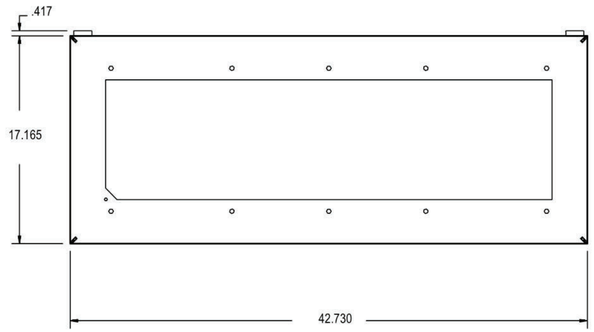
CDOT PROJECT D-7-135

DATE: 01/27/2020

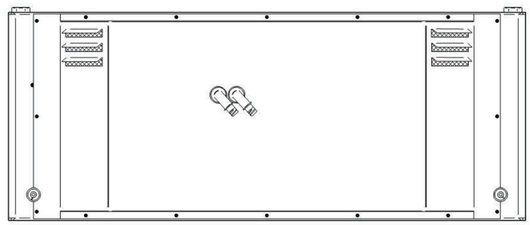
SPEC. NO.

DRAWING NO. **T50-05**

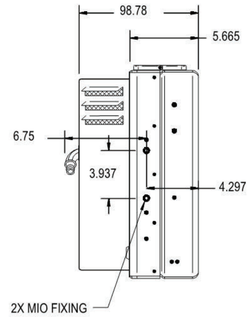
REVISION NO.



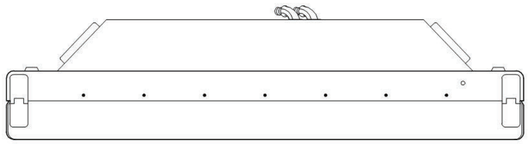
1 DMS PLATFORM - FRONT
NOT TO SCALE



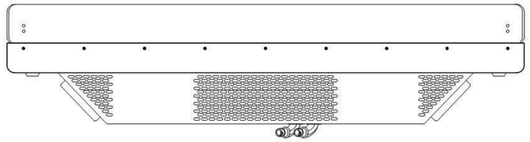
2 DMS PLATFORM - BACK
NOT TO SCALE



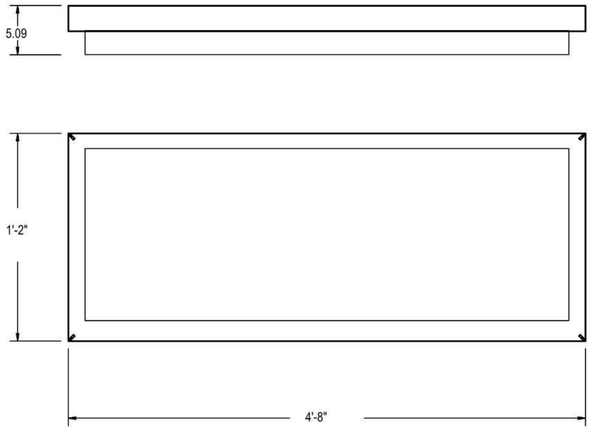
3 DMS PLATFORM - SIDE
NOT TO SCALE



4 DMS PLATFORM - TOP
NOT TO SCALE



5 DMS PLATFORM - BOTTOM
NOT TO SCALE



6 DMS DETAIL
1" = 1'-0"

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154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

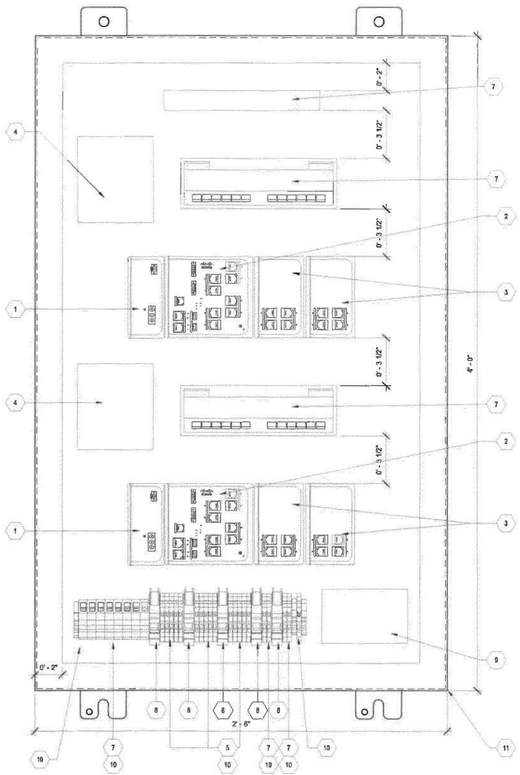
COMMUNICATIONS STANDARD DETAILS DYNAMIC MESSAGE SIGN

DRAWING NO.
T50-06

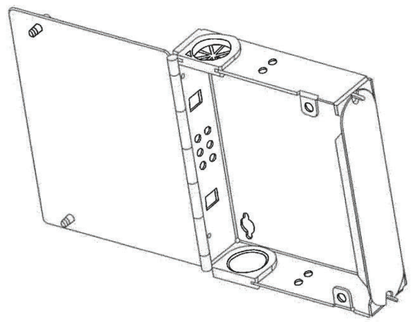
CDOT PROJECT D-7-135

DATE: 01/27/2020

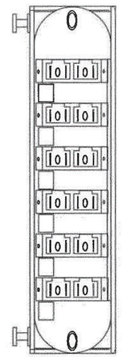
REVISION NO.



COMMUNICATIONS HUB FRONT VIEW



INSIDE FIBER SPLICE PANEL HOUSING



FIBER SPLICE PANEL HOUSING WITH CONNECTION PANEL FRONT VIEW

ITEM	MANUFACTURER	PART No.	DESCRIPTION	QUANTITY
1	CISCO	PWR-IE65-PC-AC	8 ETHERNET 10/100 PORTS	
2	CISCO	IE-3000-8TC	8 ETHERNET 10/100 PORTS AND 2 DUAL-PURPOSE UPLINKS, LAYER 2	
3	CISCO	IE-3000-4PC	EXPANSION PoE MODULE FOR IE-3000-8TPC	
4	CORNING	SHP-01P	SINGLE PANEL HOUSING, DIN RAIL BRACKET, LC JUMPERS, PIGTAILS, AND CONNECTOR HOUSING	
5	TBD	TBD	ADJACENT JUMPER	
6	TBD	TBD	SEPERATOR	
7	TBD	TBD	TERMINAL BLOCK	
8	TBD	TBD	DIN RAIL 15A BREAKER	
9	TBD	TBD	DISCONNECT SWITCH	
10	TBD	TBD	END STOP	
11	TBD	TBD	NEMA 4, 48" H x 36" W x 12" D	

NOTES:
COMMUNICATION GROUNDING BUSBAR (CGB), PREDRILLED ELECTROIN PLATED COPPER WITH STANDARD NEMA BOLT HOLE SIZING AND SPACING SHALL BE USED FOR GROUNDING THE COMMUNICATIONS EQUIPMENT. MINIMUM DIMENSIONS SHALL BE 1/4" THICK x 2" WIDE x 12" LENGTH. GROUNDING SHALL BE PER THE LATEST BICSI STANDARD

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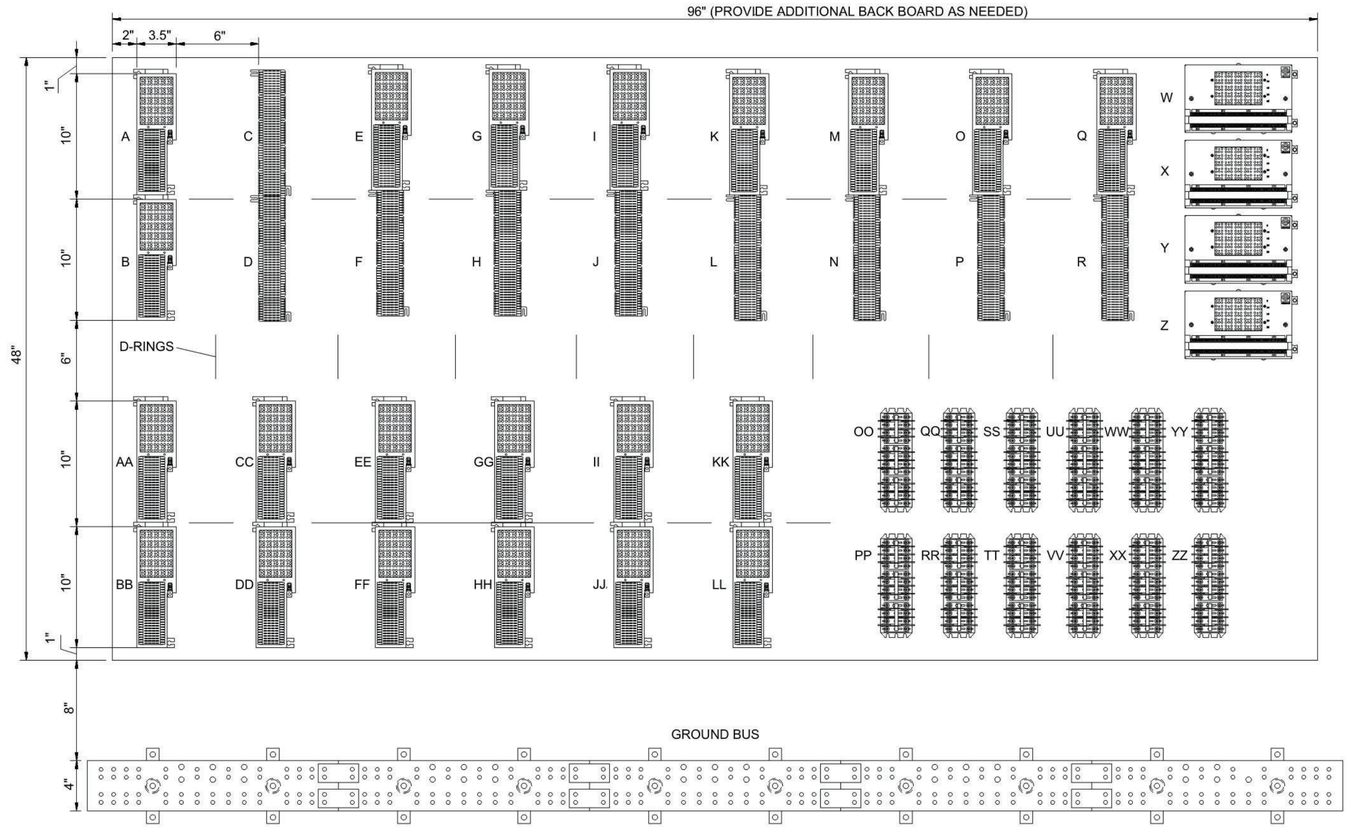
COMMUNICATIONS STANDARD DETAILS COMM HUB

CDOT PROJECT D-7-135 | DATE: 01/27/2020

SPEC. NO.

DRAWING NO. **T50-07**

REVISION NO.



BLOCK ID	BLOCK TYPE	BLOCK ASSIGNMENT
A	TYPE 66-P/25 CAT-5E	HOUSE VOICE DROPS
B	TYPE 66-P/25 CAT-5E	HOUSE VOICE DROPS
C	TYPE 66-NP/25 CAT-5E	CHANNEL BANK (2W FXS)
D	TYPE 66-NP/25 CAT-5E	CHANNEL BANK (2W FXS)
E	TYPE 66-P/25 CAT-5E	SCADA STATION OUTPUT FUNCTIONS
F	TYPE 66-NP/25 CAT-5E	SCADA RTU CONTROL POINTS (C1-C16)
G	TYPE 66-P/25 CAT-5E	SCADA LOCAL SENSORS (ANALOG SENSORS)
H	TYPE 66-NP/25 CAT-5E	SCADA RTU ANALOG POINTS (A1-A16)
I	TYPE 66-P/25 CAT-5E	SCADA LOCAL ALARMS (ALARM DEVICES)
J	TYPE 66-NP/25 CAT-5E	SCADA RTU STATUS POINTS (S1-S24)
K	TYPE 66-P/25 CAT-5E	SCADA ITC ALARMS (ITC1-ITC25)
L	TYPE 66-NP/25 CAT-5E	SCADA RTU STATUS POINTS (S25-S48)
M	TYPE 66-P/25 CAT-5E	SCADA ITC ALARMS (ITC26-ITC50)
N	TYPE 66-NP/25 CAT-5E	SCADA RTU STATUS POINTS (S49-S72)
O	TYPE 66-P/25 CAT-5E	SCADA ITC ALARMS (ITC51-ITC75)
P	TYPE 66-NP/25 CAT-5E	SCADA RTU STATUS POINTS (S72-S96)
Q	TYPE 66-P/25 CAT-5E	SCADA ITC ALARMS (ITC76-ITC100)
R	TYPE 66-NP/25 CAT-5E	SCADA RTU STATUS POINTS (S97-S120)
W	TYPE 110-P/25 CAT-5E	HOUSE DATA DROPS
X	TYPE 110-P/25 CAT-5E	HOUSE DATA DROPS
Y	TYPE 110-P/25 CAT-5E	HUB INTERCONNECT (MEZZANINE LEVEL)
Z	TYPE 110-P/25 CAT-5E	HUB INTERCONNECT (PLATFORM LEVEL)
AA	TYPE 66-P/25 CAT-3	MAIN CABLE IB (PAIRS 1-25)
BB	TYPE 66-P/25 CAT-3	MAIN CABLE OB (PAIRS 1-25)
CC	TYPE 66-P/25 CAT-3	MAIN CABLE IB (PAIRS 26-50)
DD	TYPE 66-P/25 CAT-3	MAIN CABLE OB (PAIRS 26-50)
EE	TYPE 66-P/25 CAT-3	LOCAL CABLE NIB (PAIRS 1-25)
FF	TYPE 66-P/25 CAT-3	LOCAL CABLE NOB (PAIRS 1-25)
GG	TYPE 66-P/25 CAT-3	LOCAL CABLE SIB (PAIRS 1-25)
HH	TYPE 66-P/25 CAT-3	LOCAL CABLE SOB (PAIRS 1-25)
II	TYPE 66-P/25 CAT-3	SPARE
JJ	TYPE 66-P/25 CAT-3	SPARE
KK	TYPE 66-P/25 CAT-3	SPARE
LL	TYPE 66-P/25 CAT-3	SPARE
OO	12-POLE DISC TERM BLOCK	PA SPEAKERS
PP	12-POLE DISC TERM BLOCK	PA SPEAKERS
QQ	12-POLE DISC TERM BLOCK	PA SPEAKERS
RR	12-POLE DISC TERM BLOCK	PA SPEAKERS
SS	12-POLE DISC TERM BLOCK	PA SPEAKERS
TT	12-POLE DISC TERM BLOCK	PA SPEAKERS
UU	12-POLE DISC TERM BLOCK	PA SPEAKERS
VV	12-POLE DISC TERM BLOCK	PA SPEAKERS
WW	12-POLE DISC TERM BLOCK	PA SPEAKERS
XX	12-POLE DISC TERM BLOCK	PA SPEAKERS
YY	12-POLE DISC TERM BLOCK	PA SPEAKERS
ZZ	12-POLE DISC TERM BLOCK	PA SPEAKERS

WALLFIELD DETAIL

DESIGN BY:	JS								
DRAWN BY:	JS								
CHECKED BY:	JS/SA								
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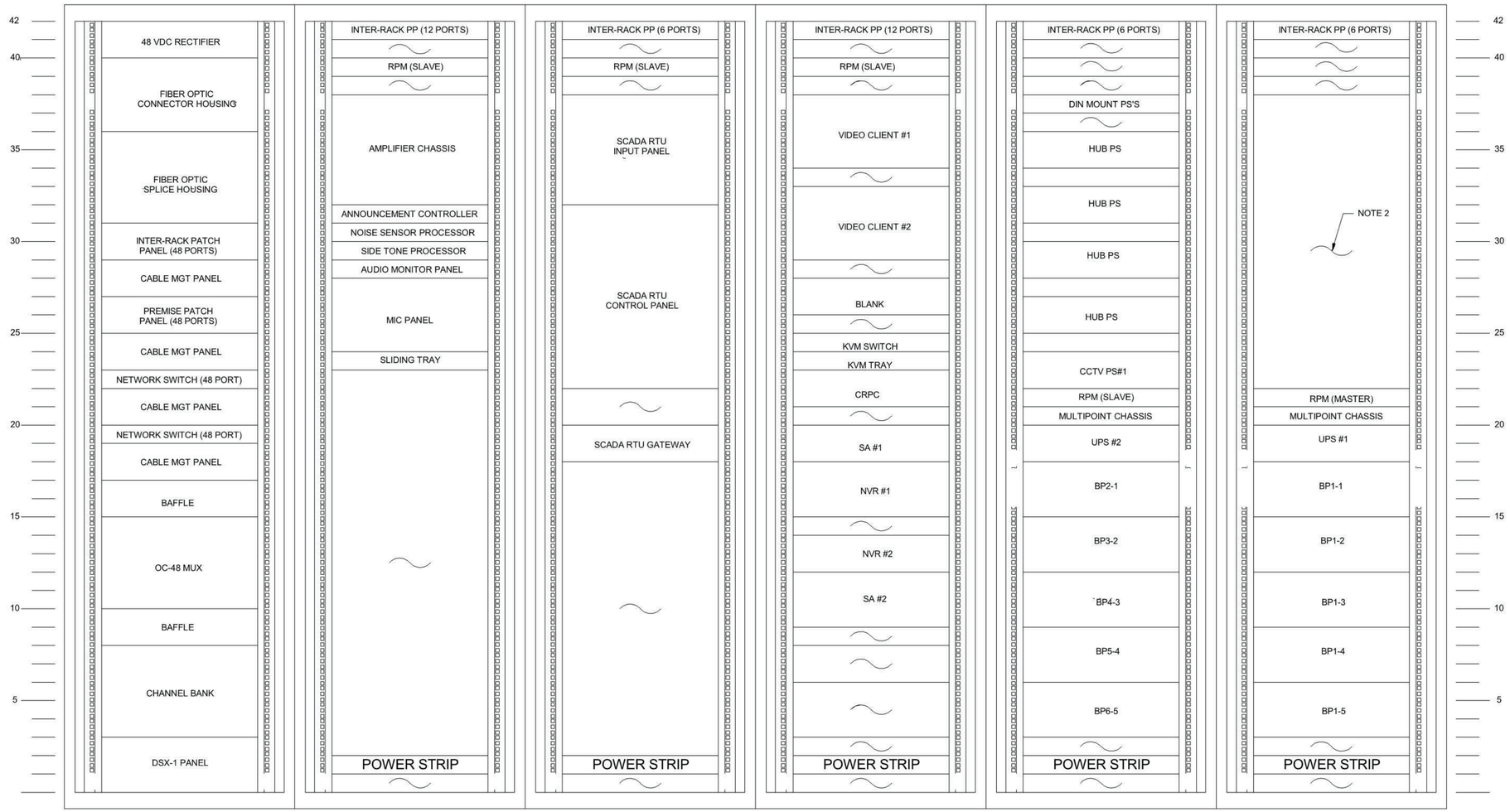
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

COMMUNICATIONS STANDARD DETAILS WALLFIELD DETAIL

DRAWING NO. T50-08

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



CABINET ELEVATION DETAIL

DESIGN BY:	JS								
DRAWN BY:	JS								
CHECKED BY:	JS/SA								
APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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SPEC. NO.

COMMUNICATIONS STANDARD DETAILS CABINET ELEVATION DETAIL

DRAWING NO. T50-09

CDOT PROJECT D-7-135

DATE: 01/27/2020

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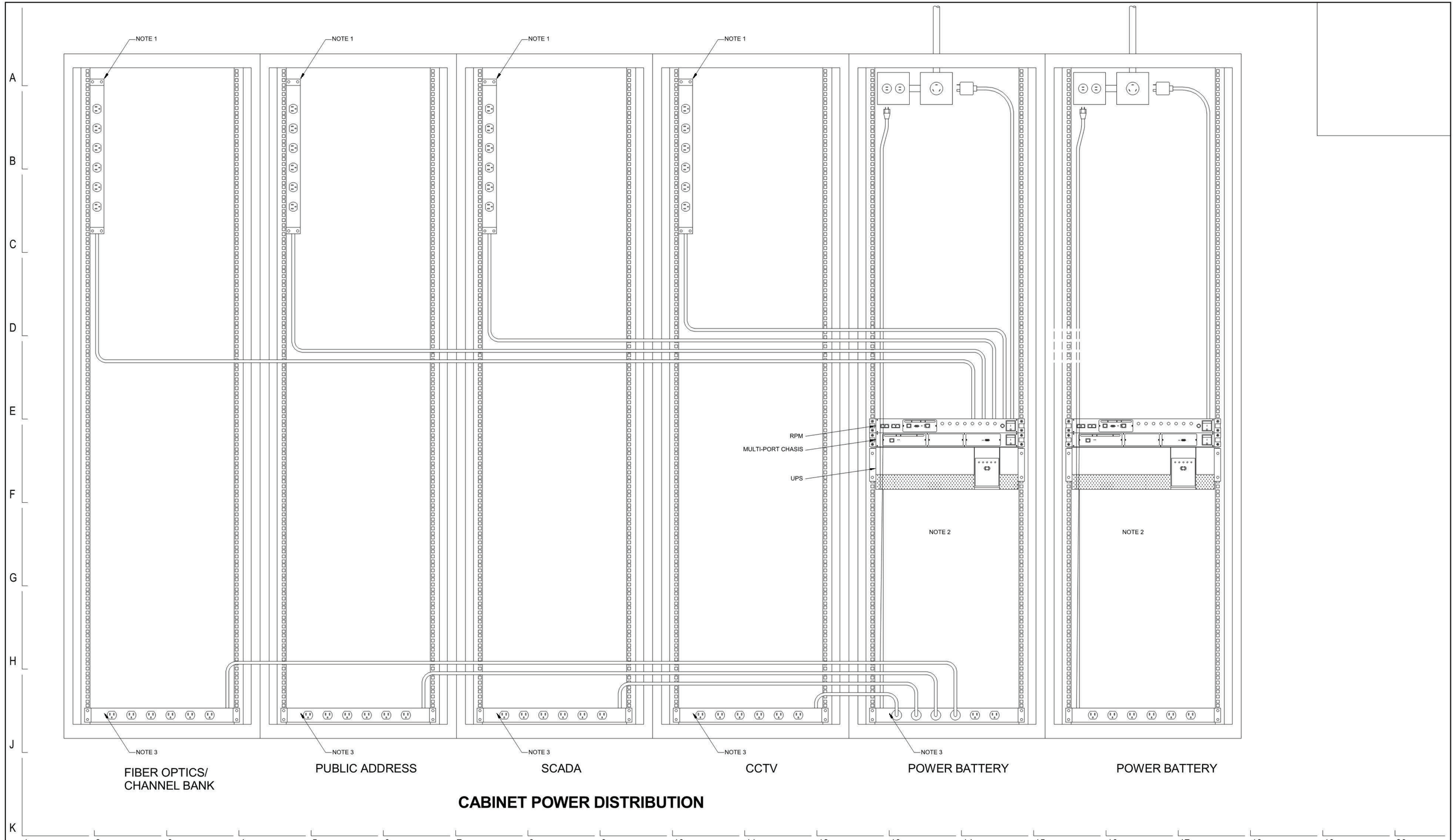

CABINET POWER DISTRIBUTION

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APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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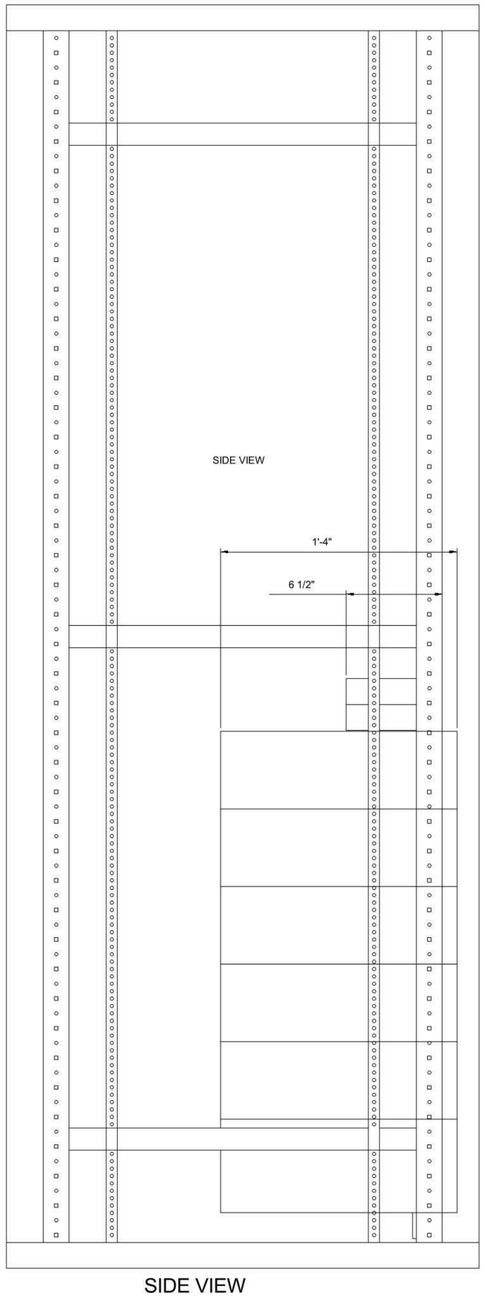
SPEC. NO.

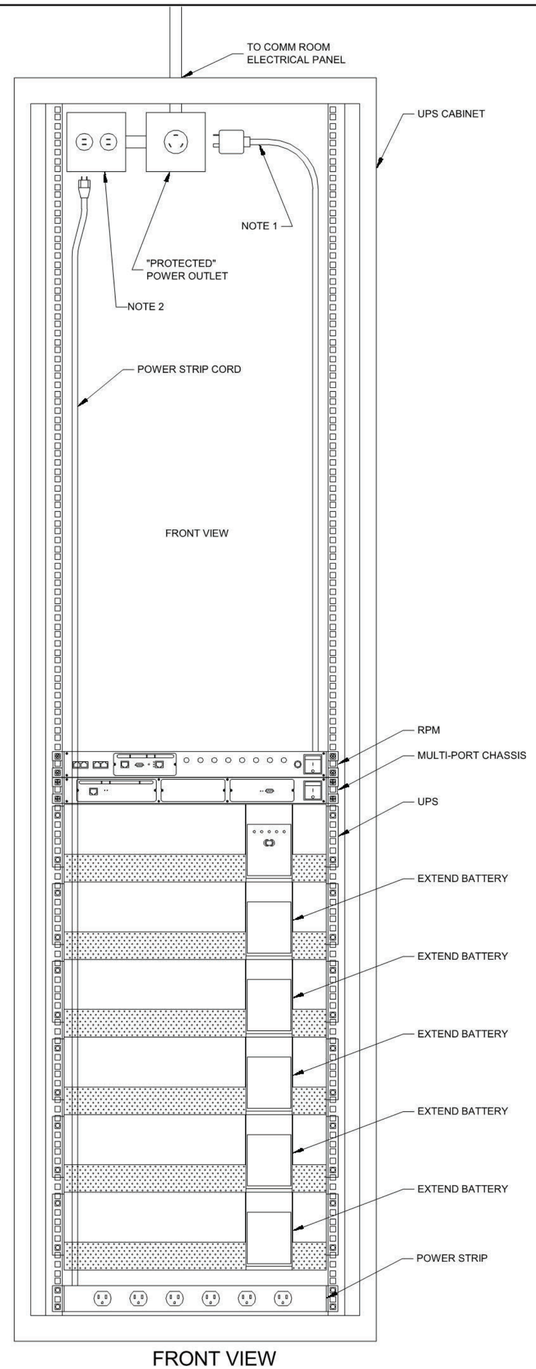
COMMUNICATIONS STANDARD DETAILS CABINET POWER DISTRIBUTION

DRAWING NO.
T50-10

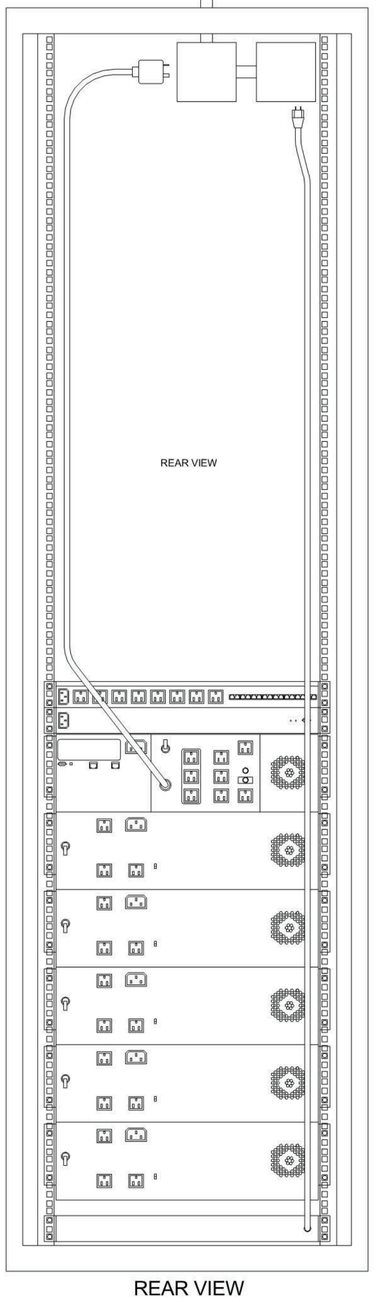
CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



SIDE VIEW



FRONT VIEW



REAR VIEW

UPS CABINET ELEVATION VIEW

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CHECKED BY:	JS/SA								
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SPEC. NO.

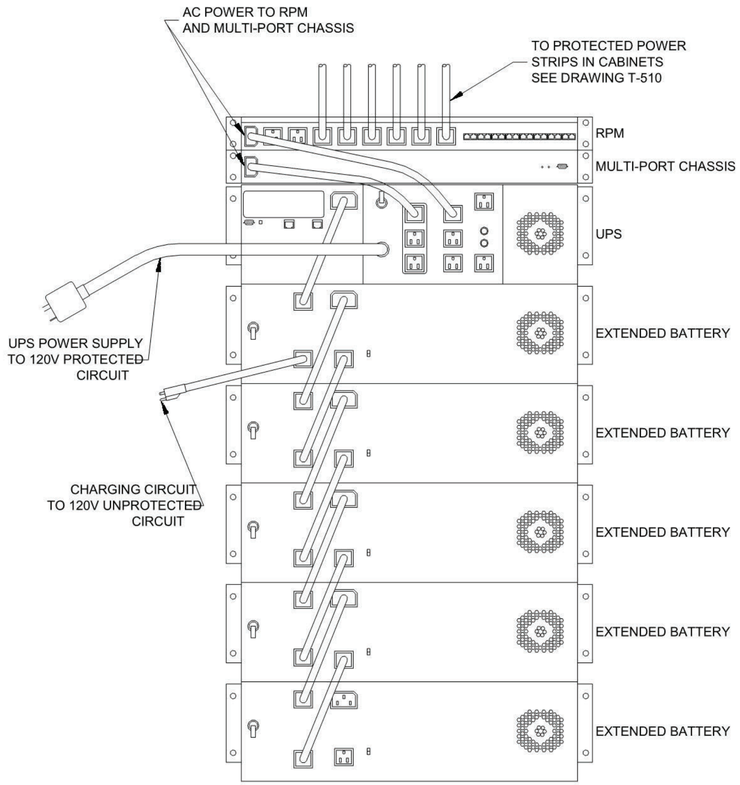
COMMUNICATIONS STANDARD DETAILS UPS CABINET ELEVATION

DRAWING NO. T50-11

CDOT PROJECT D-7-135

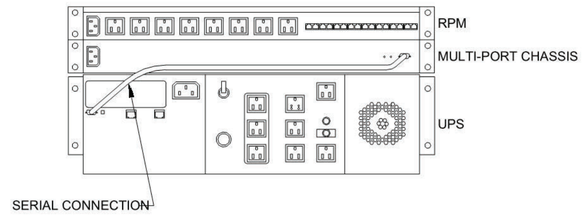
DATE: 01/27/2020

REVISION NO.



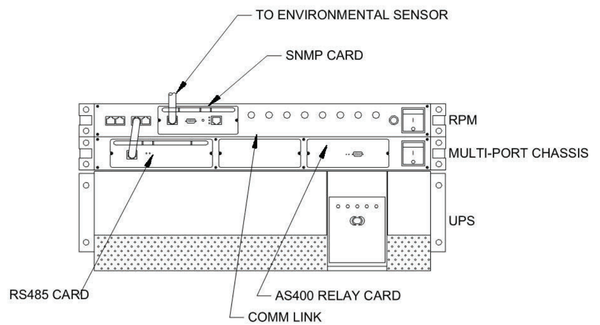
UPS POWER CONNECTIONS REAR VIEW

3" = 1'-0"



UPS COMMUNICATION CONNECTION REAR VIEW

3" = 1'-0"



UPS COMMUNICATION CONNECTION FRONT VIEW

3" = 1'-0"

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COMMUNICATIONS STANDARD DETAILS UPS POWER CONNECTION DETAIL

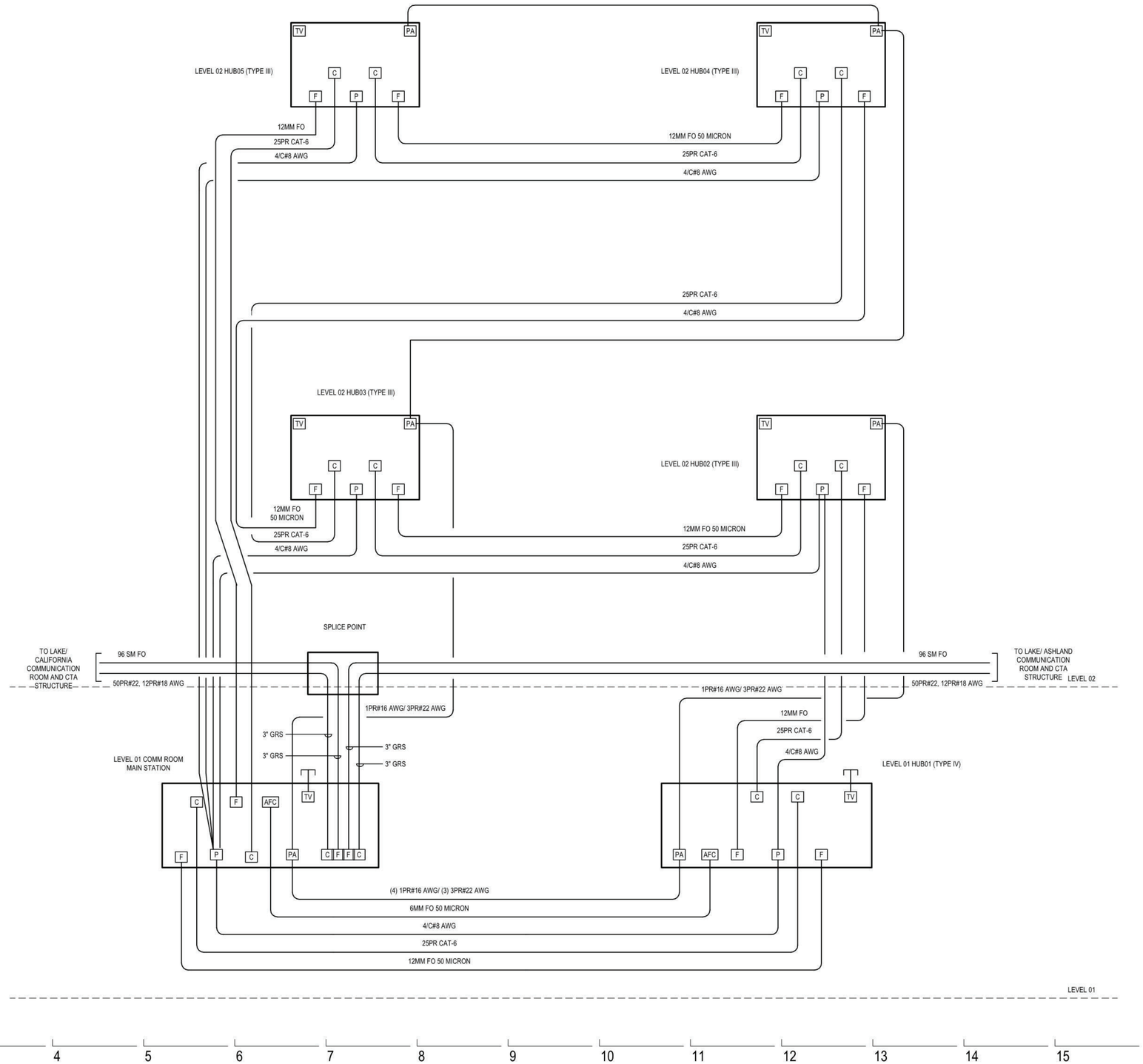
CDOT PROJECT D-7-135

DATE: 01/27/2020

SPEC. NO.

DRAWING NO. **T50-12**

REVISION NO.



NOTES:

1. NO EXPOSED CONDUITS EXCEPT UNDER PLATFORM.
2. ALL CONDUIT AND JUNCTION BOXES IN THIS AREA MUST BE CONCEALED.
3. ALL CONDUITS AND JUCNTION BOXES IN PASSANGER AREAS MUST BE CONCEALED.
4. PROVIDE FITTINGS FOR STRUCTURAL EXPANSION JOINTS.

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DRAWN BY:	JS								
CHECKED BY:	JS/SA								
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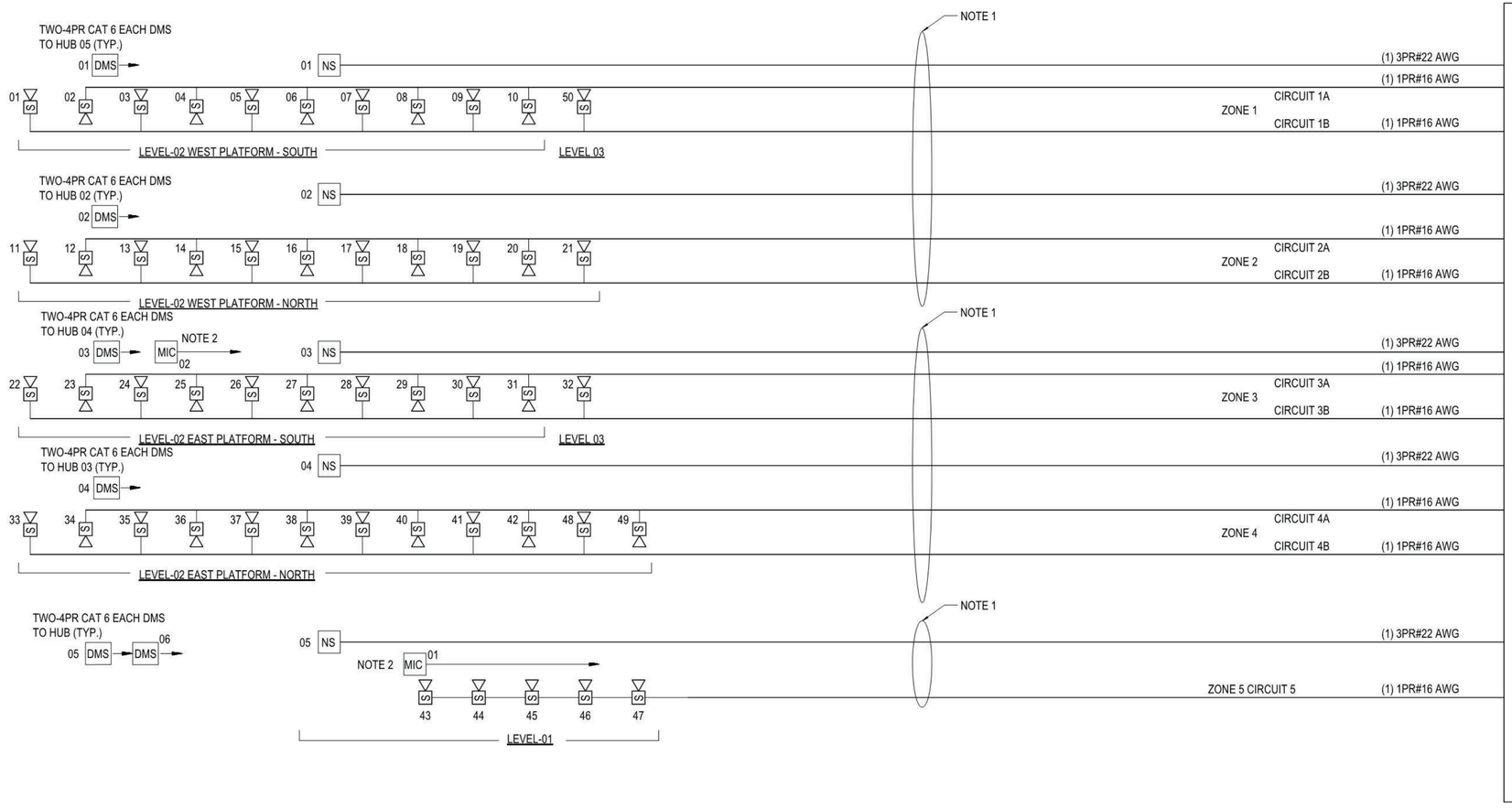
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

TELECOMM RISER DIAGRAM

DRAWING NO. **T60-01**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



SHEET NOTES

1. CABLE ROUTED IN COMMON RACEWAY BACK TO COMMUNICATION ROOM.
2. ONE CAT6 IN 3/4" GRS. TO HUB. REFER TO DRAWING X-XXX.

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DRAWN BY:	JS								
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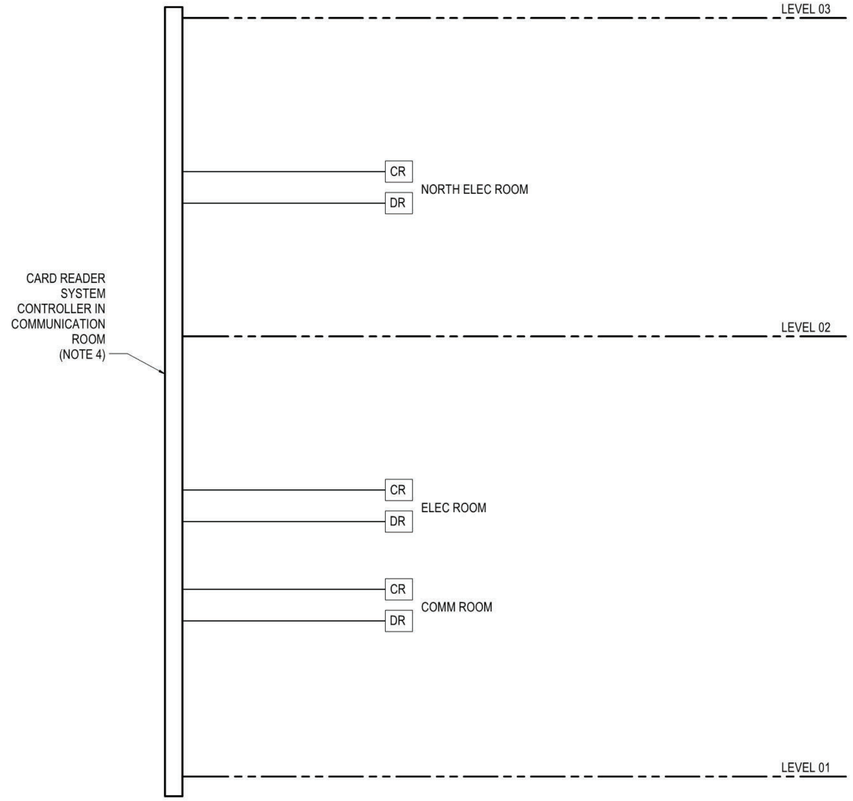
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

PUBLIC ADDRESS SYSTEM ONE LINE DIAGRAM

DRAWING NO.
T60-02

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



SHEET NOTES

1. PROVIDE CARD READER CONTROLLER AND CARD READING DEVICES AS SHOWN. COORDINATE CARD READER SYSTEM REQUIREMENTS WITH CTA.

		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT
DESIGN BY:	JS								
DRAWN BY:	JS								
CHECKED BY:	JS/SA								
APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
CDOT/APPROVED BY:									

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CDOT
CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

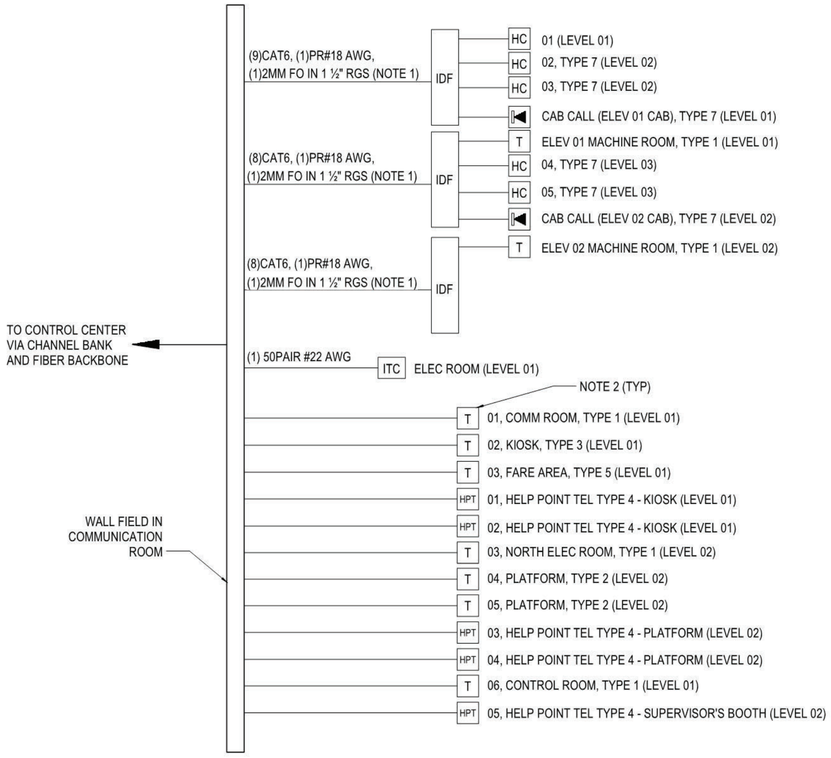
CARD READER SYSTEM ONE LINE DIAGRAM

DRAWING NO.
T60-03

CDOT PROJECT D-7-135

DATE: 01/27/2020

REVISION NO.



SHEET NOTES

1. CABLE LISTED INCLUDES CCTV CABLE.
2. PROVIDE VOICE/DATA JACK FOR EACH TELEPHONE OUTLET.

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DRAWN BY:	JS								
CHECKED BY:	JS/SA								
APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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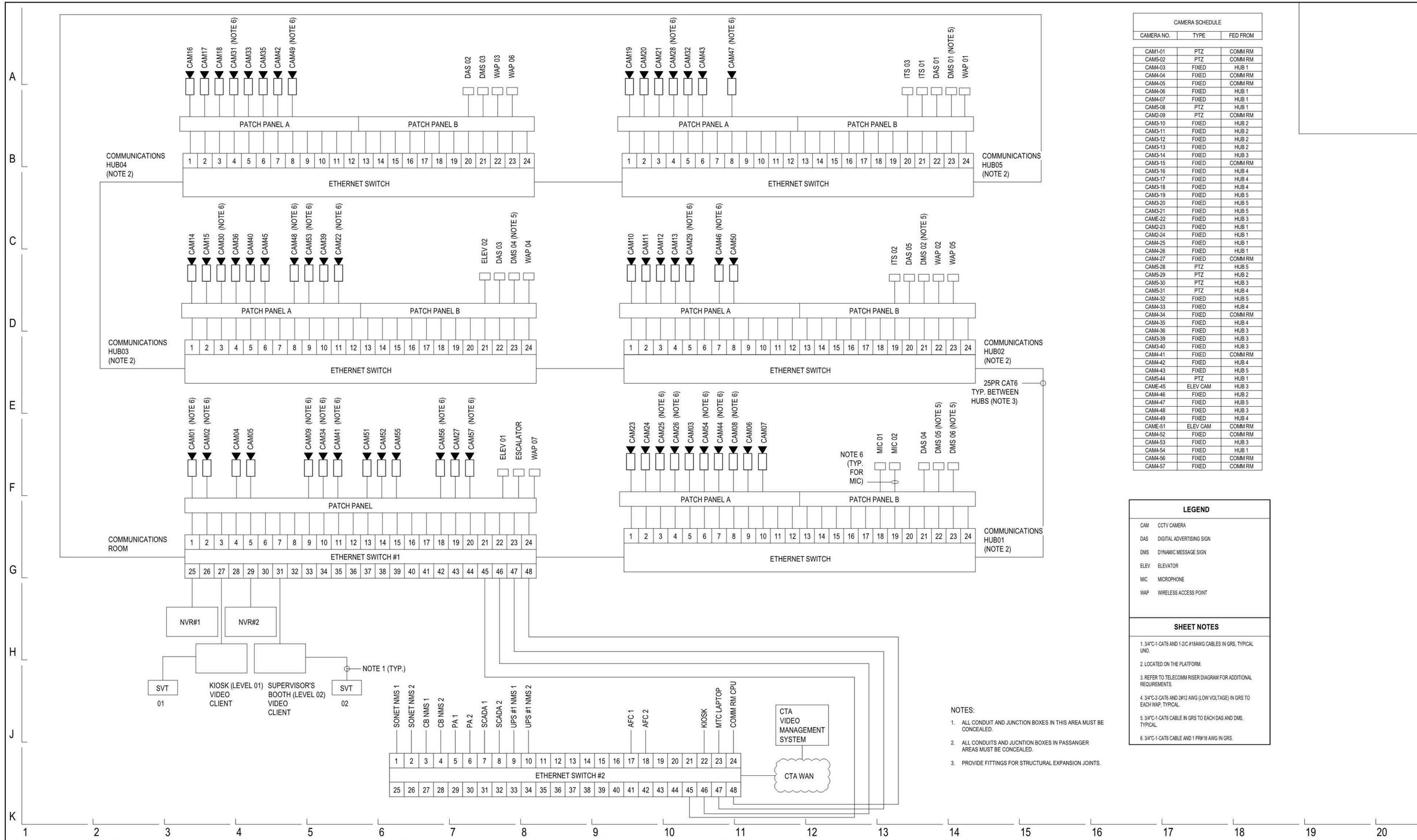
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

TELEPHONE SYSTEM ONE LINE DIAGRAM

DRAWING NO.
T60-04

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



CAMERA SCHEDULE		
CAMERA NO.	TYPE	FED FROM
CAM1-01	PTZ	COMM RM
CAM5-02	PTZ	COMM RM
CAM4-03	FIXED	HUB 1
CAM4-04	FIXED	COMM RM
CAM4-05	FIXED	COMM RM
CAM4-06	FIXED	HUB 1
CAM4-07	FIXED	HUB 1
CAM5-08	PTZ	HUB 1
CAM2-09	PTZ	COMM RM
CAM3-10	FIXED	HUB 2
CAM3-11	FIXED	HUB 2
CAM3-12	FIXED	HUB 2
CAM3-13	FIXED	HUB 2
CAM3-14	FIXED	HUB 3
CAM3-15	FIXED	COMM RM
CAM3-16	FIXED	HUB 4
CAM3-17	FIXED	HUB 4
CAM3-18	FIXED	HUB 4
CAM3-19	FIXED	HUB 5
CAM3-20	FIXED	HUB 5
CAM3-21	FIXED	HUB 5
CAME-22	FIXED	HUB 3
CAM2-23	FIXED	HUB 1
CAM2-24	FIXED	HUB 1
CAM4-25	FIXED	HUB 1
CAM4-26	FIXED	HUB 1
CAM4-27	FIXED	COMM RM
CAM5-28	PTZ	HUB 5
CAM5-29	PTZ	HUB 2
CAM5-30	PTZ	HUB 3
CAM5-31	PTZ	HUB 4
CAM4-32	FIXED	HUB 5
CAM4-33	FIXED	HUB 4
CAM4-34	FIXED	COMM RM
CAM4-35	FIXED	HUB 4
CAM4-36	FIXED	HUB 3
CAM3-39	FIXED	HUB 3
CAM3-40	FIXED	HUB 3
CAM4-41	FIXED	COMM RM
CAM4-42	FIXED	HUB 4
CAM4-43	FIXED	HUB 5
CAM5-44	PTZ	HUB 1
CAME-45	ELEV CAM	HUB 3
CAM4-46	FIXED	HUB 2
CAM4-47	FIXED	HUB 5
CAM4-48	FIXED	HUB 3
CAM4-49	FIXED	HUB 4
CAME-51	ELEV CAM	COMM RM
CAM4-52	FIXED	COMM RM
CAM4-53	FIXED	HUB 3
CAM4-54	FIXED	HUB 1
CAM4-56	FIXED	COMM RM
CAM4-57	FIXED	COMM RM

LEGEND

CAM	CCTV CAMERA
DAS	DIGITAL ADVERTISING SIGN
DMS	DYNAMIC MESSAGE SIGN
ELEV	ELEVATOR
MIC	MICROPHONE
WAP	WIRELESS ACCESS POINT

SHEET NOTES

1. 3/4"C-1-CAT6 AND 1-2/C #18AWG CABLES IN GRS, TYPICAL UNO.
2. LOCATED ON THE PLATFORM.
3. REFER TO TELECOMM RISER DIAGRAM FOR ADDITIONAL REQUIREMENTS.
4. 3/4"C-2-CAT6 AND 2#12 AWG (LOW VOLTAGE) IN GRS TO EACH WAP, TYPICAL.
5. 3/4"C-1-CAT6 CABLE IN GRS TO EACH DAS AND DMS, TYPICAL.
6. 3/4"C-1-CAT6 CABLE AND 1 PR#18 AWG IN GRS.

NOTES:

1. ALL CONDUIT AND JUNCTION BOXES IN THIS AREA MUST BE CONCEALED.
2. ALL CONDUITS AND JUCNTION BOXES IN PASSANGER AREAS MUST BE CONCEALED.
3. PROVIDE FITTINGS FOR STRUCTURAL EXPANSION JOINTS.

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CHECKED BY:	JS/SA								
APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

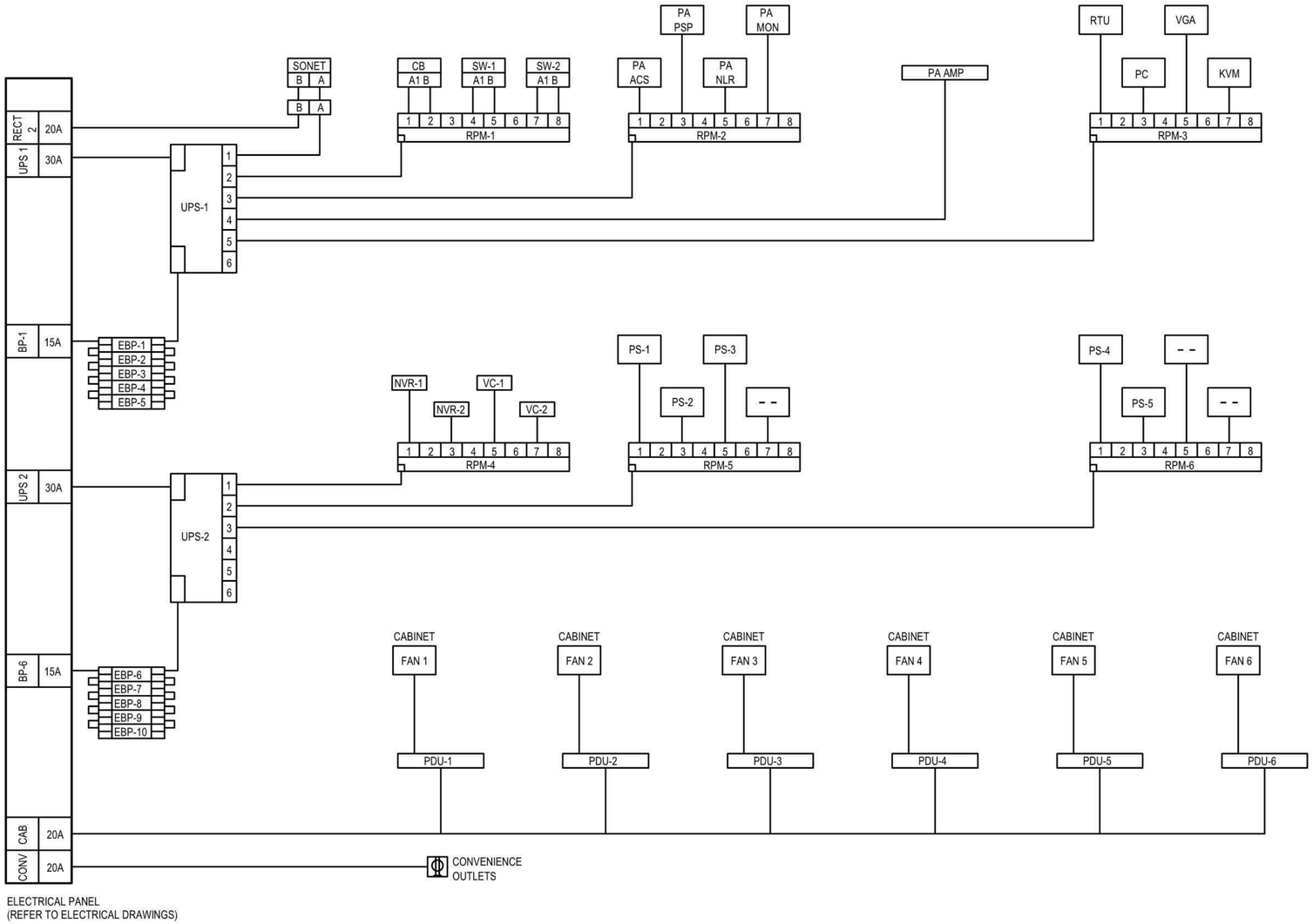
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

CCTV SYSTEM ONE LINE DIAGRAM

DRAWING NO. **T60-05**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



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APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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CHICAGO DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

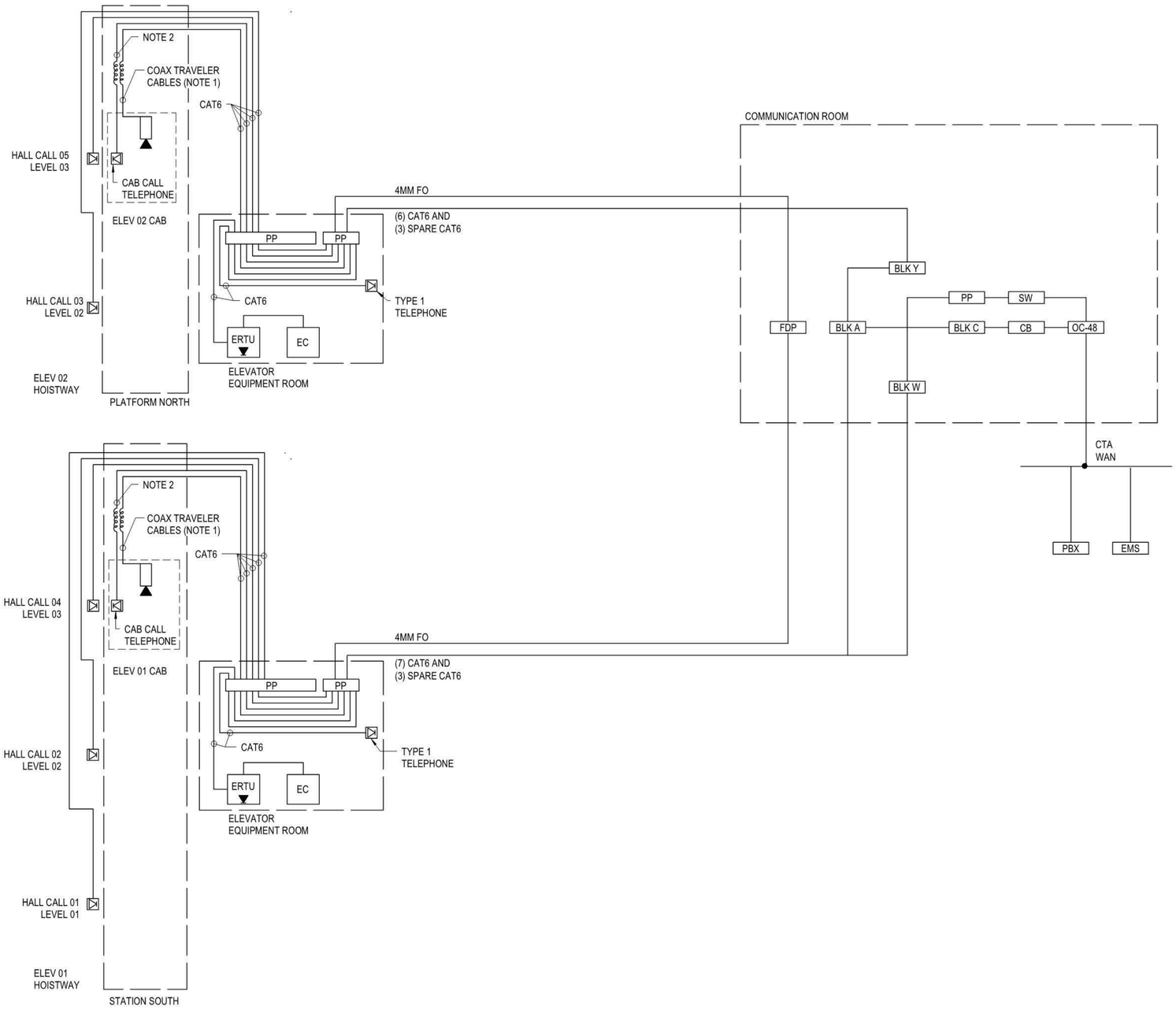
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

COMMUNICATIONS POWER SYSTEM ONE LINE DIAGRAM

DRAWING NO.
T60-06

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



SHEET NOTES

1. PROVIDE COAX TO CAT6 CONVERTER AT TOP AND BOTTOM OF TRAVELER CABLE.
2. PROVIDE SHIELDED TWISTED PAIR NO. 20 AWG TRAVELER CABLE.

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DRAWN BY:	JS								
CHECKED BY:	JS/SA								
APPROVED BY:	Approver		01/27/2020	ISSUE FOR BID	JS	JS	JS/SA		
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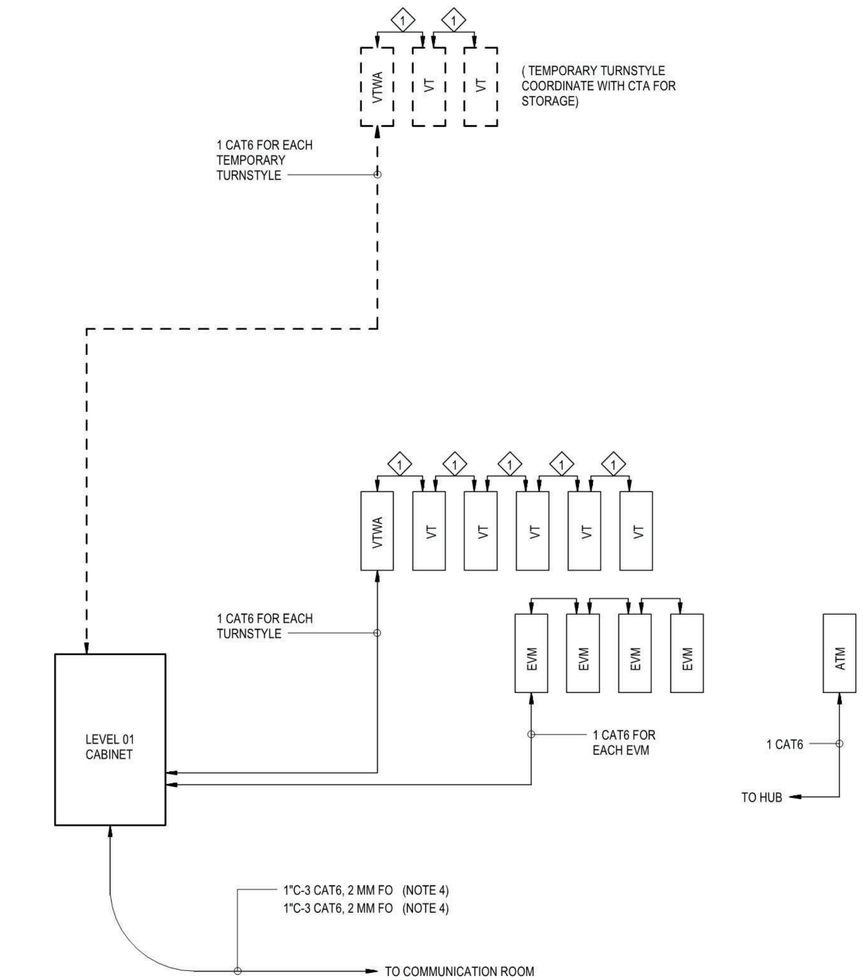
154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO.

ELEVATOR COMMUNICATIONS SYSTEM ONE LINE DIAGRAM

DRAWING NO. **T60-07**

CDOT PROJECT D-7-135 | DATE: 01/27/2020 | REVISION NO.



1 REVENUE EQUIPMENT COMMUNICATION DIAGRAM
NOT TO SCALE

KEYED NOTES

1	OVERHEAD CONDUIT AND WIRING PART OF THE FARE EQUIPMENT PACKAGE

LEGEND

EC	END CABINET
EVM	EXPRESS VENDING MACHINE (VENTRA)
VT	VENTRA TURNSTYLE
VTWA	VENTRA TURNSTYLE, WHEELCHAIR ACCESSIBLE

SHEET NOTES

1. ALL CONDUITS TO ENTER FROM THE EQUIPMENT BOTTOM, U.N.O.
2. ALL DATA CABLES TO BE CATEGORY-6 UTP 4-PR, IN A MINIMUM 1" GRS C, U.N.O.
3. NOT USED.
4. REFER TO ELECTRICAL PLANS FOR REVENUE EQUIPMENT POWER REQUIREMENTS.
5. NOT USED.
6. COORDINATE ALL DATA CONDUIT ENTRY LOCATIONS WITH FARE CONTROL EQUIPMENT VENDOR.

		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT
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154 N DAMEN AVE - DAMEN GREEN LINE STATION

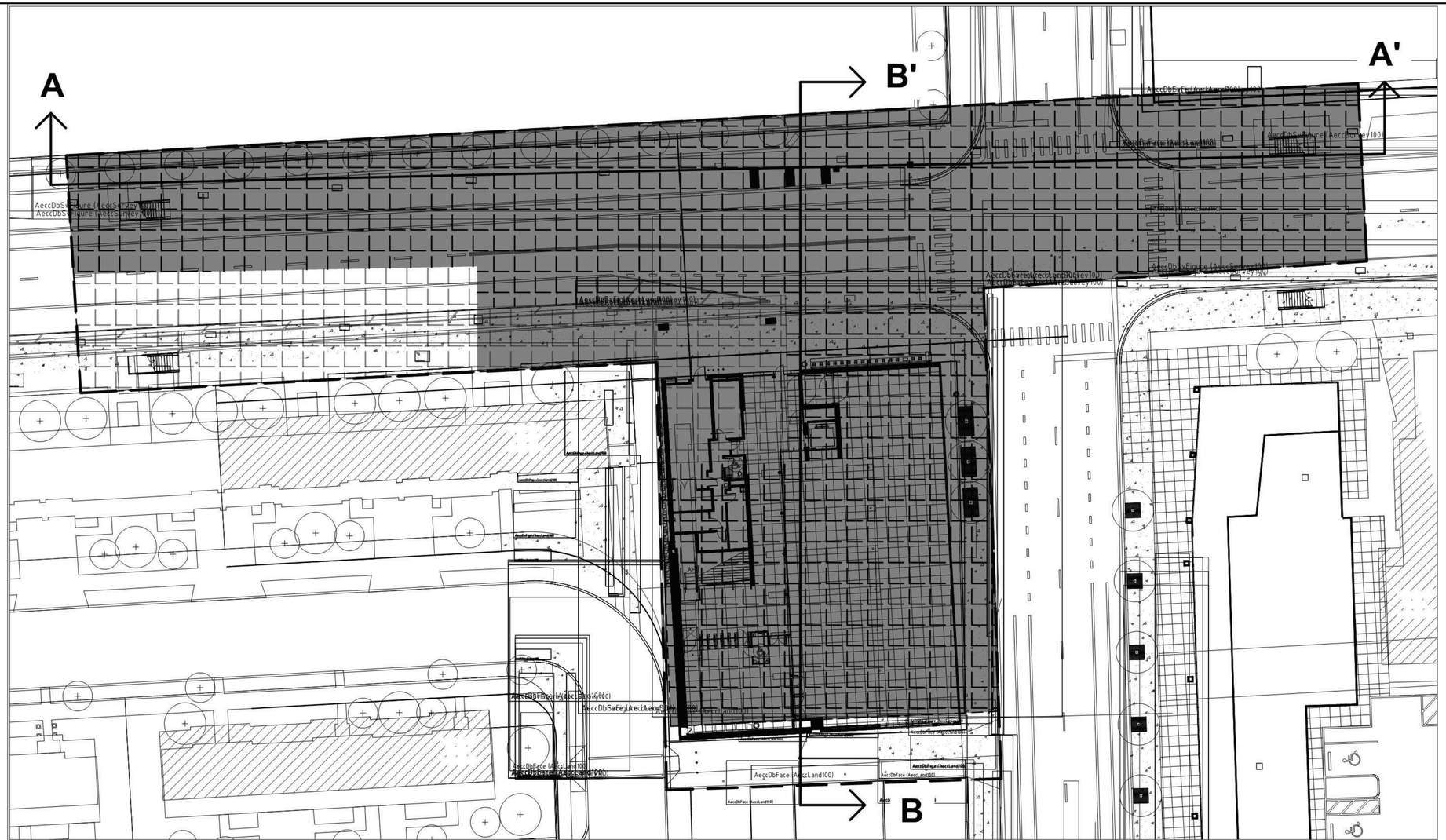
FARE CONTROL SYSTEM ONE LINE DIAGRAM

CDOT PROJECT D-7-135 | DATE: 01/27/2020

SPEC. NO.

DRAWING NO. **T60-08**

REVISION NO.

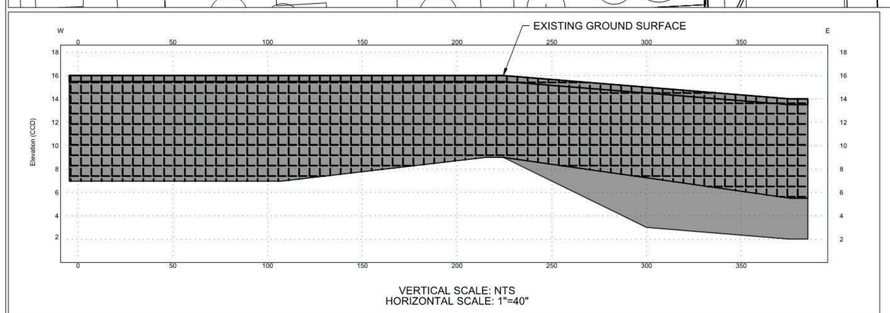


LEGEND

- CONTAMINATED SOIL - DISPOSE OF AT A SUBTITLE D LANDFILL
- SOILS EXCEED TACO CONSTRUCTION WORKER EXPOSURE ROUTE
- PROJECT LIMITS

NOTES:

1. THE CONTRACTOR SHALL REFER TO CIVIL DRAWINGS FOR CONSTRUCTION DETAILS AND DIMENSIONS.
2. THE CONTRACTOR SHALL REFER TO THE CIVIL PLANS FOR SITE LAYOUT AND UNDERGROUND UTILITY DETAILS.
3. THE EXTENT OF EACH MATERIAL TYPE SHOWN ON THIS DRAWING IS APPROXIMATE AND IS BASED ON AVAILABLE SITE INVESTIGATION DATA.
4. EXTENT OF CONTAMINATED MATERIALS BASED ON THE PROJECT LIMITS SHOWN ON THIS PLAN. ADDITIONAL SAMPLING AND TESTING SHOULD BE PERFORMED FOR ANY WORK OUTSIDE PROJECT LIMITS.

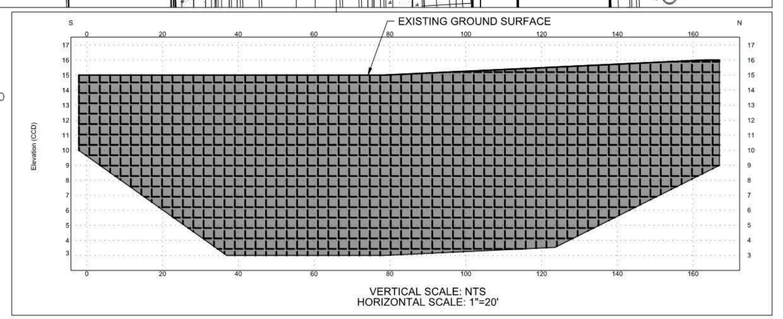


CROSS-SECTION A-A'

PLAN VIEW

GRAPHIC SCALE 1"=20'

0 5 10 20 40



CROSS-SECTION B-B'

DESIGN BY:	PW								
DRAWN BY:	DRW	4	01/27/2020	ISSUE FOR BID	EM	AN	TC		
CHECKED BY:	CHK	3	06/14/2019	ISSUE FOR 100% DESIGN	EM	AN	TC		
APPROVED BY:	APR	2	06/14/2019	ISSUE FOR PERMIT	EM	AN	TC		
CDOT/APPROVED BY:		NO.	DATE	REVISIONS	DES.	DRW.	CHK.	DCCO	CDOT

GSG CONSULTANTS, INC. ENGINEERS • SCIENTISTS • CONSTRUCTION MANAGERS

ALEX E. SASSILA 062-048568 STATE OF ILLINOIS

DATE SIGNED: 06/17/2019
LICENSE EXPIRES: 11/30/2019

CDOT CHICAGO DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING

154 N DAMEN AVE - DAMEN GREEN LINE STATION

SPEC. NO. 02 61 10

SOIL MANAGEMENT PLAN

DRAWING NO. SM-01

CDOT PROJECT D-7-135B DATE: **01/27/2020** REVISION NO.

T:\Perkins+Will\Damen Green Line Elevated Station\Soil Management Plan\Exhibits\Damen SMP.dwg, 1/28/2020 8:34:53 AM, anieves, ANSI expand D (34.00 x 22.00 Inches)

RECEIVE–POINT (POINTS IN THE DIRECTION OF THE TRANSMITTER TO WHICH IT IS TUNED)

IMPEDANCE BOND & TUNING UNIT LAYOUT

IMPEDANCE BOND & TUNING LAYOUT UNIT W/ NEGATIVE RETURN CONNECTION

RC — RELAY CASE

WHC — SWITCH HEAT CONTROL CASE

JB — JUNCTION BOX

SURFACE CABLE TROUGH WITH SEGMENTED LID

HAND–THROW SWITCH AND ELECTRIC LOCK LAYOUT

TRAIN CONTROL RELAY HOUSE

SINGLE ROUTE SELECTOR AND CANCELLATION PUSHBUTTON

DOUBLE ROUTE SELECTOR AND CANCELLATION PUSHBUTTON

OR — INSULATED RAIL JOINTS

AUTOMATIC ELECTRIC TRAIN STOP LAYOUT

CONTROL PANEL

12 — COLOR LIGHT SIGNAL LAYOUT

ELECTRIC DUAL–CONTROL SWITCH AND LOCK LAYOUT

DS — TRACTION POWER DISCONNECT SWITCH

HD — HIGH DOUBLE–DOOR RELAY CASE

HQ — HIGH FOUR–DOOR RELAY CASE

DOUBLE–AAR TERMINAL WITH SLIDE LINK

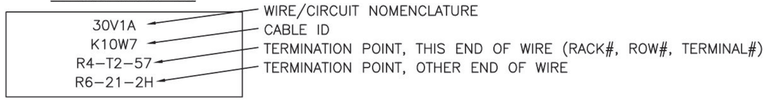
SINGLE–AAR TERMINAL

CAB SIGNAL RED–CONTROL CUTBACK

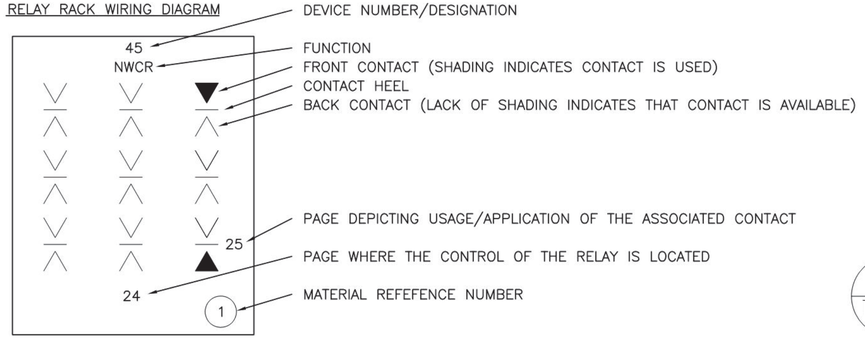
AUTOMATIC VEHICLE IDENTIFICATION RFID READER

PANT/TILT/ZOOM (PTZ) CAMERA ON POLE

TYPICAL WIRING TAG



RELAY RACK WIRING DIAGRAM

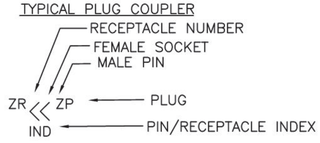


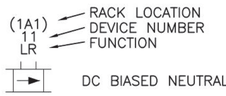
TYPICAL RELAY CONTACT ARRANGEMENT PLAN FOR ALL RACK LAYOUTS.
CONTRACTOR SHALL PROVIDE ALL INFORMATION AS SHOWN.

HATCH–BOXES ARE USED THROUGHOUT THESE PLANS TO REPRESENT ITEMS THAT ARE OUT OF SERVICE.

ABUTMENT/PORTAL

TYPICAL PLUG COUPLER





DC BIASED NEUTRAL RELAY, VITAL, PLUG–IN.

AC VANE RELAY, 120V LOCAL/TRACK WINDINGS, 60HZ, PLUG–IN.

NON–VITAL RELAY, AC OR DC COIL

RHPNO — RIGHT–HAND SWITCH, NEAR–POINT NORMALLY OPEN

LHPNO — LEFT–HAND SWITCH, NEAR–POINT NORMALLY OPEN

EOP — END OF STATION PLATFORM

VIF — CONTRACTOR TO VERIFY ACTUAL FIELD CONDITIONS

TWISTED PAIR CABLE. THE LETTERS "H/T" USED IN CONJUNCTION WITH THIS SYMBOL INDICATE THE USE OF INDIVIDUAL WIRES WHICH ARE TO BE HAND–TWISTED A MINIMUM OF TWO TURNS PER FOOT.

N/C — INDICATES "NO CONNECTION"

P/O — INDICATES "PART OF" OR "PORTION OF"

NPC — NOT PART OF CONTRACT SCOPE

LCP — LOCAL CONTROL PANEL

PB — PROPULSION RAIL BOND

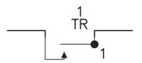
XB — CROSS BOND BETWEEN IMPEDANCE BOND CENTER TAPS

1 / TC–001 — LEGEND

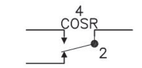
INDICATES NEW OR RELOCATED

INDICATES REMOVAL OR RETIREMENT

VITAL RELAY CONTACT, INDEPENDENT–FRONT

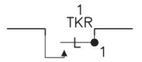


VITAL RELAY CONTACT, INDEPENDENT–BACK

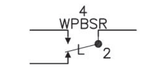


VITAL RELAY CONTACT, FRONT–BACK/TRANSFER

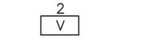
NON–VITAL RELAY CONTACT, INDEPENDENT FRONT



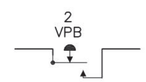
NON–VITAL RELAY CONTACT, INDEPENDENT BACK



NON–VITAL RELAY CONTACT, FRONT–BACK/TRANSFER

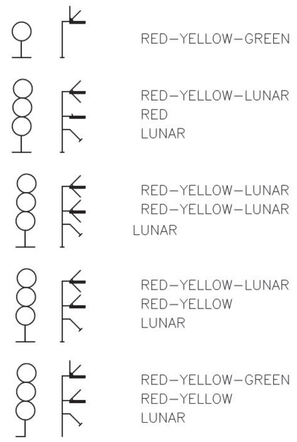


AUTOMATIC ELECTRIC TRAIN STOP MOTOR



TRACK TRIP (TRAIN STOP) MANUAL RELEASE PUSHBUTTON OR "KEY–BY" UNIT

SIGNAL SYMBOLS



NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

WARNING: THIS RECORD CONTAINS SENSITIVE SECURITY INFORMATION THAT IS CONTROLLED UNDER 49 CFR PARTS 15 AND 1520. NO PART OF THIS RECORD MAY BE DISCLOSED TO PERSONS WITHOUT A "NEED TO KNOW" AS DEFINED IN CFR PARTS 15 AND 1520, EXCEPT WITH THE WRITTEN PERMISSION OF THE ADMINISTRATOR OF THE TRANSPORTATION SECURITY ADMINISTRATION OR THE SECRETARY OF TRANSPORTATION. UNAUTHORIZED RELEASE MAY RESULT IN CIVIL PENALTY OR OTHER ACTION. FOR U.S. GOVERNMENT AGENCIES, PUBLIC DISCLOSURE IS GOVERNED BY 5 U.S.C. 552 AND 49 CFR PARTS 15 AND 1520.

DRAWING SCALE IS NOT GUARANTEED.
CTA ASSUMES NO RISK OF LIABILITY FOR ERRORS CAUSED, DIRECTLY OR INDIRECTLY, BY SCALING OF THIS DRAWING.

CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

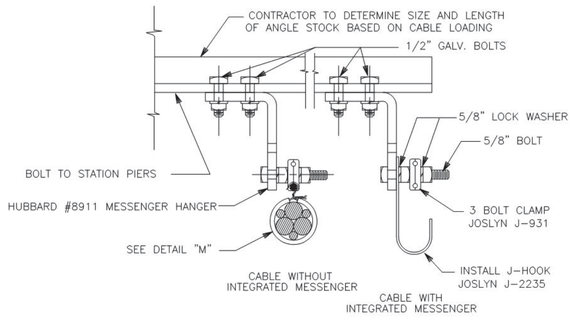
IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D–7–135B
FILE NAME	

MARK	DATE	DESCRIPTION
	01/27/2020	ISSUE FOR BID
	06/14/2019	100% DESIGN

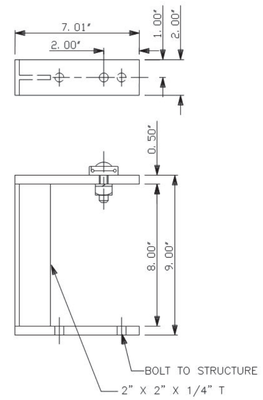
LOCATION IDENTIFIER: LK–ROW

SIGNAL SYMBOLS – LEGEND
GENERAL NOTES

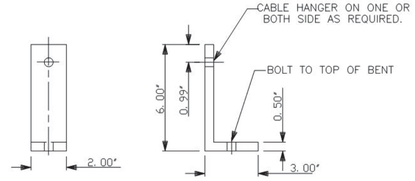
TC-001



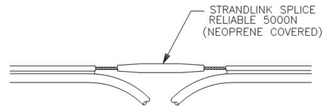
DETAIL "H"



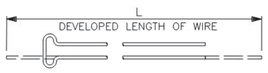
DETAIL "K"

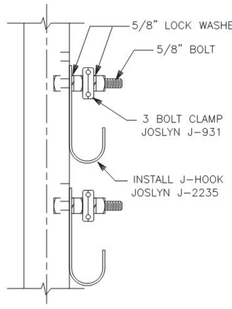


DETAIL "J"
(SEE MOUNTING DETAILS)



DETAIL "I"





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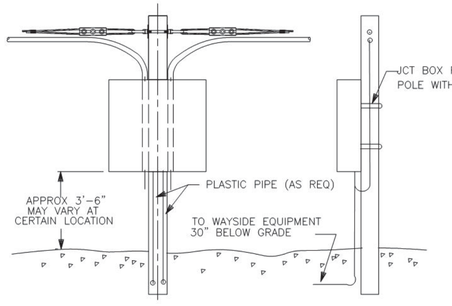
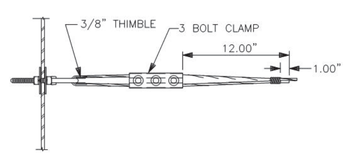
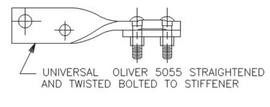


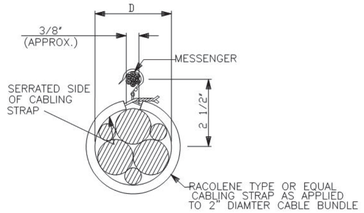
POLE MOUNTING OF JUNCTION BOX ON BALLAST
(SEE JUNCTION BOX DETAILS)



MESSENGER DEAD-END (ANCHOR)



DETAIL "L"



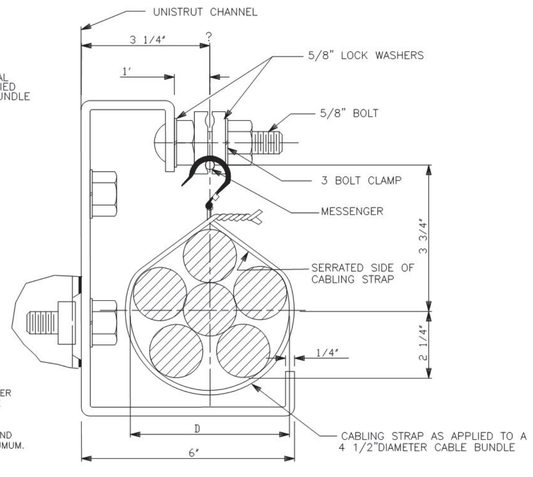
DETAIL "M"

D DIAMETER OF CABLE	C LENGTH OF INSULATING PIECE	L DEVELOPED LENGTH OF WIRE
1"	3 – 1/2"	14 – 1/4"
1 – 1/2"	5"	17 – 1/4"
2"	6 – 1/2"	20 – 1/4"
2 – 1/2"	8"	23 – 1/4"
3 – 1/2"	11 – 1/4"	30"
4 – 1/2"	14 – 1/4"	36"

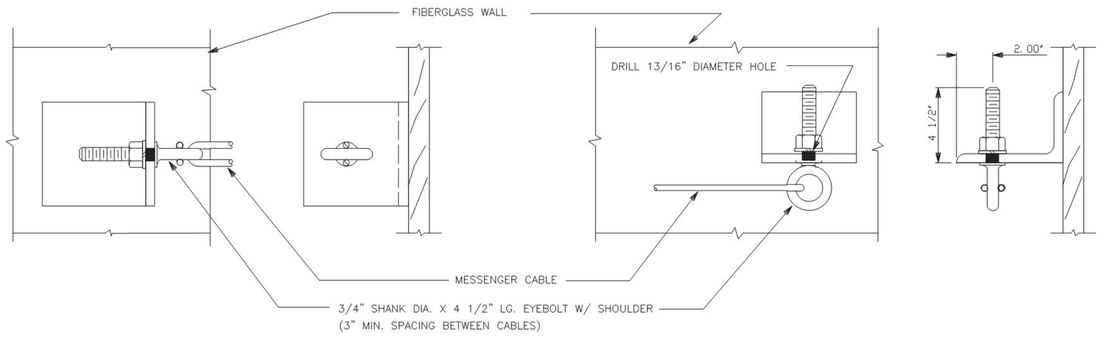
CABLE STRAPS

NOTES:

1. PLACE THE HOOK OF THE LASHING STRAP OVER THE MESSENGER WIRE, AND CLOSE THE HOOK WITH PLIERS. HOOK SHOULD BE PINCHED CLOSED TIGHT AND SECURED.
2. INSTALL #10 AWG WIRE TIED EVERY MID SPAN OF THE BENT AND BRACKET SUPPORT. CABLE SHOULD BE WINDED 5 TIMES MINUMUM.



CABLE HANGER



DETAIL OF ATTACHMENT

ALTERNATIVE ATTACHMENT

NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

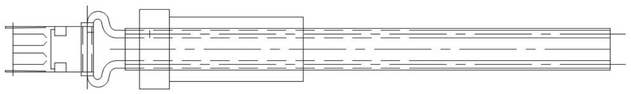
IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D-7-135B
FILE NAME	

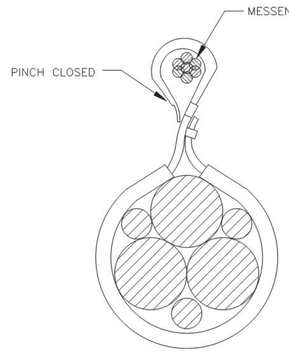
MARK	DATE	DESCRIPTION
	01/27/2020	ISSUE FOR BID
	06/14/2019	100% DESIGN

LOCATION IDENTIFIER: LK-ROW

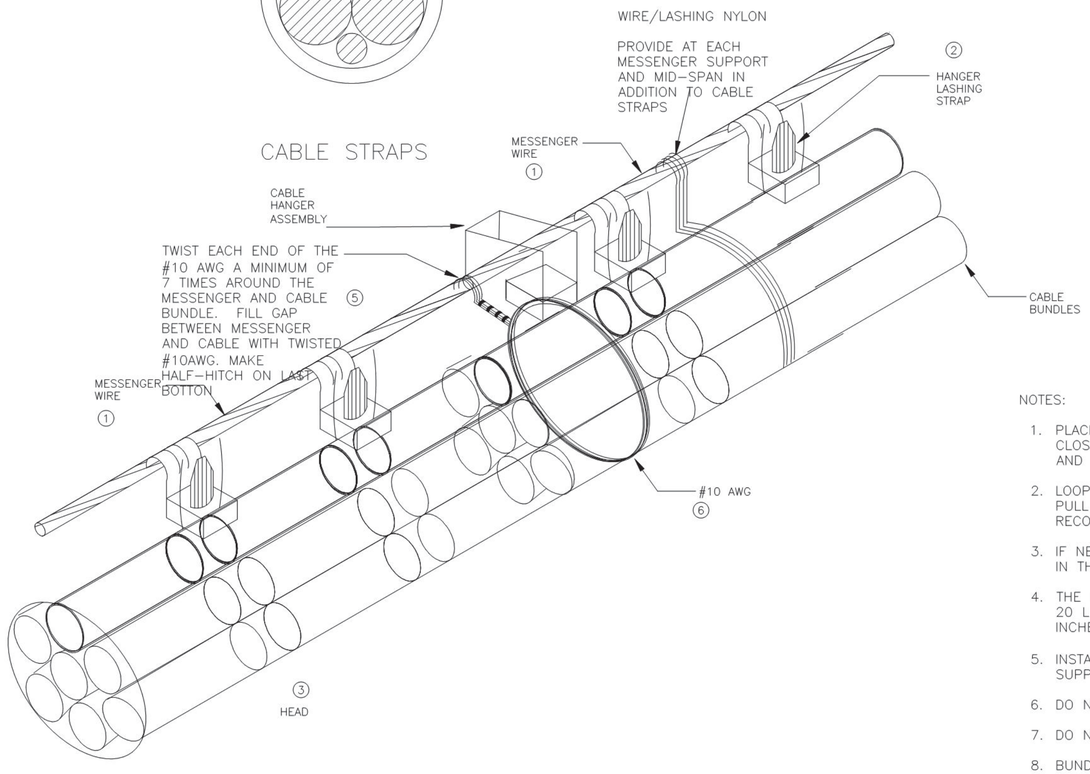
MESSENGER INSTALLATION DETAILS 1 OF 2

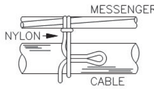
TC-165





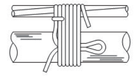
CABLE STRAPS





STEP 1

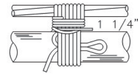
HITCH NYLON AROUND MESSENGER, LOOP SHORT END AND LAY AGAINST CABLE



STEP 2

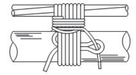
TAKE 6 TURNS AROUND CABLE AND MESSENGER

SEE NOTE 1



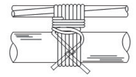
STEP 3

BUTTON TO FILL GAP BETWEEN MESSENGER AND CABLE. MAKE HALF-HITCH ON LAST BUTTON



STEP 4

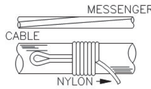
FEED END FROM HALH-HITCH THRU LOOP



STEP 5

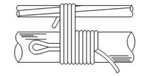
DRAW LOOP IN UNDER TIE DIAGONALLY ACROSS CABLE SO THAT SAME BITES TIGHT AND LOCKS IN CENTER OR TIE. TRIM END OF NYLON CLOSE TO SERVE

FOR CABLE DIAMETERS UP TO AND INCLUDING 1"



STEP 1

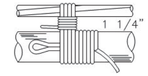
LOOP SHORT END OF NYLON AGAINST CABLE SERVE WITH "A" TURNS OF NYLON



STEP 2

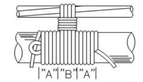
SERVE "B" TURNS AROUND CABLE AND MESSENGER

SEE NOTE 1



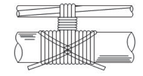
STEP 3

BUTTON TO FILL GAP BETWEEN MESSENGER AND CABLE. MAKE HALF-HITCH ON LAST BUTTON



STEP 4

SERVE "A" TURNS AROUND CABLE ONLY. DRAW END OF NYLON THRU LOOP



STEP 5

DRAW LOOP IN UNDER TIE DIAGONALLY ACROSS CABLE SO THAT SAME BITES TIGHT AND LOCKS IN CENTER OR TIE. TRIM END OF NYLON CLOSE TO SERVE

FOR CABLE DIAMETERS OVER 1"

NOTE 1

MAKE LONGER AND PROVIDE ADDITIONAL HITCHES FOR NYLON X-TIES FOR HOLDING CABLES AT ENTRANCES TO EQUIPMENT

NUMBER OF NYLON TURNS FOR VARIOUS CABLE SIZES

DIAM OF CABLE	"A" TURNS	"B" TURNS
1" TO 3"	6	6
3" TO 4"	8	6
4" TO 5"	10	6
5" TO 6"	12	6

TYPICAL NYLON CABLE TIE

NOTES:

1. PLACE THE HOOK OF THE LASHING STRAP OVER THE MESSENGER WIRE, AND CLOSE THE HOOK WITH PLIERS. HOOK SHOULD BE PINCHED CLOSED TIGHT AND SECURED.
2. LOOP THE LASHING STRAP AROUND THE CABLE, THROUGH THE HEAD, AND PULL UP TO DESIRED TIGHTNESS. DO NOT EXCEED CABLE MAXIMUM RECOMMENDED LOAD.
3. IF NECESSARY, RELEASE THE STRAP BY PULLING BACK RELEASE TAB LOCATION IN THE HEAD.
4. THE MAX CONTINUOUS STATIC LOADING FOR THE HANGER LASHING STRAP IS 20 LBS. PER STRAP. SPACE STRAPS AS NEEDED NOT TO EXCEED 15 INCHES.
5. INSTALL #10 AWG WIRE TIED EVERY MID SPAN OF THE BENT AND BRACKET SUPPORT. CABLE SHOULD BE WOUND 7 TIMES MINUMUM.
6. DO NOT EXCEED CABLE MINIMUM BEND RADIUS.
7. DO NOT STRESS CABLE OR TIGHTLY CINCHED CABLE BUNDLES.
8. BUNDLES SHOULD BE SPACED 3-5 INCHES APART
9. TO ENSURE PROPER TENSIONING, STRAIGHT RUNS OF CABLE (NO TURNS, DIPS, TWISTS OR RISES) INSTALL A TENSION ADJUSTMENT FITTING AT LEAST EVERY 50 FEET
10. RUNS WITH BENDS OR CORNERS SHOULD HAVE A TENSION ADJUSTMENT FITTING AT LEAST EVERY 10 FEET
11. ALL CABLE SHALL BE RUN NEATLY, PARALLEL, WITHIN INDUSTRY STANDARDS AND NO SPIRALING.
12. MAXIMUM BUNDLE SIZE SHALL NOT EXCEED 6 INCHES.

NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

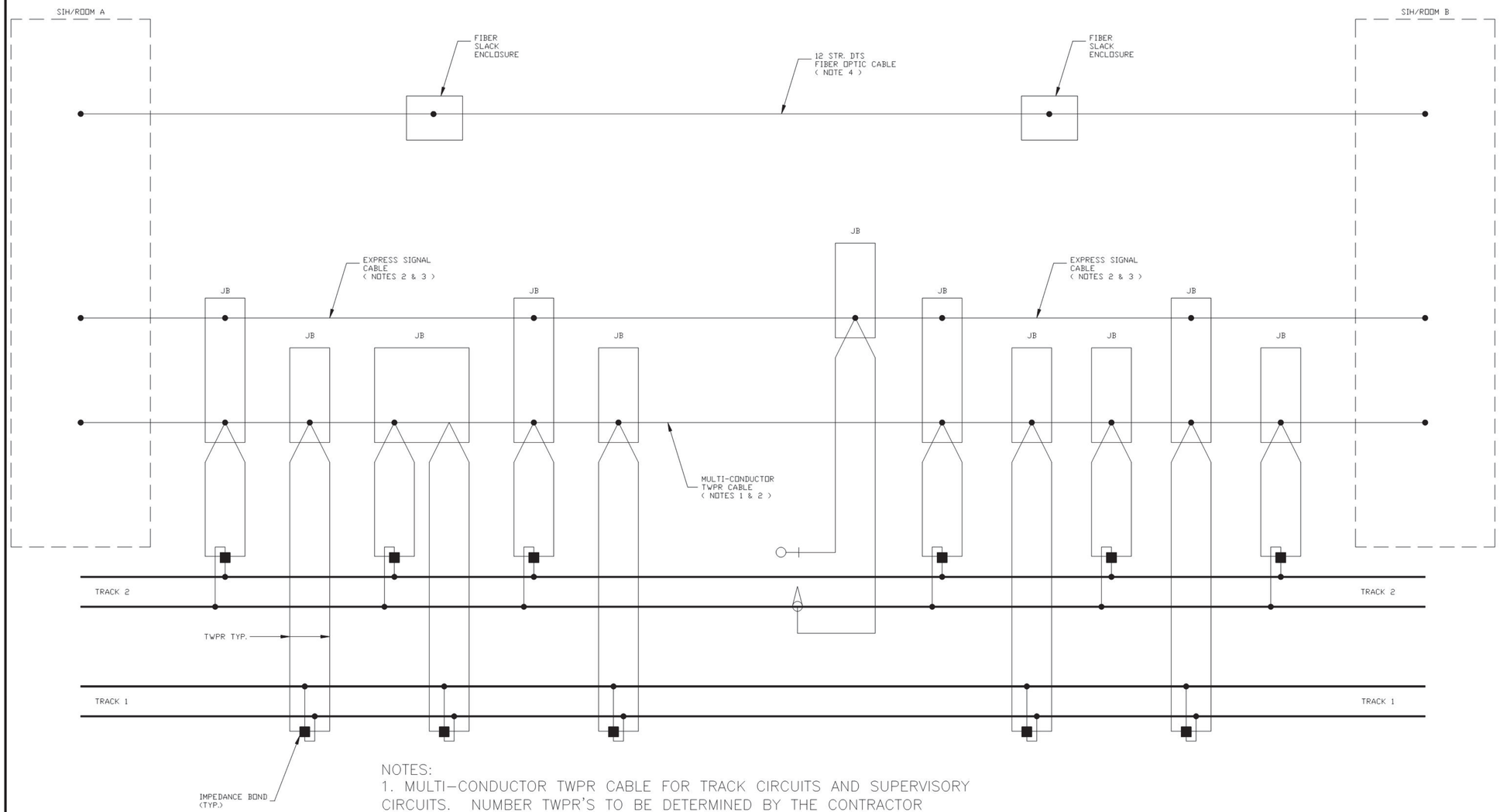
IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D-7-135B
FILE NAME	

MARK	DATE	DESCRIPTION
	01/27/2020	ISSUE FOR BID
	06/14/2019	100% DESIGN

LOCATION IDENTIFIER: LK-ROW

MESSENGER INSTALLATION DETAILS 2 OF 2

TC-166



NOTES:

1. MULTI–CONDUCTOR TWPR CABLE FOR TRACK CIRCUITS AND SUPERVISORY CIRCUITS. NUMBER TWPR'S TO BE DETERMINED BY THE CONTRACTOR PER SPECIFICATIONS.

2. EACH CONDUCTOR OF THE MULTI–CONDUCTOR TWPR CABLE SHALL BE TERMINATED IN EACH JB. WHERE MULTI–CONDUCTOR EXPRESS SIGNAL CABLE REQUIRES TERMINATION DUE TO EXCESSIVE REEL LENGTHS OR PULLING LENGTHS, EACH CONDUCTOR OF THE MULTICONDUCTOR CABLE SHALL BE TERMINATED WITHIN THE JB.

3. MULTI–CONDUCTOR EXPRESS SIGNAL CABLE FOR LINE CIRCUITS, TRAFFIC CIRCUITS, WORKER AHEAD CIRCUITS, TRACK REPEATERS, BLOCK SIGNALS, ELECTRIC LOCKS, ETC. NUMBER OF CONDUCTORS TO BE DETERMINED BY THE CONTRACTOR PER SPECIFICATIONS.

4. 12 STR. FIBER–OPTIC CABLE FOR SUPERVISORY DATA TRANSMISSION SYSTEM (MOP).

NOT FOR CONSTRUCTION

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ENGINEERING

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
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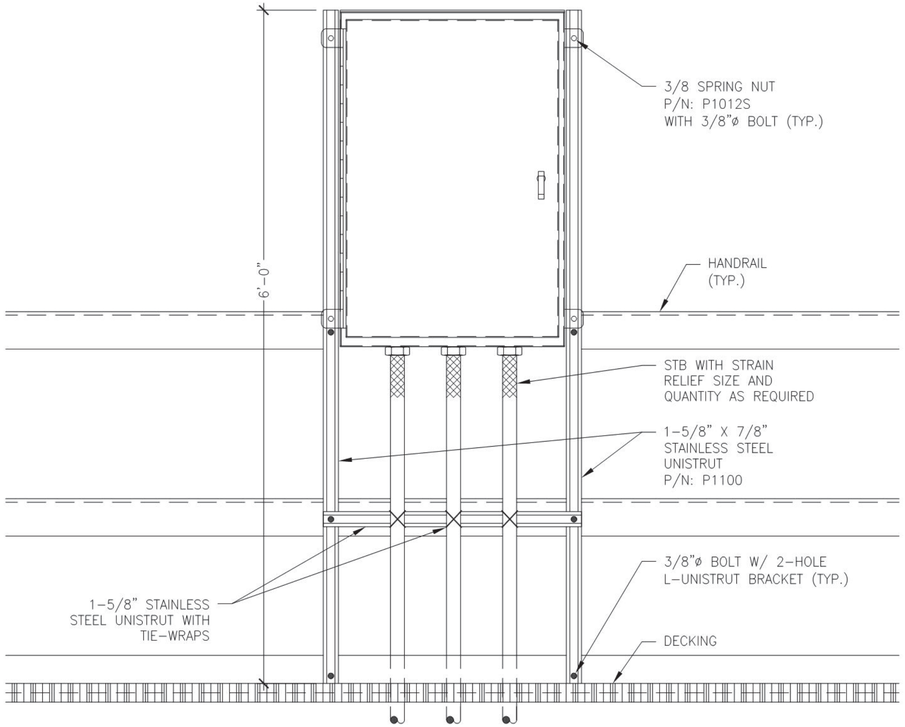
LOCATION IDENTIFIER: LK–ROW

TYPICAL CABLE PLAN

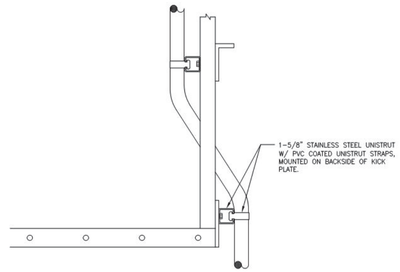
TC-167



TCC-170

MOUNTING DETAIL

SCALE:



A
TCC-170

PARTIAL SIDE VIEW

SCALE:

NOTES:

1. ALL MATERIAL 12 GAUGE STAINLESS STEEL (TYPE TYPE 316L) OR GREATER. UNLESS NOTED OTHERWISE.
2. ALL SEAMS WELDED.
3. JUNCTION BOX MEETS NEMA-4X AND U.L. REQUIREMENTS.

NOT FOR CONSTRUCTION

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ENGINEERING

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
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DESIGNED BY	CTA
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PROJECT NO	PROJECT D-7-135B
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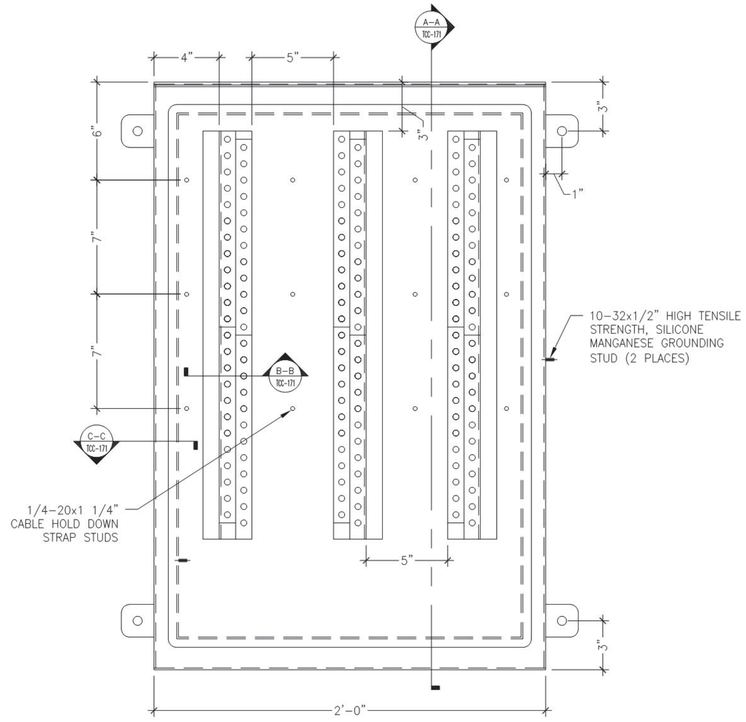
LOCATION IDENTIFIER: LK-ROW

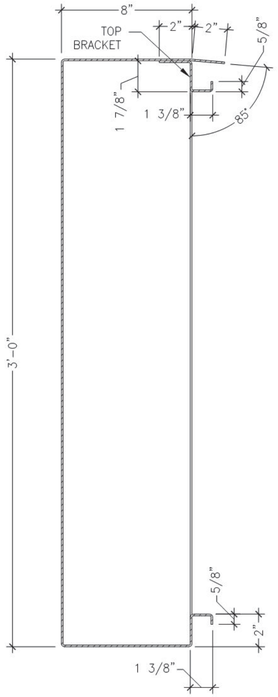
TYPICAL EXPRESS CABLE JUNCTION BOX DETAIL

TC-170

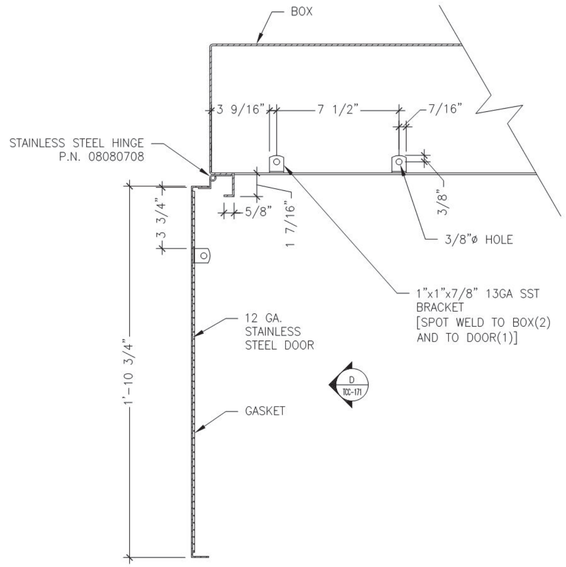


INTERNAL VIEW
(DOOR IS NOT SHOWN FOR CLARITY)

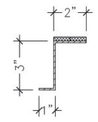
1 TCC-171 — 24"x36"x8" EXPRESS CABLE JUNCTION BOX
SCALE:



A–A TCC-171 — 24"x36"x8" EXPRESS CABLE JUNCTION BOX
SCALE:



C–C TCC-171 — 24"x36"x8" EXPRESS CABLE JUNCTION BOX
SCALE:



B–B TCC-171 — Z–BRACKET
SCALE:

NOTES:
1. ALL MATERIAL 12 GAUGE STAINLESS STEEL (TYPE TYPE 316L) OR GREATER.
2. ALL SEAMS WELDED.
3. JUNCTION BOX MEETS NEMA–4X AND U.L. REQUIREMENTS.

NOT FOR CONSTRUCTION

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ENGINEERING

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D–7–135B
FILE NAME	

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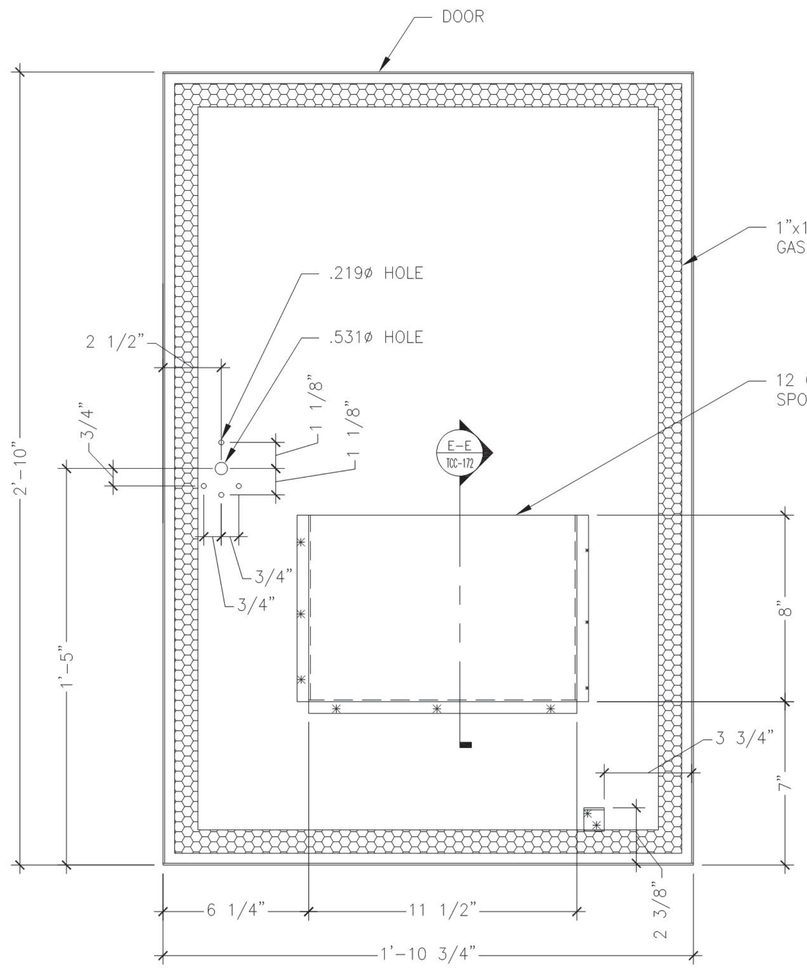
	06/14/2019	100% DESIGN

LOCATION IDENTIFIER: LK–ROW

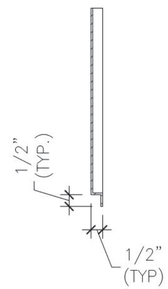
TYPICAL EXPRESS CABLE JUNCTION BOX DETAIL
1 of 3

TC-171



D
TCC-172

DOOR DETAIL
SCALE:



E-E
TCC-172

PRINT HOLDER DETAIL
SCALE:

NOTES:

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2. ALL SEAMS WELDED.
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CDOT
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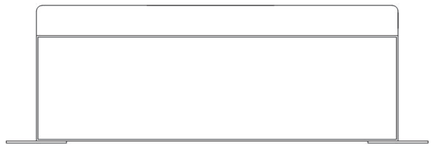
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D-7-135B
FILE NAME	

MARK	DATE	DESCRIPTION
	01/27/2020	ISSUE FOR BID
	06/14/2019	100% DESIGN

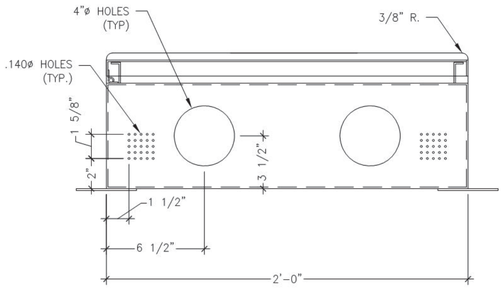
LOCATION IDENTIFIER: LK-ROW

TYPICAL EXPRESS CABLE JUNCTION BOX DETAIL
2 of 3

TC-172

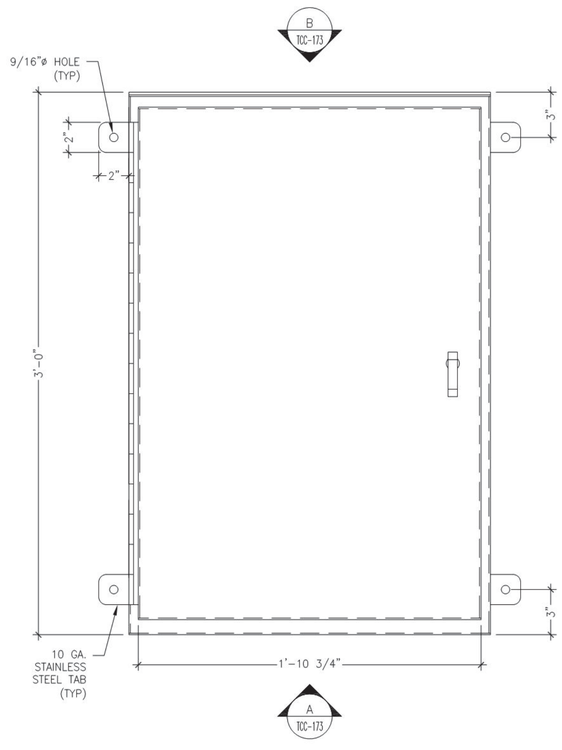


B TCC-173 TOP VIEW DETAIL
SCALE:

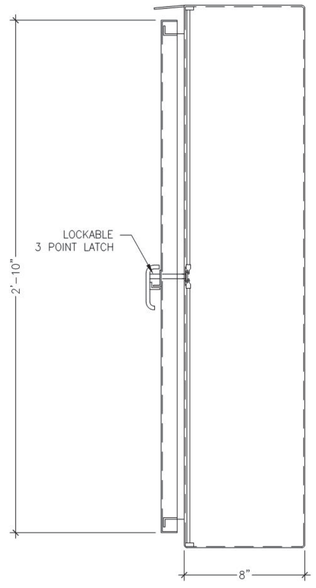


A TCC-173 BOTTOM VIEW DETAIL
SCALE:

NOTES:
1. ALL MATERIAL 12 GAUGE STAINLESS STEEL (TYPE TYPE 316L) OR GREATER.
2. ALL SEAMS WELDED.
3. JUNCTION BOX MEETS NEMA-4X AND U.L. REQUIREMENTS.



1 TCC-173 FRONT ELEVATION
SCALE:



2 TCC-173 SIDE ELEVATION
SCALE:

NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D-7-135B
FILE NAME	

MARK	DATE	DESCRIPTION
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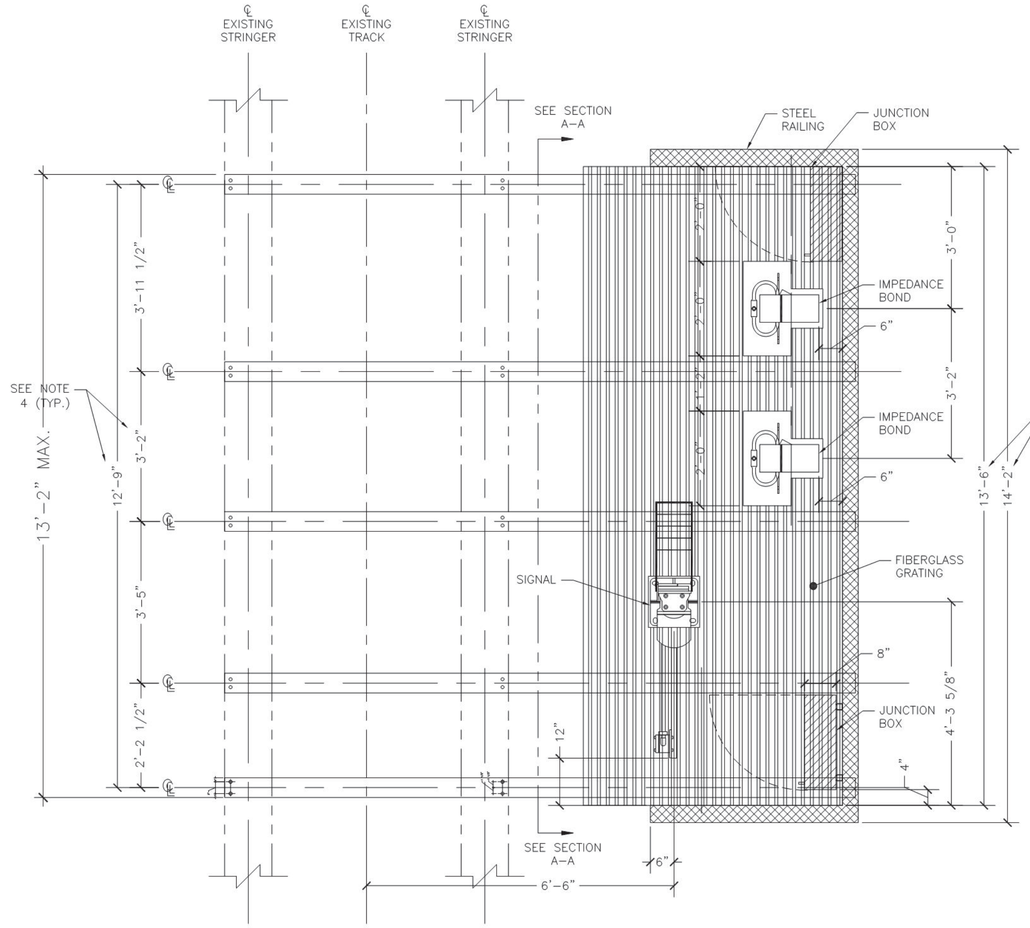
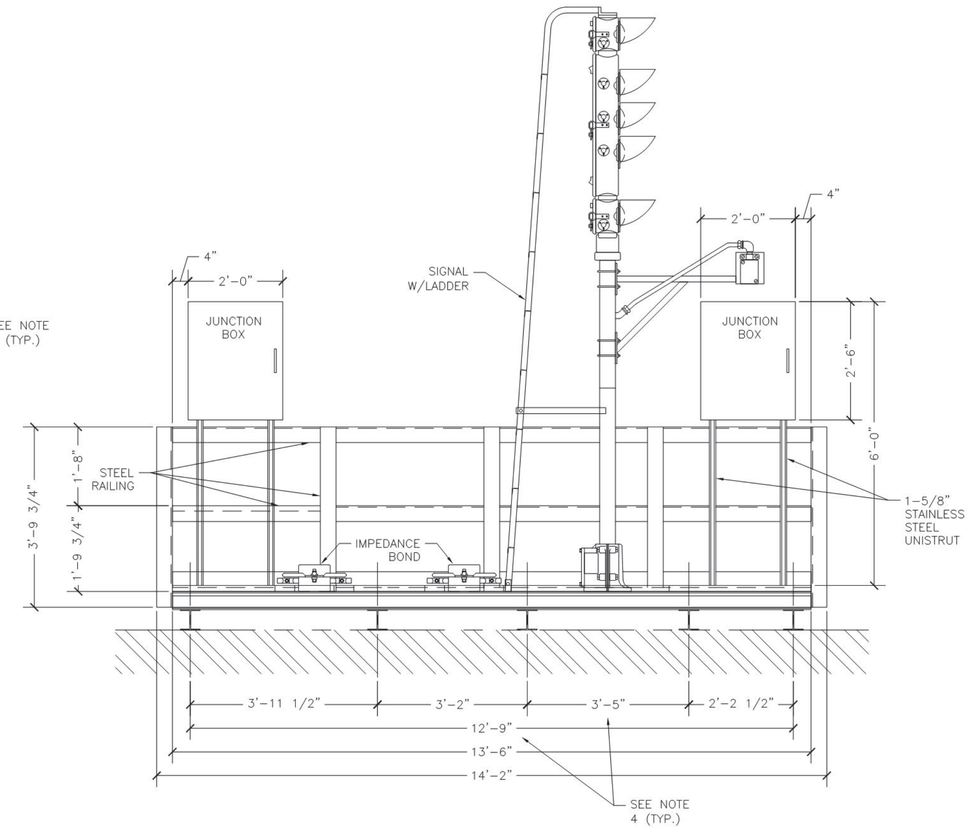
LOCATION IDENTIFIER: LK-ROW

TYPICAL EXPRESS CABLE JUNCTION BOX DETAIL
3 of 3

TC-173





ITEM	SHAPE	LENGTH	NOTES	QTY
A	W5x19	13'–4"	I–BEAM (SEE NOTE #2)	5
B	L4x4x3/8	13'–6"		2
C	L4x4x3/8	4'–9 3/8"		5
D	L4x4x3/8	14'–2"		2
E	L4x4x3/8	4'–0"		4
F	L4x4x3/8	3'–9 3/4"		4
G	4x3/8	3'–11"	FLAT PLATE	2
H	4x3/8	13'–11"	FLAT PLATE	1
J	4x3/8	3'–5 3/4"	FLAT PLATE	3
K	L3x3x3/8	2'–4 5/8"	SUPPORT	2
L	L3x3x3/8	2'–10"	SUPPORT	2
M	L3x3x3/8	4'–5 1/4"		4
N	L3x3x3/8	3'–8 1/4"		2
P	L3–1/2x3–1/2x3/8	13'–4"		2
	3/4–12 x 1–3/4"	ASE 325	BOLTS	20
	3/4 – 12	ASE 325	NUTS	20
	ø3/4	FLAT	WAHSERS	20
	5/8"–11 x 1–3/4"	ASE 325	BOLTS	40
	5/8"–11	ASE 325	NUTS	40
	ø5/8"	FLAT	WAHSERS	40

NOTE:
1. EQUIPMENT LOCATIONS MAY VARY DUE TO FIELD CONDITIONS.
2. IMPEDANCE BONDS CAN BE A MINIMUM OF 5'–10" FROM ℄ OF TRACK AND A MINIMUM 6" OFF BACK OF PLATFORM.
3. DIRECTION OF EQUIPMENT MOUNTING HARDWARE MAY VARY DUE TO FIELD OBSTRUCTIONS.
4. DISTANCES VARY. W5X19 BEAMS ADJUSTED FOR TIE OBSTRUCTION.
5. PLATFORMS COMBINED WITH TRACK ACCESS STAIRS MUST BE 18 FEET. REFERENCE TCC–245 DRAWING.
7. INFORMATION PROVIDED IS FOR REFERENCE ONLY CONTRACTOR MUST DESIGN PER LOCATION AND SUBMIT WITH CALCULATION AND SE STAMP FOR APPROVAL TO CTA.

TYPICAL PLATFORM
14–18 FEET
EQUIPMENT LAYOUT

NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
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PROJECT NO	PROJECT D–7–135B
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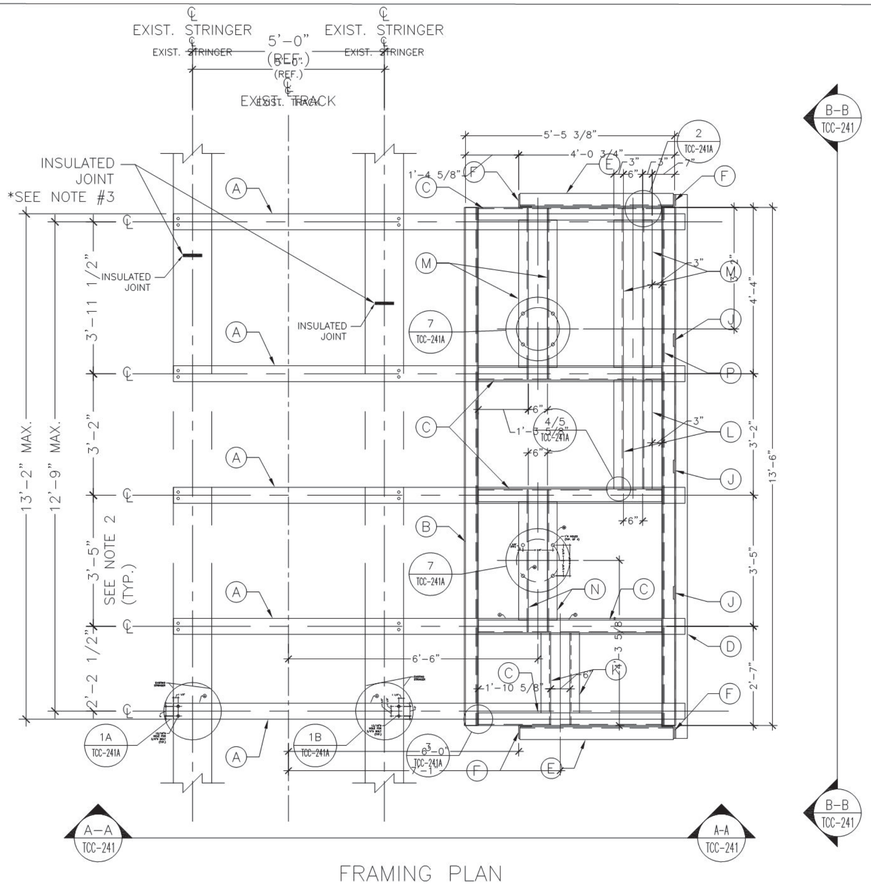
	06/14/2019	100% DESIGN

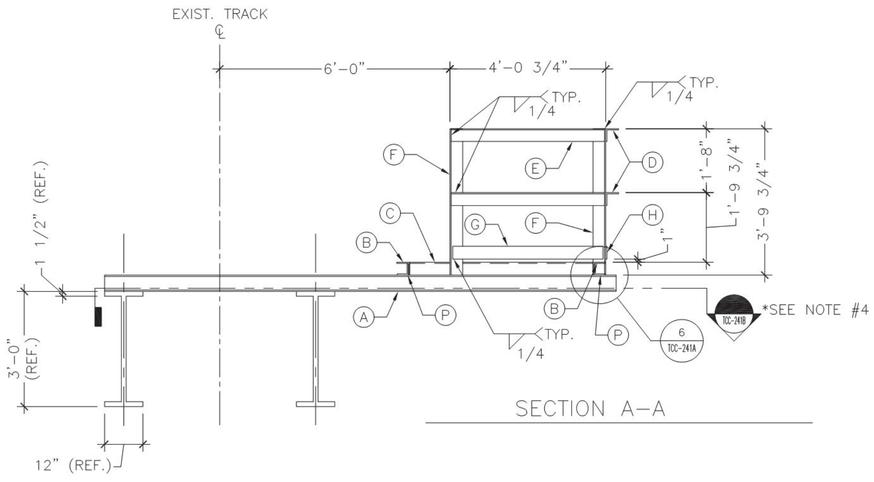
LOCATION IDENTIFIER: LK–ROW

TYPICAL PLATFORM
EQUIPMENT LAYOUT

TCC-240

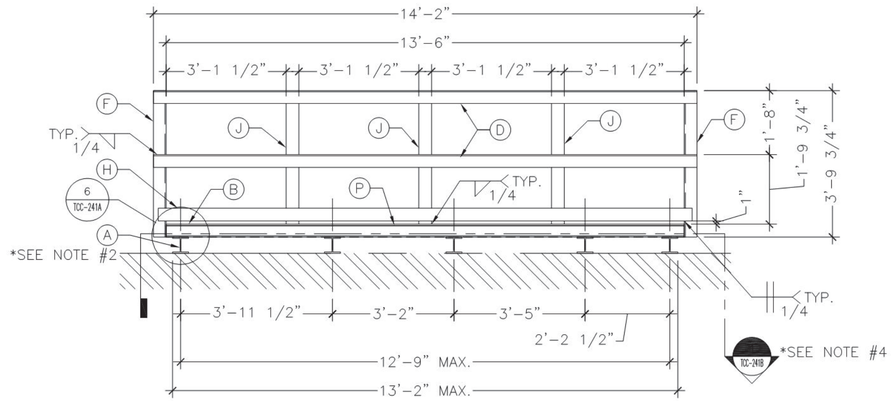


FRAMING PLAN



SECTION A–A

ITEM	SHAPE	LENGTH	NOTES	QTY
A	W5x19	13'–4"	I–BEAM (SEE NOTE #2)	5
B	L4x4x3/8	13'–6"		2
C	L4x4x3/8	4'–9 3/8"		5
D	L4x4x3/8	14'–2"		2
E	L4x4x3/8	4'–0"		4
F	L4x4x3/8	3'–9 3/4"		4
G	4x3/8	3'–11"	FLAT PLATE	2
H	4x3/8	13'–11"	FLAT PLATE	1
J	4x3/8	3'–5 3/4"	FLAT PLATE	3
K	L3x3x3/8	2'–4 5/8"	SUPPORT	2
L	L3x3x3/8	2'–10"	SUPPORT	2
M	L3x3x3/8	4'–5 1/4"		4
N	L3x3x3/8	3'–8 1/4"		2
P	L3–1/2x3–1/2x3/8	13'–4"		2
	3/4–12 x 1–3/4" ASE 325		BOLTS	20
	3/4 – 12	ASE 325	NUTS	20
	ø3/4	FLAT	WAHSERS	20
	5/8"–11 x 1–3/4"	ASE 325	BOLTS	40
	5/8"–11	ASE 325	NUTS	40
	ø5/8"	FLAT	WAHSERS	40



SECTION B–B

TYPICAL 14 FEET
PLATFORM DETAILS
1 OF 4

NOTES:
1. PLATFORMS CANNOT BE INSTALLED IN THE MIDDLE 1/3 OF EXISTING BENT SPANS OR AT EXPANSIONS BENT.
2. DISTANCES VARY. W5X19 BEAMS ADJUSTED FOR TIE OBSTRUCTION.
3. SIGNAL PLATFORM LOCATED IN A MANNER THAT ALLOWS THE SIGNAL TO BE MOUNTED BETWEEN THE INSULATED JOINT AND 5'–0" PRIOR TO THE INSULATED JOINT IN THE DIRECTION OF TRAVEL.
4. FOR PLATFORM UNDERBUILT AND DETAIL SEE DRAWINGS TCC–241 THRU TCC–244
5. INFORMATION PROVIDED IS FOR REFERENCE ONLY CONTRACTOR MUST DESIGN PER LOCATION AND SUBMIT WITH CALCULATION AND SE STAMP FOR APPROVAL TO CTA.
6. CONTRACTOR MUST ADHERE TO CONTRACT SPECIFICATIONS.

NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D–7–135B
FILE NAME	

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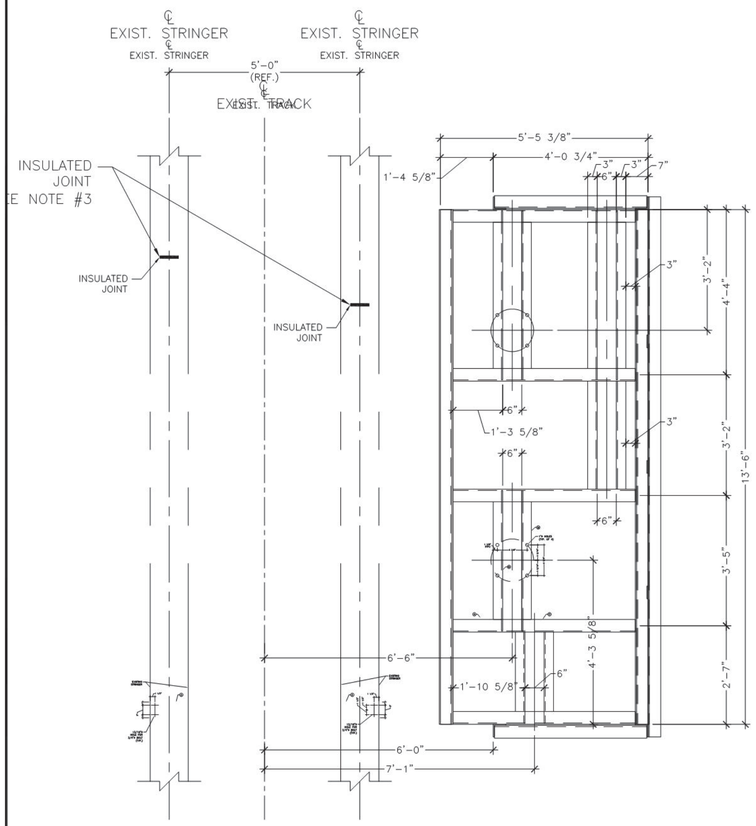
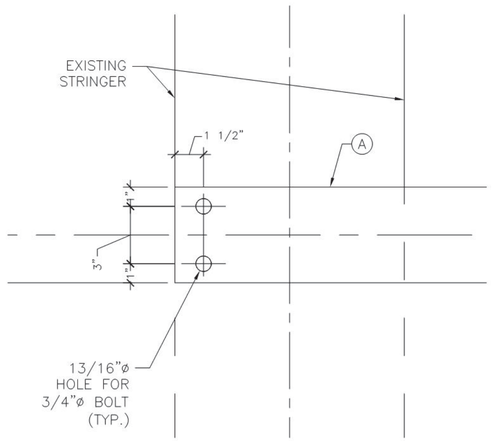
LOCATION IDENTIFIER: LK–ROW

TYPICAL 14 FEET
PLATFORM DETAILS
1 OF 4

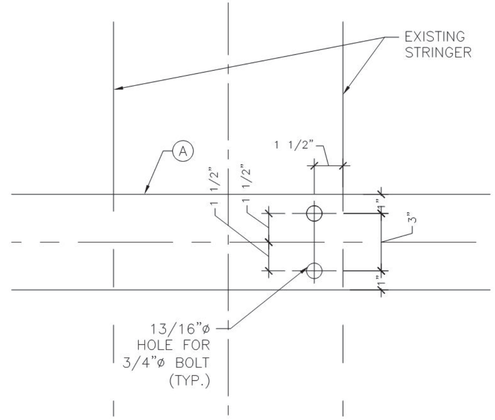
TCC-241



DIMENSION PLAN
TCC-241A SCALE:



1A TCC-241A DETAIL SCALE:



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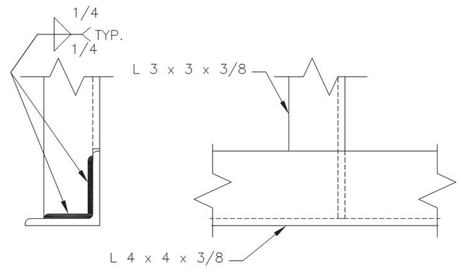
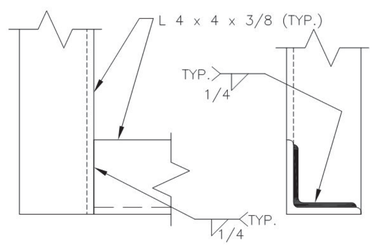
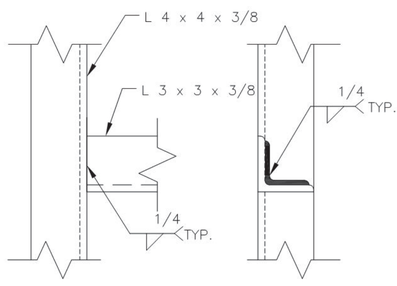


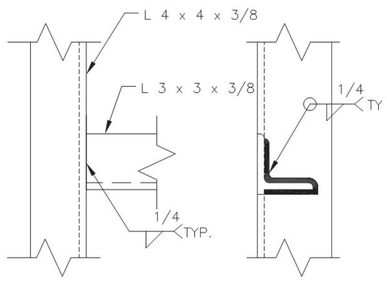
2 TCC-241A DETAIL SCALE:



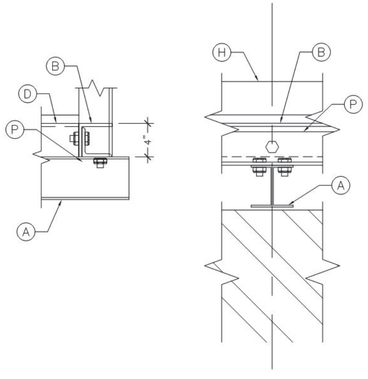
3 TCC-241A DETAIL SCALE:



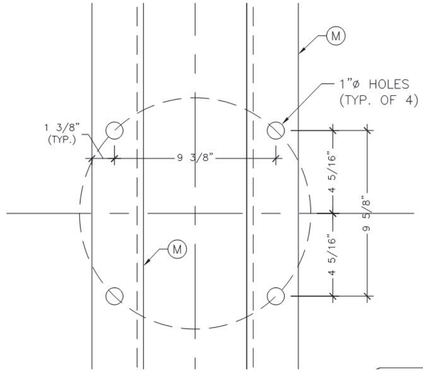
4 TCC-241A DETAIL SCALE:



5 TCC-241A DETAIL SCALE:



6 TCC-241A DETAIL SCALE:



7 TCC-241A BOLT PATTERN DETAIL SCALE:

NOT FOR CONSTRUCTION

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ENGINEERING

SENSITIVE SECURITY INFORMATION

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GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
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PROJECT NO	PROJECT D-7-135B
FILE NAME	

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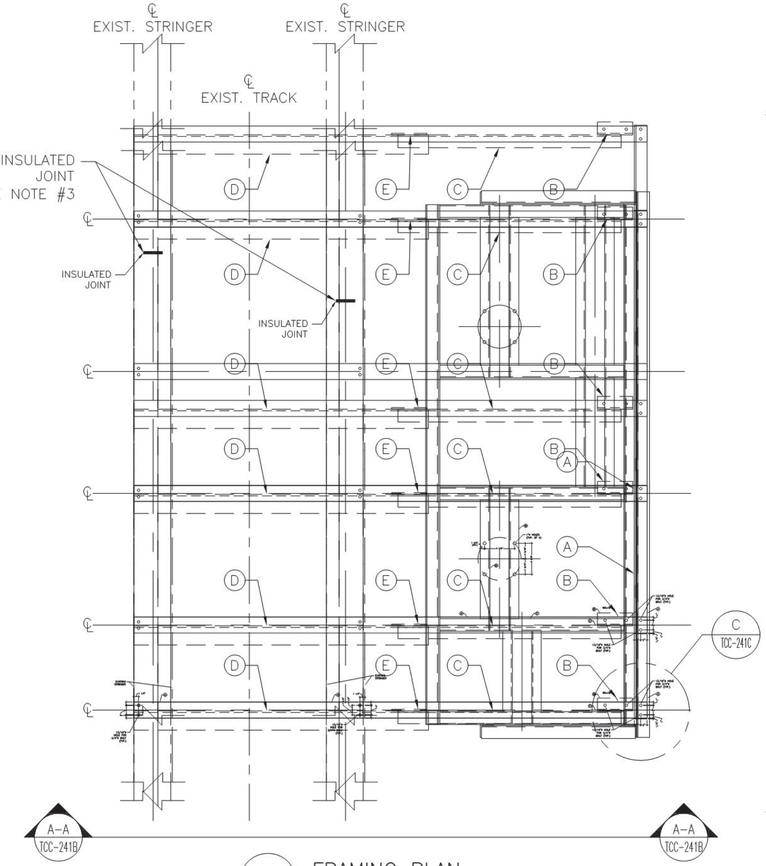
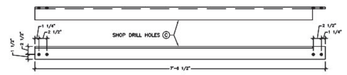
LOCATION IDENTIFIER: LK-ROW

TYPICAL 14 FEET PLATFORM DETAILS 2 OF 4

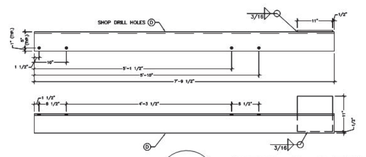
TCC-241A



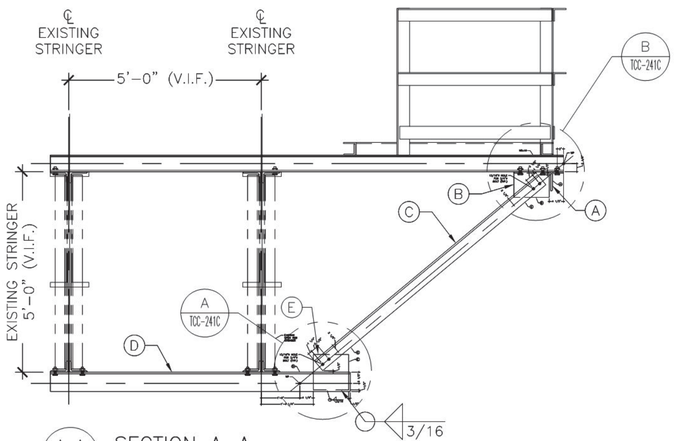
FRAMING PLAN
SCALE:



ITEM–C DETAIL
SCALE:



ITEM–D DETAIL
SCALE:



SECTION A–A
SCALE:

NOTES:
1. PLATFORMS CANNOT BE INSTALLED IN THE MIDDLE 1/3 OF EXISTING BENT SPANS OR AT EXPANSIONS BENT.
2. DISTANCES VARY. W5X19 BEAMS ADJUSTED FOR TIE OBSTRUCTION.
3. SIGNAL PLATFORM LOCATED IN A MANNER THAT ALLOWS THE SIGNAL TO BE MOUNTED BETWEEN THE INSULATED JOINT AND 5'–0" PRIOR TO THE INSULATED JOINT IN THE DIRECTION OF TRAVEL
4. FOR PLATFORM UNDERBUILT AND DETAIL SEE DRAWINGS TCC–241 THRU TCC–244
5. INFORMATION PROVIDED IS FOR REFERENCE ONLY CONTRACTOR MUST DESIGN PER LOCATION AND SUBMIT WITH CALCULATION AND SE STAMP FOR APPROVAL TO CTA.
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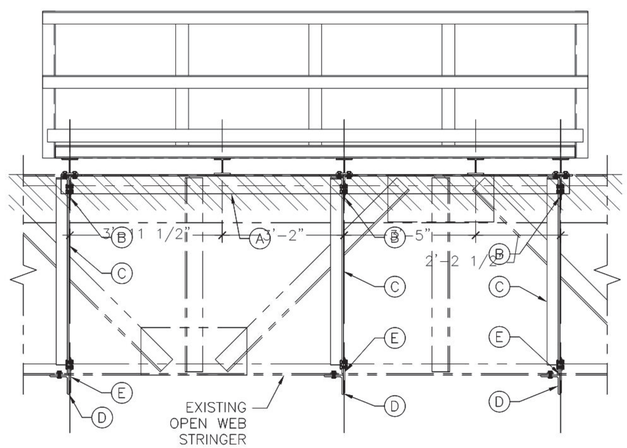
ITEM	SHAPE	LENGTH	NOTES	QTY
A	L6x4x1/2	±13'–2 1/2"	SEE NOTE #4	1
B	L8x4x1/2	11"		3
C	L4x4x1/2	±7'–6 1/2"	SEE NOTE #4	3
D	L6x6x1/2	±7'–9 1/2"	SEE NOTE #4	3
E	11"x1/2"	11"	GUSSET PLATE	3
	3/4" x 1–3/4"	ASE 325	BOLT	40
	3/4	ASE 325	NUTS	40
	ø3/4	FLAT	WASHERS	40

TYPICAL 14 FEET
PLATFORM DETAILS
3 OF 4



SECTION B–B
SCALE:

NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

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GREEN LINE
DAMEN STATION
LAKE STREET

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APPROVED BY	E. MCGRAW
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PROJECT NO	PROJECT D–7–135B
FILE NAME	

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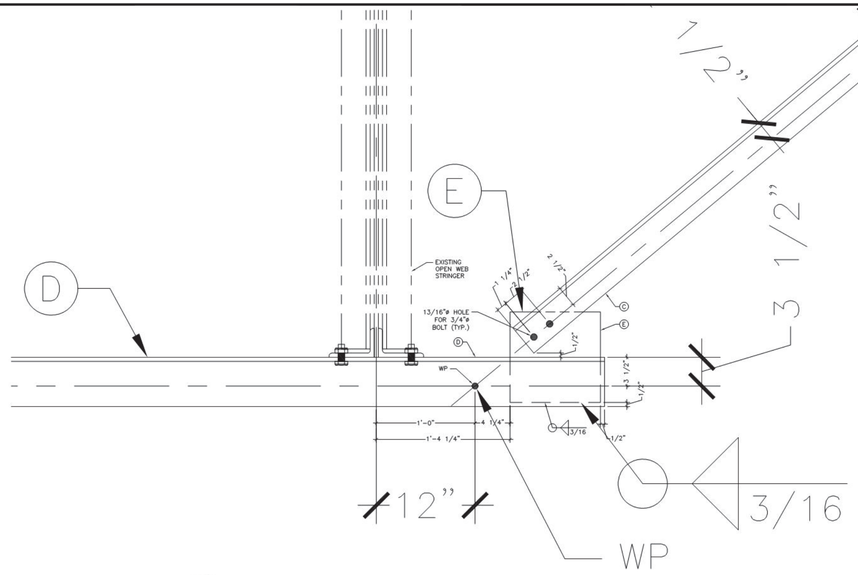
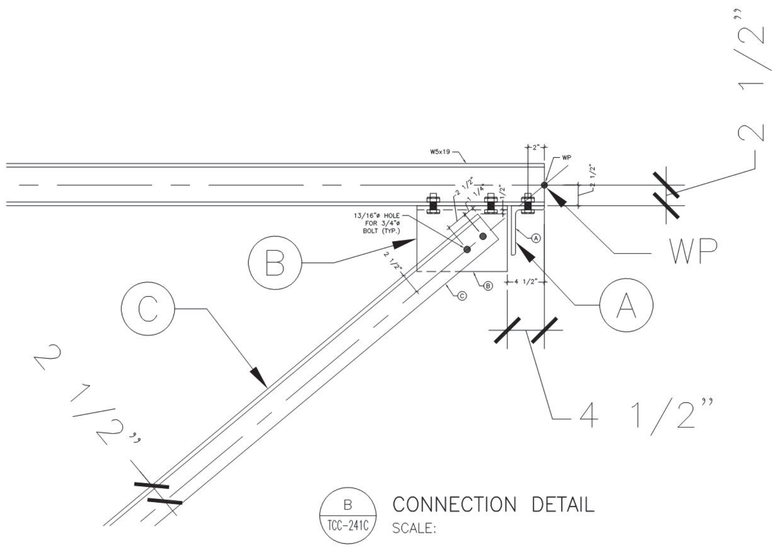
LOCATION IDENTIFIER: LK–ROW

TYPICAL 14 FEET
PLATFORM
DETAILS 3 OF 4

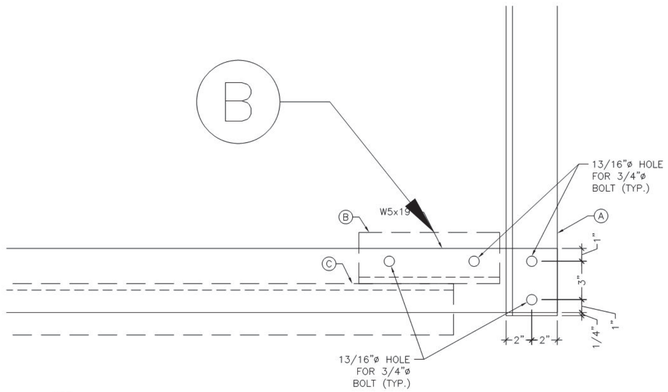
TCC-241B



A TCC-241C CONNECTION DETAIL
SCALE:



B TCC-241C CONNECTION DETAIL
SCALE:



C TCC-241C CONNECTION DETAIL
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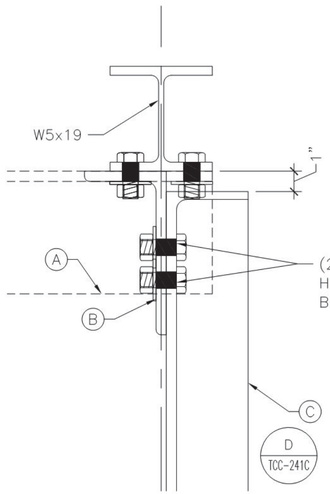
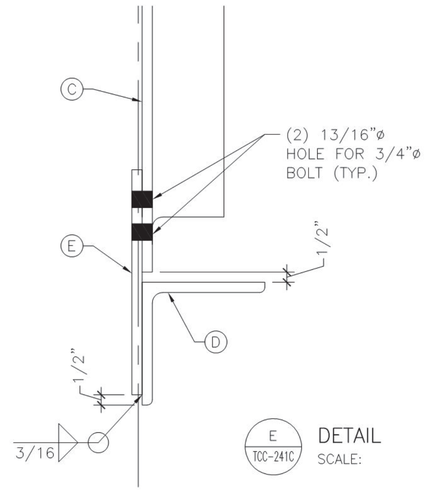
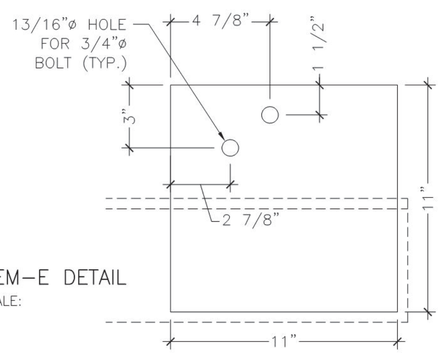


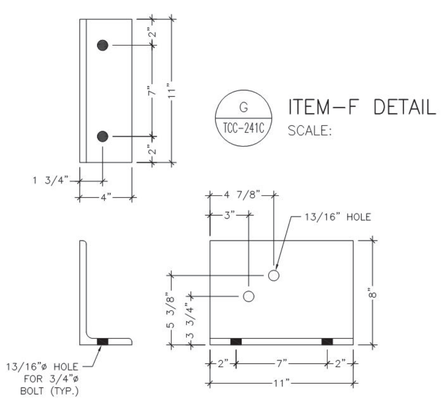
D TCC-241C DETAIL
SCALE:



E TCC-241C DETAIL
SCALE:



F TCC-241C ITEM–E DETAIL
SCALE:



G TCC-241C ITEM–F DETAIL
SCALE:

NOTES:

1. PLATFORMS CANNOT BE INSTALLED IN THE MIDDLE 1/3 OF EXISTING BENT SPANS OR AT EXPANSIONS BENT.
2. DISTANCES VARY. W5X19 BEAMS ADJUSTED FOR TIE OBSTRUCTION.
3. SIGNAL PLATFORM LOCATED IN A MANNER THAT ALLOWS THE SIGNAL TO BE MOUNTED BETWEEN THE INSULATED JOINT AND 5'–0" PRIOR TO THE INSULATED JOINT IN THE DIRECTION OF TRAVEL
4. FOR PLATFORM UNDERBUILT AND DETAIL SEE DRAWINGS TCC–241 THRU TCC–244
5. INFORMATION PROVIDED IS FOR REFERENCE ONLY CONTRACTOR MUST DESIGN PER LOCATION AND SUBMIT WITH CALCULATION AND SE STAMP FOR APPROVAL TO CTA.
6. CONTRACTOR MUST ADHERE TO CONTRACT SPECIFICATIONS.

NOT FOR CONSTRUCTION

CHICAGO TRANSIT AUTHORITY
ENGINEERING

SENSITIVE SECURITY INFORMATION

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CDOT
GREEN LINE
DAMEN STATION
LAKE STREET

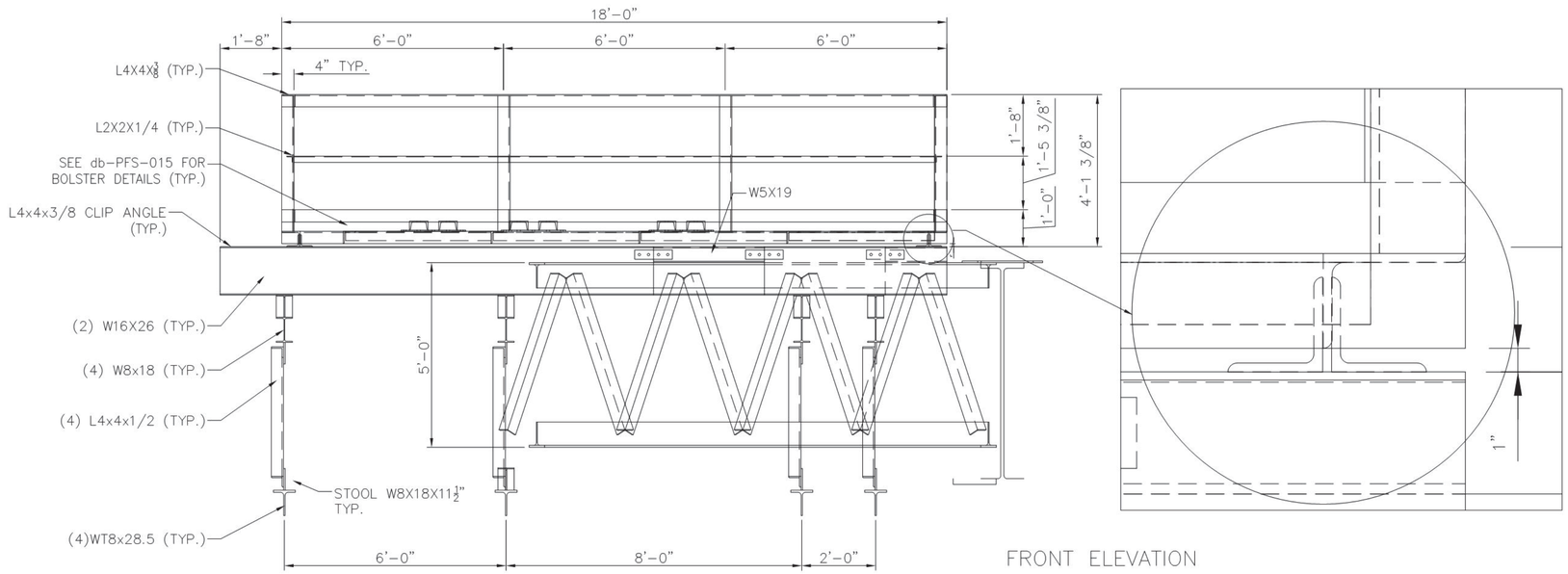
IN CHARGE	J. HARPER
APPROVED BY	E. MCGRAW
CHECKED BY	J. MITCHELL
DESIGNED BY	CTA
DRAWN BY	J. MITCHELL
PROJECT NO	PROJECT D–7–135B
FILE NAME	

MARK	DATE	DESCRIPTION
	01/27/2020	ISSUE FOR BID
	06/14/2019	100% DESIGN

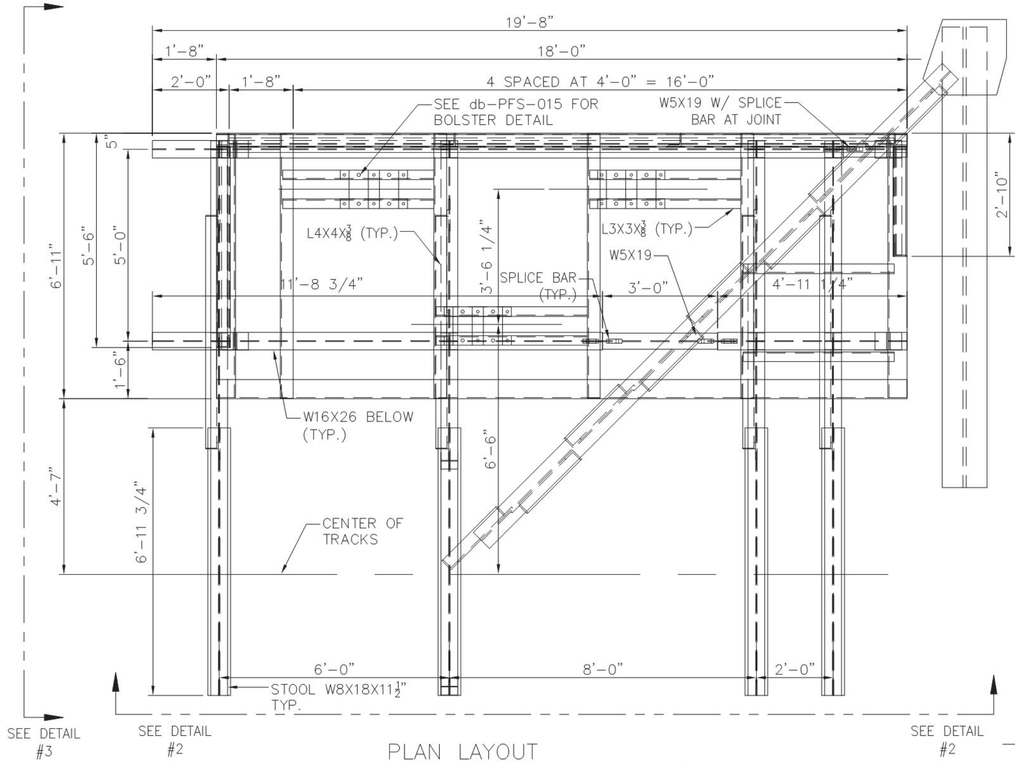
LOCATION IDENTIFIER: LK–ROW

TYPICAL 14 FEET PLATFORM DETAILS 4 OF 4

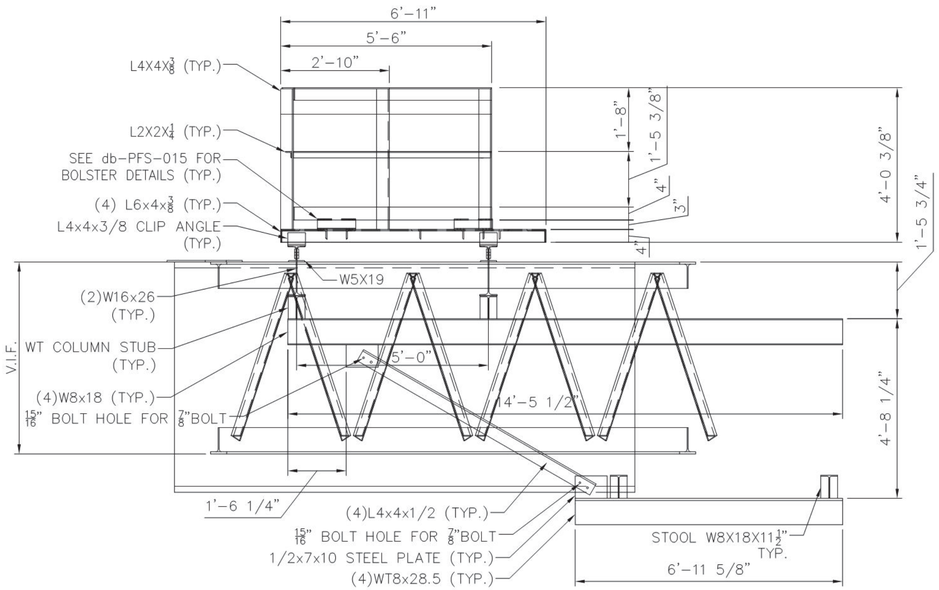
TCC-241C



FRONT ELEVATION



PLAN LAYOUT



SIDE ELEVATION

TYPICAL 18 FEET END OF PLATFORM DETAILS

NOTES:

1. ALL STEEL TO BE GALVANIZED
2. STEEL ANGLES & PLATES TO BE ASTM A36
3. ALL HOLES TO BE 1 3/16" DIAMETER FOR 3/4" DIAMETER BOLT UNLESS OTHERWISE NOTED
4. EQUIPMENT AND TIES NOT SHOWN FOR CLARITY
5. DISTANCES VARY. W5X19 BEAMS ADJUSTED FOR TIE OBSTRUCTION.
6. PLATFORMS COMBINED WITH TRACK ACCESS STAIRS MUST BE 18 FEET. REFERENCE TCC-245 DRAWING.
7. INFORMATION PROVIDED IS FOR REFERENCE ONLY CONTRACTOR MUST DESIGN PER LOCATION AND SUBMIT WITH CALCULATION AND SE STAMP FOR APPROVAL TO CTA.

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GREEN LINE
DAMEN STATION
LAKE STREET

IN CHARGE	J. HARPER
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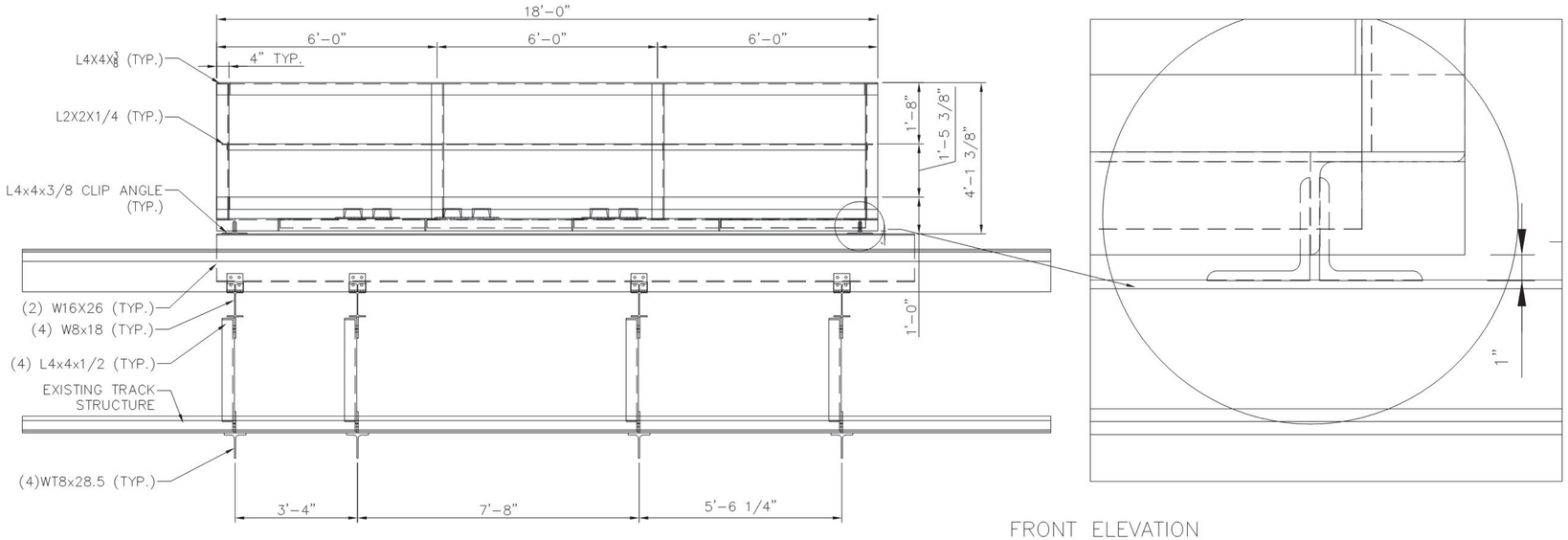
LOCATION IDENTIFIER: LK-ROW

TYPICAL 18 FEET END OF PLATFORM DETAILS 1 OF 2

TCC-246



FRONT ELEVATION

NOTES:

1. ALL STEEL TO BE GALVANIZED
2. STEEL ANGLES & PLATES TO BE ASTM A36
3. ALL HOLES TO BE $\frac{13}{16}$" DIAMETER FOR $\frac{3}{4}$" DIAMETER BOLT UNLESS OTHERWISE NOTED
4. EQUIPMENT AND TIES NOT SHOWN FOR CLARITY
5. DISTANCES VARY. W5X19 BEAMS ADJUSTED FOR TIE OBSTRUCTION.
6. PLATFORMS COMBINED WITH TRACK ACCESS STAIRS MUST BE 18 FEET. REFERENCE TCC-245 DRAWING.
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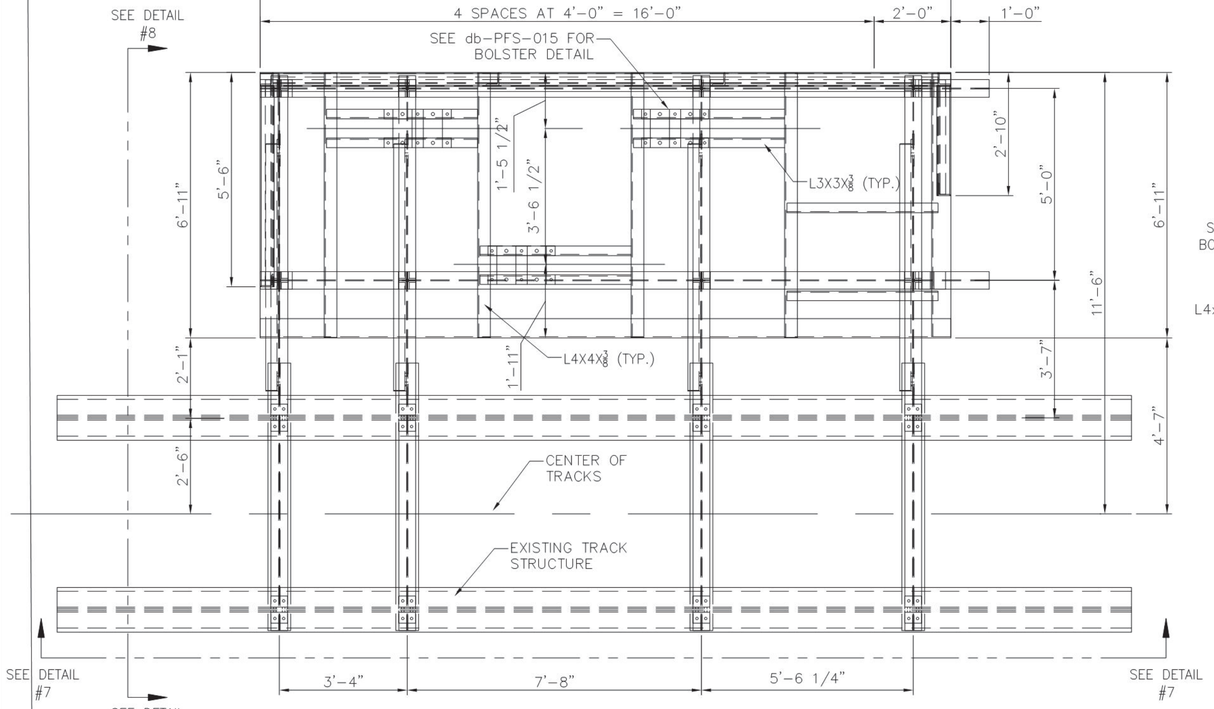
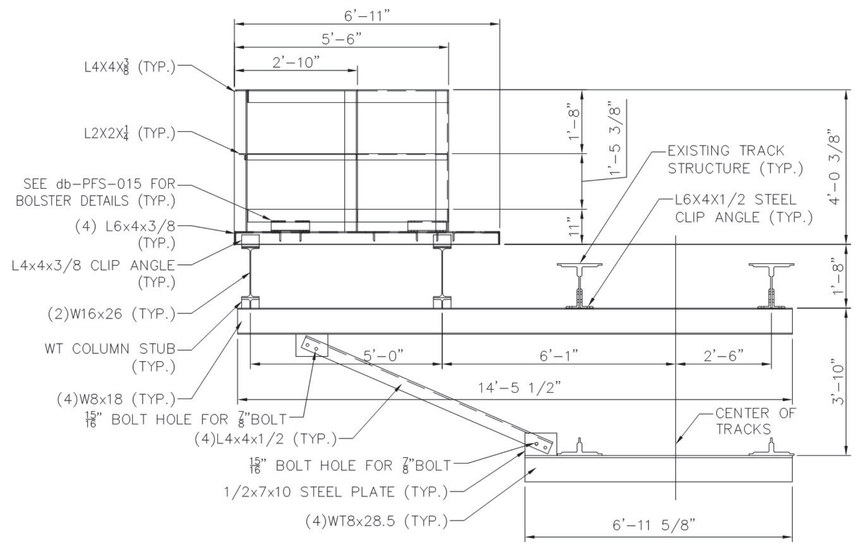


PLAN LAYOUT



TYPICAL 18 FEET END OF PLATFORM DETAILS

SIDE ELEVATION

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LAKE STREET

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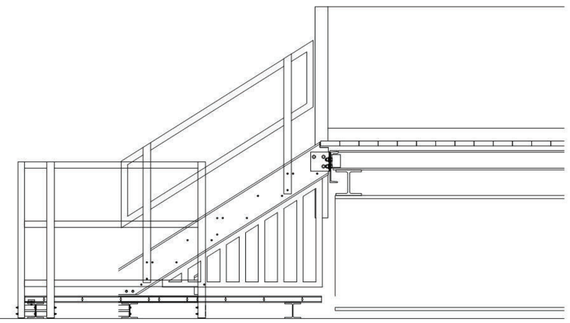
LOCATION IDENTIFIER: LK-ROW

TYPICAL 18 FEET END OF PLATFORM DETAILS 2 OF 2

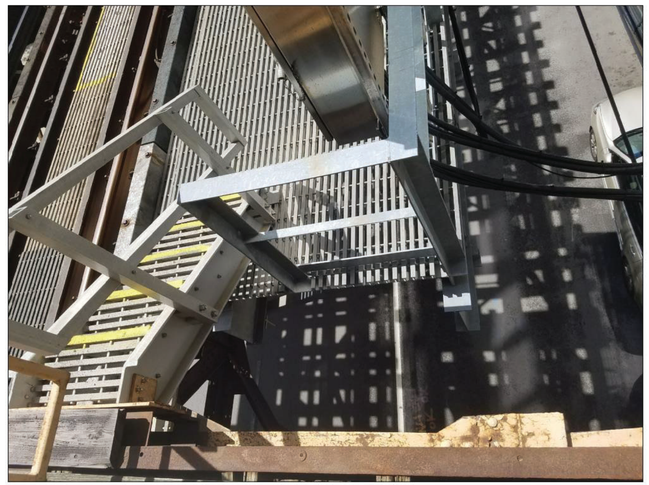
TCC-247



FRONT SIDE VIEW

PLAN VIEW

BACK SIDE VIEW



TOP VIEW

NOTES:

1. THE SIGNAL PLATFORM AND THE TRACK ACCESS STAIRS PLATFORM NEEDS TO BLEND AT THE LANDING.
2. REFERENCE THE CONTRACT DRAWINGS ON THE DETAILS FOR THE TRACK ACCESS STAIRS DRAWING CT-005.
3. REFERENCE THE CONTRACT DRAWINGS ON THE DETAILS FOR THE END OF PLATFORM TCC-245 THRU TCC-247.
4. REFERENCE THE CONTRACT DRAWINGS ON THE DETAILS FOR THE TYPICAL 14 FEET SIGNAL PLATFORM TCC-240 THRU TCC-241C.
5. THE LENGTH OF THE SIGNAL PLATFORM COMBINED OR BLENDED WITH THE TRACK ACCESS STAIRS MUST BE 18 FEET. USE THE TYPICAL 14 FEET PLATFORM AS REFERENCE.
6. THE PURPOSE OF THIS DRAWING IS TO REFLECT WHAT IS MEANT BY BLENDING A SIGNAL PLATFORM WITH A TRACK ACCESS STAIRS PLATFORM.

NOT FOR CONSTRUCTION

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TYPICAL BLENDED TRACK ACCESS STAIRS WITH WAYSIDE SIGNAL PLATFORM

TCC-248