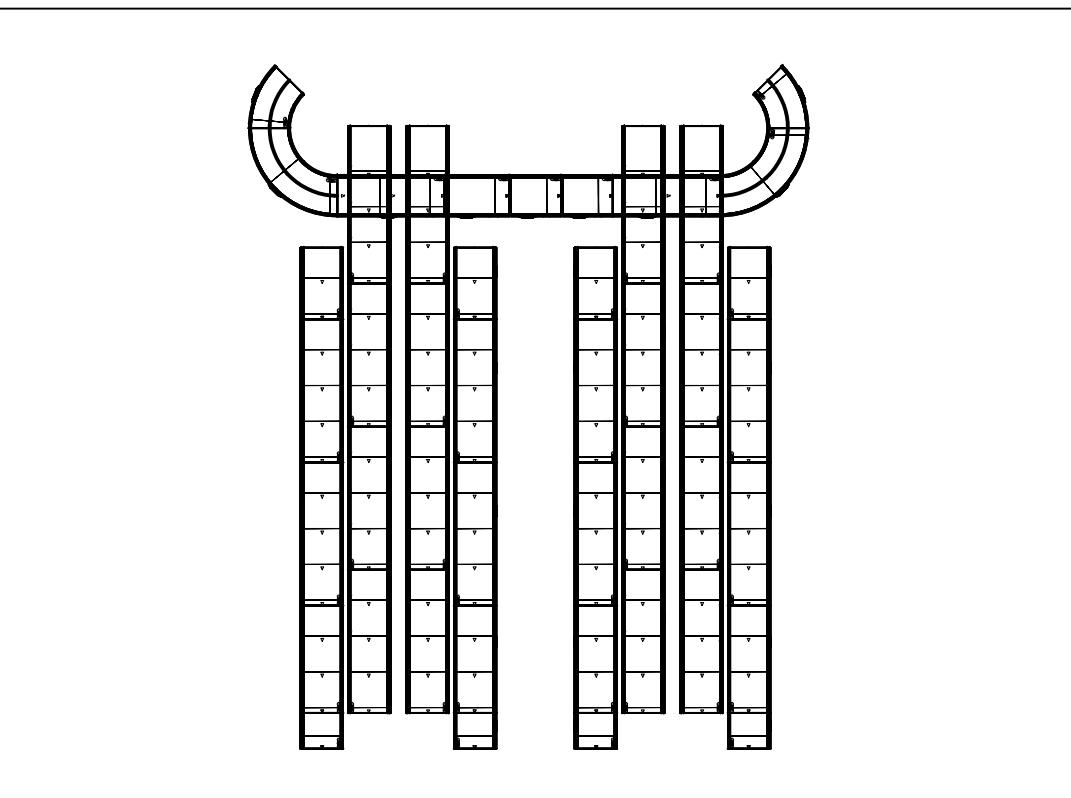


SPS

INTERCONNECT DRAWING PACKAGE BERKSHIRE GREY



CONTROL ENCLOSURE			
FILENAME	SH	REV	DWGDESC
SPS-I	I	-	TITLE SHEET
SPS-II	II	-	NOTES
SPS-01	01	-	SYSTEM CABLE REFERENCE - P1
SPS-02	02	-	SYSTEM CABLE REFERENCE - P2
SPS-03	03	-	SYSTEM CABLE REFERENCE - P3
SPS-04	04	-	SYSTEM CABLE REFERENCE - P4
SPS-05	05	-	SYSTEM CABLE REFERENCE - P5
SPS-06	06	-	SYSTEM CABLE REFERENCE - P6
SPS-10	10	-	SPS SYSTEM INTERCONNECT OVERVIEW
SPS-26	26	-	SPS ASI CONNECTIONS - OVERVIEW
SPS-27	27	-	SPS ASI CONNECTIONS - CABLE ROUTING
SPS-29	29	-	SPS 4SPAN CONVEYOR OVERVIEW
SPS-30	30	-	SPS 4SPAN FPP POWER - AB
SPS-31	31	-	SPS 4SPAN MOTOR POWER - AB
SPS-32	32	-	SPS 4SPAN LOGIC POWER - AB
SPS-33	33	-	SPS 4SPAN COMMUNICATION - AB
SPS-34	34	-	SPS 4SPAN PE SENSORS - AB
SPS-35	35	-	SPS RPS HIGHWAY LOOP PE SENSORS - AB
SPS-36	36	-	SPS STATION BONDING
SPS-40	40	-	SPS AUTO SHUTTLE A - MOTOR MAIN AND LOGIC PWR
SPS-41	41	-	SPS AUTO SHUTTLE A - MOTOR COMMUNICATION
SPS-43	43	-	SPS AUTO SHUTTLE B - MOTOR MAIN AND LOGIC PWR
SPS-44	44	-	SPS AUTO SHUTTLE B - MOTOR COMMUNICATION
SPS-51	51	-	SPS ESTOP PULL-CORDS
SPS-52	52	-	SPS PTZ CAMERAS
SPS-53	53	-	SPS LASER DISTANCE SENSORS
SPS-54	54	-	SPS OVERFILL BEAMS - TX
SPS-55	55	-	SPS OVERFILL BEAMS - RX
SPS-56	56	-	SPS WEIGH SCALE - LOAD CELLS
SPS-57	57	-	SPS WEIGH SCALE - INDICATOR
SPS-58	58	-	SPS DIMENSIONING SKU CAMERAS
SPS-60	60	-	SPS CC - MOTOR CONNECTIONS - P1
SPS-61	61	-	SPS CC - MOTOR CONNECTIONS - P2
SPS-62	62	-	SPS CC - MOTOR CONNECTIONS - P3
RPS-63	63	-	SPS BOX LINE BARCODE SCANNERS
RPS-64	64	-	SPS TOTE LINE BARCODE SCANNERS
RPS-66	66	-	SPS MANUAL STATION - HM CONNECTIONS
RPS-67	67	-	SPS MANUAL STATION - I/O BLOCK CONNECTIONS - A SIDE
RPS-68	68	-	SPS MANUAL STATION - I/O BLOCK CONNECTIONS - B SIDE
RPS-69	69	-	SPS MANUAL STATION - ESTOP PULL-CORDS
RPS-70	70	-	SPS MANUAL STATION - LIGHTSTACK SPLITTER WIRING DETAIL
RPS-71	71	-	SPS MANUAL STATION - LIGHTSTACK CONFIGURATION
RPS-172	172	-	SECTION - ADDITIONAL INFORMATION
RPS-173	173	-	RAT-HPD CABLE ASSEMBLY V2
RPS-174	174	-	SAFETY ZONE - PULL CORD DEVICE WIRING DETAIL - SINGLE
RPS-175	175	-	SAFETY ZONE - PULL CORD DEVICE WIRING DETAIL - DUAL
RPS-177	177	-	ROLLER BRAKE CONNECTION
RPS-178	178	-	HOMING SENSOR ASSEMBLY
RPS-179	179	-	INTERROLL Y-CABLE DETAILS
RPS-180	180	-	SPS HIGHWAY LOOP MODIFICATIONS - P1
RPS-181	181	-	SPS HIGHWAY LOOP MODIFICATIONS - P2
RPS-182	182	-	PULL CORD AT CONVEYOR BOUNDARY

DRAWING PACKAGE NOTES	
1)	THIS DRAWING PACKAGE IS REPRESENTATIVE OF THE SYSTEM AS IT WAS INSTALLED. ALL FIELD CHANGES MADE AFTER INSTALLATION MAY NOT BE REFLECTED IN THIS DRAWING SET.
2)	DRAWING PACKAGE CONTAINS WIRING FROM SEVERAL DIFFERENT MACHINE COMPONENTS.

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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DRAWN	MC
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SPS
INTERCONNECT DRAWING PACKAGE
TITLE SHEET

REV	SECT.	DETAIL	JOB#
A	PREV.	I	114600
A	SHEET NEXT	II	DWG SPS-I

COMMON ABBREVIATIONS	
ID	Meaning
ASH	Auto Shuttle
CAM	Pan-Tilt-Zoom Ethernet Camera
CBL	Cable
CC	Cleated Conveyor Sub-System
CV	Conveyor
DIB	Daifuku Interface Box
DS	Disconnect
DSC	Dimensioning SKU Camera
EPP	Emergency Push Button
EPC	Emergency Pull-Cord
FCV	Flow Control Valve
FIT	Flow Indicating Transmitter
FPP	Field Power Panel
FT	Flow Transmitter
GS	Gate Switch
HMI	Human Machine Interface
HPD	High Performance Divert
JB	Junction Box
LC	Load Cell
LCTX	Light Curtain Transmitter
LCRX	Light Curtain Receiver
LCB	Load Cell Sum Box
LDS	Laser Distance Sensor
LS	Light Stack
MC	Motor Controller
MTR	Motor
NS	Network Switch
P	Electrical Panel
PB	Pushbutton
PCM	Pneumatic Control Module
PE	Photoeye Beam Break Sensor
PIH	Pose In Hand
PIT	Pressure Indicating Transmitter
PLC	PLC Controller
PM	Perception Module
PP	Patch Panel
PRX	Proximity Sensor
PT	Pressure Transmitter
R	Robot Arm
RAT	Right Angle Transfer
RC	Robot Controller
RLY	Relay
RPS	Robotic Product Sortation
RSR	Robotic Store Replenishment
SC	Scanner
SSR	Shuttle-Based Store Replenishment
TJ	Tote Jostler
VLV	Valve
WIT	Weight Indicating Transmitter
WT	Weight Transmitter

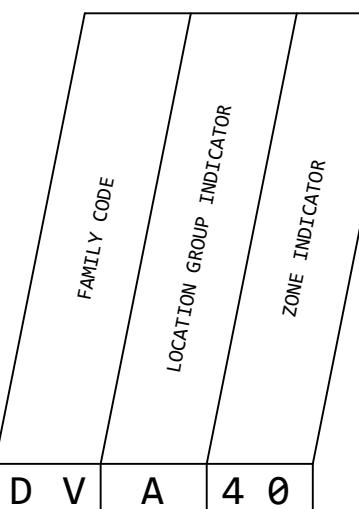
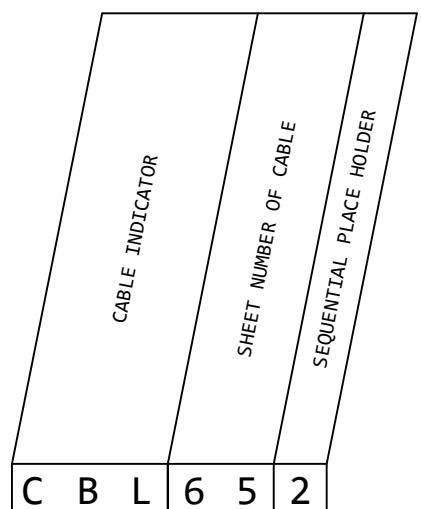
CABLE LABELING STANDARDS	
1)	ALL CABLES MUST BE CLEARLY LABELED ON BOTH ENDS. THIS INCLUDES NETWORK CABLES.
2)	AS-I CABLING MUST BE LABELED AT EVERY SPLICING OR JUNCTION.
3)	ALL UN-USED WIRES SHALL BE CUT AND INSULATED TO PREVENT SHORTING.
4)	HEATSHRINK INSULATION SHALL BE INSTALLED AT CABLE JUNCTIONS WHERE FLYING LEADS BREAK-OUT FROM THE CABLE JACKET.

CABLES CONNECTING TO ELECTRICAL CABINET

Leave 5' of slack on the cables to be terminated inside the electrical cabinet.

DEVICES, COMPONENTS, AND SUB-SYSTEMS

All locations are approximate in this drawing package. Refer to the conveyance CAD and/or mechanical drawings for detailed information.

COMPONENT
LABELCABLE
LABEL

C		
B		
A		
REV	DATE	ENGR.



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SPS
INTERCONNECT DRAWING PACKAGE
NOTES

REV A
SECT. I
DETAIL II
PREV. SHEET 01
NEXT 01
JOB# 114600
DWG SPS-II

	1	2	3	4	5	6	7	8	
	A	B	C	D	E	F	G	H	
Cable Ref.	EG Part #	Connection Description	Side A Terminating Connector	Side B Terminating Connector					Length (meter)
SPS-00 4SPAN FPP POWER - AB	109503								
CBL30-1	109342	Cable from Electrical Cabinet to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-2	109342	Cable from FPP to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-3	109342	Cable from FPP to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-4	109342	Cable from Electrical Cabinet to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-5	109342	Cable from FPP to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-6	109342	Cable from FPP to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-7	109342	Cable from Electrical Cabinet to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-8	109342	Cable from FPP to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
CBL30-9	109342	Cable from FPP to FPP	Flying leads - 4Conductor 14AWG	Flying leads - 4Conductor 14AWG					cut to length
SPS-00 4SPAN MOTOR POWER - AB	109504								
CBL31-1	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-2	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-3	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-4	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-5	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-6	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-7	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-8	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-9	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-10	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-11	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-12	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-13	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-14	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-15	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-16	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-17	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
CBL31-18	105564	ASI branch from FPP to MCs	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable					cut to length
SPS-00 4SPAN LOGIC POWER - AB	109505								
CBL32-1	105492	Cable from Electrical Cabinet to ASI Splitters	Flying leads - ASI Red Cable	Flying leads - ASI Red Cable					cut to length
CBL32-2	105492	ASI branch from ASI Splitter to MC's	Flying leads - ASI Red Cable	Flying leads - ASI Red Cable					cut to length
CBL32-3	105492	ASI branch from ASI Splitter to MC's	Flying leads - ASI Red Cable	Flying leads - ASI Red Cable					cut to length
CBL32-4	105492	Cable from Electrical Cabinet to ASI Splitters	Flying leads - ASI Red Cable	Flying leads - ASI Red Cable					cut to length
CBL32-5	105492	ASI branch from ASI Splitter to MC's	Flying leads - ASI Red Cable	Flying leads - ASI Red Cable					cut to length
CBL32-6	105492	Cable from Electrical Cabinet to ASI Splitters	Flying leads - ASI Red Cable	Flying leads - ASI Red Cable					cut to length
CBL32-7	105492	ASI branch from ASI Splitter to MC's	Flying leads - ASI Red Cable	Flying leads - ASI Red Cable					cut to length
SPS-00 4SPAN COMMUNICATION - AB	109506								
CBL33-1	109474	External switch to Network Switch	4pin M12 D-CODE male	RJ45					20
CBL33-2	109442	External switch to HIGHWAY MC's	4pin M12 D-CODE male	RJ45					10
CBL33-3	109442	External switch to 4SPAN B MC's	4pin M12 D-CODE male	RJ45					10
CBL33-4	109442	External switch to 4SPAN A MC's	4pin M12 D-CODE male	RJ45					10
CBL33-5	107753	Cable from MC to MC	4pin M12 D-CODE male	4pin M12 D-CODE male					5
CBL33-6	107753	Cable from MC to MC	4pin M12 D-CODE male	4pin M12 D-CODE male					5
CBL33-7	106949-229	Cabinet HMI to Network Switch	RJ45	RJ45					22.9
SPS-00 SYSTEM BONDING	110177								
CBL36-1	110157	Cable for system bonding	Copper lug	Copper lug					cut to length

C			
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REV	DATE	ENGR.	DESCRIPTION



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SCALE	N/A
DRAWN	MC
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BED-RPS
INTERCONNECT DRAWING PACKAGE
SYSTEM CABLE REFERENCE - P1

REV
A
SECT.
PREV.
II
SHEET
01
NEXT
02
JOB# 114600
DWG SPS-01

	1	2	3	4	5	6	7	8	
	A	B	C	D	E	F	G	H	
Cable Ref.									
SPS-00 AUTO SHUTTLE A - MOTOR MAIN AND LOGIC PWR	109507	EG Part #	Connection Description	Side A Terminating Connector	Side B Terminating Connector				Length (meter)
CBL40-1	109401	Slide Motor Logic Power							
CBL40-2	104826	Slide Motor Main Power		Flying leads - 5Conductor	5pin M12 female				10
CBL40-3	106650	Y-splitter cable for ejector/kicker motors		Flying leads - 6Conductor	6pin M23 female				10
CBL40-4	109401	Power cable to E-CHAIN power cable			5pin M12 female				1
CBL40-5	109950	E-CHAIN power cable for ejector/kicker		Flying leads - 5Conductor	5pin M12 female				10
CBL40-5-b	109810	E-CHAIN cable for motor logic power-backup			5pin M12 female				10
CBL40-6	110213	Y-splitter to ejector motor			5pin M12 female				20
SPS-00 AUTO SHUTTLE A - MOTOR COMMUNICATION	109508								
CBL41-1	109404	Slide Motor Communication		4pin M12 D-CODE male	4pin M12 D-CODE male				10
CBL41-2	109405	Kicker Motor Communication		4pin M12 D-CODE male	4pin M12 D-CODE male				2
CBL41-3	106644-009	E-chain comm connection to Ejector Motor		4pin M12 D-CODE female	4pin M12 D-CODE male				0.9
CBL41-4	106644-009	Ejector Motor Communication		4pin M12 D-CODE female	4pin M12 D-CODE male				0.9
CBL41-5	109951	E-CHAIN comm cable		4pin M12 D-CODE male	4pin M12 D-CODE male				10.5
CBL41-5-b	109416	E-CHAIN comm cable-backup		4pin M12 D-CODE male	4pin M12 D-CODE male				20
SPS-00 AUTO SHUTTLE A - MOTOR STO	109509								
CBL42-1	109406	Slide Motor STO		Flying leads - 3Conductor	3pin M8 male				10
SPS-00 AUTO SHUTTLE B - MOTOR MAIN AND LOGIC PWR	109510								
CBL43-1	109401	Slide Motor Logic Power		Flying leads - 5Conductor	5pin M12 female				10
CBL43-2	104826	Slide Motor Main Power		Flying leads - 6Conductor	6pin M23 female				10
CBL43-3	106650	Y-splitter cable for ejector/kicker motors			5pin M12 female				1
CBL43-4	109401	Power cable to E-CHAIN power cable		Flying leads - 5Conductor	5pin M12 female				10
CBL43-5	109950	E-CHAIN power cable for ejector/kicker			5pin M12 male				10
CBL43-5-b	109810	E-CHAIN cable for motor logic power-backup			5pin M12 male				20
CBL43-6	110213	Y-splitter to ejector motor			5pin M12 female				1.5
SPS-00 AUTO SHUTTLE B - MOTOR COMMUNICATION	109511								
CBL44-1	109404	Slide Motor Communication		4pin M12 D-CODE male	4pin M12 D-CODE male				10
CBL44-2	109405	Kicker Motor Communication		4pin M12 D-CODE male	4pin M12 D-CODE male				2
CBL44-3	106644-009	E-chain comm connection to Ejector Motor		4pin M12 D-CODE female	4pin M12 D-CODE male				0.9
CBL44-4	106644-009	Ejector Motor Communication		4pin M12 D-CODE female	4pin M12 D-CODE male				0.9
CBL44-5	109951	E-CHAIN comm cable		4pin M12 D-CODE male	4pin M12 D-CODE male				10.5
CBL44-5-b	109416	E-CHAIN comm cable-backup		4pin M12 D-CODE male	4pin M12 D-CODE male				20
SPS-00 AUTO SHUTTLE B - MOTOR STO	109512								
CBL45-1	109406	Slide Motor STO		Flying leads - 3Conductor	3pin M8 male				10
SPS-00 ESTOP PULL-CORDS	109513								
CBL51-1	102303	Yellow ASI connection to Pull-Cord		Flying leads - ASI Yellow Cable	Flying leads - ASI Yellow Cable				
CBL51-2	102303	Yellow ASI connection to Pull-Cord		Flying leads - ASI Yellow Cable	Flying leads - ASI Yellow Cable				
SPS-00 PTZ CAMERAS	109514								
CBL52-1	106949-076	Ethernet connection for Axis Camera		RJ45	RJ45				7.6
CBL52-2	106949-076	Ethernet connection for Axis Camera		RJ45	RJ45				7.6
CBL52-3	109412	Ethernet connection for Axis Camera		RJ45	RJ45				9.14
CBL52-4	109410	Ethernet connection for Axis Camera		RJ45	RJ45				12.19
CBL52-5	109408	Ethernet connection for Axis Camera		RJ45	RJ45				15.24
CBL52-6	109412	Ethernet connection for Axis Camera		RJ45	RJ45				9.14
CBL52-7	109410	Ethernet connection for Axis Camera		RJ45	RJ45				12.19
CBL52-8	109408	Ethernet connection for Axis Camera		RJ45	RJ45				15.24
CBL52-9	105668	Ethernet connection for Axis Camera		RJ45	RJ45				5
CBL52-10	105668	Ethernet connection for Axis Camera		RJ45	RJ45				5
CBL52-11	105668	Ethernet connection for Axis Camera		RJ45	RJ45				5
CBL52-13	105668	Ethernet connection for Axis Camera		RJ45	RJ45				5
CBL52-14	105668	Ethernet connection for Axis Camera		RJ45	RJ45				5
CBL52-16	105668	Ethernet connection for Axis Camera		RJ45	RJ45				5

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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DATE	09/22/2020
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DRAWN	MC
APPROVED	

BED-RPS
INTERCONNECT DRAWING PACKAGE
SYSTEM CABLE REFERENCE - P2

REV	SECT.	DETAIL	JOB#
A	PREV.	01	114600
	SHEET	02	SPS-02
	NEXT	03	DWG

1	C	D	E	F	G	H	I	
								A
Cable Ref.	BG Part #	Connection Description	Side A Terminating Connector	Side B Terminating Connector				
SPS-00 LASER DISTANCE SENSORS								Length (meter)
CBL53-1	109515							
CBL53-2	109413-050	Laser Distance Sensor connection	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL53-3	109413-050	Laser Distance Sensor connection	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL53-4	109413-050	Laser Distance Sensor connection	4pin 3conductor M12 male	4pin 3conductor M12 female				5
SPS-00 OVERFILL BEAMS - TX	109516							
CBL54-1	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL54-2	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL54-3	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL54-4	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
SPS-00 OVERFILL BEAMS - RX	109517							
CBL55-1	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL55-2	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL55-3	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
CBL55-4	109413-050	Overfill Light Curtain - transmitter module	4pin 3conductor M12 male	4pin 3conductor M12 female				5
SPS-00 WEIGH SCALE : INDICATOR	109518							
CBL57-1	105598	Load Cell Summation to Weigh Indicator	Flying leads - 6 Conductor 1 Drain	Flying leads - 6 Conductor 1 Drain				2
CBL57-2	106949-076	Ethernet connection for Weigh Indicator	RJ45	RJ45				7.6
CBL57-3	105564	Power connection for Weight Indicator	Flying leads - ASI Black Cable	Flying leads - ASI Black Cable				
								cut to length
SPS-00 DIMENSIONING SKU CAMERAS	109807							
CBL58-1	109791	Power connection and I/O for camera	Flying leads - 12Conductor	Dimensioning Camera				5
CBL58-2	109791	Power connection and I/O for camera	Flying leads - 12Conductor	Dimensioning Camera				5
CBL58-3	105691	Ethernet connection for camera	8pin M12 X-CODE male	RJ45				10
CBL58-4	105691	Ethernet connection for camera	8pin M12 X-CODE male	RJ45				10
SPS-00 CC - MOTOR CONNECTIONS - P1	109519							
CBL60-1	102283	CC Motor Main Power connection	Flying leads - 4conductor	4pin M16 female				20
CBL60-2	109473	CC Motor Logic Power connection	Flying leads - 5Conductor	5pin M12 female				20
CBL60-3	109415	CC Motor STO connection	Flying leads - 3Conductor	3pin M8 male				20
CBL60-4	102283	CC Motor Main Power connection	Flying leads - 4conductor	4pin M16 female				20
CBL60-5	109473	CC Motor Logic Power connection	Flying leads - 5Conductor	5pin M12 female				20
CBL60-6	109415	CC Motor STO connection	Flying leads - 3Conductor	3pin M8 male				20
SPS-00 CC - MOTOR CONNECTIONS - P2	109767							
CBL61-3	106666	CC Motor I/O to sensor	17pin m12 male	5pin M12 male field wireable conn				1.5
CBL61-4	106666	CC Motor I/O to sensor	17pin m12 male	5pin M12 male field wireable conn				1.5
SPS-00 CC - MOTOR CONNECTIONS - P3	110091							
CBL62-1	109442	Cable from MTR to network switch	4pin M12 D-CODE male	RJ45				10
CBL62-2	109442	Cable from MTR to network switch	4pin M12 D-CODE male	RJ45				10
SPS-00 BOX LINE BARCODE SCANNERS	109550							
CBL63-1	109442	Barcode to local Ethernet Switch	4pin M12 D-CODE male	RJ45				10
CBL63-2	109442	Barcode to local Ethernet Switch	4pin M12 D-CODE male	RJ45				10
CBL63-3	109442	Barcode to local Ethernet Switch	4pin M12 D-CODE male	RJ45				10
CBL63-4	109442	Barcode to local Ethernet Switch	4pin M12 D-CODE male	RJ45				10
CBL63-5	109452	Barcode Power	12pin m12 female	Flying leads - 12Conductor				5
CBL63-6	109452	Barcode Power	12pin m12 female	Flying leads - 12Conductor				5
CBL63-7	109452	Barcode Power	12pin m12 female	Flying leads - 12Conductor				5
CBL63-8	109452	Barcode Power	12pin m12 female	Flying leads - 12Conductor				5
SPS-00 TOTE LINE BARCODE SCANNERS	109560							
CBL64-1	109442	Barcode to local Ethernet Switch	4pin M12 D-CODE male	RJ45				10
CBL64-2	102629	Barcode Power	17pin m12 female	Flying leads - 17Conductor				5
CBL64-3	109442	Barcode to local Ethernet Switch	4pin M12 D-CODE male	RJ45				10
CBL64-4	102629	Barcode Power	17pin m12 female	Flying leads - 17Conductor				5

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



140 SO
BEDFORD

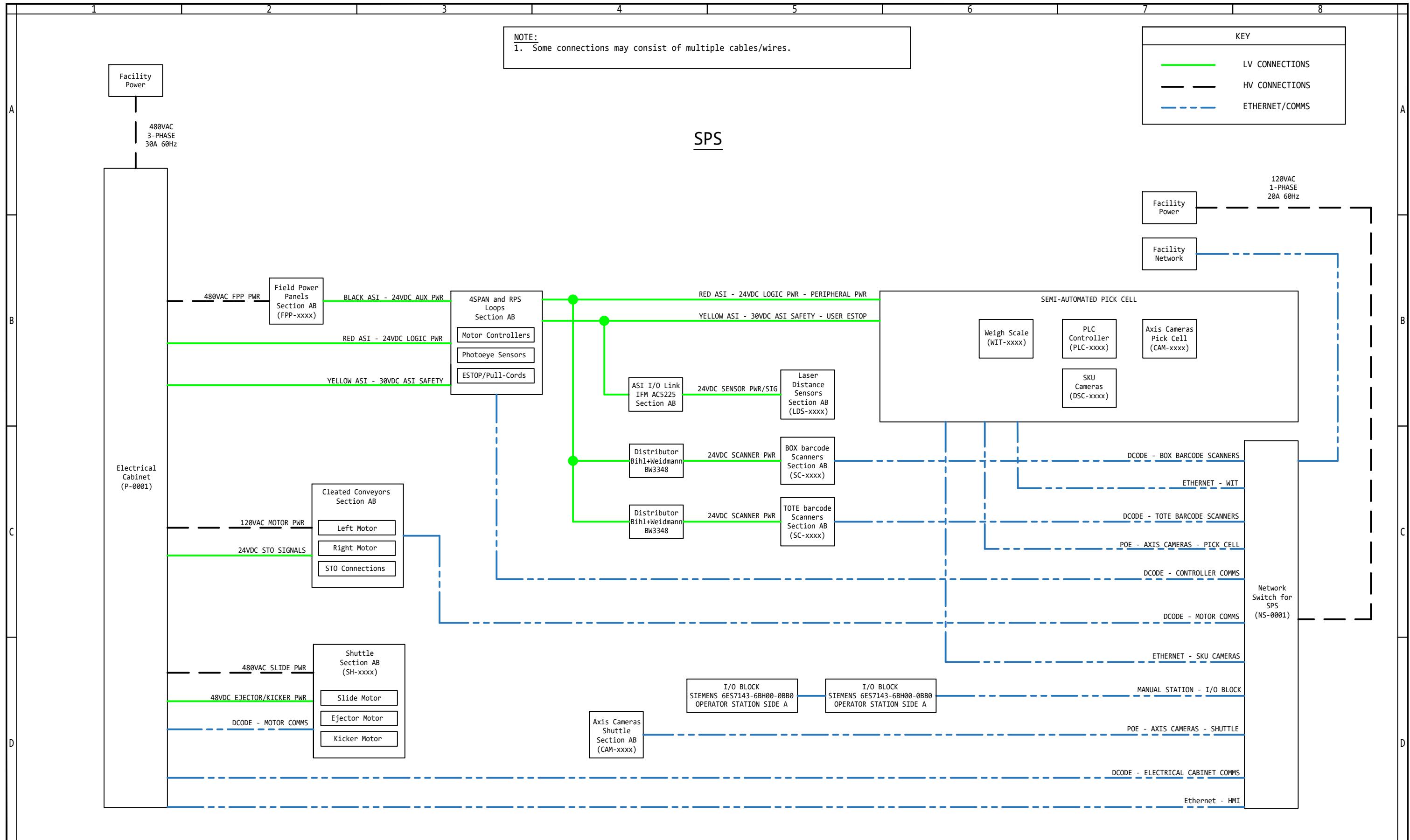
**BERKSHIRE
REY**
H ROAD
MA 01730

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	SCALE	N/A
	DRAWN	MC
	APPROVED	

BED-RPS
INTERCONNECT DRAWING PACKA
SYSTEM CABLE REFERENCE - F

REV	SECT.	DETAIL	JOB#	114600
	PREV.	02		
A	SHEET	03	DWG	SPS-03
	NEXT	10		



C		
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REV	DATE	ENGR.



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

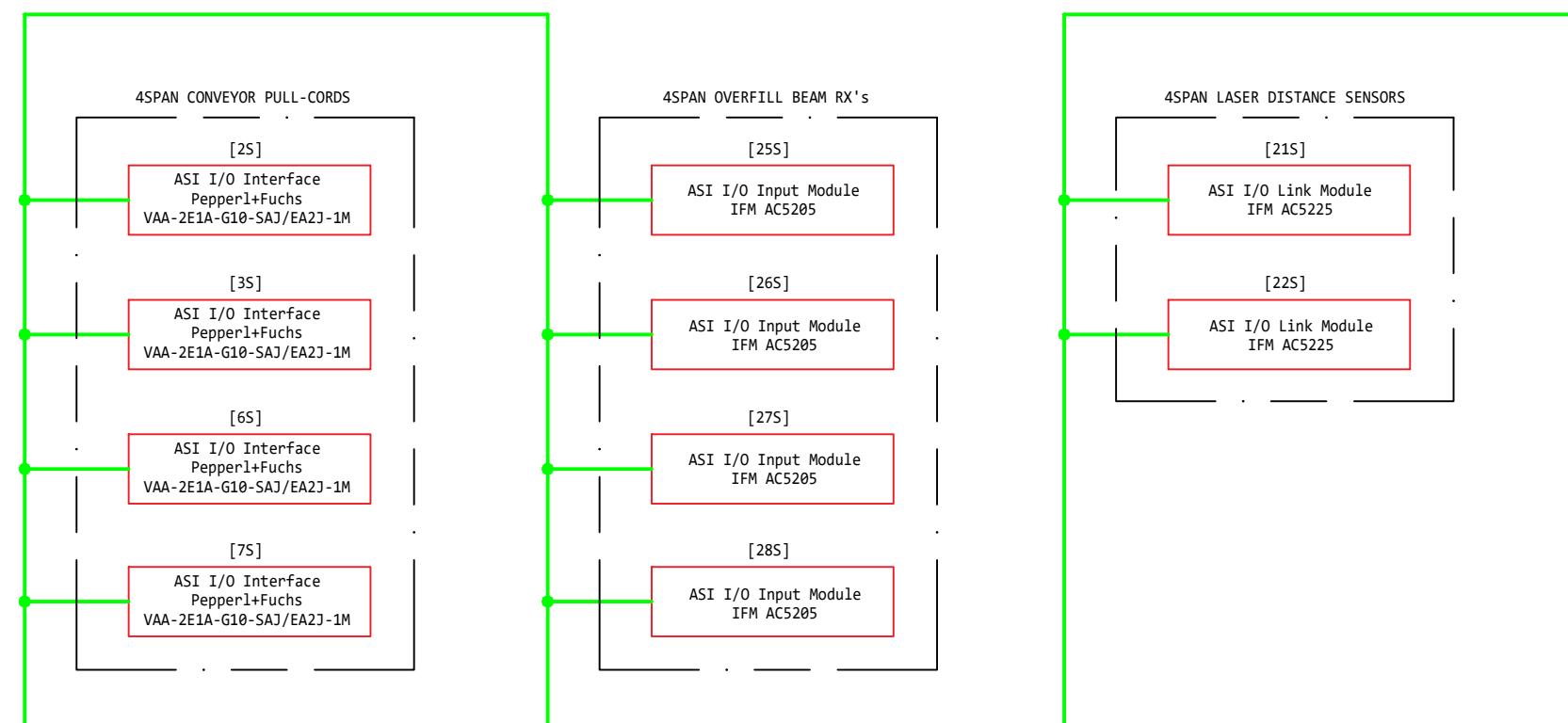
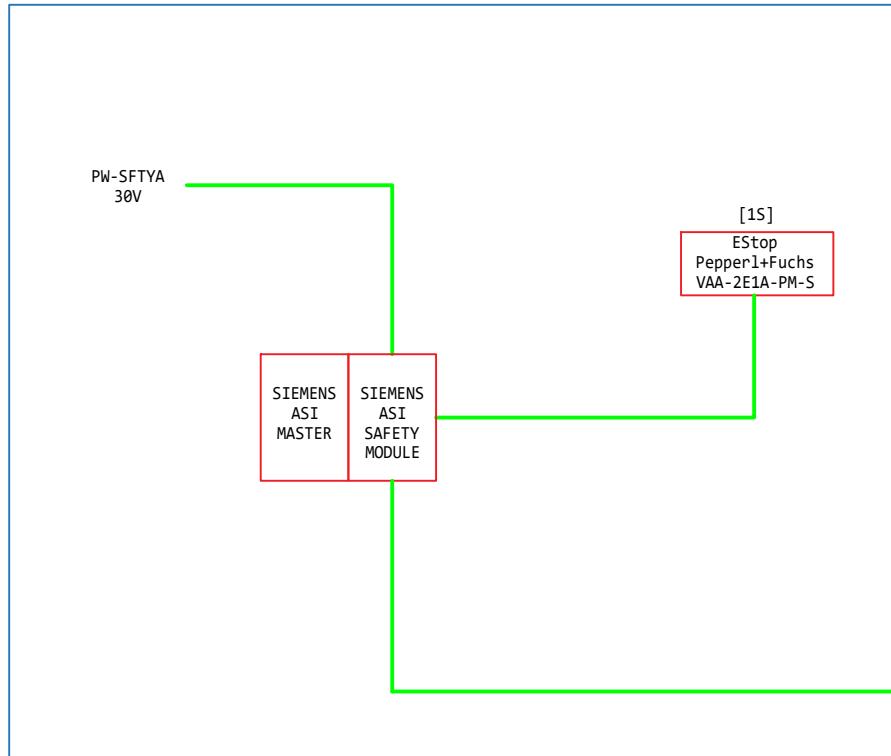
SPS
INTERCONNECT DRAWING PACKAGE
SPS SYSTEM INTERCONNECT OVERVIEW

REV	SECT.	DETAIL	JOB#
PREV.	03		114600
SHEET	10		SPS-10
NEXT	26		DWG

NOTE:
 1. ASI Safety connections use flat yellow cable.
 2. ASI addresses for each device are shown in brackets [].

A

ELECTRICAL CABINET (P-0001)



B

A

B

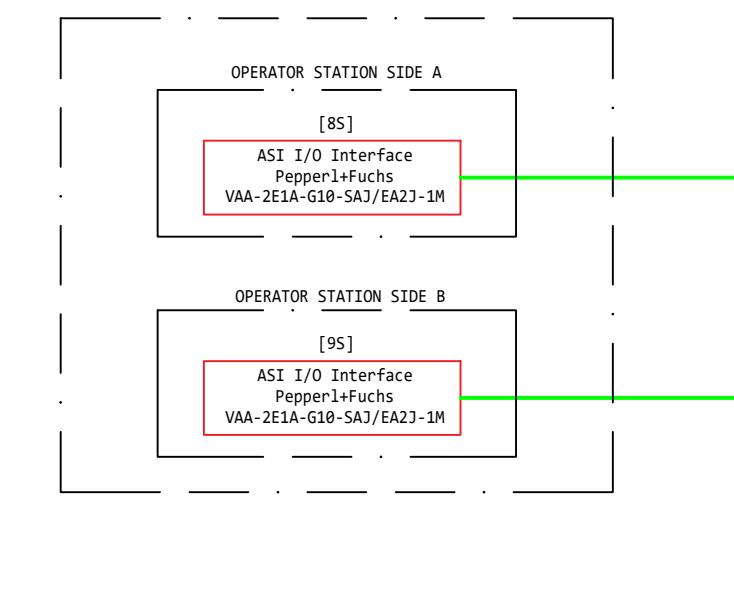
C

C

D

D

MANUAL STATION PULL-CORDS



C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS ASI CONNECTIONS - OVERVIEW

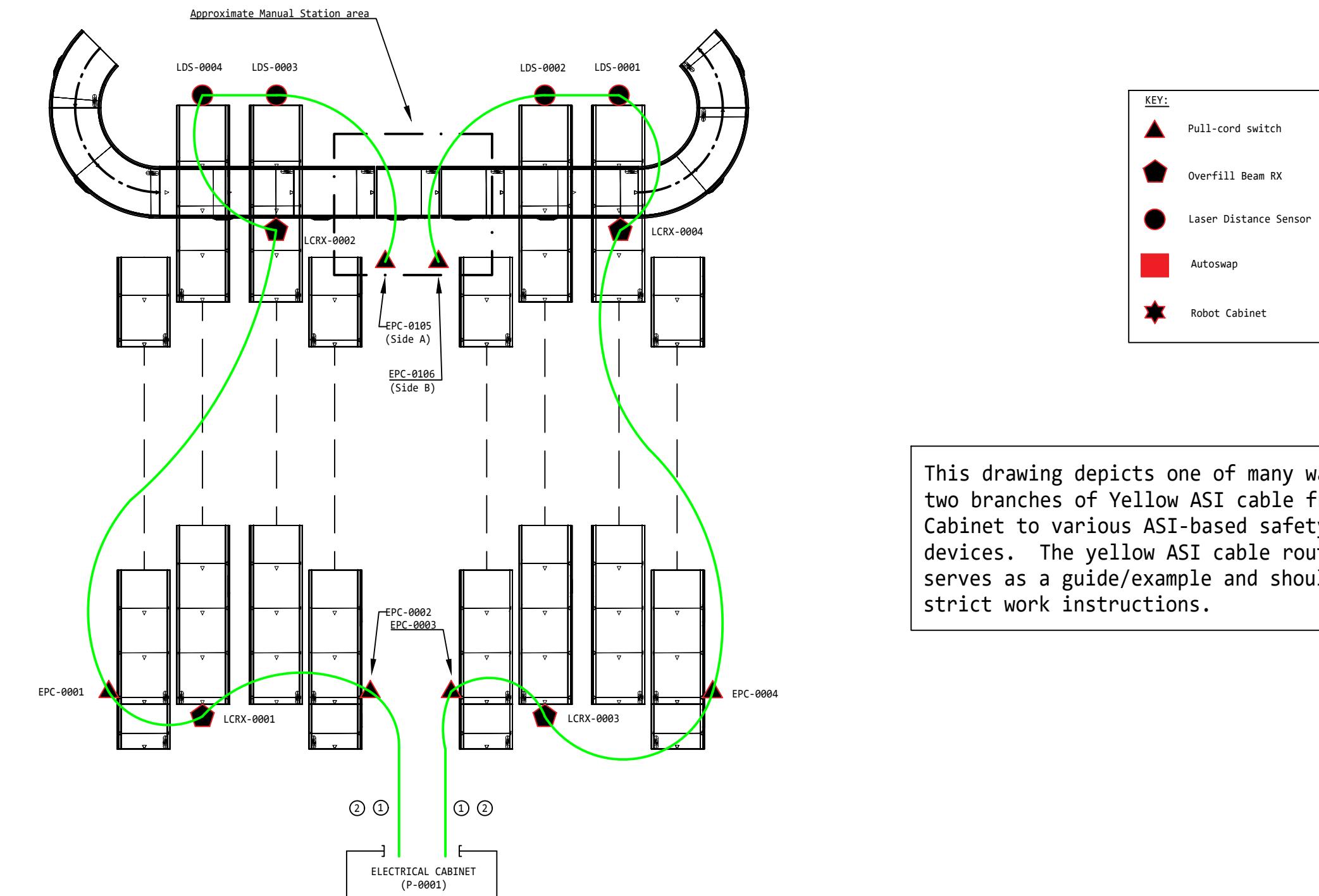
REV	SECT.	DETAIL	JOB#
PREV.	10		114600
SHEET	26		SPS-26
NEXT	27		DWG

USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.

NOTE:

1. Connections to ASI-based safety and non-safety devices use yellow ASI cables with 1.5mm² cross-section or 16AWG equivalent (16A max rated).
2. See SSR-00 ESTOP PULL-CORDS drawing for electrical cabinet connection information.
3. Refer to mechanical drawings for detailed locations of all peripherals, components, and sub-system locations.

A



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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140 SOUTH ROAD
BEDFORD, MA 01730

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DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS ASI CONNECTIONS - CABLE ROUTING

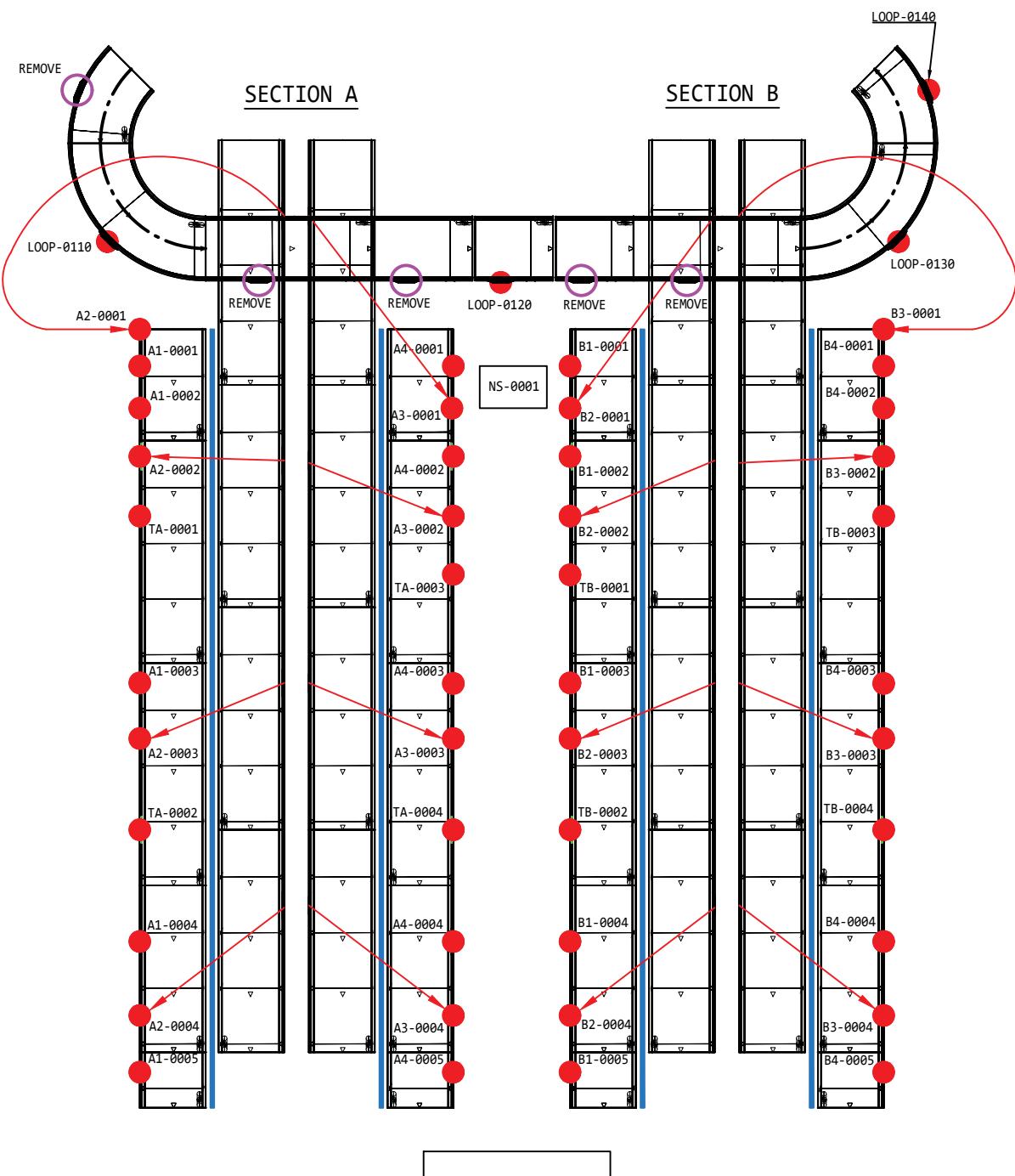
REV	SECT.	DETAIL	JOB#
PREV.	26		114600
SHEET	27		SPS-27
NEXT	29		DWG SPS-27

NOTE:

- This drawing illustrates 4SPAN and Interroll MultiControl Card naming conventions and approximate relative locations. Refer to the mechanical drawings for exact locations.
- Tx-0001, -0002, -0003, and -0004 represent Interroll MultiControl Cards for Takeaway Rollers, where x = A, B, C, or D.
- Seven Takeaway Rollers are distributed between the first two columns of conveyors and another seven Takeaway Rollers are distributed between the last two columns of conveyors, for each 4SPAN section.
- Refer to the mechanical drawings for locations of all peripherals, components, and sub-systems.
- One electrical cabinet powers two 4SPAN sections.

KEY:

- Interroll MultiControl Card
- Relocated Interroll MultiControl Card
- Takeaway Rollers - group of 7



These two 4SPAN's and one Electrical Cabinet are part of one Station.

C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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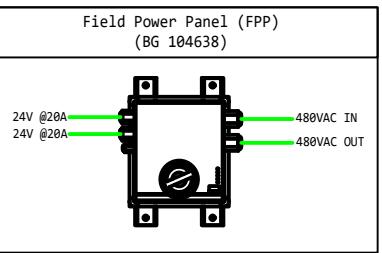
DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS 4SPAN CONVEYOR OVERVIEW

REV	SECT.	DETAIL	JOB#
	PREV.	27	114600
A	SHEET	29	
	NEXT	30	SPS-29
DWG			

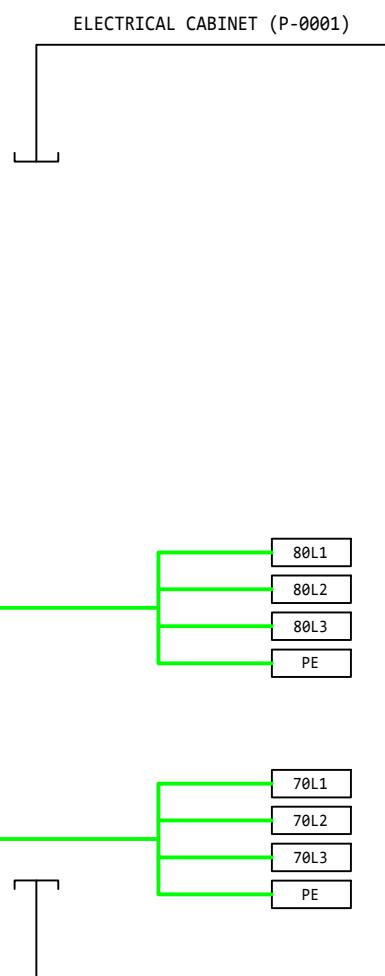
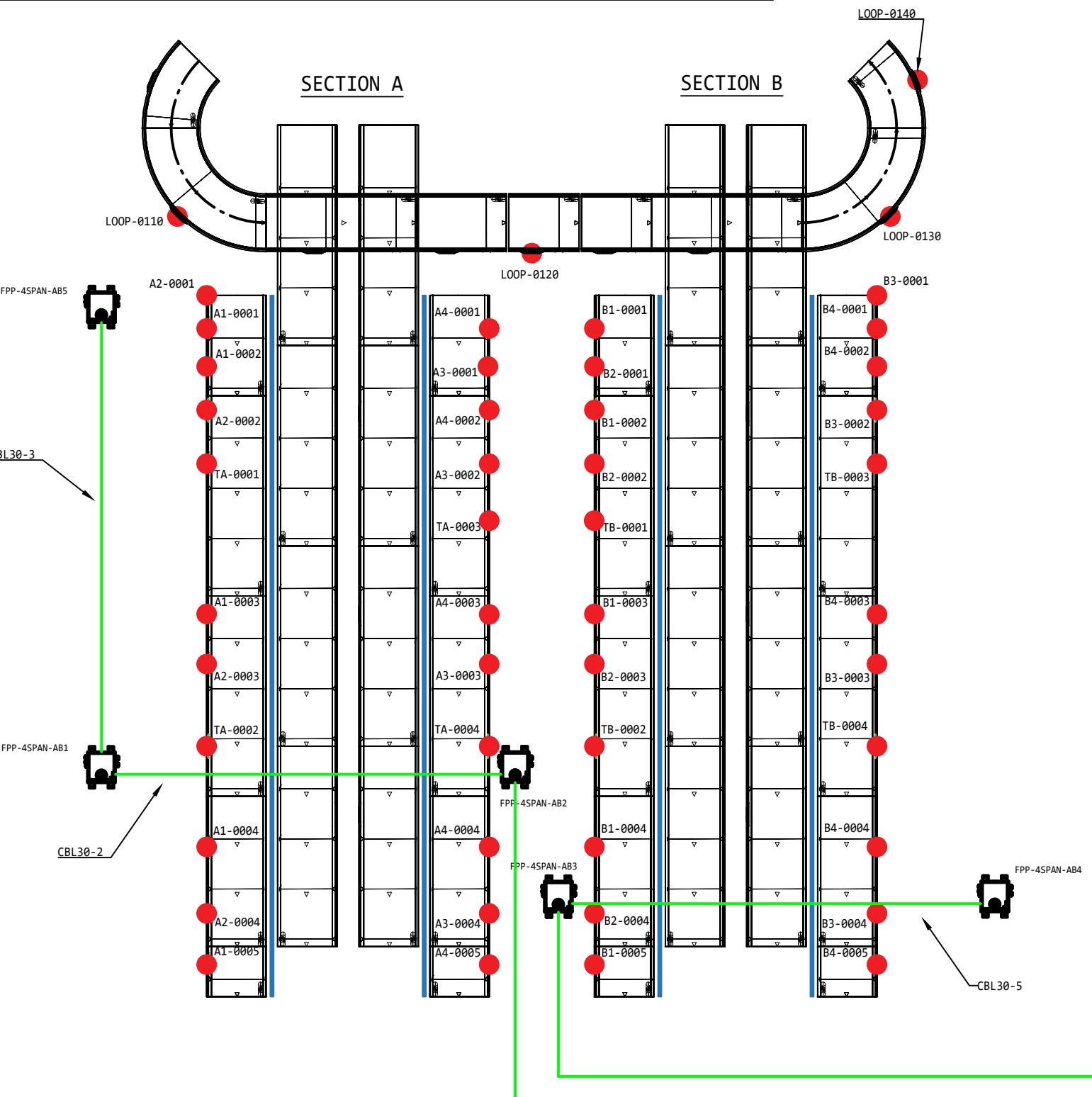
NOTE:

- Configure each Field Power Panel (FPP), approx. locations shown, with output jumpers set to 16A.
- One Electrical Cabinet will supply 480VAC for all FPP's, per 4SPAN section.
- The input power connections for the FPP's will be daisy-chained.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.



KEY:

- Interroll MultiControl Card
- Takeaway Rollers - group of 7



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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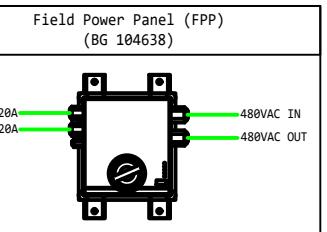
DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS 4SPAN FPP POWER - AB

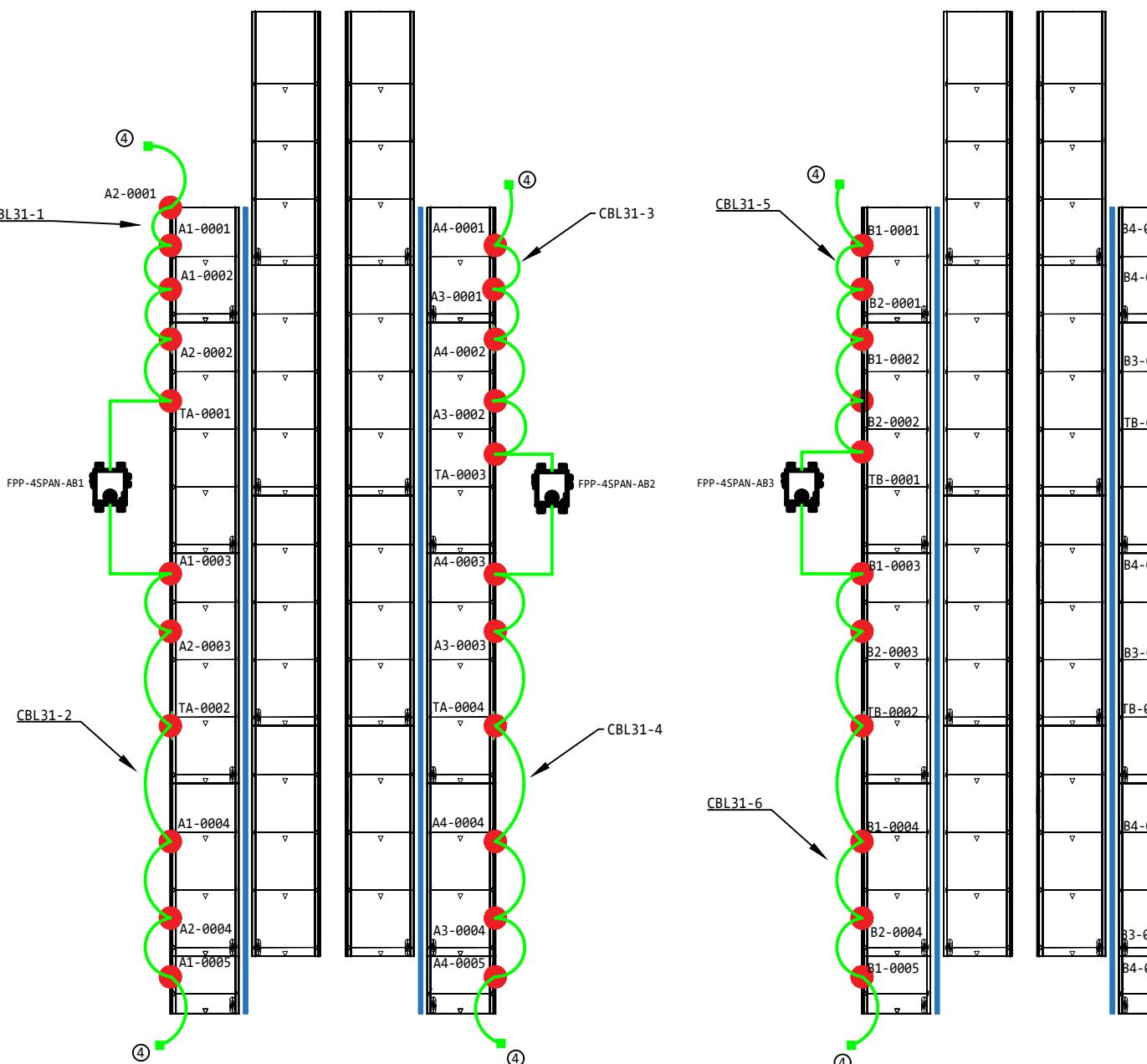
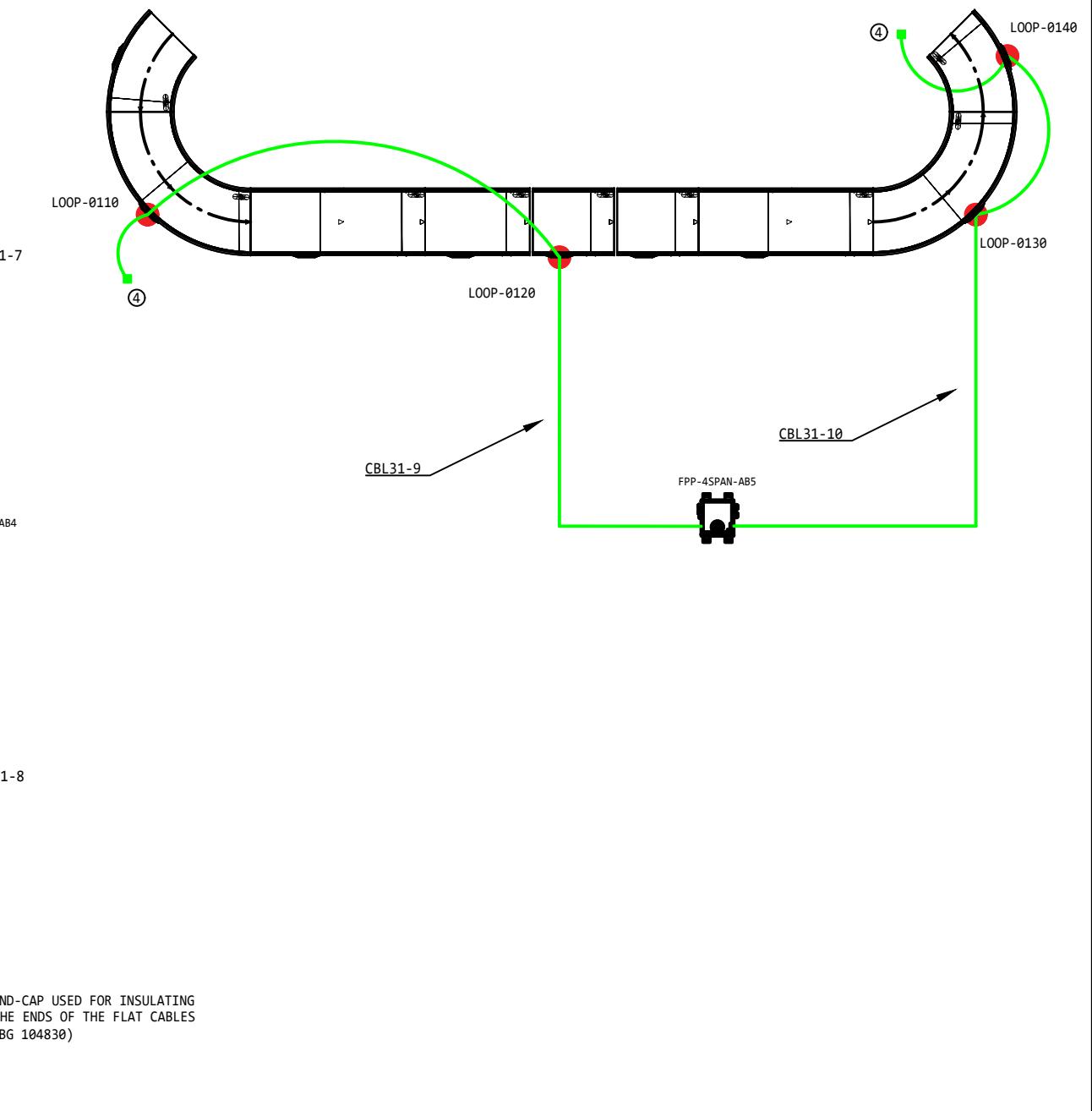
REV	SECT.	DETAIL	JOB#
A	PREV.	29	114600
	SHEET	30	
	NEXT	31	DWG SPS-30

NOTE:

- Configure each Field Power Panel (FPP) with output jumpers set to 16A. Unless specified, use 24" length Black ASI cable for FPP to ASI Splitter connections.
- Each FPP will supply two 24V 16A circuits with each circuit powering groups of conveyor drive/motor sections.
- Motor power interconnects use black ASI cables with 2.5 mm² cross-section or 14AWG equivalent (20A max rated).
- Leave approximately 12" of excess black ASI and terminate with ASI end-cap.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- Use approx. 24" length of ASI cable to connect FPP's to ASI SPLITTERS.



KEY:	
●	Interroll MultiControl Card
—	Takeaway Rollers - group of 7

SECTION A**SECTION B**

C		
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A		
REV	DATE	ENGR.



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS 4SPAN MOTOR POWER - AB

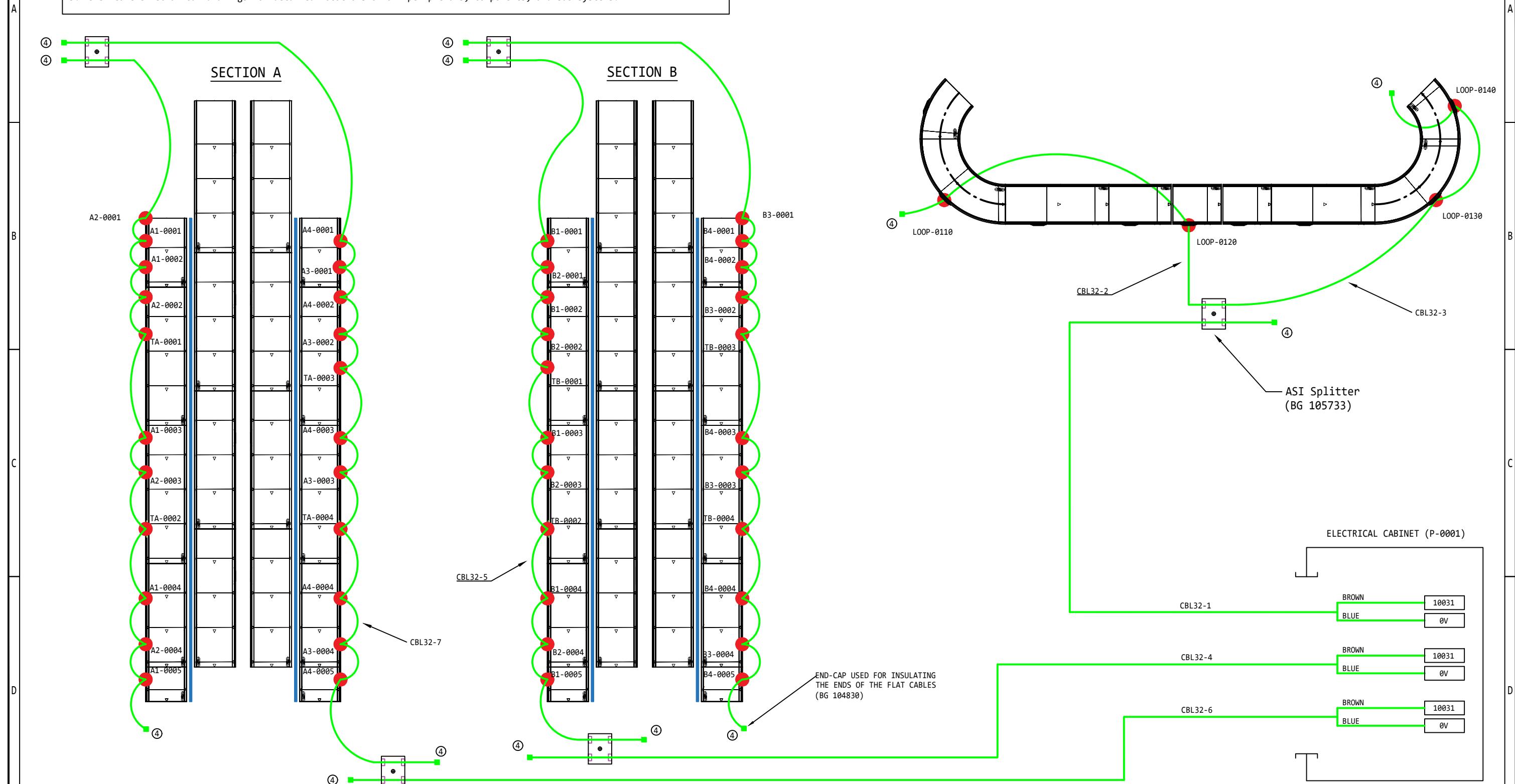
REV	SECT.	DETAIL	JOB#
	PREV.	30	114600
A	SHEET	31	SPS-31
	NEXT	32	DWG SPS-31

KEY:

- Interroll MultiControl Card
- Takeaway Rollers - group of 7

NOTE:

1. All logic power for the Interroll MultiControl Cards will come from the electrical cabinet.
2. The logic power is sourced from the non-estop circuit in the electrical cabinet.
3. Logic power interconnects use red ASI cables with 1.5 mm² cross-section or 16AWG equivalent (16A max rated).
4. Leave approximately 12" excess of red ASI and terminate with ASI end-cap.
5. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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140 SOUTH ROAD
BEDFORD, MA 01730

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DRAWN	MC
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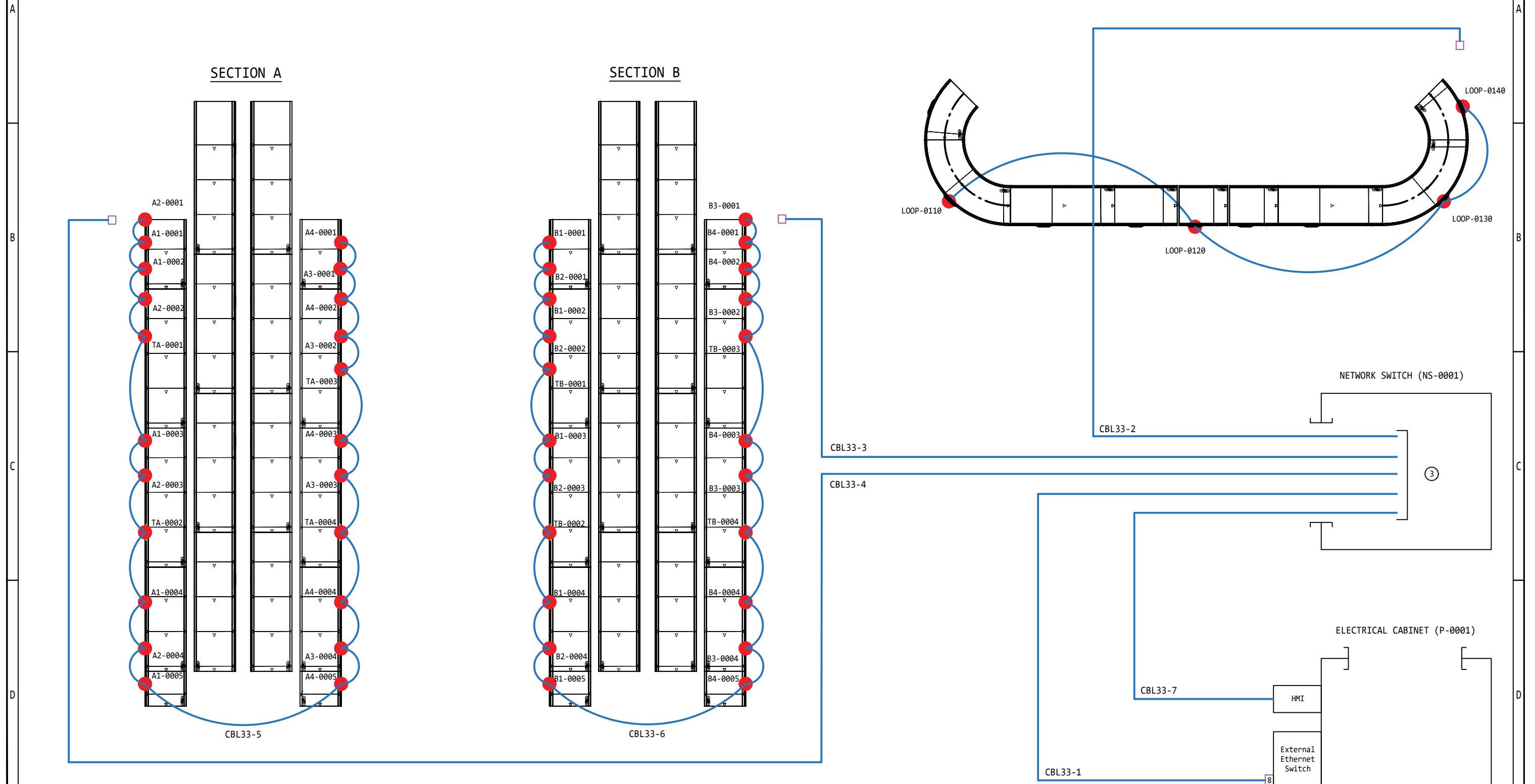
SPS
INTERCONNECT DRAWING PACKAGE
SPS 4SPAN LOGIC POWER - AB

REV	SECT.	DETAIL	JOB#
A	PREV.	31	114600
	SHEET	32	
	NEXT	33	DWG SPS-32

NOTE:

- All communication connections for the Interroll MultiControl Cards will come from the electrical cabinet via an external Ethernet switch.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- Refer to the DevOps network document for port assignment details.

KEY:

 Interroll MultiControl Card


C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



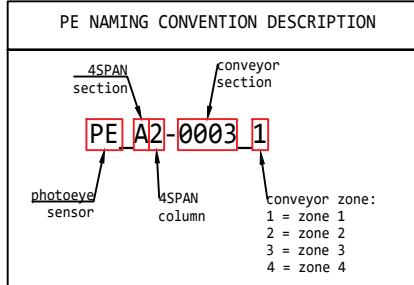
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SCALE	N/A
DRAWN	MC
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SPS
INTERCONNECT DRAWING PACKAGE
SPS 4SPAN COMMUNICATION - AB

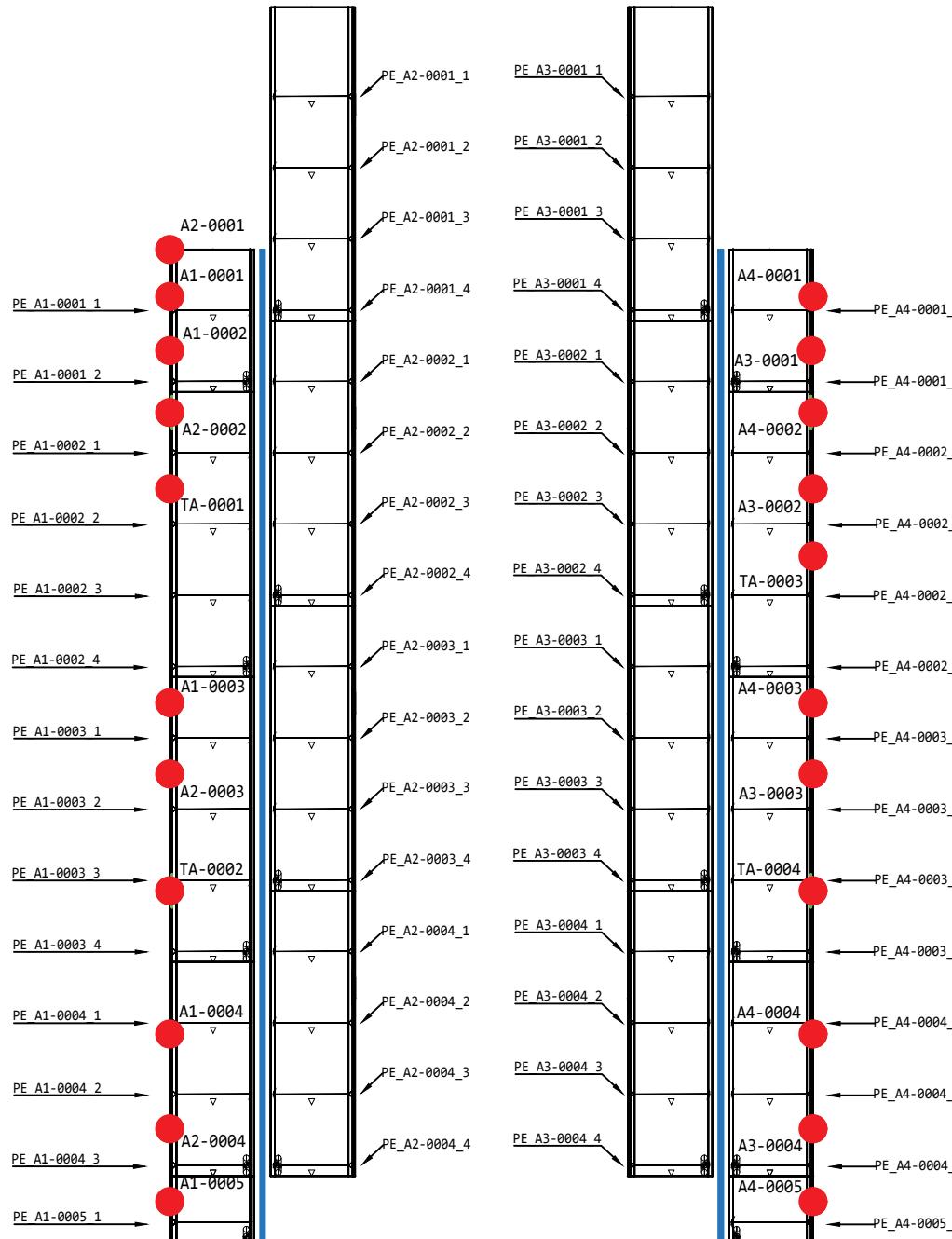
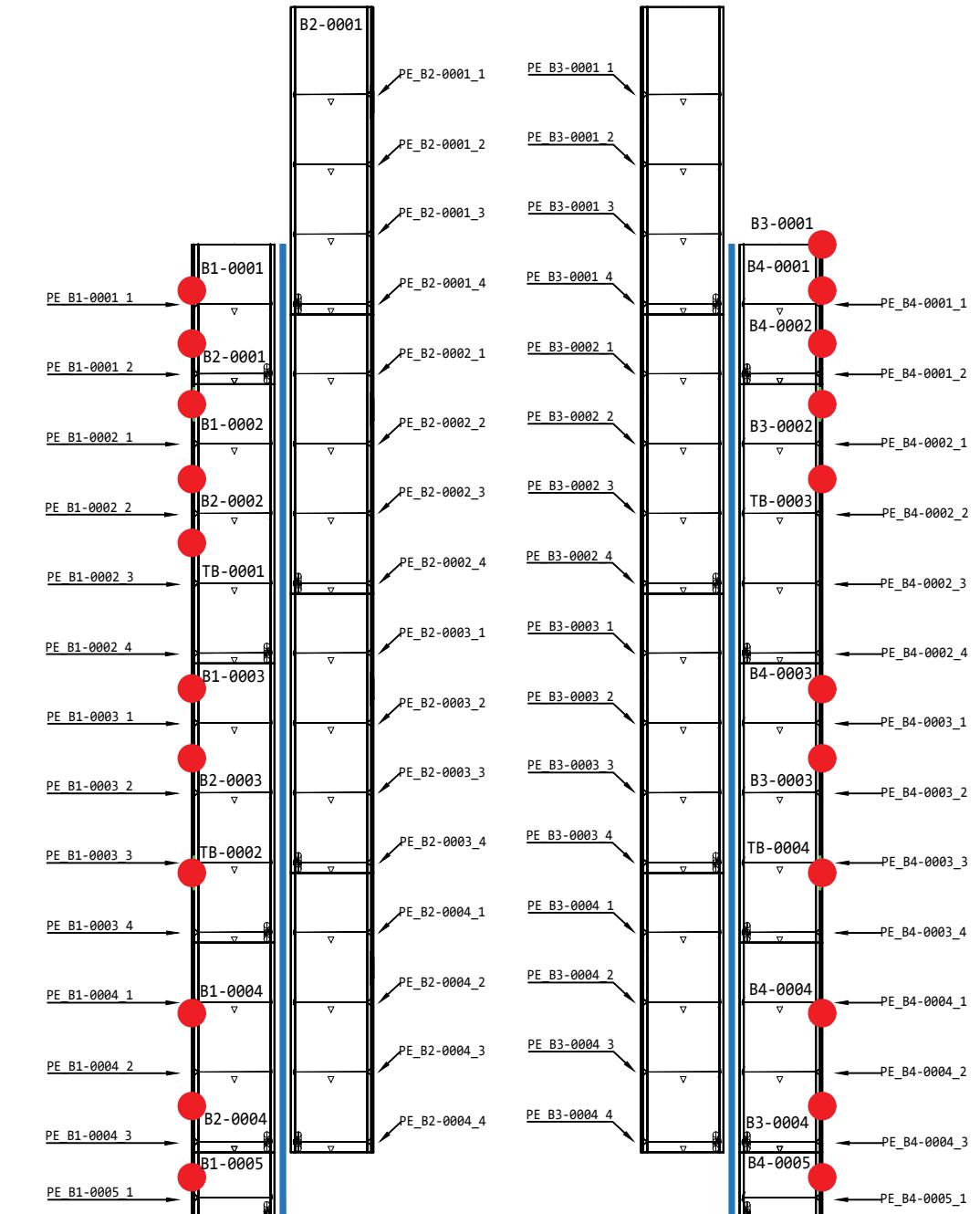
REV		SECT.	DETAIL	JOB#
		PREV.	32	114600
		SHEET	33	
		NEXT	34	DWG SPS-33

NOTE:
 1. Drawing shows naming convention and relative locations for photoeye (PE) sensors.
 2. Refer to mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
 3. All photoeye sensors and cables should be labeled per drawing.



KEY:

- Interroll MultiControl Card
- Takeaway Rollers - group of 7
- ↔ PE Sensor

SECTION A**SECTION B**

A

A

B

B

C

C

D

D

C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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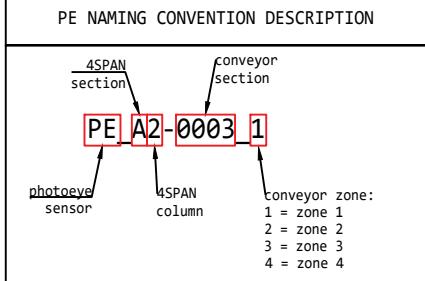
DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS 4SPAN PE SENSORS - AB

REV	SECT.	DETAIL	JOB#
PREV.	33		114600
SHEET	34		SPS-34

NEXT 35 DWG SPS-34

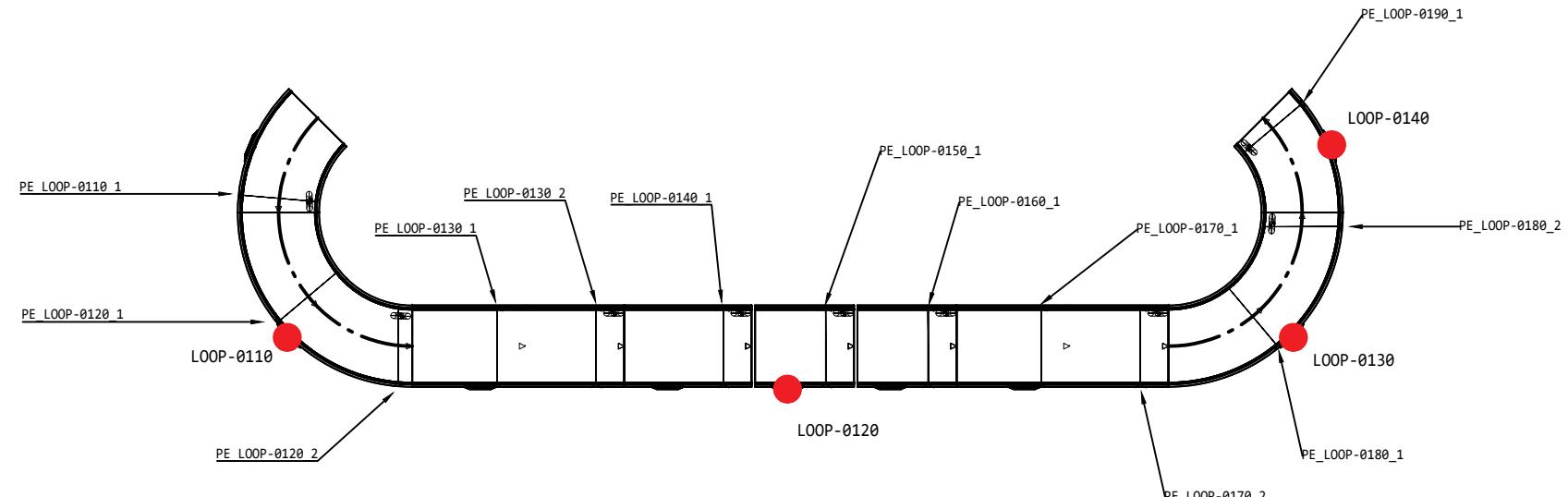
NOTE:
 1. All communication connections for the Interroll MultiControl Cards will come from the electrical cabinet via an external Ethernet switch.
 2. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.



KEY:

- Interroll MultiControl Card
- Takeaway Rollers - group of 7
- ↔ PE Sensor

HIGHWAY LOOP - SECTION AB



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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140 SOUTH ROAD
BEDFORD, MA 01730

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SPS
INTERCONNECT DRAWING PACKAGE
SPS HIGHWAY LOOP PE SENSORS - AB

REV	SECT.	DETAIL	JOB#
	PREV.	34	114600
A	SHEET	35	
	NEXT	36	DWG SPS-35

A

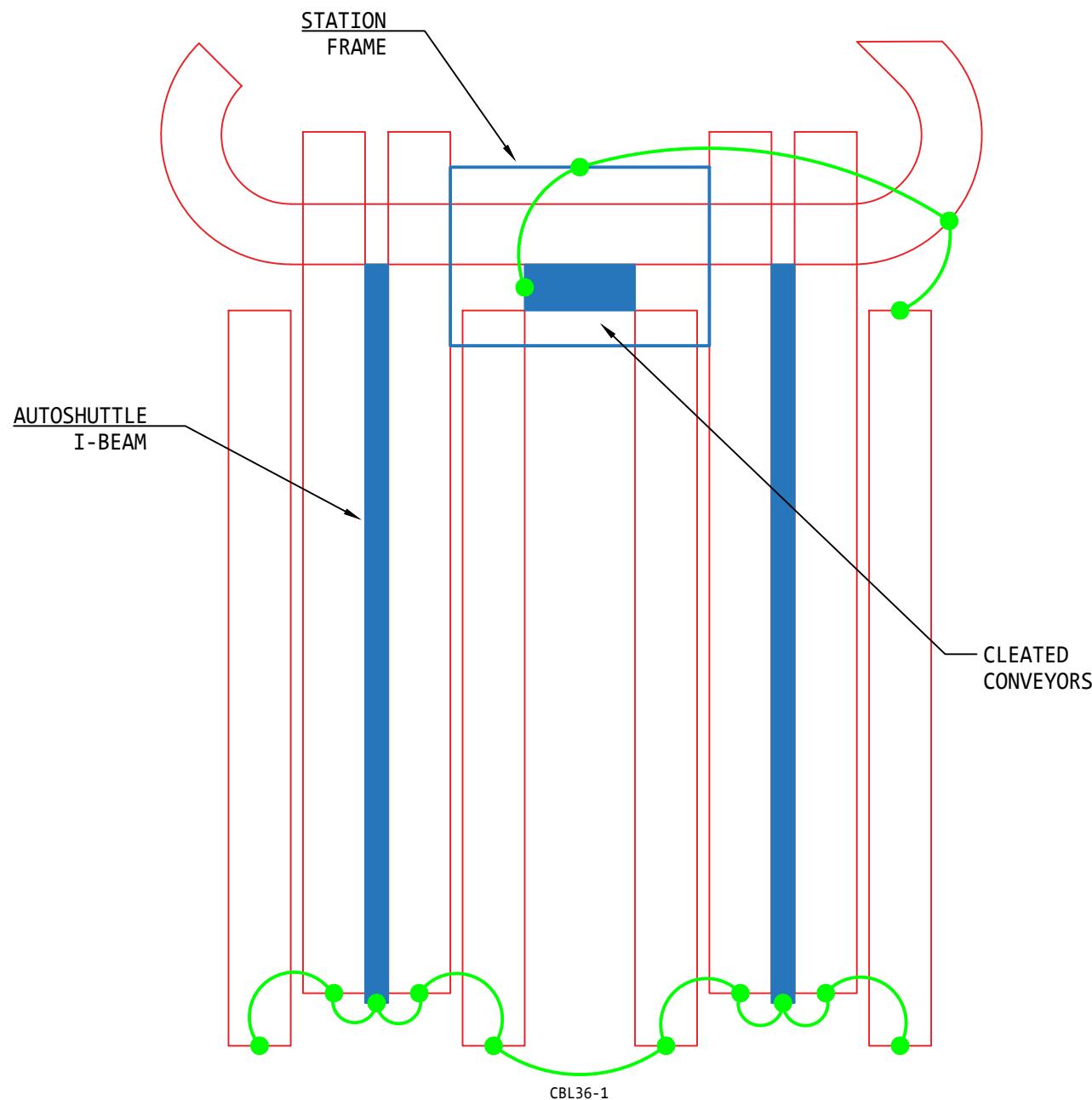
NOTE:

1. Refer to the mechanical drawings for detailed peripheral, components, and sub-system locations.
2. Cut bonding cables with approximately 2" excess in length when terminating at the screw lugs.

KEY	
●	Bonding Screw Lug
—	Bonding Cable 8AWG

A

B



C

GENERAL PROCEDURE:

1. Approximate locations are shown for the bonding screw lugs. Refer to the mechanical drawings for detailed locations.
2. Locate an available through-hole on the metal structure, sized appropriately for the bonding screw lug. If none available, then drill the necessary size hole on the structure.
3. Use a file or sandpaper to remove any paint or coating such that a clean, flat metal surface is exposed to ensure optimal electrical contact with the bonding screw lug.
4. Install the bonding screw lug and verify that it is mechanically secured and rigid in-place.
5. Cut bonding cable to various needed lengths.
6. When installing the bonding cable(s) through the bonding screw lug, make sure to tighten the set-screw and verify that the cable(s) is mechanically secured.

B

D

C

D

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

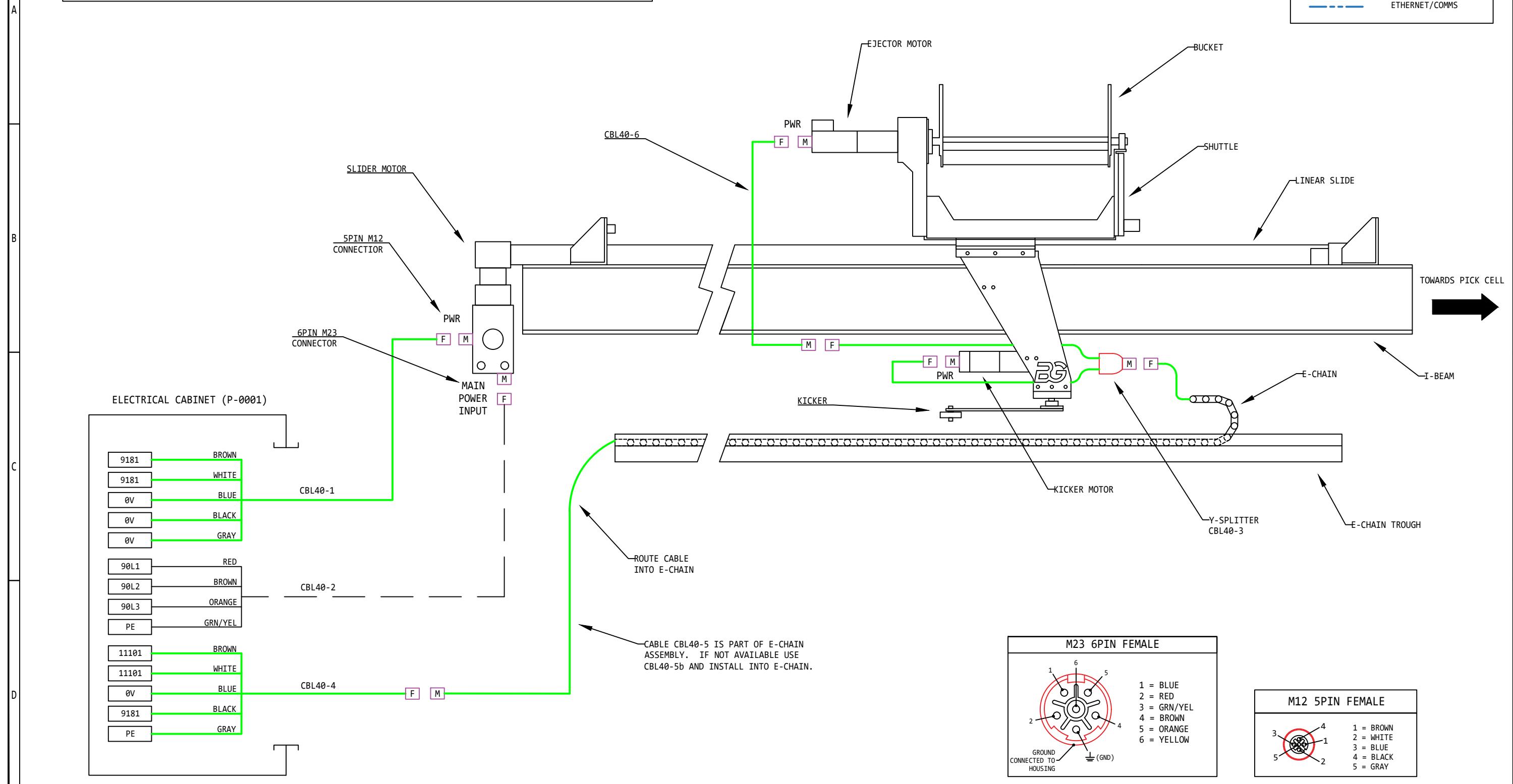
SPS
INTERCONNECT DRAWING PACKAGE
SPS STATION BONDING

REV	SECT.	DETAIL	JOB#
PREV.	35		114600
SHEET	36		
NEXT	40		SPS-36
DWG			

NOTE:
 1. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
 2. Cut and insulate unused flying lead wires.
 3. The 480VAC and 48VDC are part of the E-STOPPED branch circuit.
 4. The 24VDC is part of the NON E-STOPPED branch circuit.

SIDE VIEW OF AUTO SHUTTLE (ASH-0001A)

KEY		
	LV CONNECTIONS	
	HV CONNECTIONS	
	ETHERNET/COMMS	



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



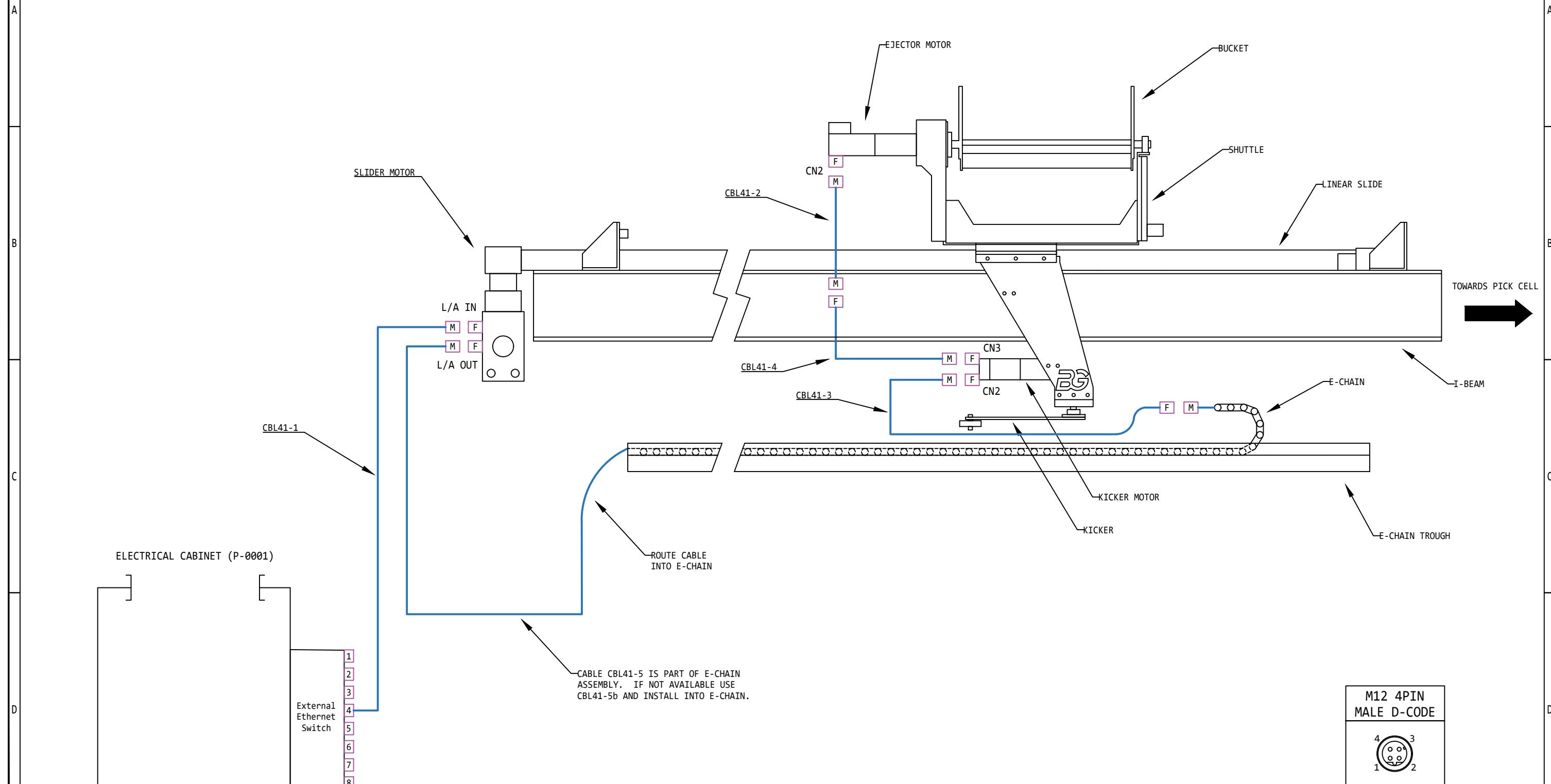
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DRAWN	MC
APPROVED	

SPS
 INTERCONNECT DRAWING PACKAGE
 SPS AUTO SHUTTLE A - MOTOR MAIN AND LOGIC PWR

REV	SECT.	DETAIL	JOB#
	PREV.	36	114600
A	SHEET	40	SPS-40
	NEXT	41	DWG SPS-40

NOTE:
1. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.

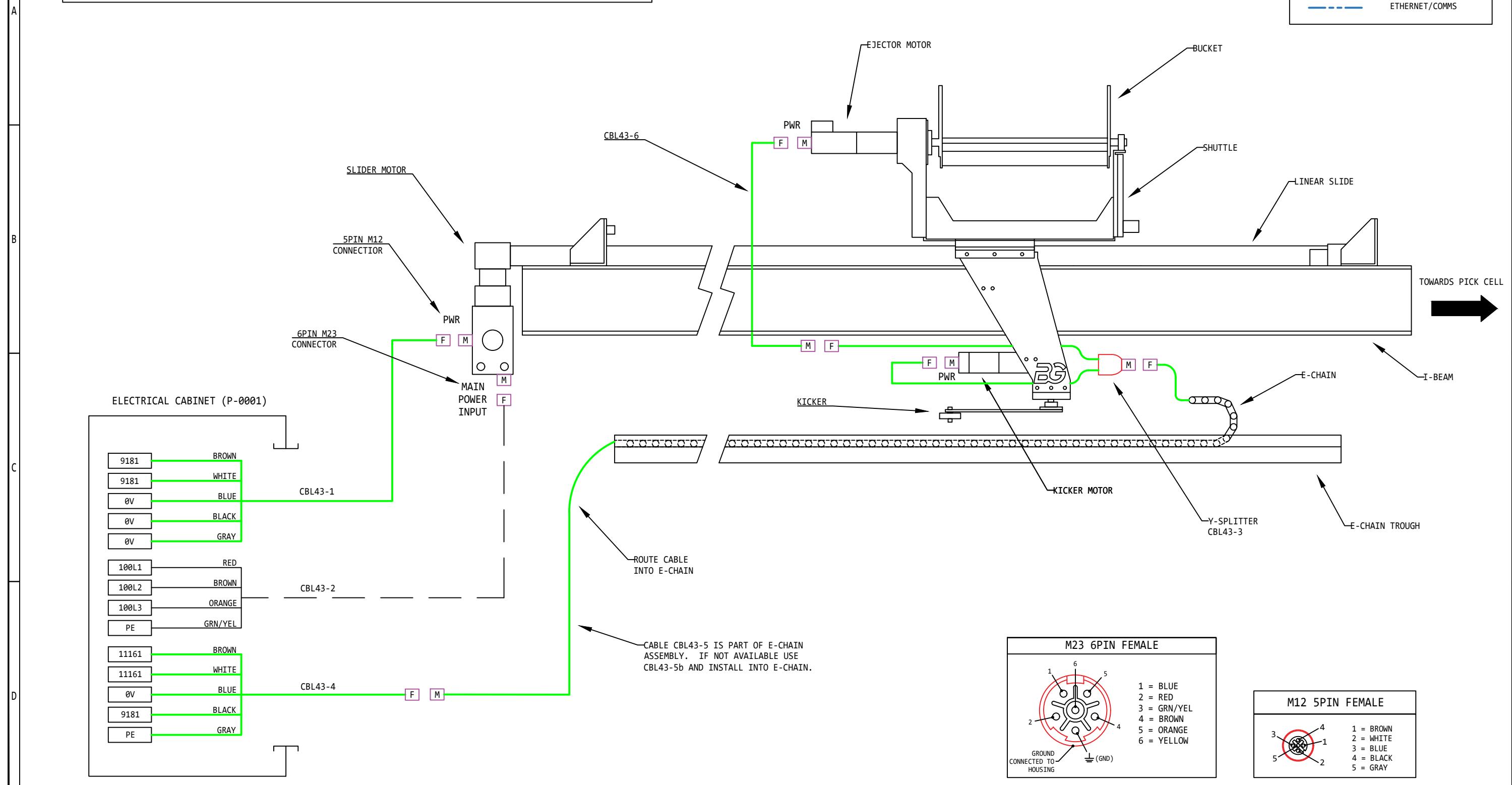
SIDE VIEW OF AUTO SHUTTLE (ASH-0001A)


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B				140 SOUTH ROAD BEDFORD, MA 01730		SCALE N/A	SPS AUTO SHUTTLE A - MOTOR COMMUNICATION	REV A	SECT. NEXT 43	DETAIL DWG SPS-41	
A						DRAWN MC			<th></th>		
REV	DATE	ENGR.	DESCRIPTION			APPROVED					

NOTE:
 1. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
 2. Cut and insulate unused flying lead wires.
 3. The 480VAC and 48VDC are part of the E-STOPPED branch circuit.
 4. The 24VDC is part of the NON E-STOPPED branch circuit.

SIDE VIEW OF AUTO SHUTTLE (ASH-0001B)

KEY		
	LV CONNECTIONS	
	HV CONNECTIONS	
	ETHERNET/COMMS	



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



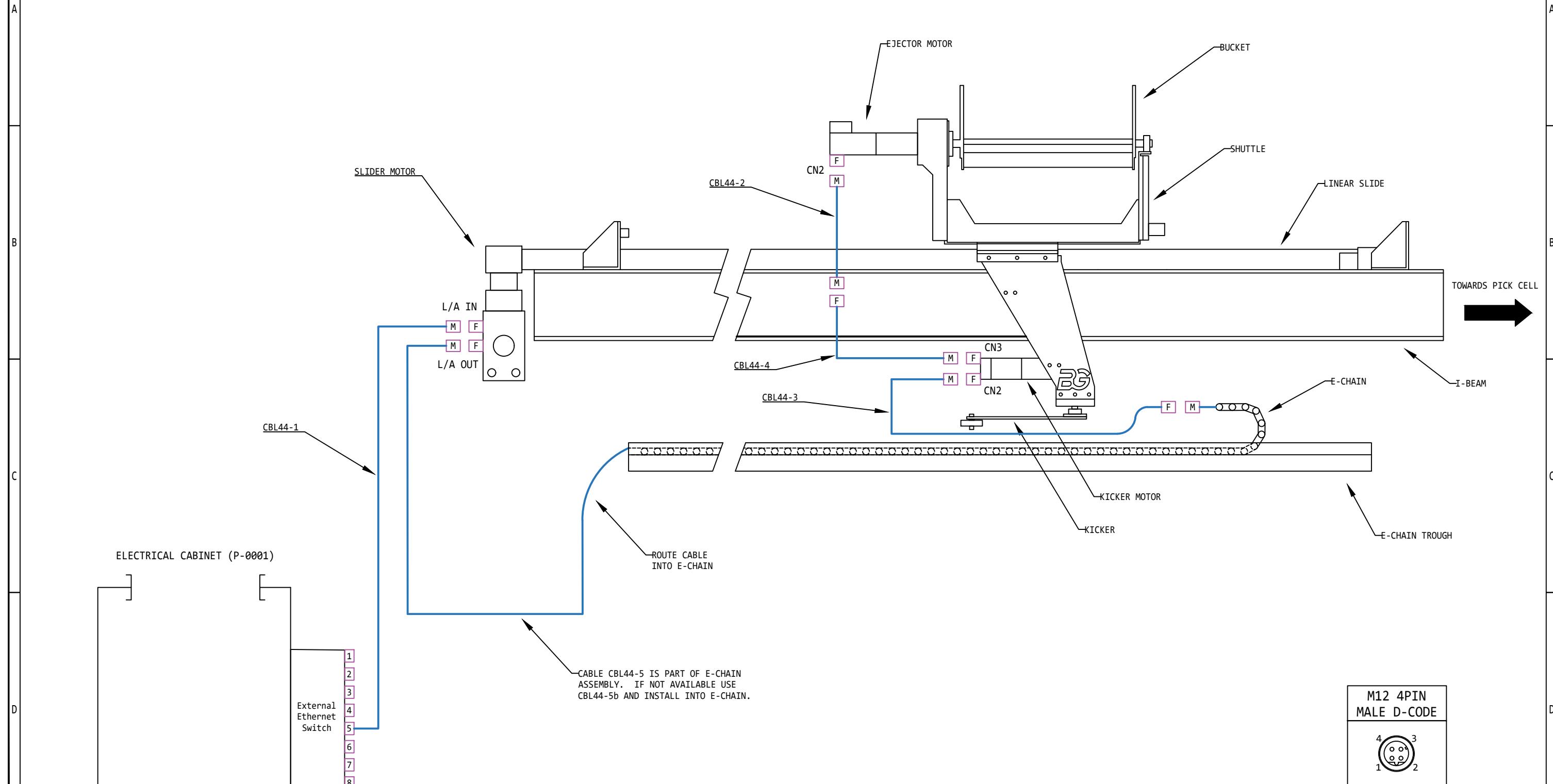
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DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS AUTO SHUTTLE B - MOTOR MAIN AND LOGIC PWR

REV	SECT.	DETAIL	JOB#
	PREV.	41	114600
A	SHEET	43	SPS-43
	NEXT	44	DWG SPS-43

NOTE:
1. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.

SIDE VIEW OF AUTO SHUTTLE (ASH-0001B)


C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS AUTO SHUTTLE B - MOTOR COMMUNICATION

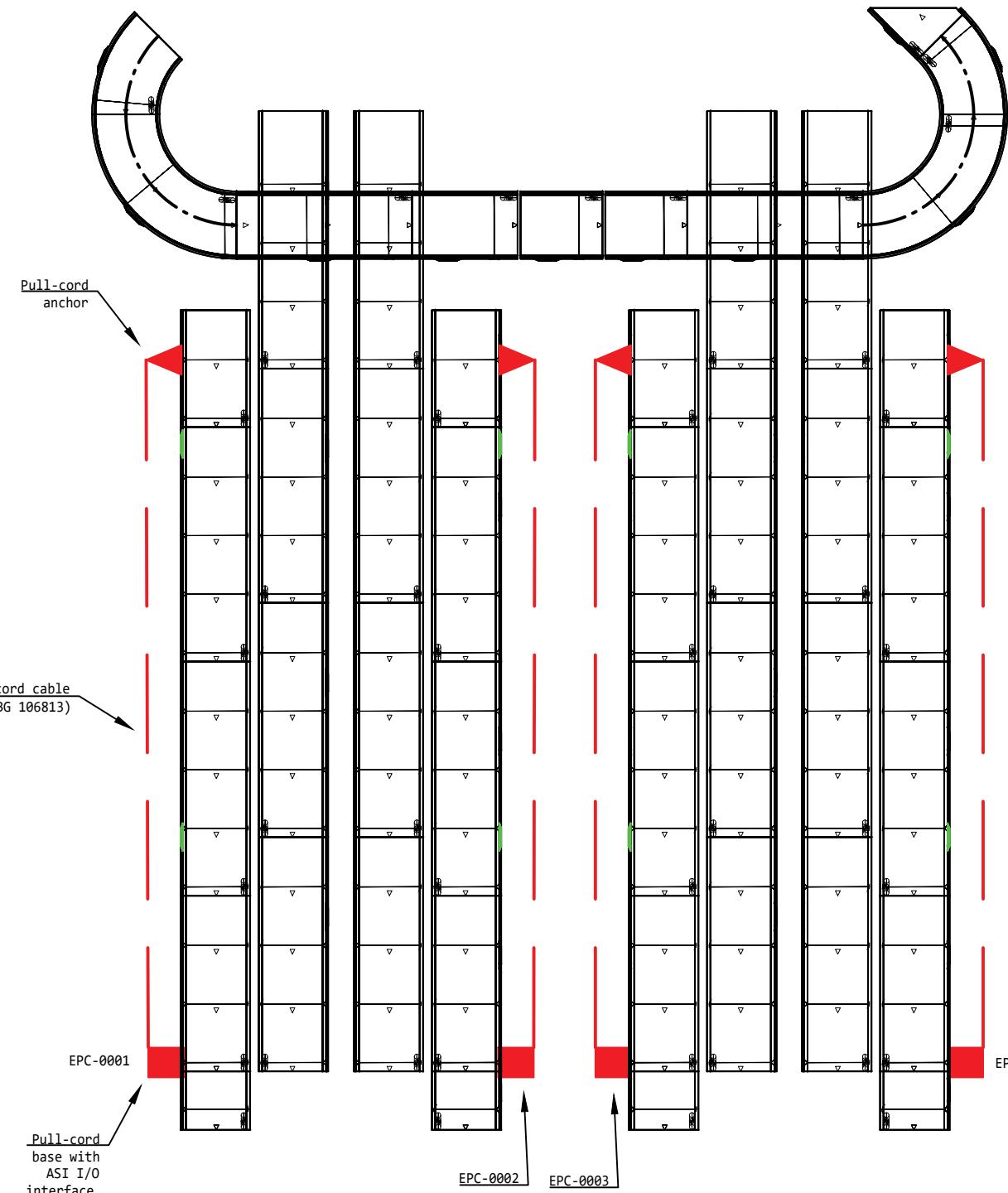
REV	SECT.	DETAIL	JOB#
43	PREV.		114600
44	SHEET		
51	NEXT		SPS-44

USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.



NOTE:

1. Connections to ASI I/O Link Modules use yellow ASI cables with 1.5mm² cross-section or 16AWG equivalent (16A max rated).
2. ASI I/O Interface module (BG 102475).
3. Refer to the SAFETY ZONE - PULL CORD DEVICE WIRING DETAILS - SINGLE drawing.
4. Refer to mechanical drawings for detailed locations of peripherals, components, and sub-systems.
5. Yellow ASI cable continues to other devices and sub-systems, if not, then terminate with ASI end-caps (BG 104830).
6. Pull-Cord Switch Base (BG 103788).

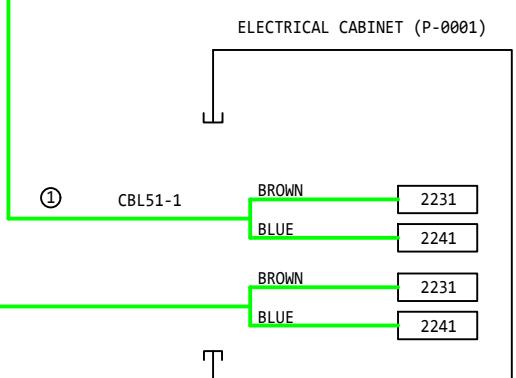
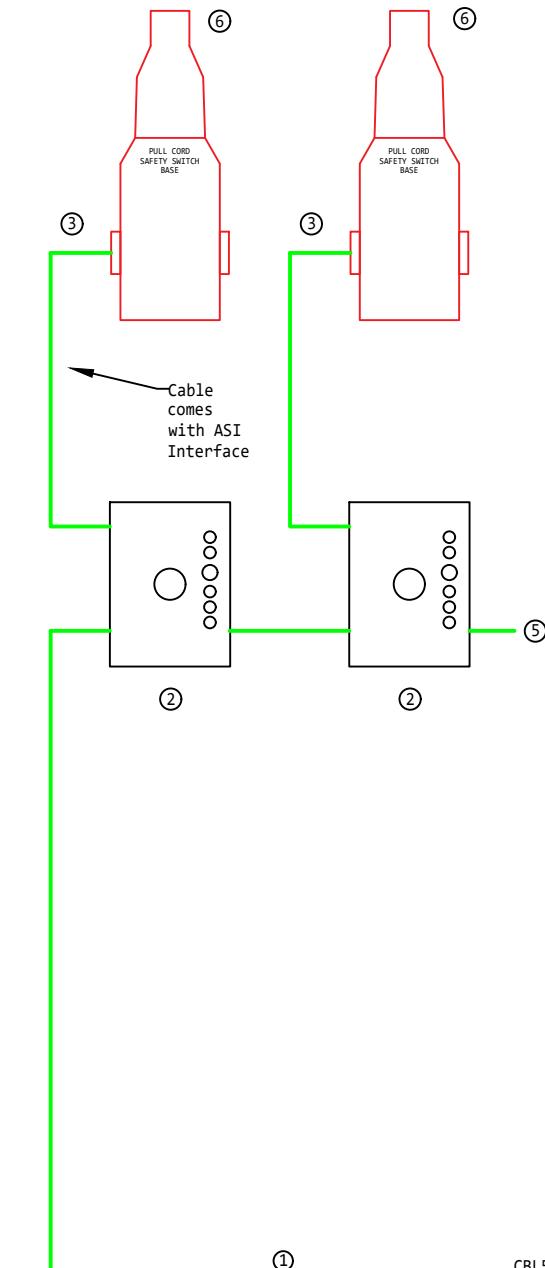


EPC-0002

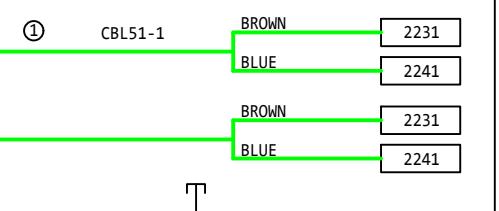
EPC-0001

EPC-0003

EPC-0004



ELECTRICAL CABINET (P-001)



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS ESTOP PULL-CORDS

REV	SECT.	DETAIL	JOB#
A	PREV.	44	114600
A	SHEET	51	SPS-51
	NEXT	52	DWG

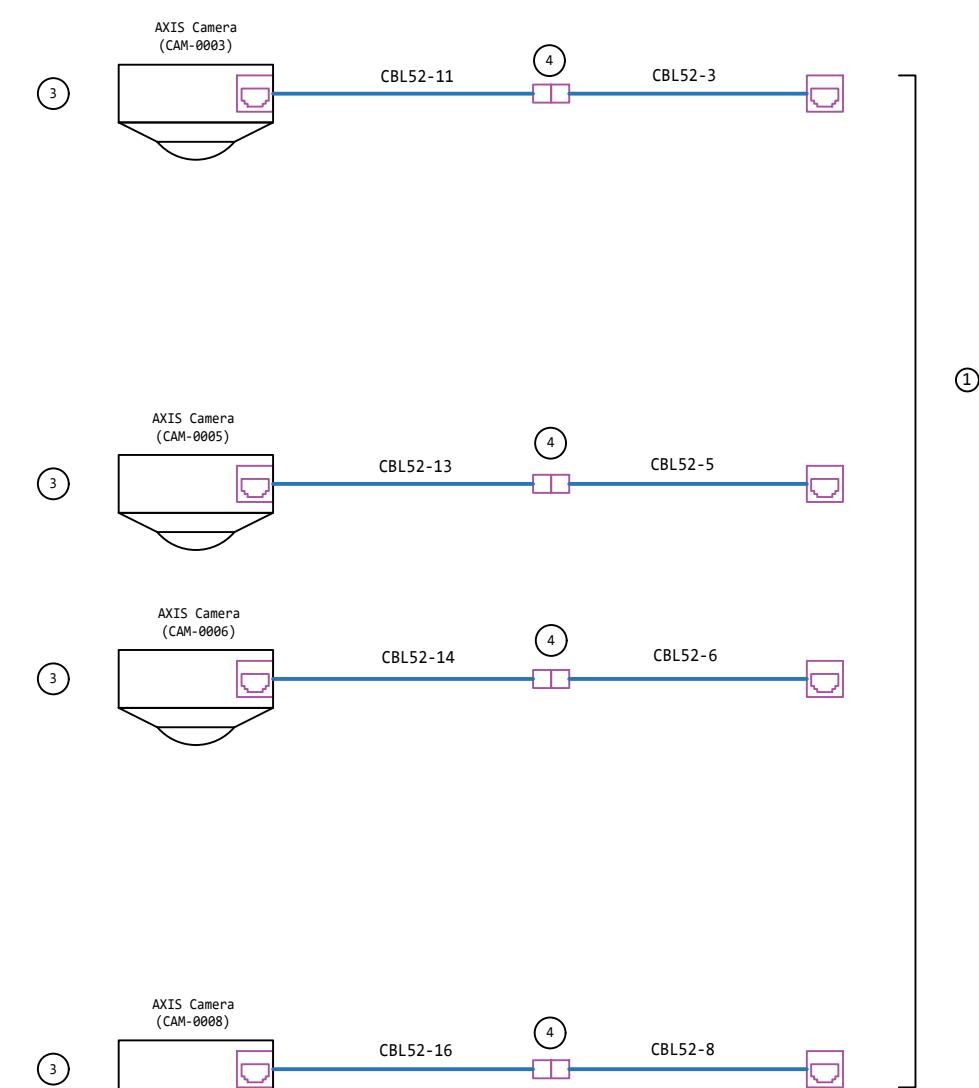
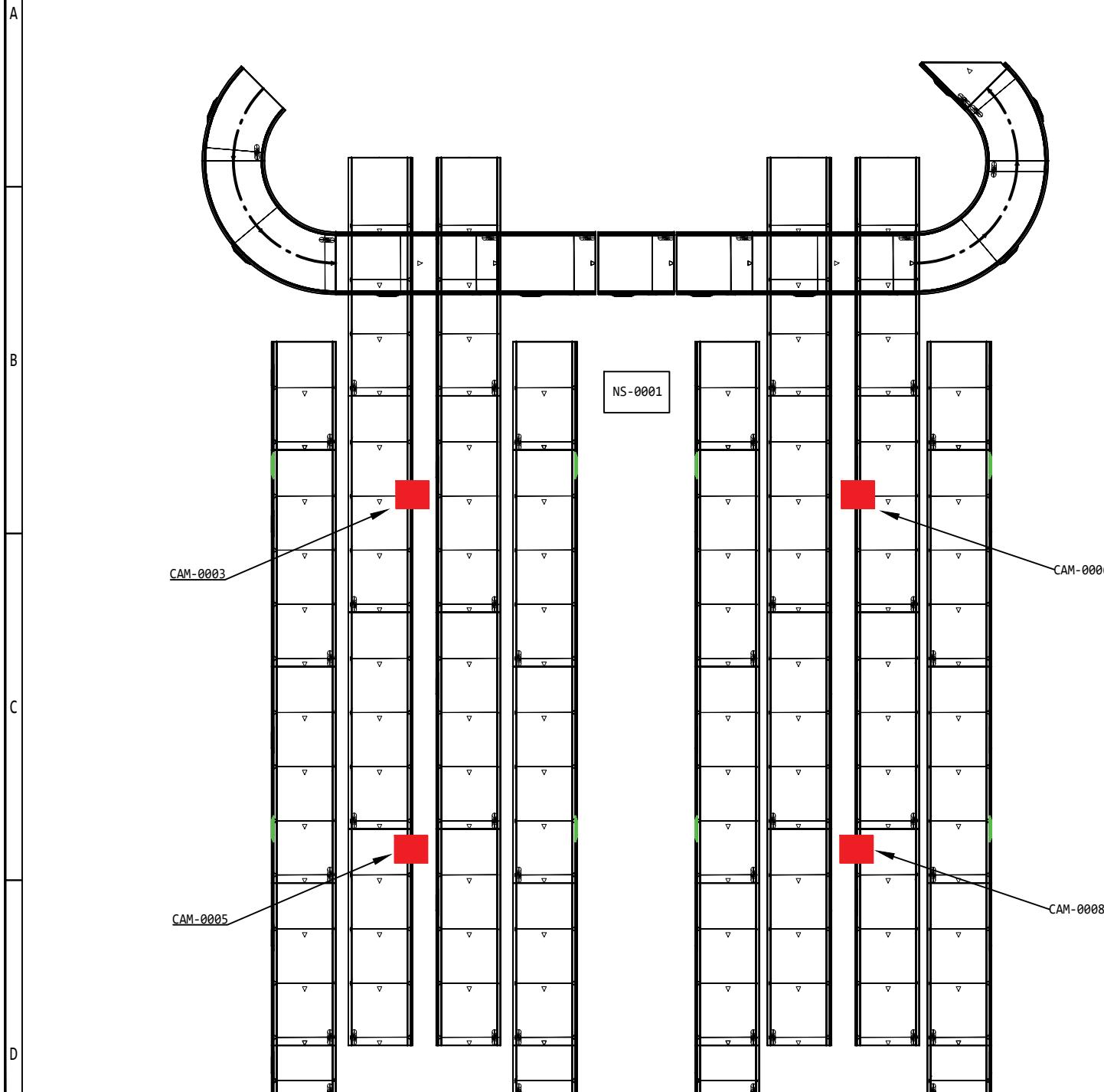
1 2 3 4 5 6 7 8

USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.



NOTE:
1. Refer to SPS-00 Network Switch Interconnect drawing.
2. POE Connections.
3. Refer to mechanical drawings for device location.
4. CAT6A Ethernet coupler - BG 109768.

NETWORK SWITCH (NS-0001)



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



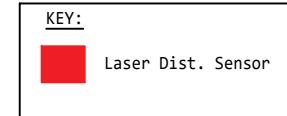
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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

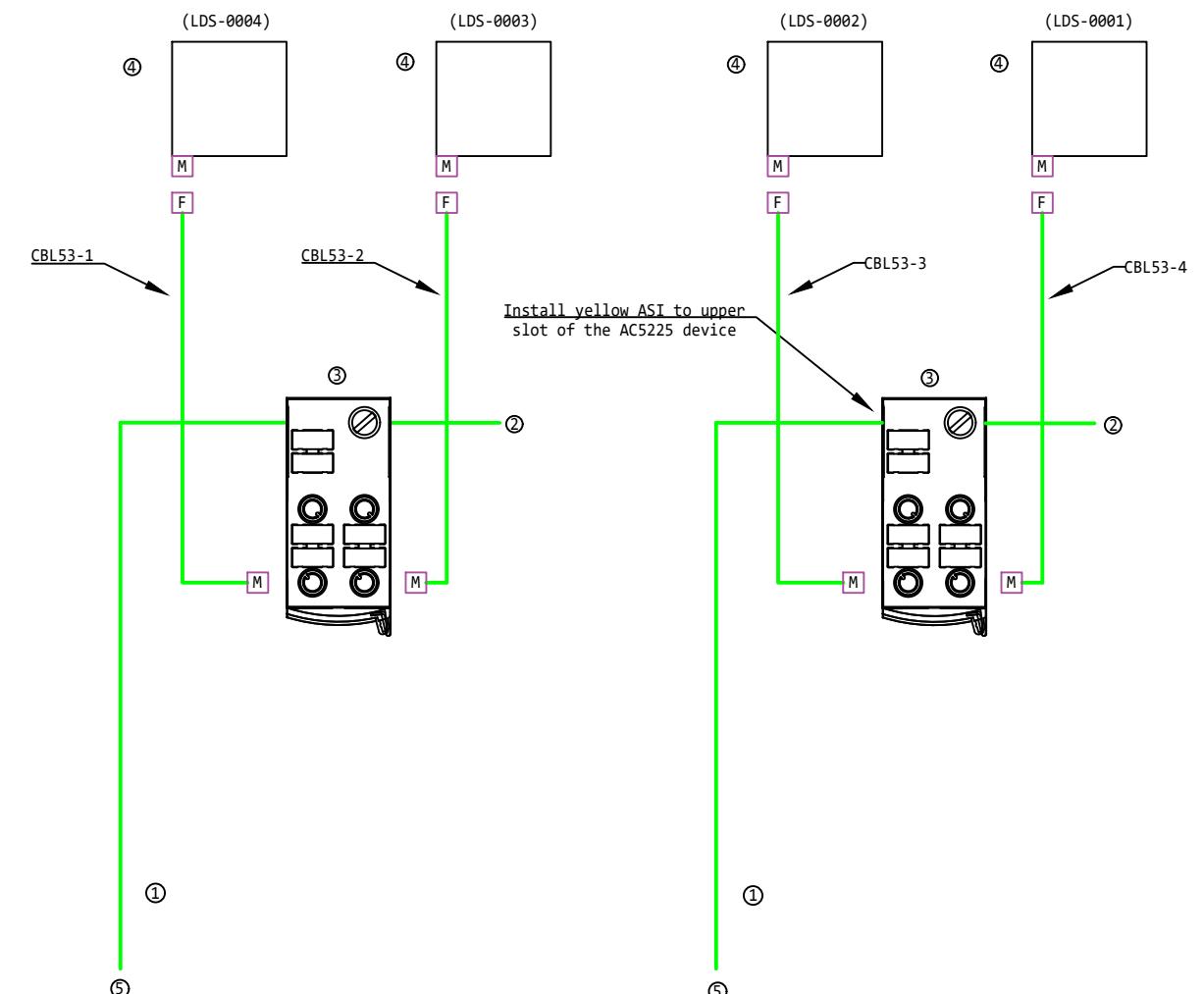
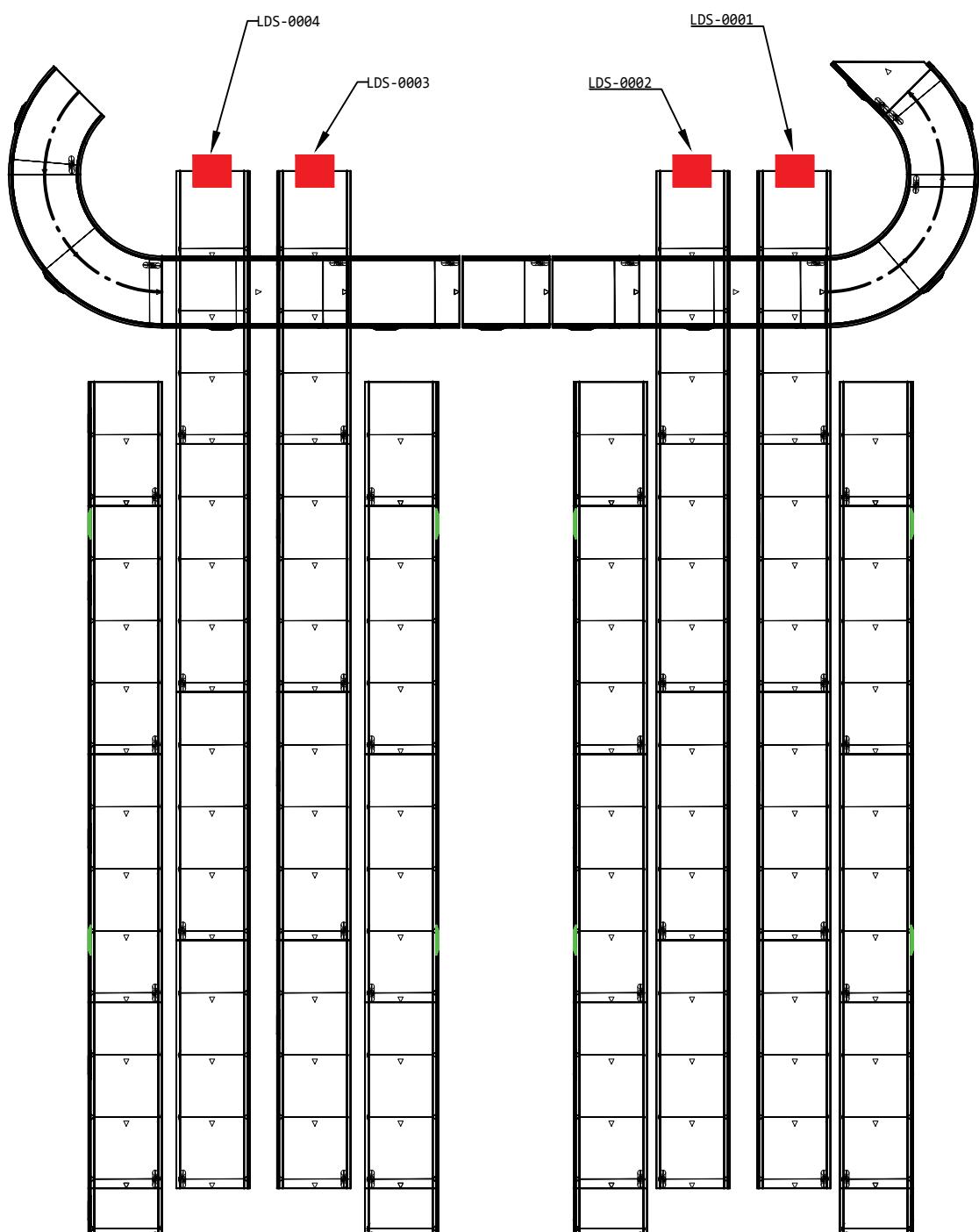
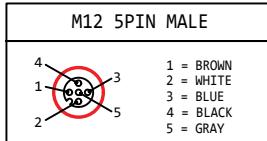
SPS
INTERCONNECT DRAWING PACKAGE
SPS PTZ CAMERAS

REV	SECT.	DETAIL	JOB#
	PREV.	51	114600
A	SHEET	52	
	NEXT	53	SPS-52
DWG			

USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.



NOTE:
 1. Connections to ASI I/O Link Modules use yellow ASI cables with 1.5mm² cross-section or 16AWG equivalent (16A max rated).
 2. Yellow ASI cable continues to other devices and sub-systems, if not, then terminate with an ASI end-cap (BG 104830).
 3. ASI I/O Link Module (BG 105082).
 4. Laser Diffuse TOF sensor (BG 103780).
 5. Yellow ASI cable continued from the main branch of the Electrical Cabinet.
 6. Refer to mechanical drawings for detailed locations of peripherals, components, and sub-systems.



C		
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REV	DATE	ENGR.



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS LASER DISTANCE SENSORS

REV	SECT.	DETAIL	JOB#
	PREV.	52	114600
A	SHEET	53	SPS-53
	NEXT	54	DWG

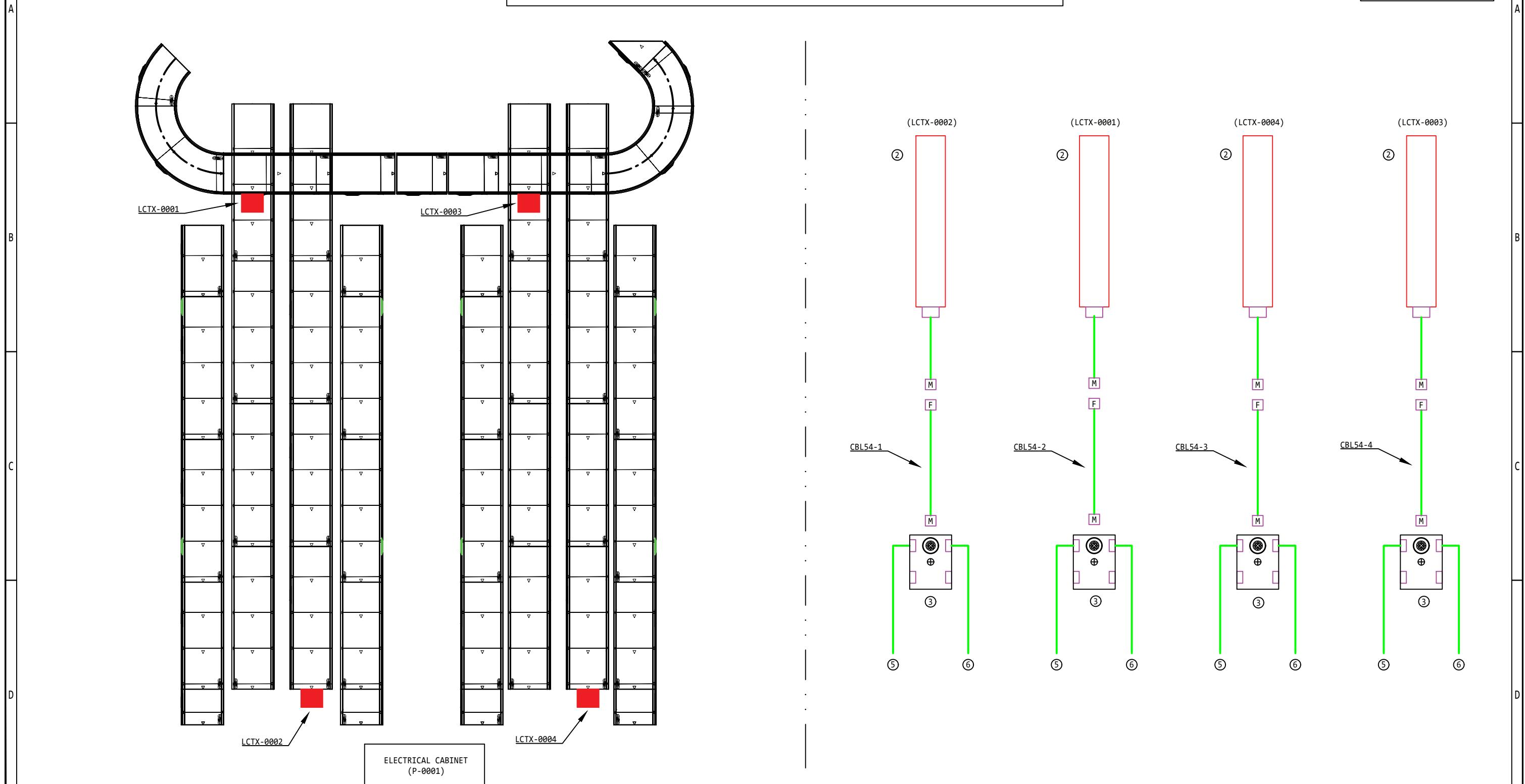
USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.

KEY:
Overfill Beam TX

NOTE:
 1. Connections to ASI I/O Link Modules use yellow ASI cables with 1.5mm² cross-section or 16AWG equivalent (16A max rated).
 2. Light Curtain TX (BG 106234)
 3. ASI to M12 converter (BG 105739).
 4. Refer to mechanical drawings for detailed locations of all peripherals, components, and sub-system locations.
 5. Red ASI cable from nearby MultiControl Card.
 6. Red ASI cable continues to next MultiControl Card.

M12 5PIN MALE

 1 = BROWN
 2 = WHITE
 3 = BLUE
 4 = BLACK
 5 = GRAY



C		
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A		
REV	DATE	ENGR. DESCRIPTION



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS OVERFILL BEAMS - TX

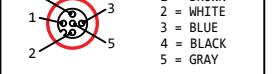
REV	A	SECT.	DETAIL	JOB#
		PREV.	53	114600
		SHEET	54	
		NEXT	55	DWG SPS-54

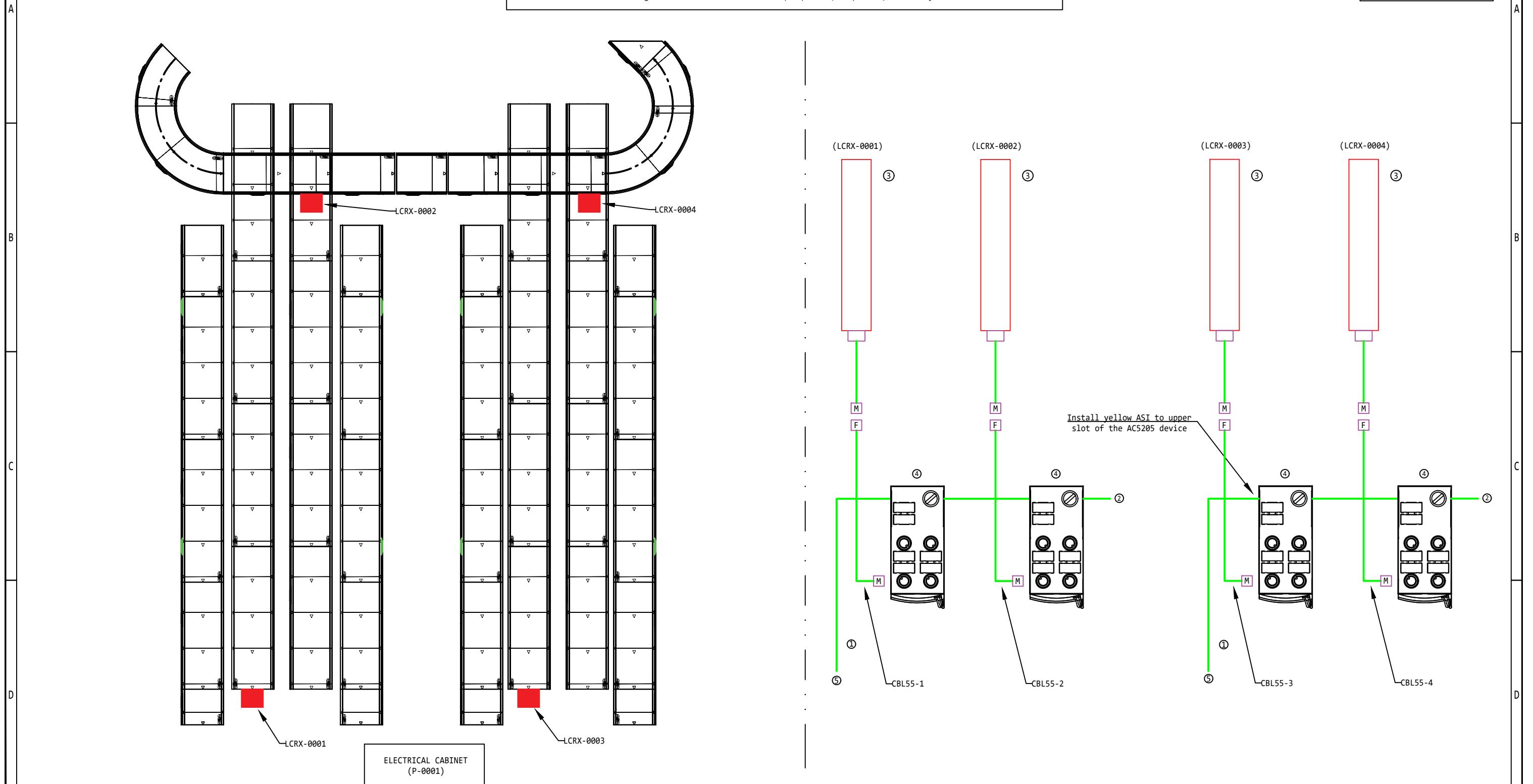
1 2 3 4 5 6 7 8

USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.

KEY:
Overfill Beam RX

NOTE:
 1. Connections to ASI Input Modules use yellow ASI cables with 1.5mm² cross-section or 16AWG equivalent (16A max rated).
 2. Yellow ASI cable continues to other devices and sub-systems, if not, then terminate with ASI end-caps (BG 104830).
 3. Light Curtain RX (BG 106234).
 4. ASI I/O Input Module (BG 105081).
 5. Yellow ASI cable continued from the main branch of the Electrical Cabinet.
 6. Refer to mechanical drawings for detailed locations of all peripherals, components, and sub-systems.

M12 5PIN MALE

 1 = BROWN
 2 = WHITE
 3 = BLUE
 4 = BLACK
 5 = GRAY



C		
B		
A		
REV	DATE	ENGR.



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS OVERFILL BEAMS - RX

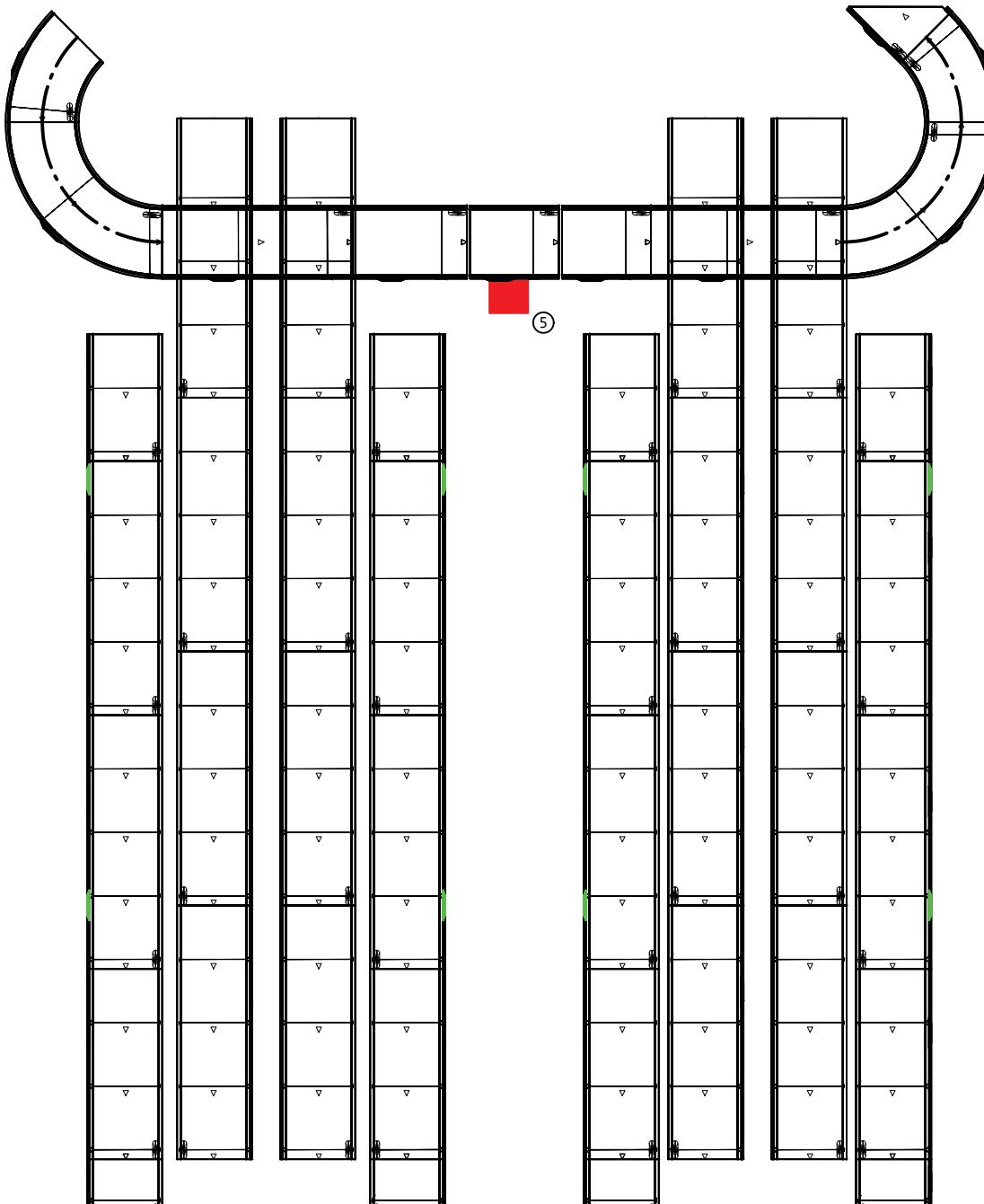
REV	SECT.	DETAIL	JOB#
A	PREV.	54	114600
	SHEET	55	
	NEXT	56	SPS-55
DWG			

USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.

KEY:
Weigh Scale Sub-System

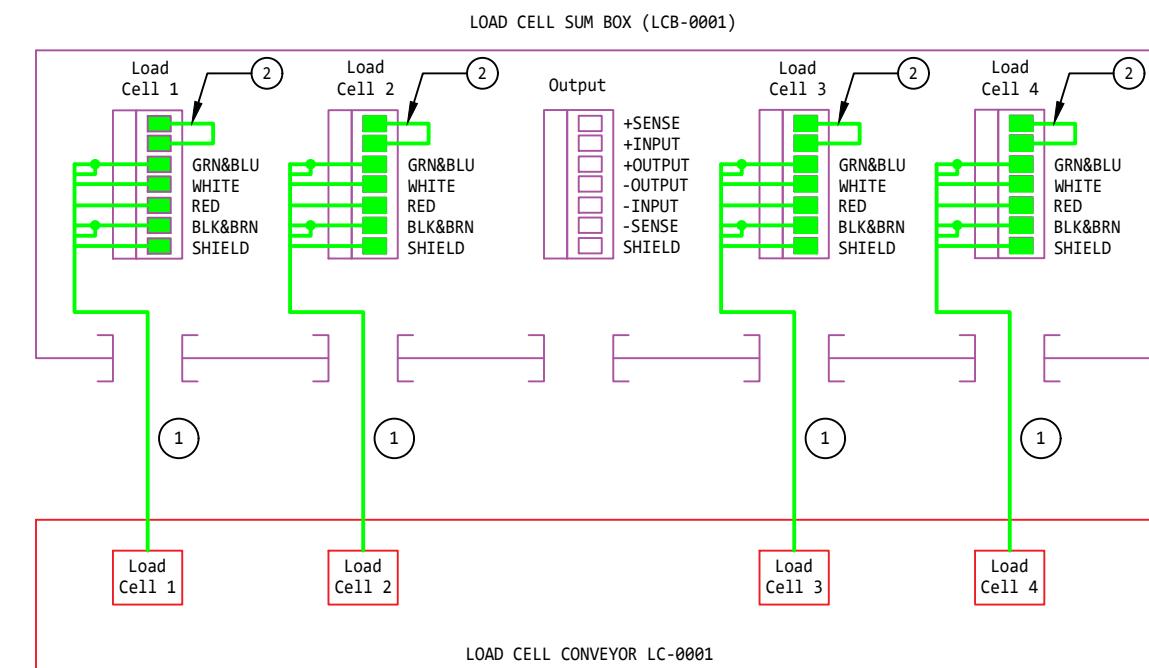
NOTE:

1. Verify the 4 conductor load cell cables are the same lengths.
2. Pre-installed shorting connector.
3. Cut and insulate all unused wires.
4. Refer to the mechanical drawings for detailed peripheral, component, and sub-system locations.
5. Weigh Scale sub-system - consists of Load Cell sensors, Load Cell Conveyor, Load Cell Sum Box, and Weigh Scale Display.

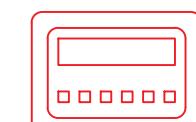


ELECTRICAL CABINET
(P-0001)

Sub-system wiring between Load Cell Summation box and conveyor Load Cell sensors.



WEIGH SCALE INDICATOR (WIT-0001)



C		
B		
A		
REV	DATE	ENGR.



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DATE 09/22/2020
SCALE N/A
DRAWN MC
APPROVED

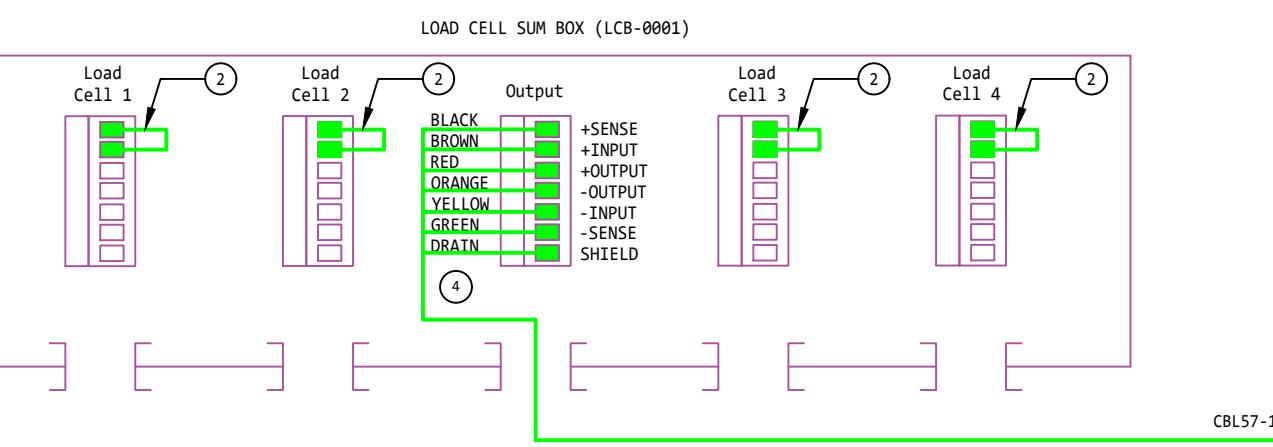
SPS
INTERCONNECT DRAWING PACKAGE
SPS WEIGH SCALE - LOAD CELLS

REV A
SECT. PREV. 55
DETAIL SHEET 56
NEXT 57
JOB# 114600
DWG SPS-56

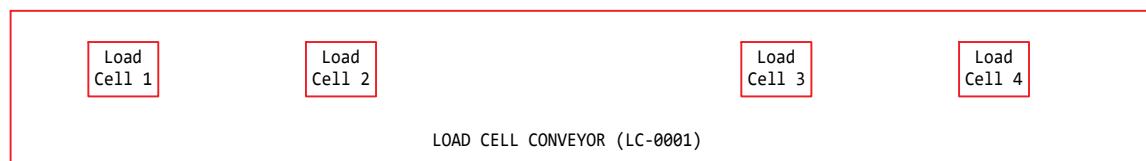
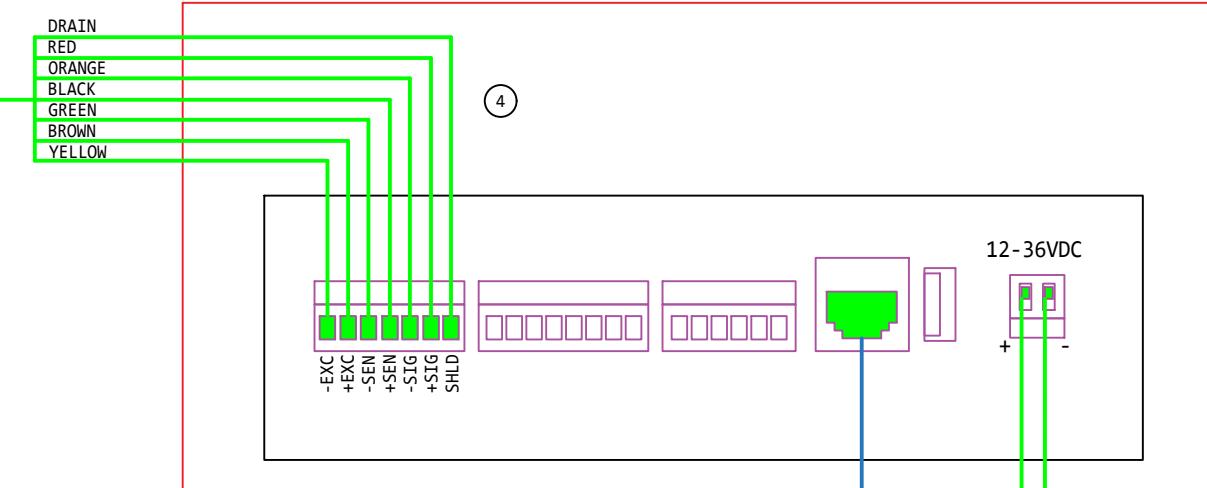
NOTE:

1. Refer to the RSR-00 NETWORK SWITCH INTERCONNECT drawing.
2. Pre-installed shorting connector.
3. Cut ASI RED flat cable to length.
4. Install heatshrink to shield/drain wires.
5. Refer to the mechanical drawings for detailed peripheral, component, and sub-system locations.
6. Leave approximately 12" of excess RED ASI cable and terminate with ASI end-cap (BG 104830).

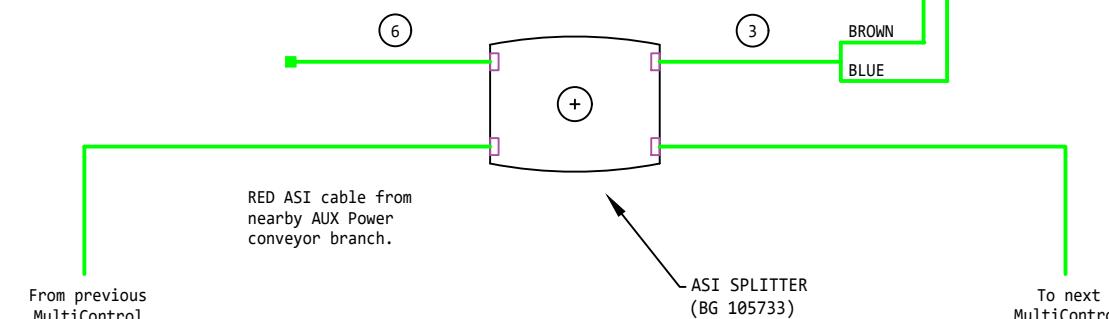
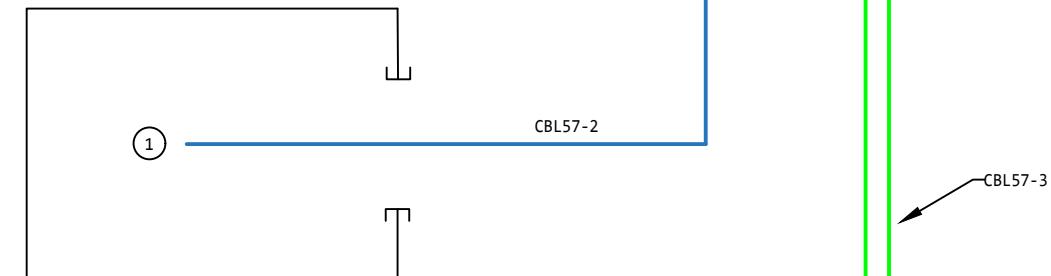
A



ZM301 WEIGH SCALE INDICATOR (WIT-0001)



NETWORK SWITCH (NS-0001)



C			
B			
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REV	DATE	ENGR.	DESCRIPTION



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS WEIGH SCALE - INDICATOR

REV	SECT.	DETAIL	JOB#
PREV.	56		114600
SHEET	57		
NEXT	58		SPS-57
DWG			

1 2 3 4 5 6 7 8

USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.

KEY:
Dimensioning
SKU Camera

NOTE:
 1. SKU Dimensioning Camera (BG 109786).
 2. Refer to mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
 3. Refer to the SSR-00 NETWORK SWITCH INTERCONNECT drawing.
 4. ASI power distributor (Bihl Weidemann BW3348 - BG 109453).
 5. Cut and insulate all unused wires.

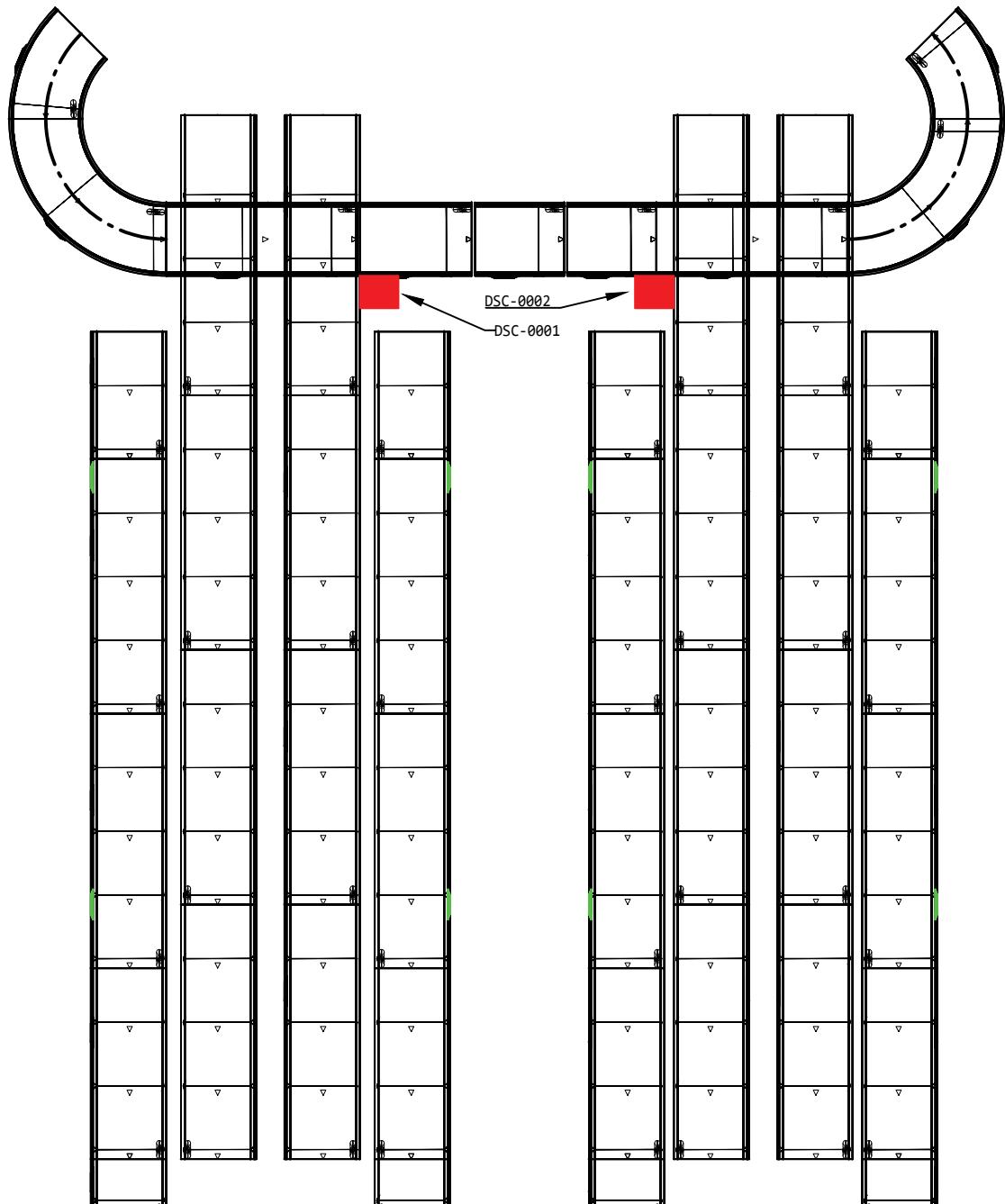
KEY:
 LV CONNECTIONS
 HV CONNECTIONS
 ETHERNET/COMMS

M12 12PIN FEMALE

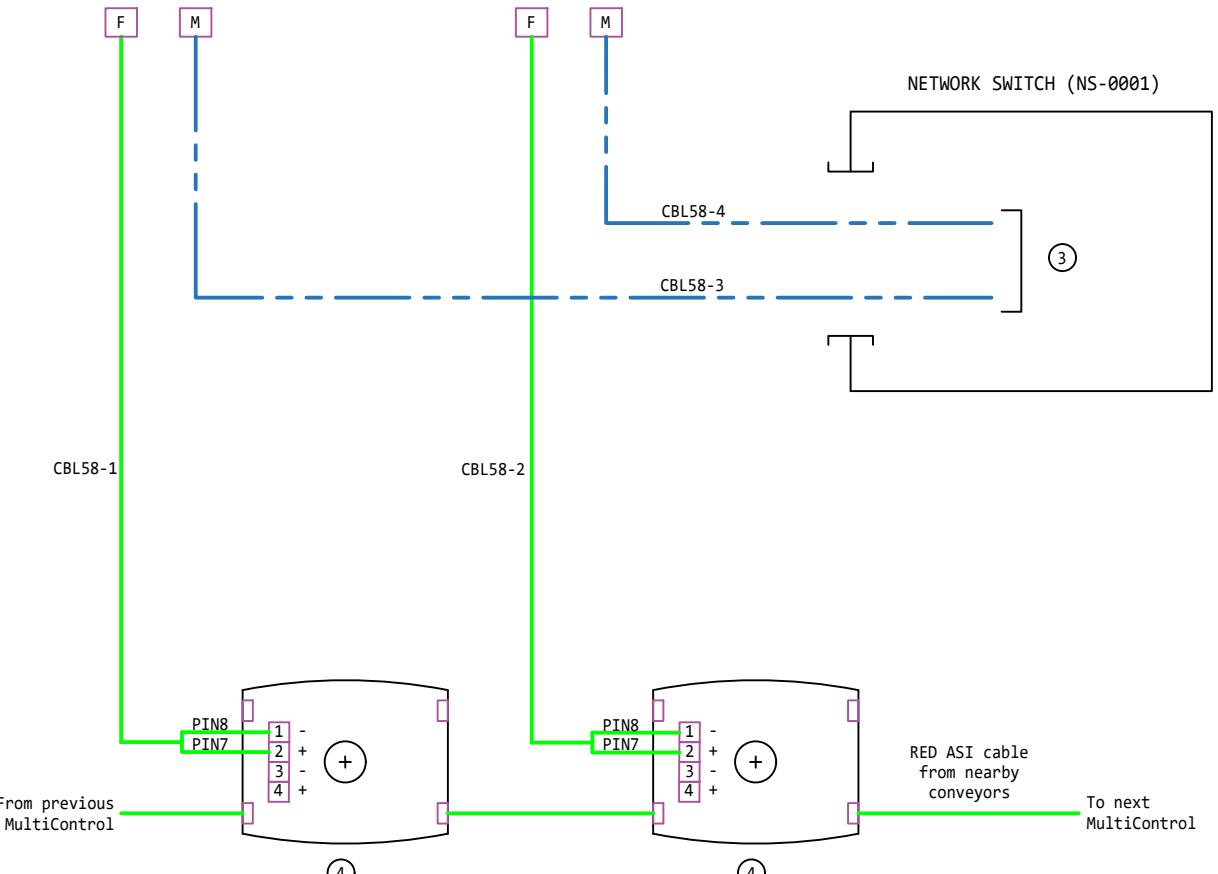
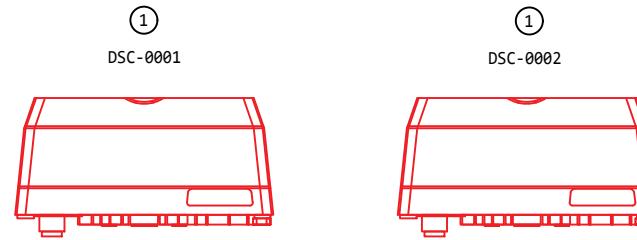
1	BROWN
2	BLUE
3	WHITE
4	GREEN
5	PINK
6	YELLOW
7	BLACK
8	GREY
9	RED
10	VIOLET
11	GREY/PINK
12	RED/BLUE

M12 8PIN MALE X-CODE

1	WH/OG
2	OG
3	WH/GN
4	GN
5	WH/BU
6	BU
7	WH/BN
8	BN



ELECTRICAL CABINET
(P-0001)



C		
B		
A		
REV	DATE	ENGR.



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DATE 09/22/2020
SCALE N/A
DRAWN MC
APPROVED

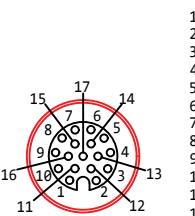
SPS
INTERCONNECT DRAWING PACKAGE
SPS DIMENSIONING SKU CAMERAS

REV A
SECT. PREV. 57
DETAIL SHEET 58
NEXT 60
JOB# 114600
DWG SPS-58

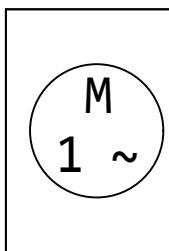
1 2 3 4 5 6 7 8

NOTE:

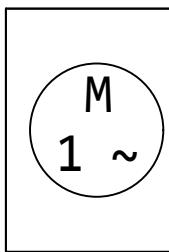
1. Refer to the SPS-00 Network Switch Interconnect drawings.
2. Cut and insulated unused wires.
3. Refer to the mechanical drawings for all peripherals, components, and sub-system locations.

M12 17PIN MALE**M12 4PIN FEMALE D-CODE****M12 5PIN FEMALE****M8 3PIN MALE****KEY**

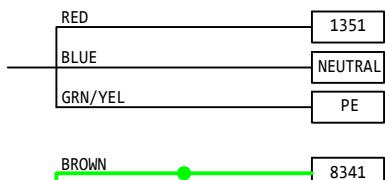
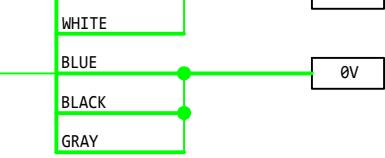
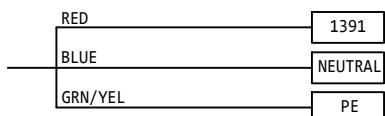
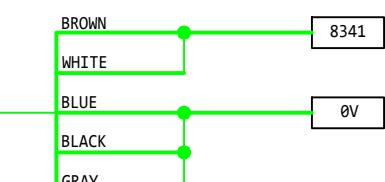
- LV CONNECTIONS
- HV CONNECTIONS
- - - ETHERNET/COMMS

RSR-00 CLEATED CONVEYOR SUB-SYSTEM (CC-0001)**ELECTRICAL CABINET (P-0001)****MOTOR LEFT (MTR-0001)**

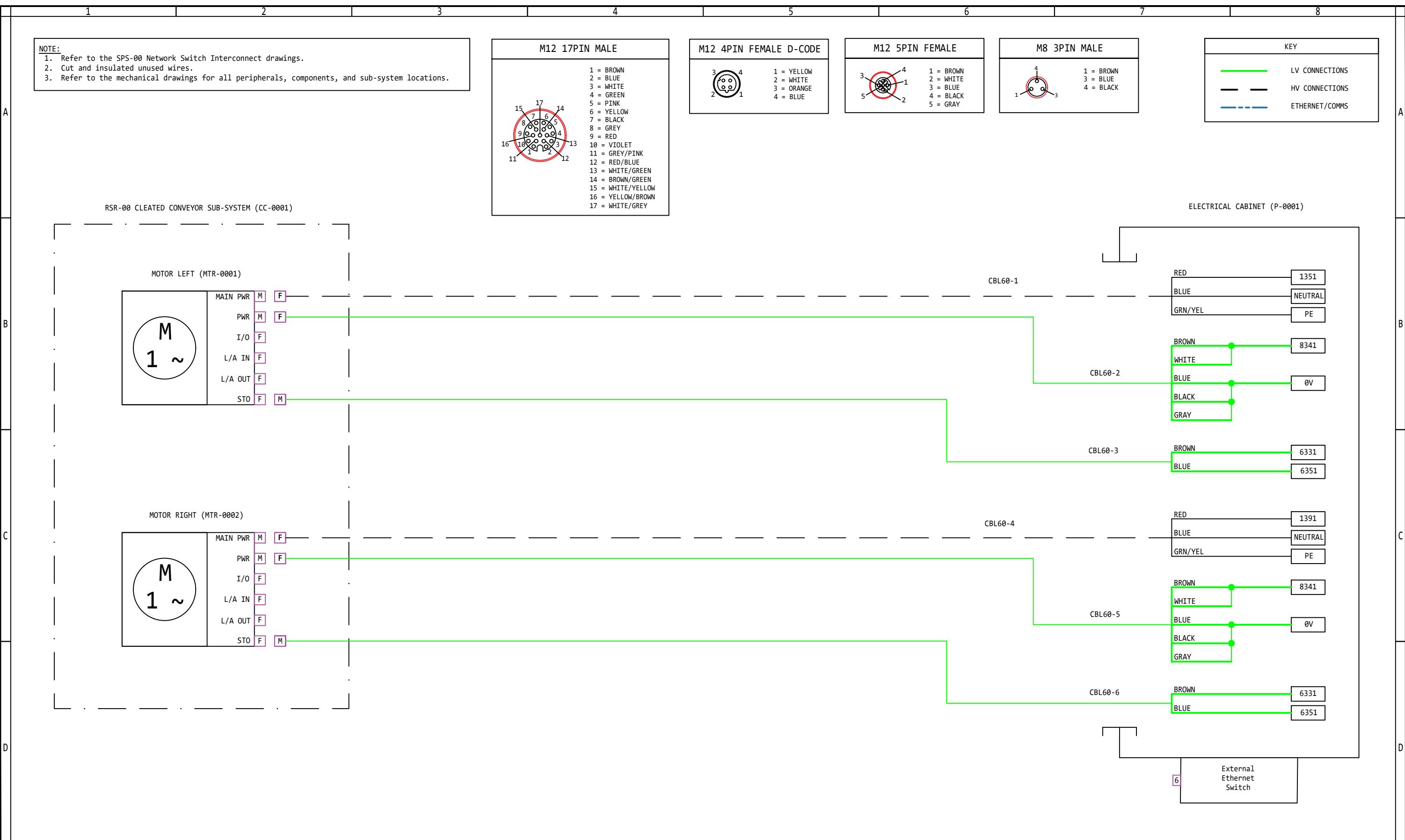
MAIN PWR M
PWR M F
I/O F
L/A IN F
L/A OUT F
STO F M

MOTOR RIGHT (MTR-0002)

MAIN PWR M
PWR M F
I/O F
L/A IN F
L/A OUT F
STO F M

CBL60-1**CBL60-2****CBL60-3****CBL60-4****CBL60-5****CBL60-6**

External
Ethernet
Switch



C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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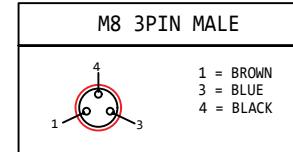
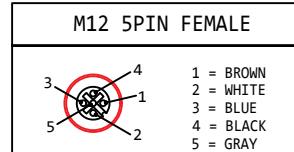
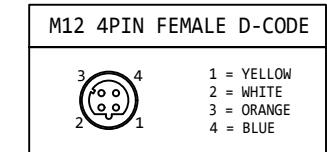
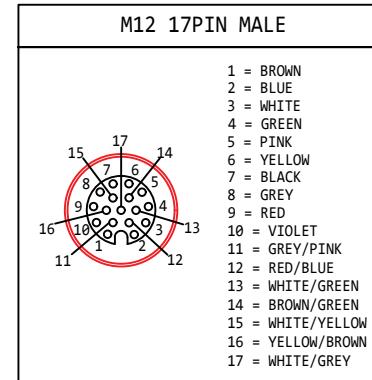
DATE 09/22/2020
SCALE N/A
DRAWN MC
APPROVED

SPS
INTERCONNECT DRAWING PACKAGE
SPS CC - MOTOR CONNECTIONS - P1

REV	SECT.	DETAIL	JOB#
A	PREV.	58	114600
A	SHEET	60	
A	NEXT	61	SPS-60

1 2 3 4 5 6 7 8

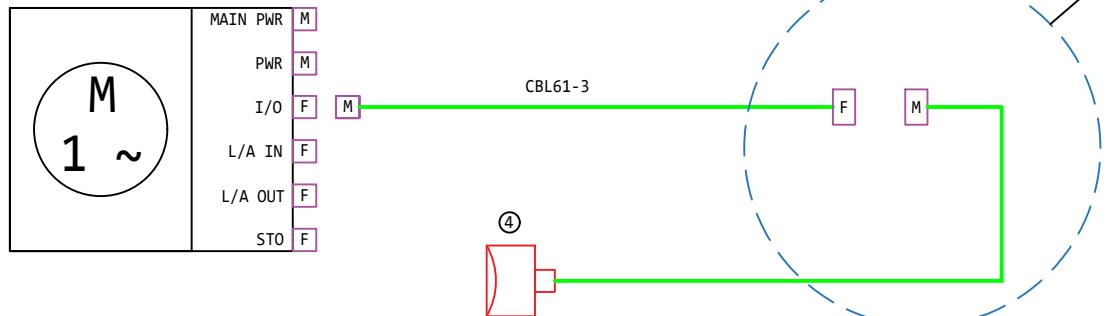
NOTE:
1. Refer to the SPS-00 Network Switch Interconnect drawings.
2. Cut and insulated unused wires.
3. Refer to the mechanical drawings for all peripherals, components, and sub-system locations.
4. Homing sensor - BG 109691.
5. Splitter Tap-Style - BG 109701
6. See HOMING SENSOR ASSEMBLY drawing for wiring details.



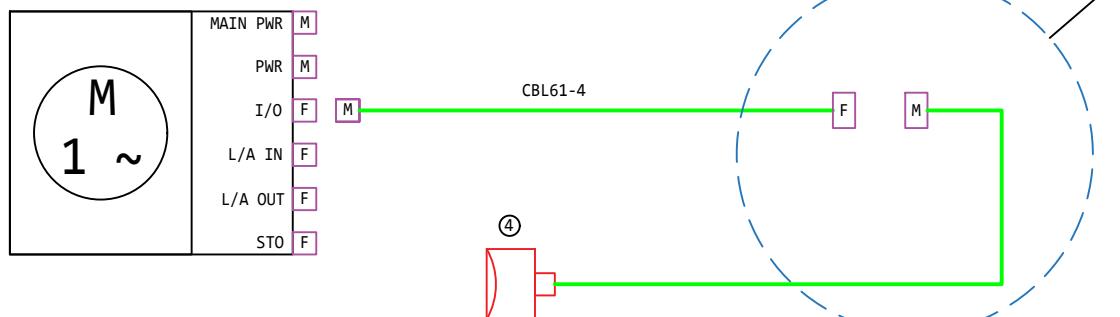
KEY		
	LV CONNECTIONS	
	HV CONNECTIONS	
	ETHERNET/COMMS	

SPS-00 CLEATED CONVEYOR SUB-SYSTEM (CC-0001)

MOTOR LEFT (MTR-0001)



MOTOR RIGHT (MTR-0002)



C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

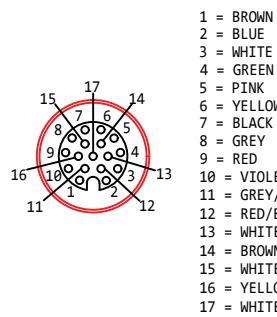
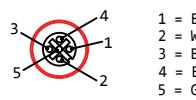
SPS
INTERCONNECT DRAWING PACKAGE
SPS CC - MOTOR CONNECTIONS - P2

REV	SECT.	DETAIL	JOB#
A	PREV.	60	114600
A	SHEET	61	SPS-61
	NEXT	62	DWG SPS-61

1 2 3 4 5 6 7 8

NOTE:

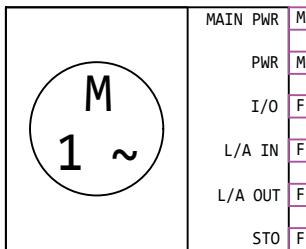
1. Refer to the DevOps network document for port assignment details..
2. Cut and insulated unused wires.
3. Refer to the mechanical drawings for all peripherals, components, and sub-system locations.

M12 17PIN MALE**M12 4PIN FEMALE D-CODE****M12 5PIN FEMALE****M8 3PIN MALE**

KEY		
	LV CONNECTIONS	
	HV CONNECTIONS	
	ETHERNET/COMMS	

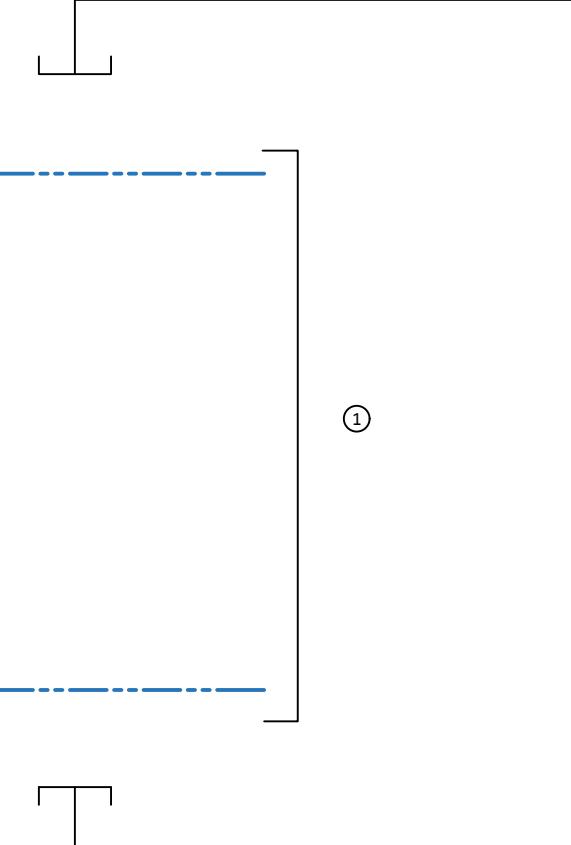
RSR-00 CLEATED CONVEYOR SUB-SYSTEM (CC-0001)

MOTOR LEFT (MTR-0001)

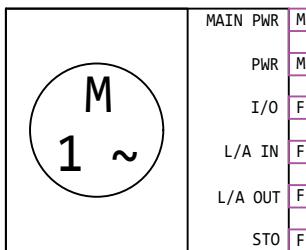


CBL62-1

NETWORK SWITCH (NS-0001)



MOTOR RIGHT (MTR-0002)



CBL62-2

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION

1 2 3 4 5 6 7 8

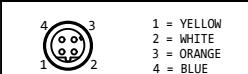
NOTE:

1. Refer to the DevOps network document for port assignment details.
2. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
3. ASI power distributor (Bihl Weidemann BW3348 - BG 109453).
4. Some cable vendors may use different color codes for wires. Use PIN information and check cable part number.
5. Cut and insulate all unused wires.

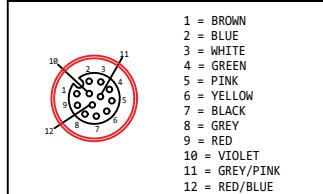
KEY:

Barcode Scanner

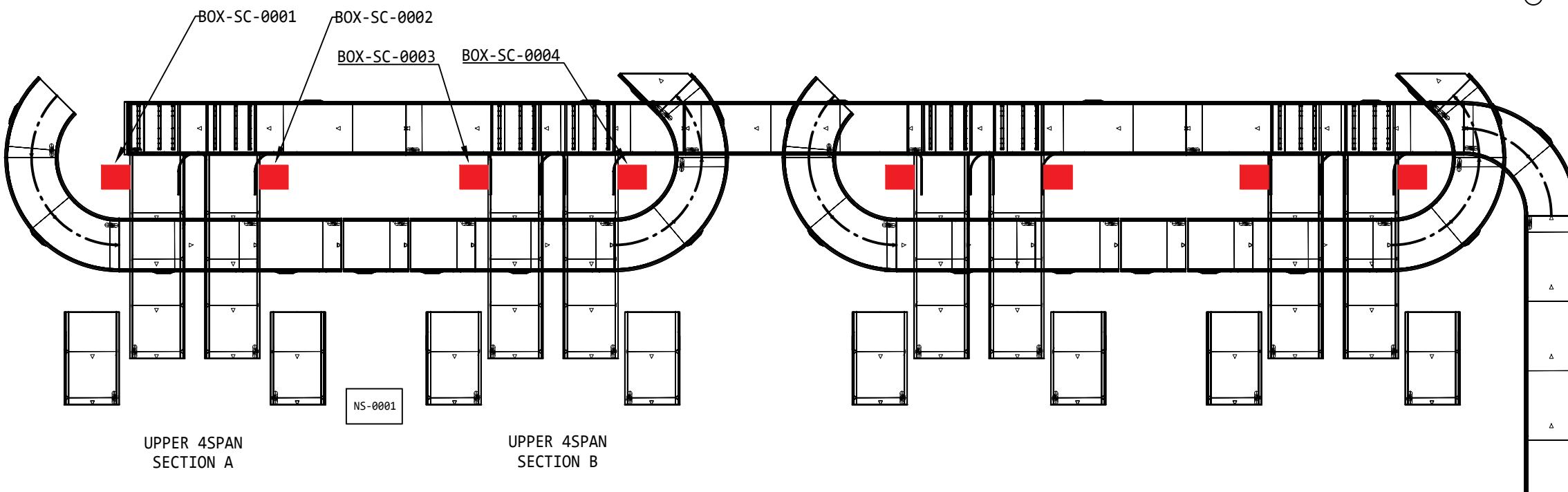
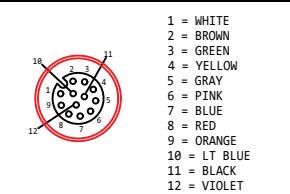
M12 4PIN MALE D-CODE



M12 12PIN FEMALE - STANDARD

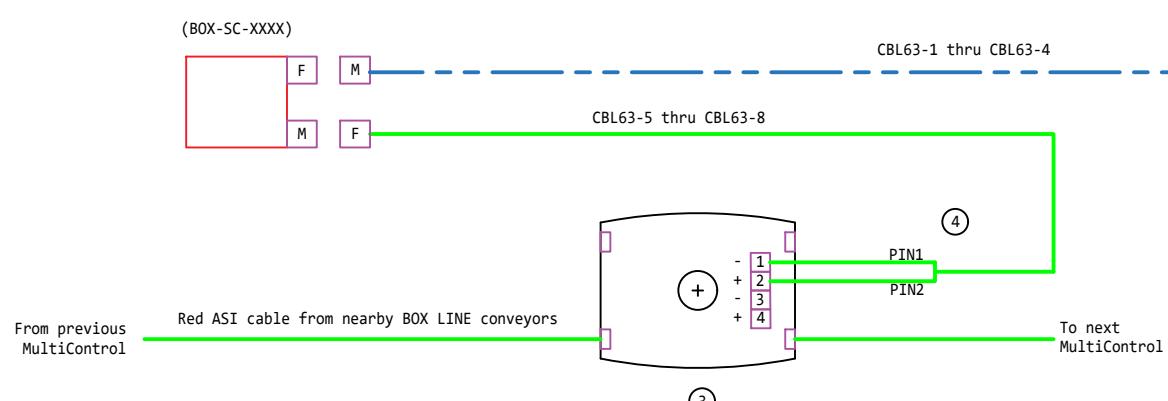


M12 12PIN FEMALE - MQDCS-1230



Interconnects shown valid for
BOX-SC-0001, 0002, 0003, 0004

NETWORK SWITCH (NS-0001)



C				SPS INTERCONNECT DRAWING PACKAGE SPS BOX LINE BARCODE SCANNERS	REV A	SECT.	DETAIL	JOB#	114600
B						PREV.	62		
A						SHEET	63		
REV	DATE	ENGR.	DESCRIPTION			NEXT	64	DWG	SPS-63



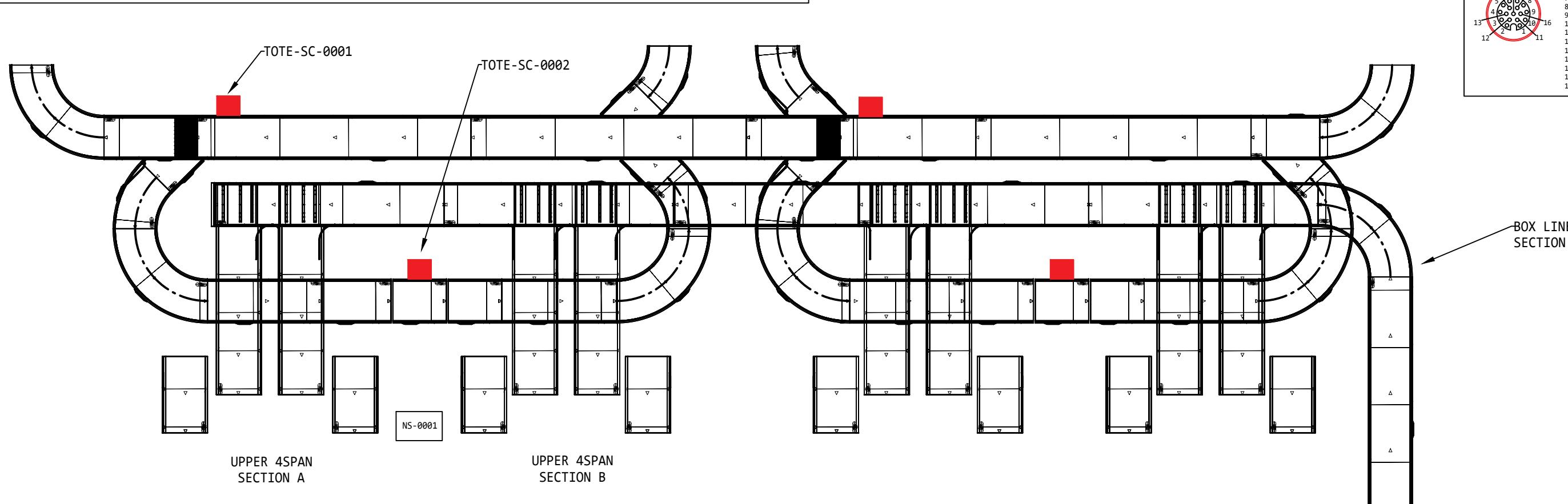
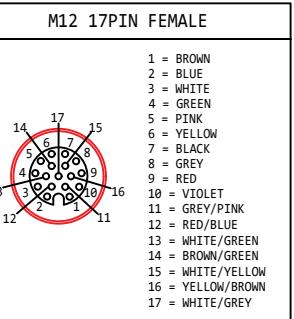
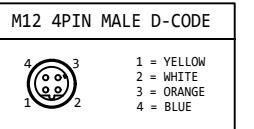
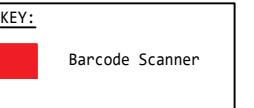
BERKSHIRE
GREY

140 SOUTH ROAD
BEDFORD, MA 01730

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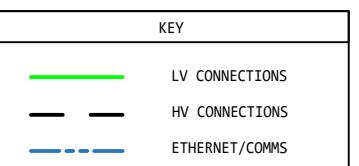
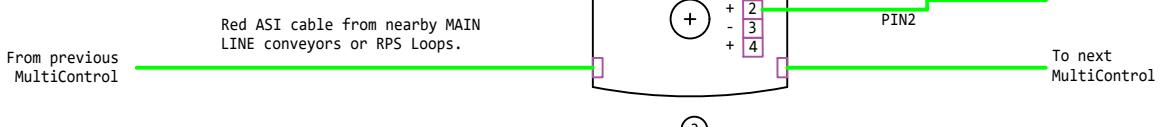
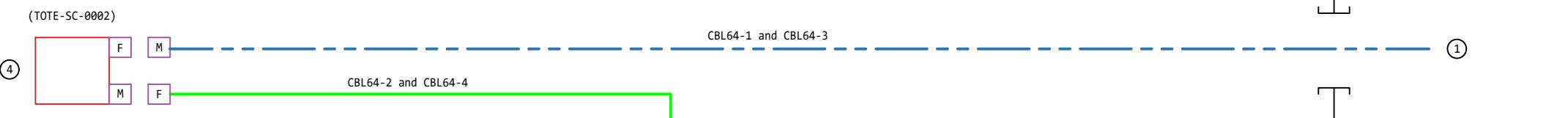
DATE 09/22/2020
SCALE N/A
DRAWN MC
APPROVED

NOTE:
 1. Refer to the DevOps network document for port assignment details.
 2. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
 3. ASI power distributor (Bihl Weidemann BW3348 - BG 109453).
 4. Note that this scanner's 17pin M12 power connection uses reverse colors - BLUE(+) and BROWN(-).
 5. Cut and insulate all unused wires.



Interconnects shown valid for
TOTE-SC-0002.

NETWORK SWITCH (NS-0001)



C			SPS INTERCONNECT DRAWING PACKAGE SPS TOTE LINE BARCODE SCANNERS	REV A	SECT.	DETAIL	JOB#
B					DATE	09/22/2020	114600
A					SCALE	N/A	
REV	DATE	ENGR.			DRAWN	MC	
REV	DATE	ENGR.	APPROVED	REV	SECT.	DETAIL	DWG
				A			SPS-64
				NEXT			

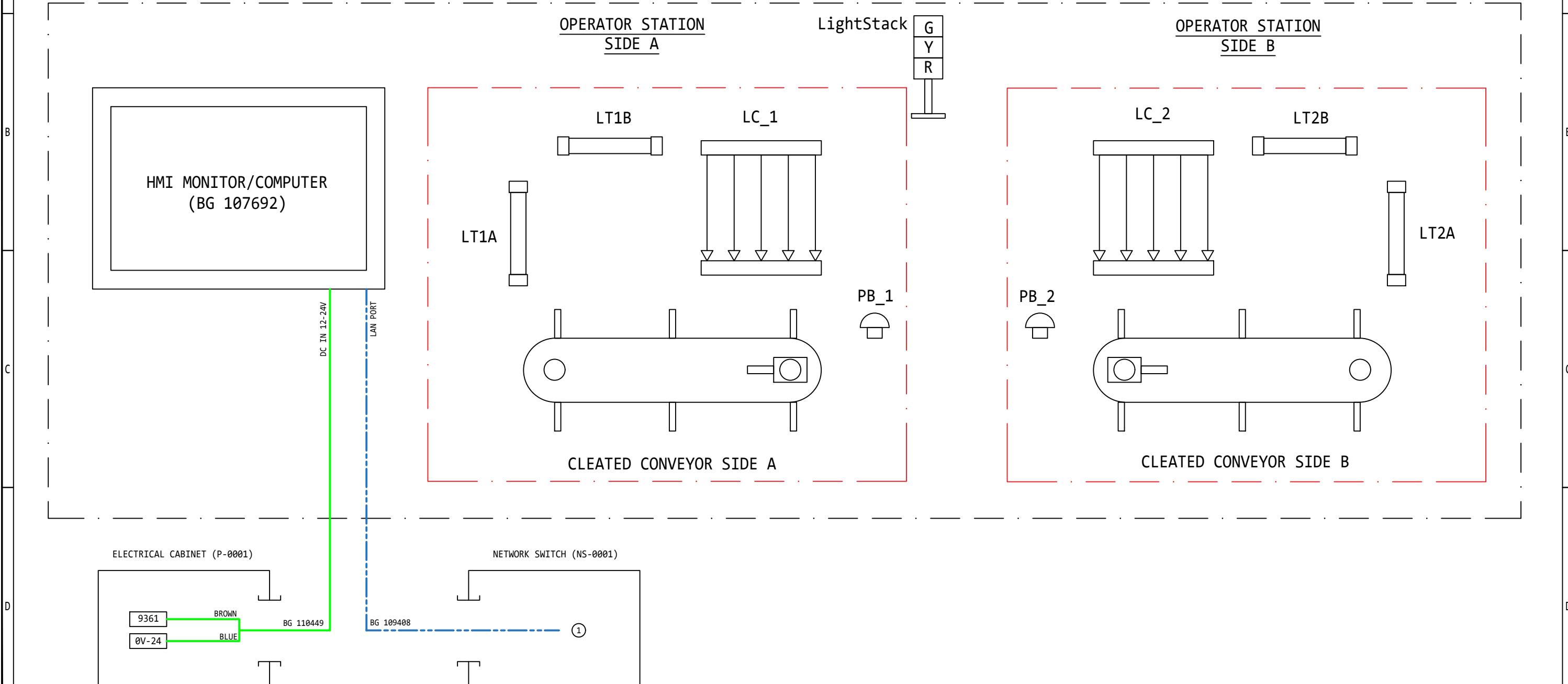
1 2 3 4 5 6 7 8

NOTE:
 1. Refer to the DevOps network document for port assignment details.
 2. Refer to BOM BG 109247 - SA-RPS PICKING STATION ASSEMBLY - for peripheral, component, and cable information.
 3. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
 4. Cut and insulate all unused wires.
 5. Use green terminal block connector for the DC IN 12-24V on the back of the HMI.

KEY		
	LV CONNECTIONS	
	HV CONNECTIONS	
	ETHERNET/COMMS	

PARTS:
 LT1A, LT1B = BG 109689 - LED STRIP LIGHT
 LC_1, LC_2 = BG 109705 - SAFETY LIGHT CURTAIN
 PB_1, PB_2 = BG 110150 - PICK-TO-LIGHT TOUCH BUTTON
 LIGHTSTACK = BG 106701 - BANNER 70MM THREE COLOR LIGHT TOWER

MANUAL STATION



C		
B		
A		
REV	DATE	ENGR.



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GREY
140 SOUTH ROAD
BEDFORD, MA 01730

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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS MANUAL STATION - HMI CONNECTIONS

REV	SECT.	DETAIL	JOB#
PREV.	64		114600
SHEET	66		
NEXT	67		SPS-66
DWG			

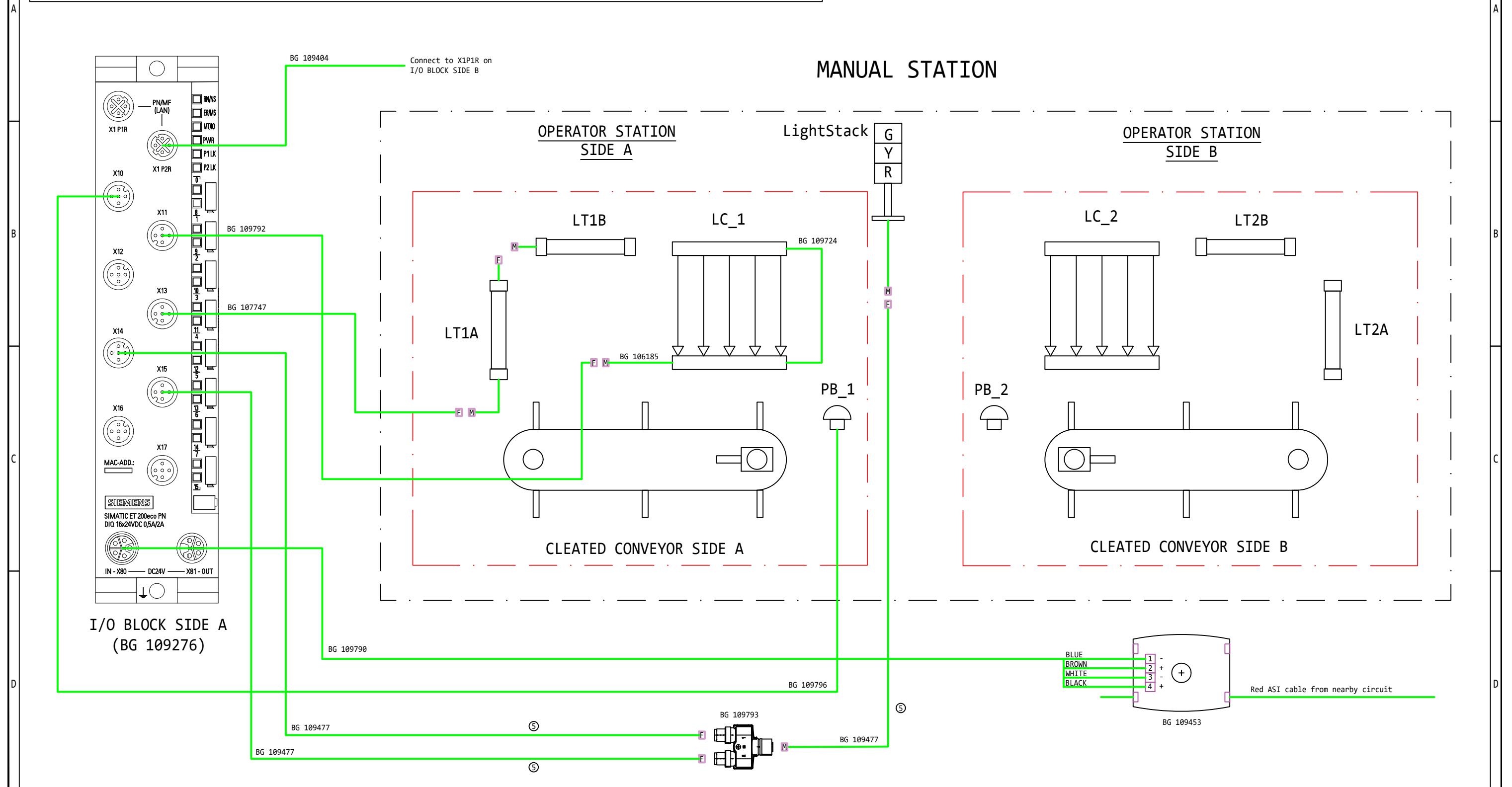
1 2 3 4 5 6 7 8

NOTE:

1. Refer to the DevOps network document for port assignment details.
2. Refer to BOM BG 109247 - SA-RPS PICKING STATION ASSEMBLY - for peripheral, component, and cable information.
3. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
4. Cut and insulate all unused wires.
5. Install field wireable connector, BG 109700, to the cable. Wiring details can be found in the SPS MANUAL STATION - LIGHTSTACK WIRING DETAIL drawing.

PARTS:

- LT1A, LT1B = BG 109689 - LED STRIP LIGHT
- LC_1, LC_2 = BG 109705 - SAFETY LIGHT CURTAIN
- PB_1, PB_2 = BG 110150 - PICK-TO-LIGHT TOUCH BUTTON
- LIGHTSTACK = BG 106701 - BANNER 70MM THREE COLOR LIGHT TOWER



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

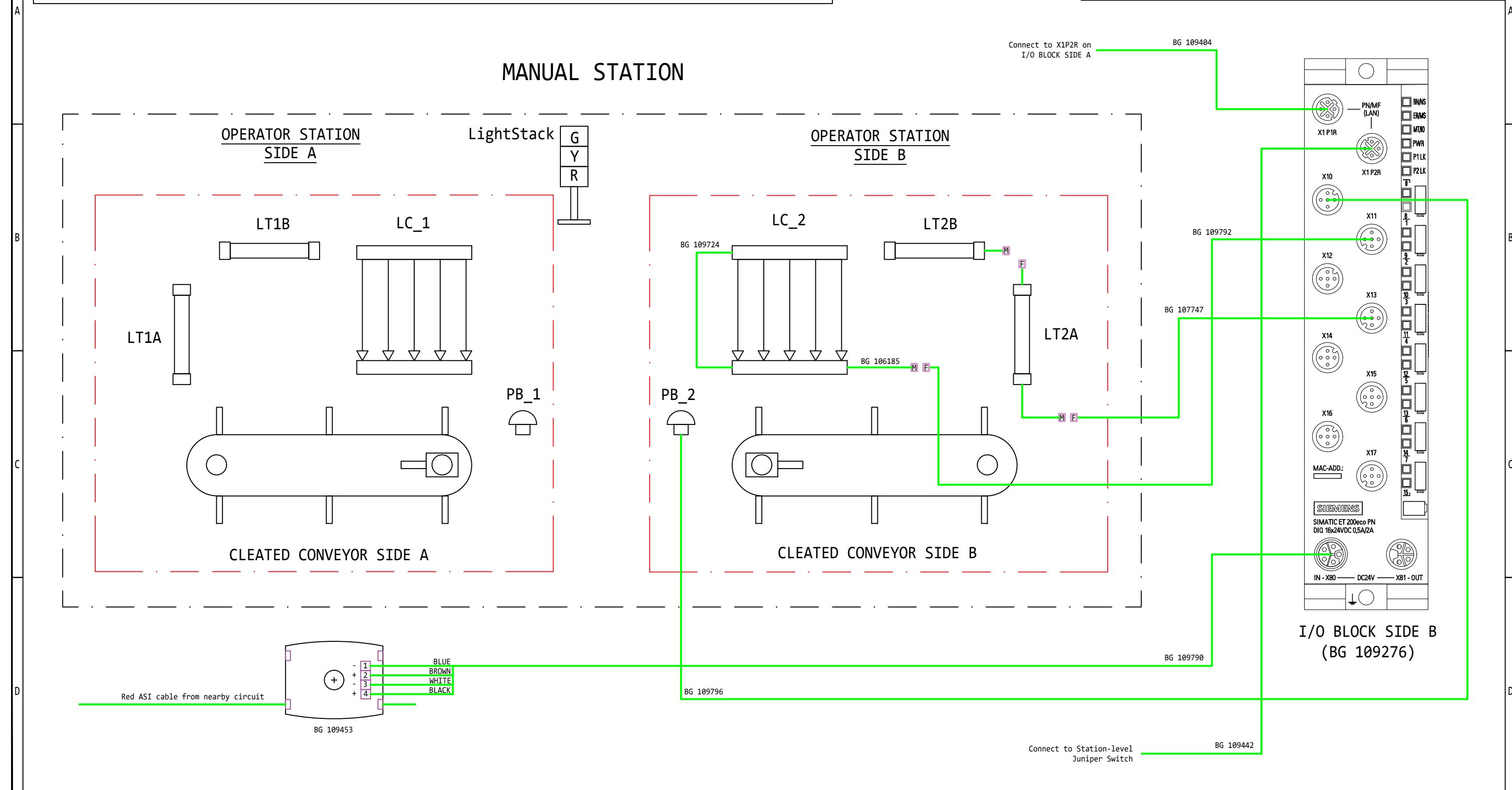
SPS
INTERCONNECT DRAWING PACKAGE
SPS MANUAL STATION - I/O BLOCK CONNECTIONS - SIDE A

REV	SECT.	DETAIL	JOB#
A	PREV.	66	114600
	SHEET	67	
	NEXT	68	DWG SPS-67

1 2 3 4 5 6 7 8

NOTE:
 1. Refer to the DevOps network document for port assignment details.
 2. Refer to BOM BG 109247 - SA-RPS PICKING STATION ASSEMBLY - for peripheral, component, and cable information.
 3. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
 4. Cut and insulate all unused wires.

PARTS:
 LT1A, LT1B = BG 109689 - LED STRIP LIGHT
 LC_1, LC_2 = BG 109705 - SAFETY LIGHT CURTAIN
 PB_1, PB_2 = BG 110150 - PICK-TO-LIGHT TOUCH BUTTON
 LIGHTSTACK = BG 106701 - BANNER 70MM THREE COLOR LIGHT TOWER

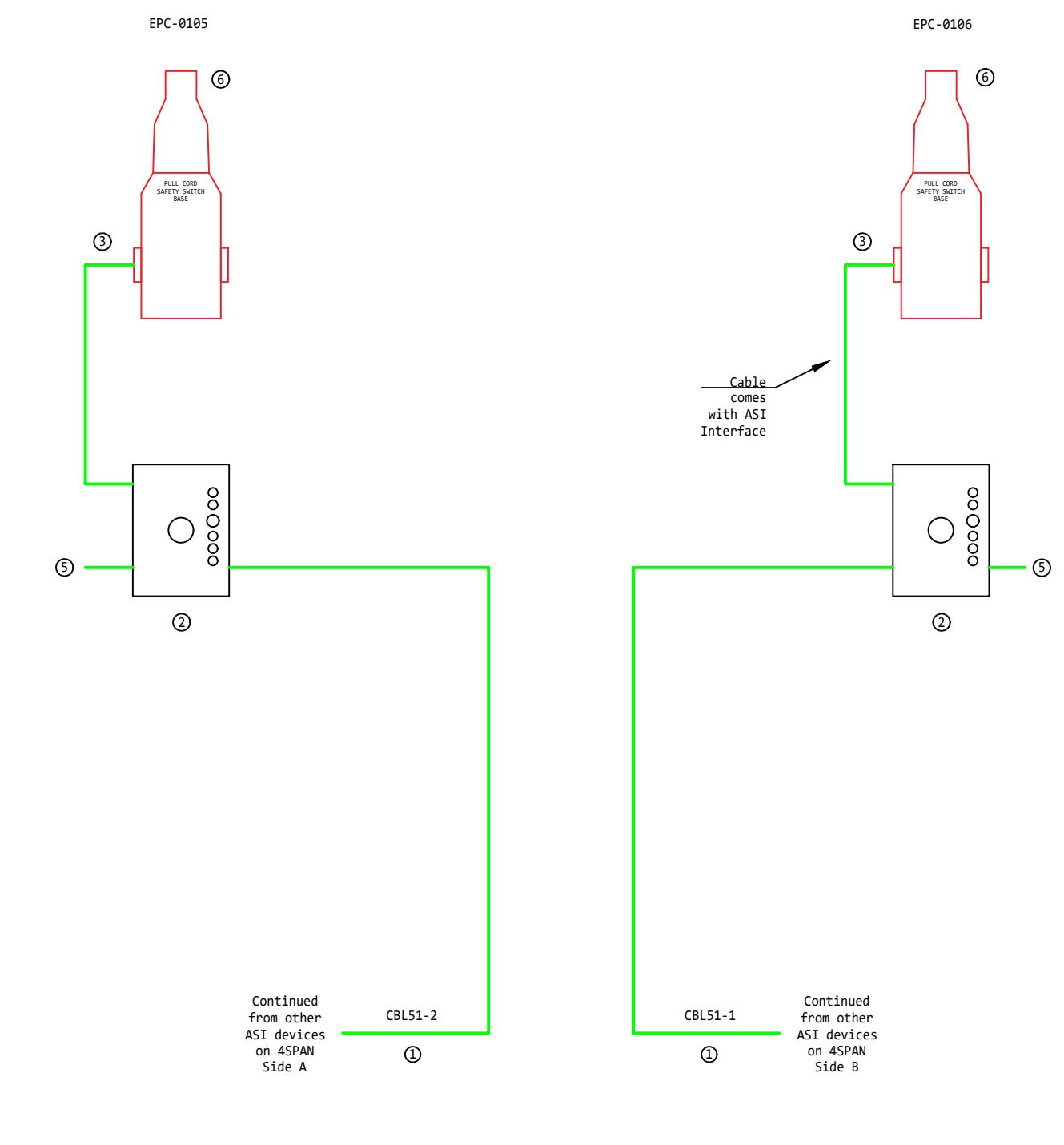
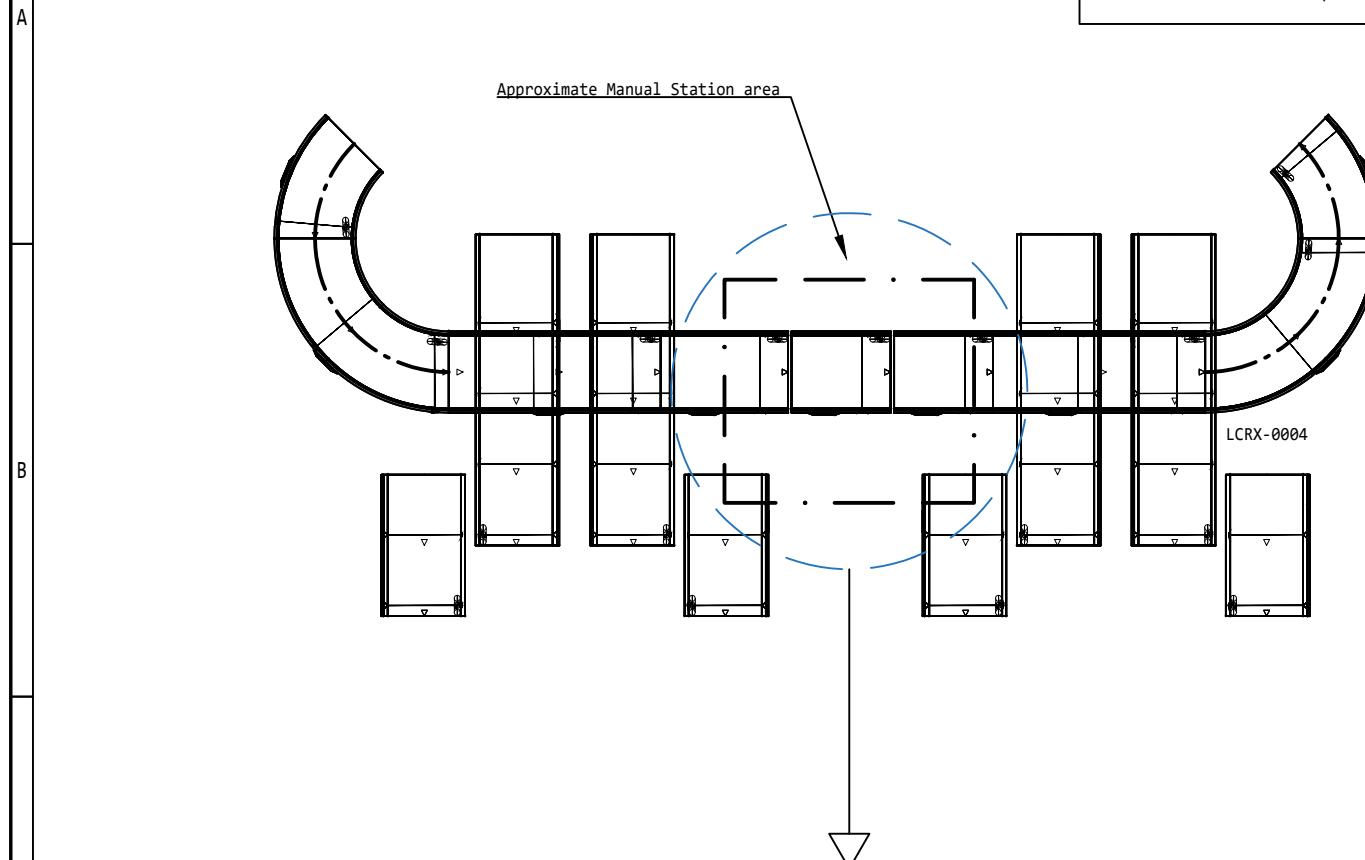


USE THE MECHANICAL DRAWINGS FOR PRECISE MOUNTING LOCATIONS AND INSTALLATION DETAILS FOR ALL SUB-SYSTEMS AND COMPONENTS.



NOTE:

1. Connections to ASI I/O Link Modules use yellow ASI cables with 1.5mm² cross-section or 16AWG equivalent (16A max rated).
2. ASI I/O Interface module (BG 102475).
3. Refer to the SAFETY ZONE - PULL CORD DEVICE WIRING DETAILS - SINGLE drawing.
4. Refer to mechanical drawings for detailed locations of peripherals, components, and sub-systems.
5. Yellow ASI cable continues to other devices and sub-systems, if not, then terminate with ASI end-caps (BG 104830).
6. Pull-Cord Switch Base (BG 103788).



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



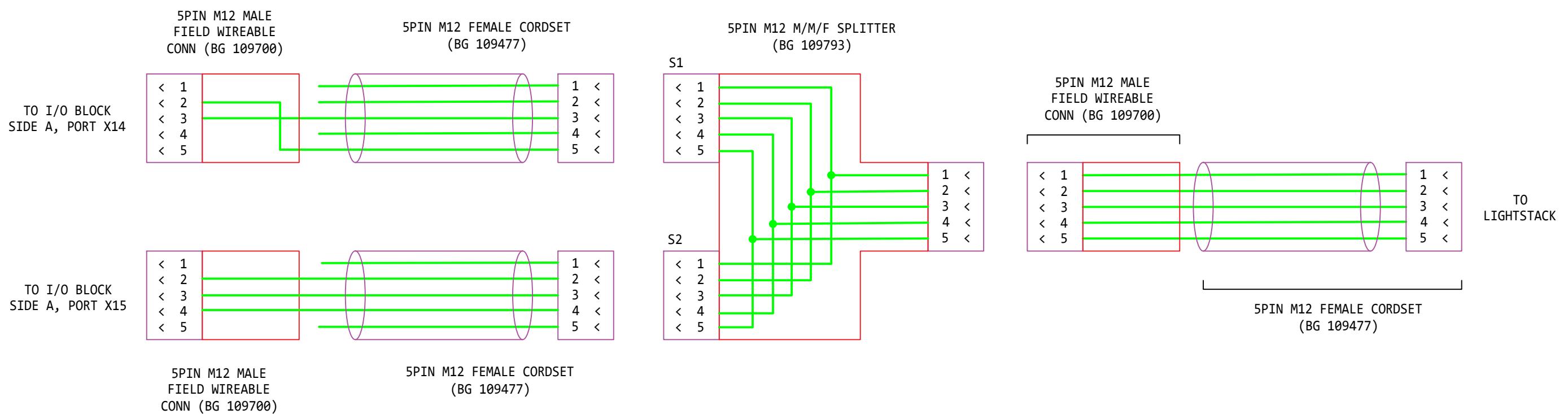
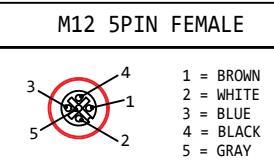
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SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS MANUAL STATION - ESTOP PULL-CORDS

REV	SECT.	DETAIL	JOB#
A	PREV.	68	114600
	SHEET	69	
	NEXT	70	DWG SPS-69

- NOTE:**
1. Cut and insulate all un-used wires.
 2. Cut to length all cable cordsets.
 3. Refer to Manual Station BOM BG 109247 for peripherals, components, and cables.



C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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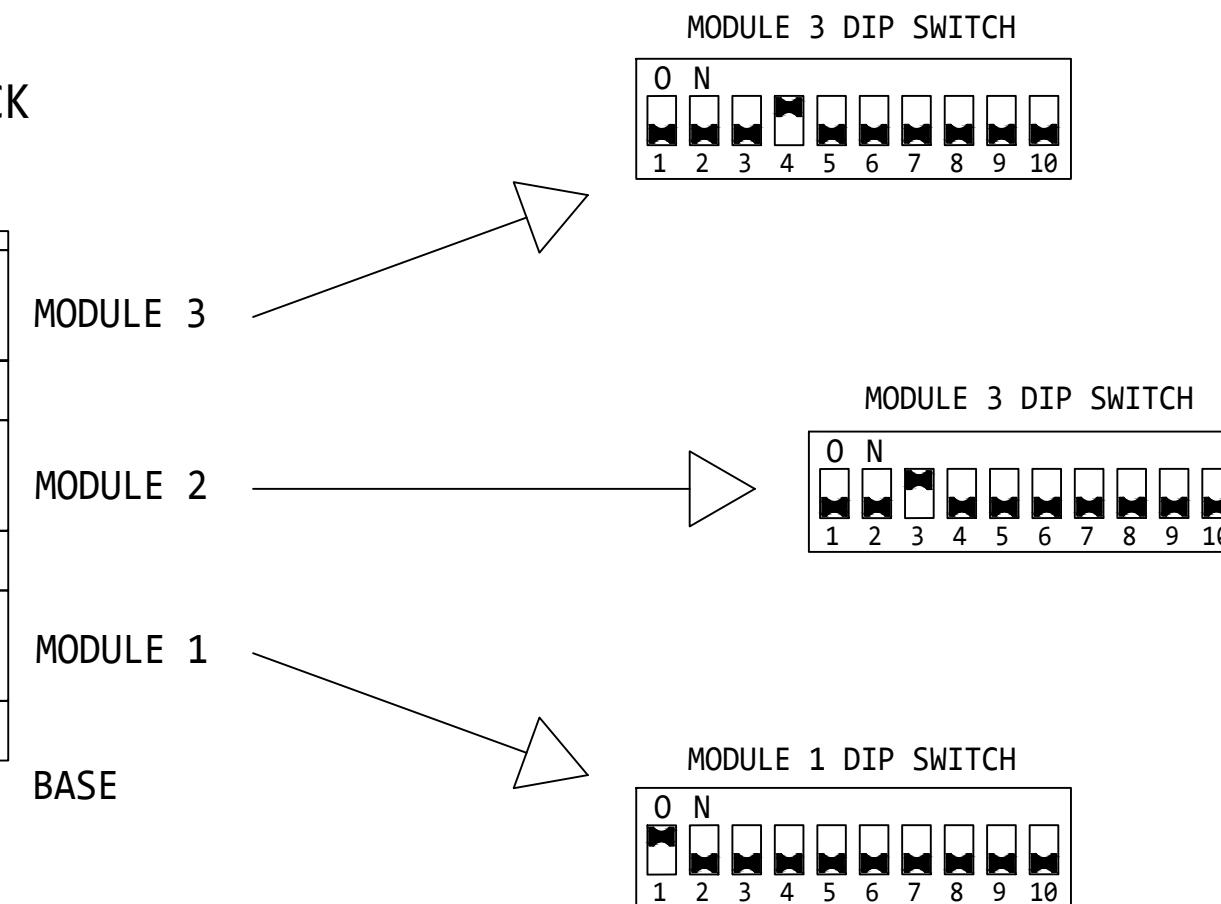
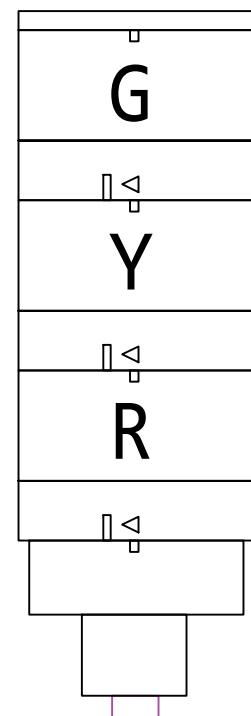
DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS MANUAL STATION - LIGHTSTACK SPLITTER WIRING DETAIL

REV	SECT.	DETAIL	JOB#
PREV.	69		114600
SHEET	70		SPS-70
NEXT	71		DWG SPS-70

LIGHTSTACK MODULE CONFIGURATION

LIGHTSTACK



NOTE:

Each module has a Dip Switch terminal. Remove each module from the lightstack assembly to access the Dip Switch. The following are the switch settings for each module:

MODULE 3 (GREEN)	4 UP, REST DOWN
MODULE 2 (YELLOW)	3 UP, REST DOWN
MODULE 1 (RED)	1 UP, REST DOWN

C				SPS INTERCONNECT DRAWING PACKAGE SPS MANUAL STATION - LIGHTSTACK CONFIGURATION	REV A	SECT.	DETAIL	JOB#
B						PREV.	70	
A						SHEET	71	
REV	DATE	ENGR.	DESCRIPTION			NEXT	172	DWG SPS-71

1 2 3 4 5 6 7 8

A

A

B

B

C

C

D

D

SECTION ADDITIONAL INFORMATION

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SECTION - ADDITIONAL INFORMATION

REV	SECT.	DETAIL	JOB#
PREV.	71		114600
SHEET	172		
NEXT	173	DWG	SPS-172

BALI RIGHT-ANGLE TRANSFER HPD CABLE ASSEMBLY V2

A

A

B

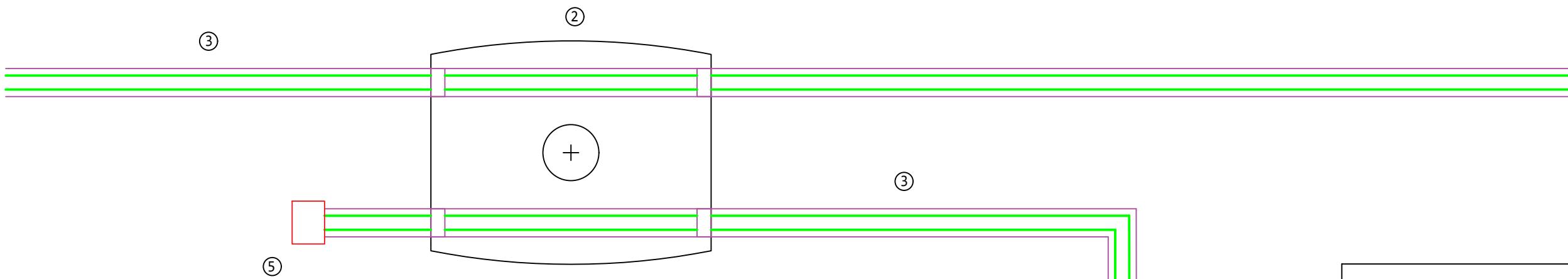
B

C

C

D

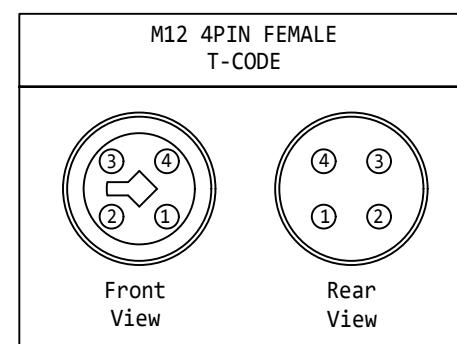
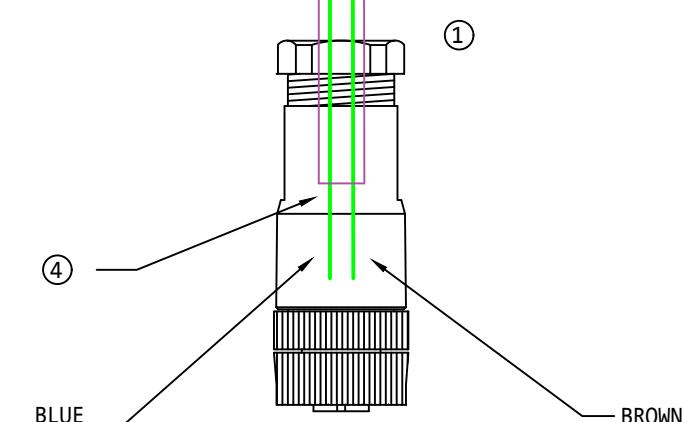
D



Wiring Table	
COLOR	CONNECTOR PIN
Brown	1
Blue	4

NOTE:

1. 4PIN M12 Female T-Code Field-Wireable Connector BG 105573 (Phoenix Contact 1404644).
2. ASi Splitter, BG 105733 (Bihl Wiedmann BWU3306).
3. ASi Flat Black Cable 2.5mm², BG 105564 (Pepperl+Fuchs VAZ-FK-S-BK-2,5MM).
4. Cut, strip, and install ASi cable into field-wireable connector based on wiring table.
5. End-cap used for insulating the ends of the flat cables, BG 104830.



C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



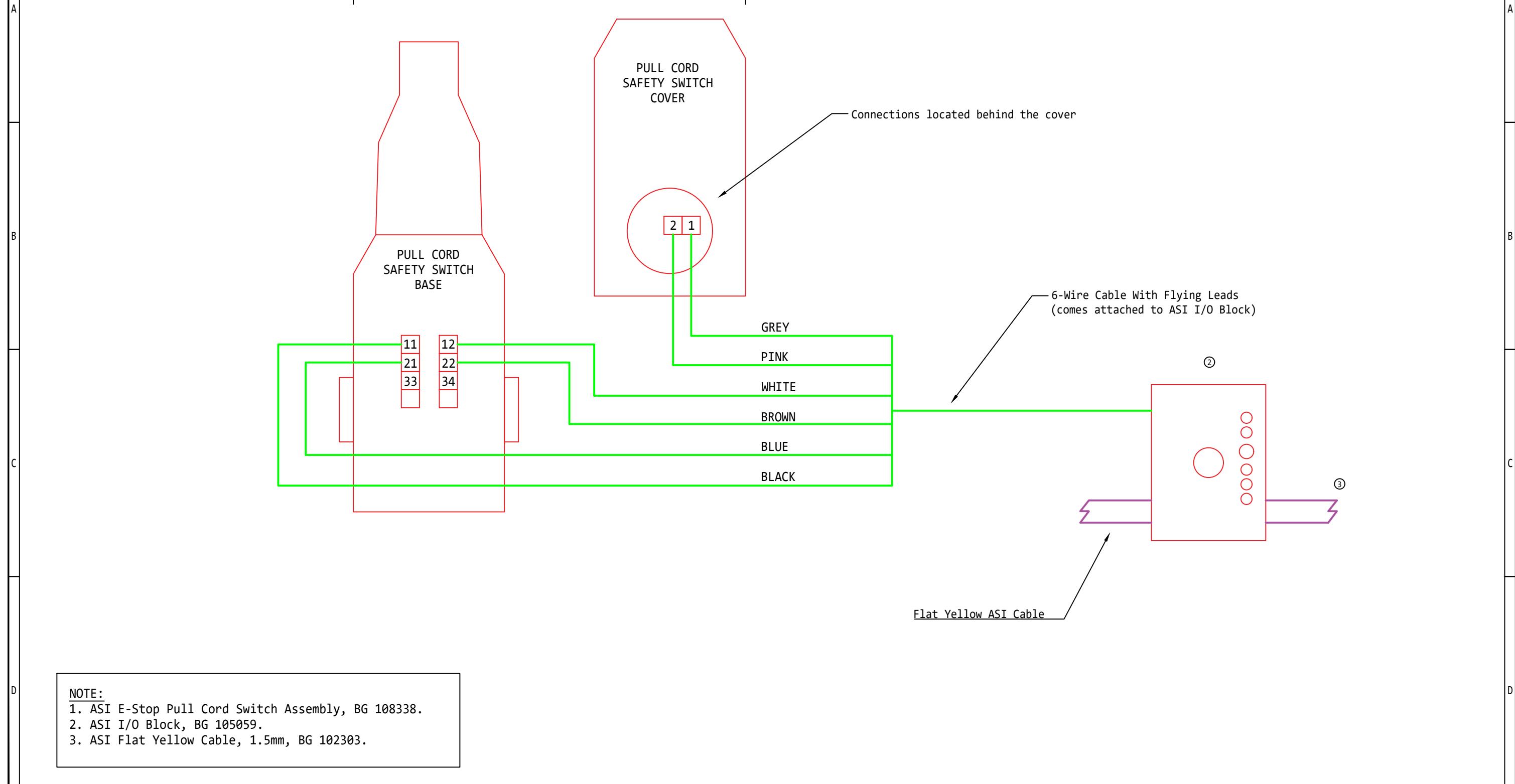
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DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
RAT-HPD CABLE ASSMEBLY V2

REV	SECT.	DETAIL	JOB#
PREV.	172		114600
SHEET	173		SPS-173
NEXT	174		

①



C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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DRAWN	MC
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SPS
INTERCONNECT DRAWING PACKAGE
SAFETY ZONE - PULL CORD DEVICE WIRING DETAIL - SINGLE

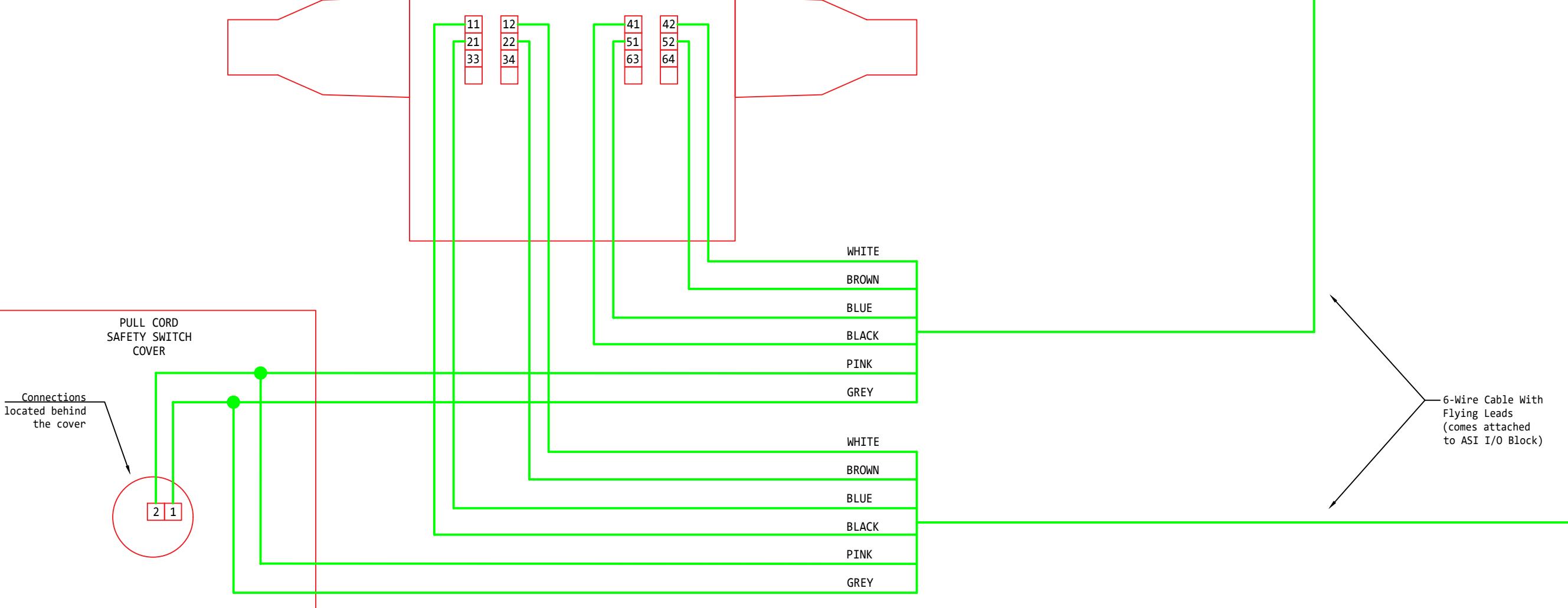
REV	SECT.	DETAIL	JOB#
PREV.	173		114600
SHEET	174		SPS-174
NEXT	175		DWG

A

NOTE:
 1. ASI E-Stop Pull Cord Switch Assembly, BG 108339.
 2. ASI I/O Block, BG 105059.
 3. ASI Flat Yellow Cable, 1.5mm, BG 102303.

A

B



B

C

C

D

D

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



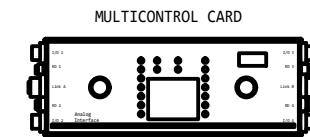
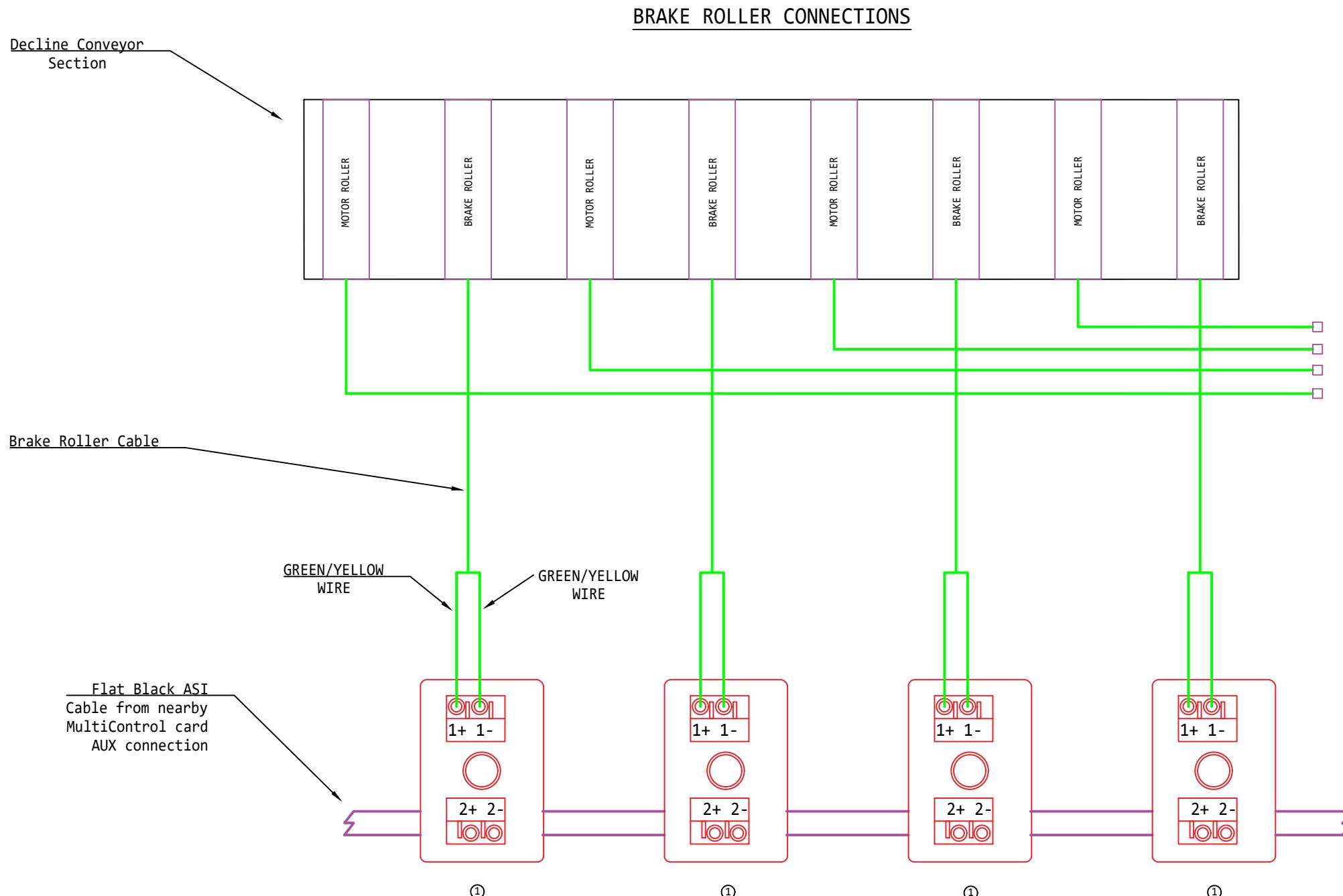
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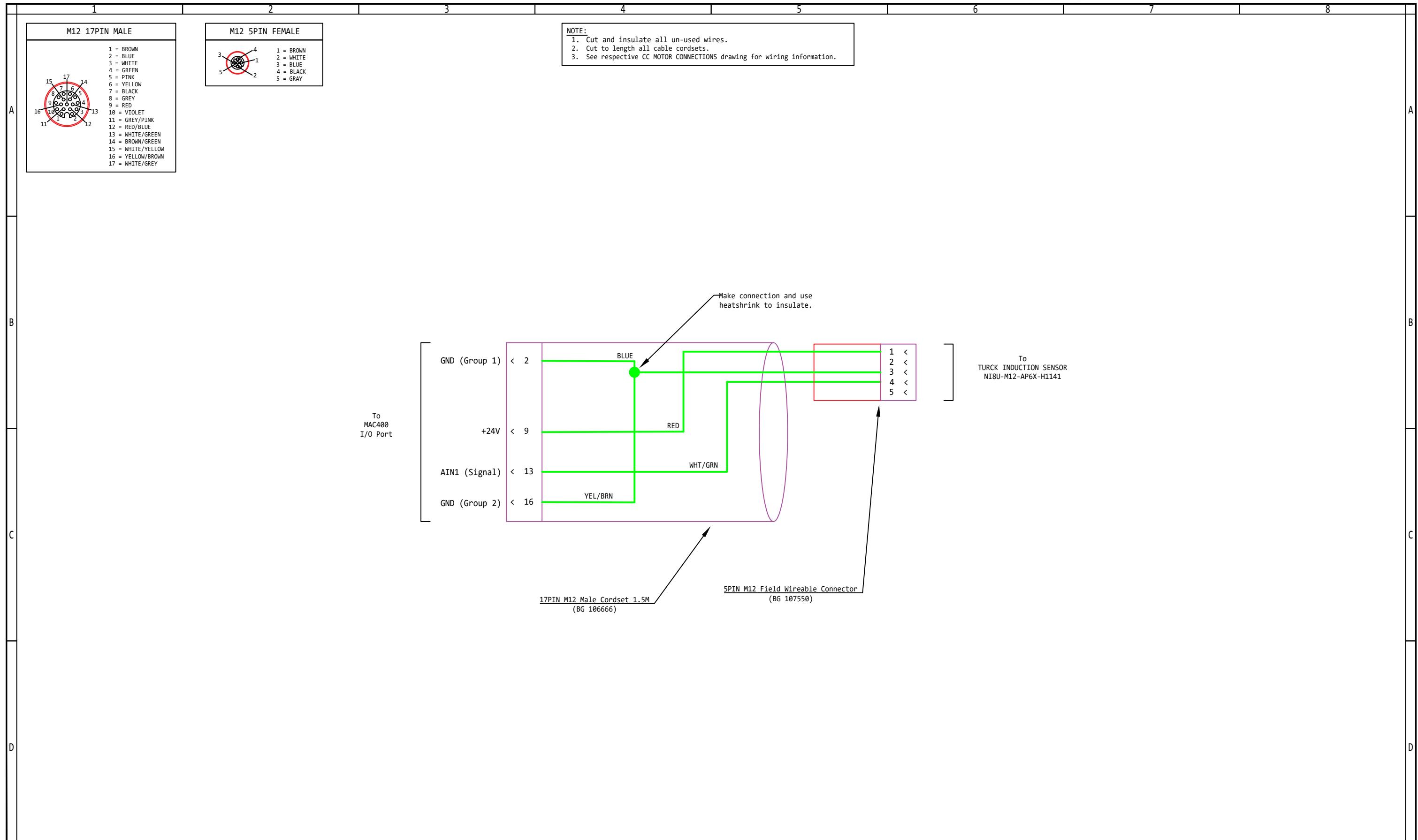
DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SAFETY ZONE - PULL CORD DEVICE WIRING DETAIL - DUAL

REV	A	SECT.	DETAIL	JOB#
		PREV.	174	114600
		SHEET	175	
		NEXT	177	DWG SPS-175

NOTE:
 1. ASI splitter block - BG 109755.
 2. Brake Roller engages when 24VDC is removed from the circuit.
 3. If possible, strip wires and install ferrules.





C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION

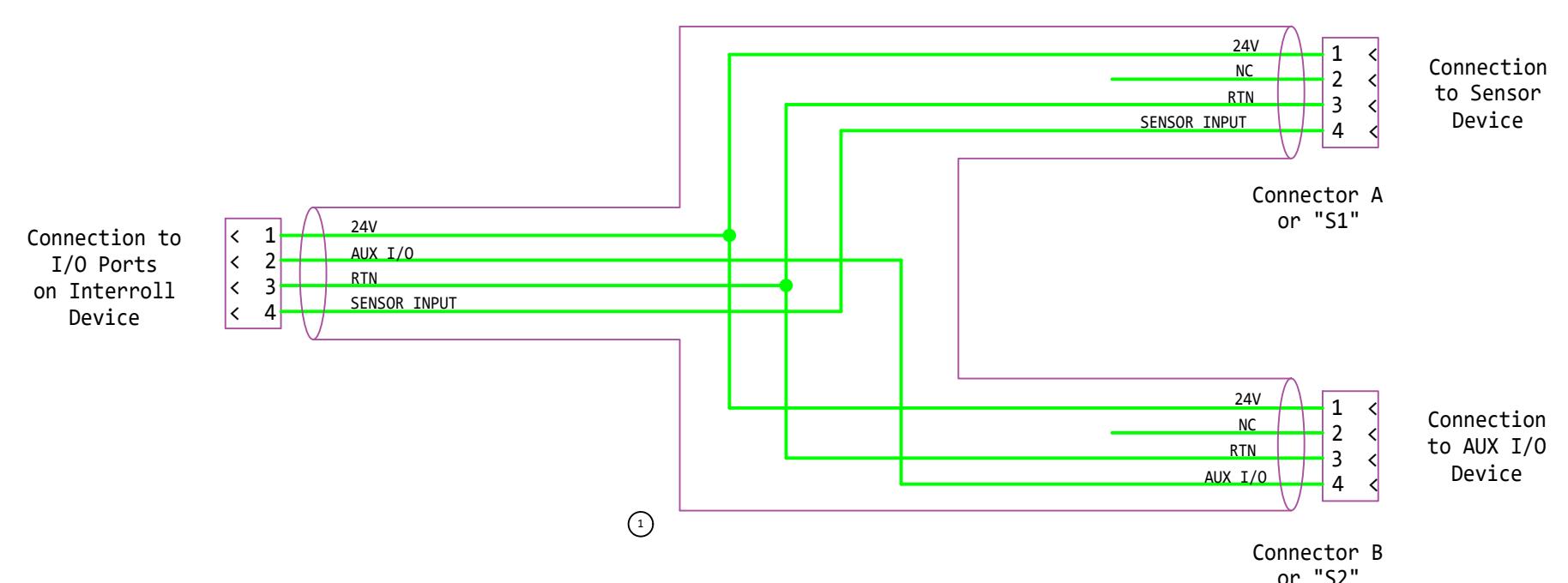
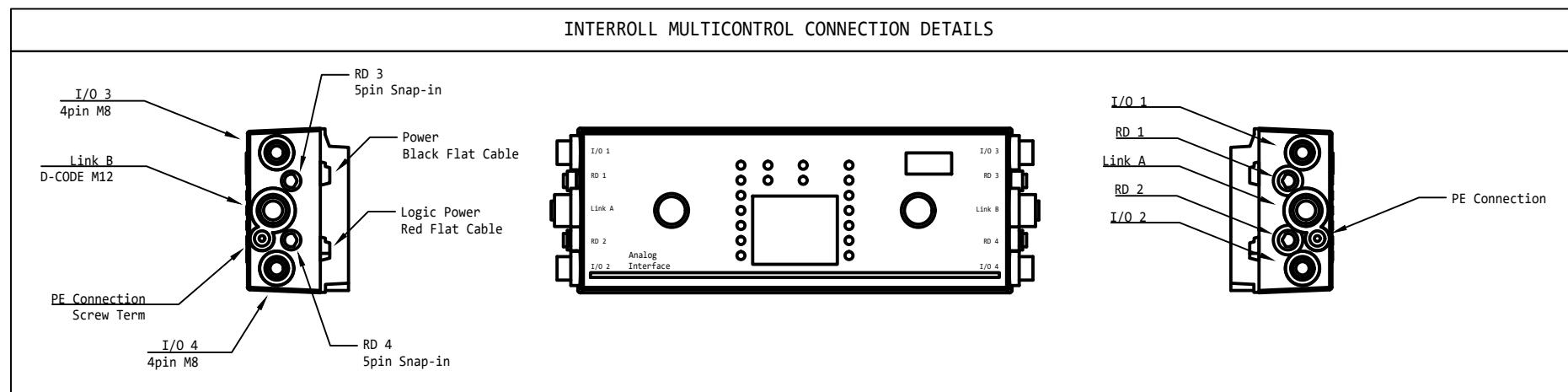


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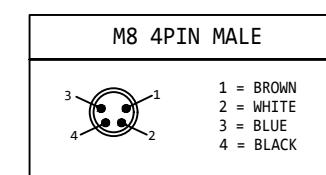
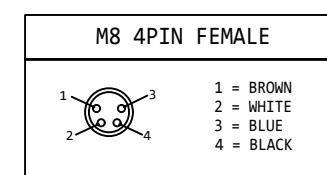
DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
HOMING SENSOR ASSEMBLY

REV	SECT.	DETAIL	JOB#
PREV.	177		114600
SHEET	178		SPS-178
NEXT	179		DWG SPS-178



NOTE:
1. Interroll 4PIN Y-Cable PN S-1104460 - (BG 107163).



C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
INTERROLL Y-CABLE DETAILS

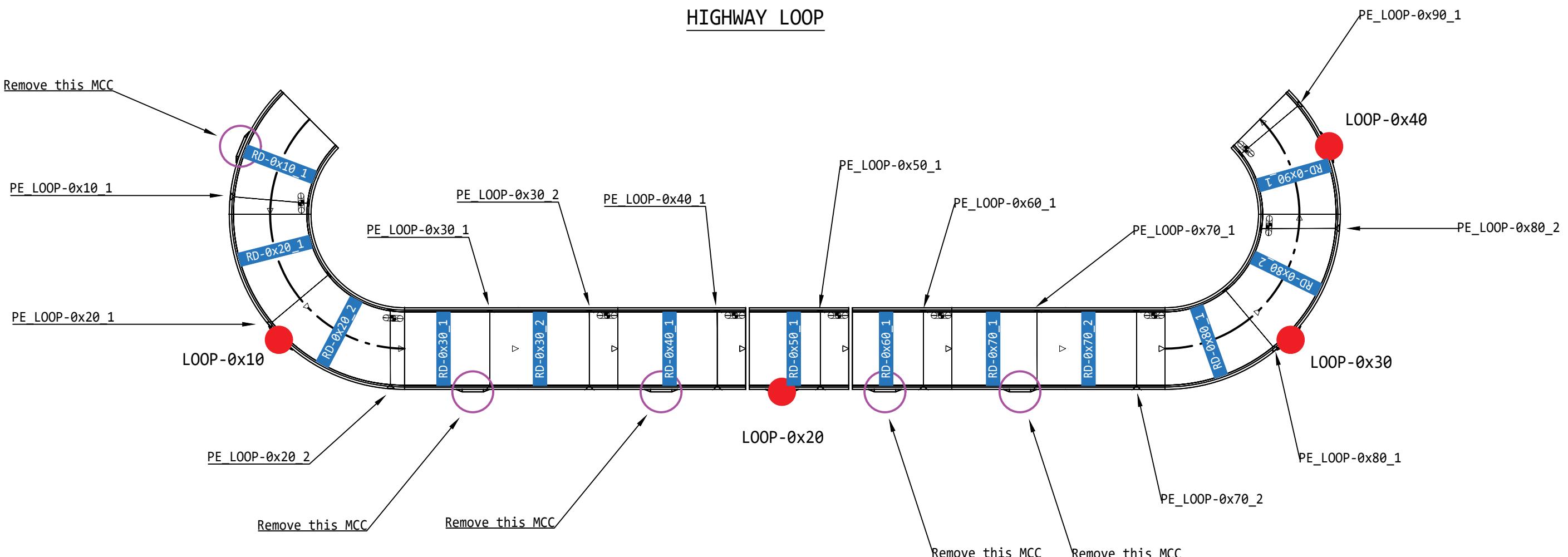
REV	SECT.	DETAIL	JOB#
	PREV.	178	114600
A	SHEET	179	SPS-179
	NEXT	180	DWG SPS-179

NOTE:

- This drawing shows the hardware modifications and new naming conventions for the MultiControl Cards (MCC), Photoeye sensors (PE), and Roller Drives (RD) on the Highway Loop.
- The "x" in the naming conventions will change for different Stations, e.g., Station-01 may use LOOP-0020 and Station-07 may use LOOP-0620 for the MCC located in the same relative position on the Highway Loops.
- All peripherals and components are depicted in approximate locations.
- All MCC's that are removed shall be collected and carefully stored in local BG inventory.

KEY

- Interroll MultiControl Card
- Roller Drive
- PE Sensor

HIGHWAY LOOP

C		
B		
A		
REV	DATE	ENGR. DESCRIPTION



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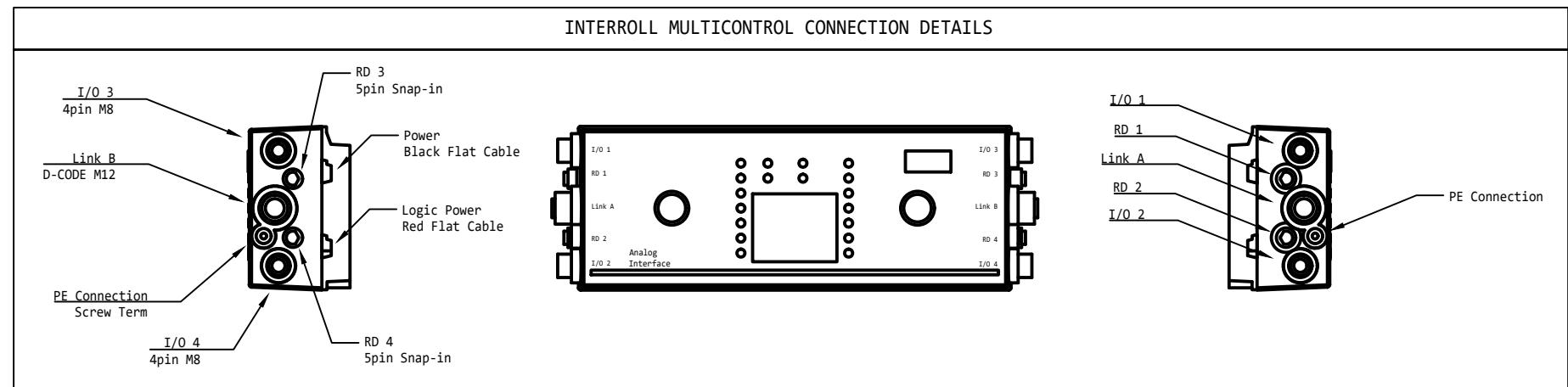
DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS HIGHWAY LOOP MODIFICATIONS - P1

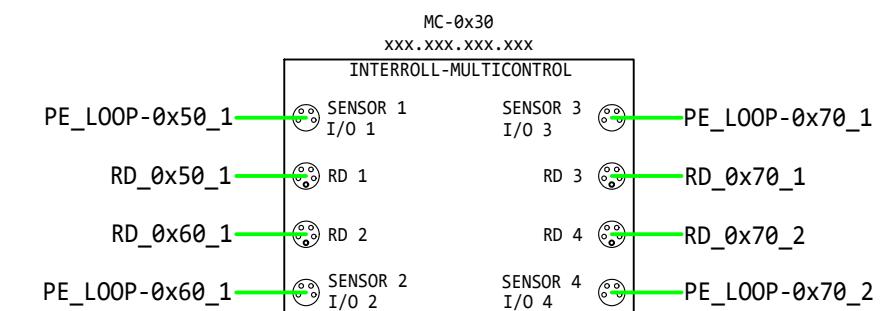
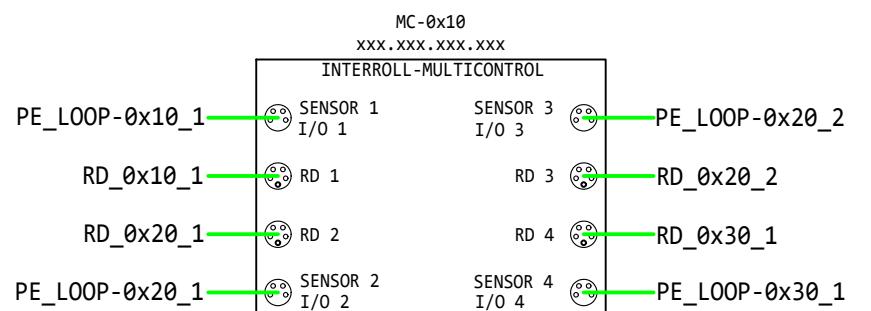
REV	A	SECT.	DETAIL	JOB#
PREV.	179			114600
SHEET	180			
NEXT	181			
DWG	SPS-180			

NOTE:

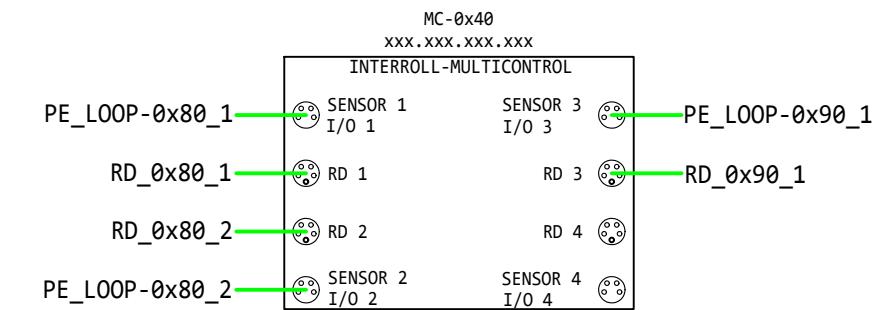
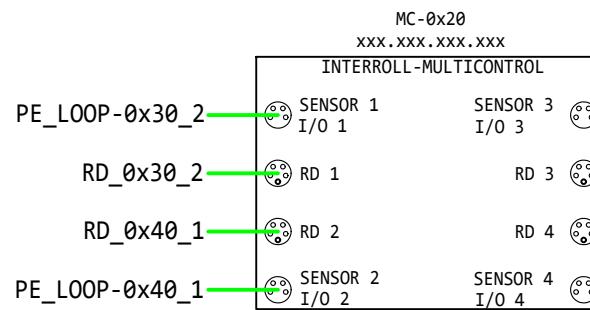
- This drawing shows the modified connections for the Photoeye Sensors (PE's) and Roller Drives (RD's) to each MultiControl Card (MCC).
- Use motor extension cables and sensor extension cables where necessary.



B



C



D

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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DATE	09/22/2020
SCALE	N/A
DRAWN	MC
APPROVED	

SPS
INTERCONNECT DRAWING PACKAGE
SPS HIGHWAY LOOP MODIFICATIONS - P2

REV	SECT.	DETAIL	JOB#
PREV.	180		114600
SHEET	181		SPS-181
NEXT	182		DWG SPS-181

NOTE:
Actuation of all 6 contacts
is common and all 6 are
mechanically linked.

NOT BG SUPPLIED

ABB LINESTRONG3D
2TLA050204R1233

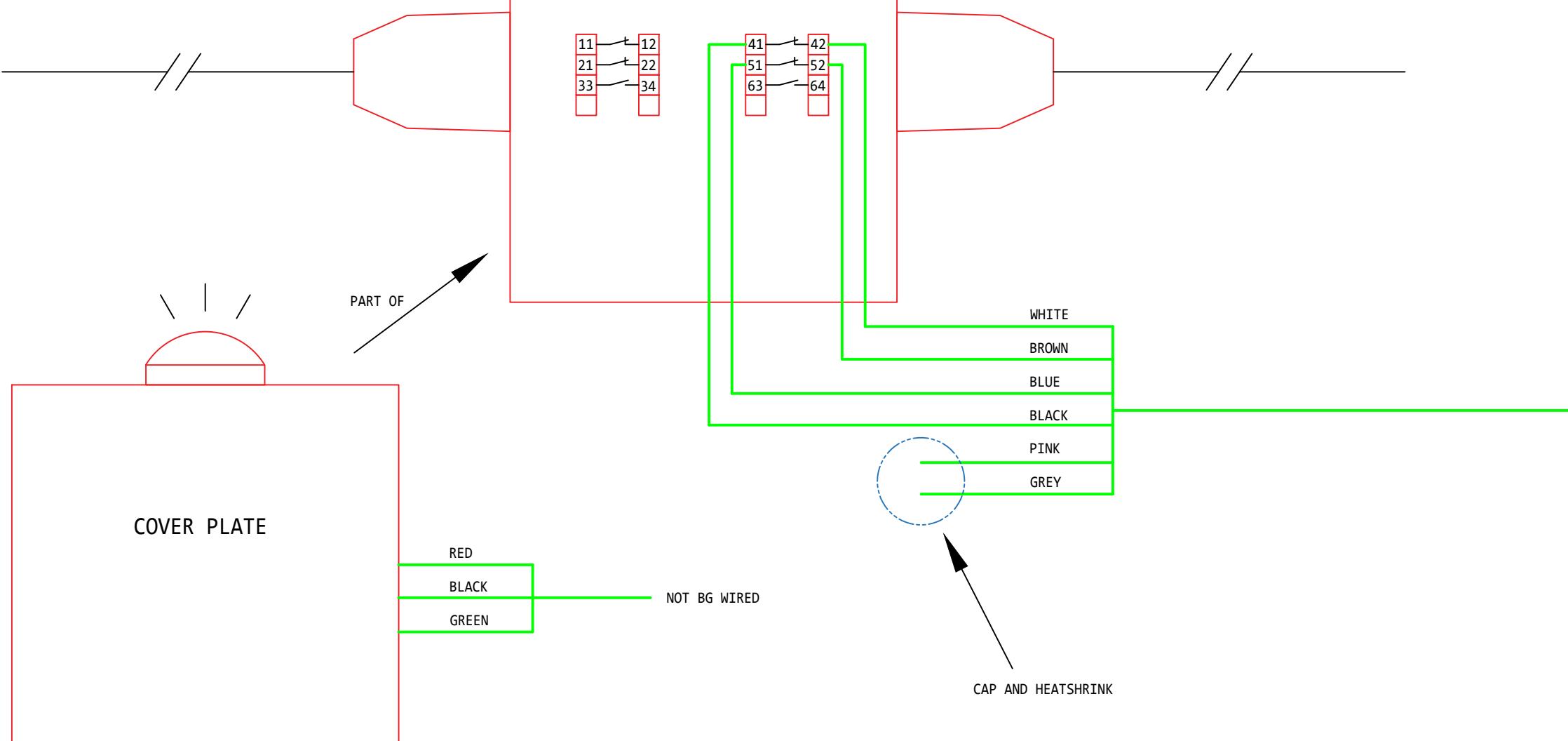
11---12
21---22
33---34

41---42
51---52
63---64

BG Flat Yellow ASI
Cable

PEPPERL+FUCHS
VAA-2E1A-G10-SAJ/EA2J-1M
BG 105059

BG SUPPLIED



C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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SPS
INTERCONNECT DRAWING PACKAGE
PULL CORD AT CONVEYOR BOUNDARY

REV	SECT.	DETAIL	JOB#
	PREV.	181	114600
A	SHEET	182	
	NEXT		DWG SPS-182