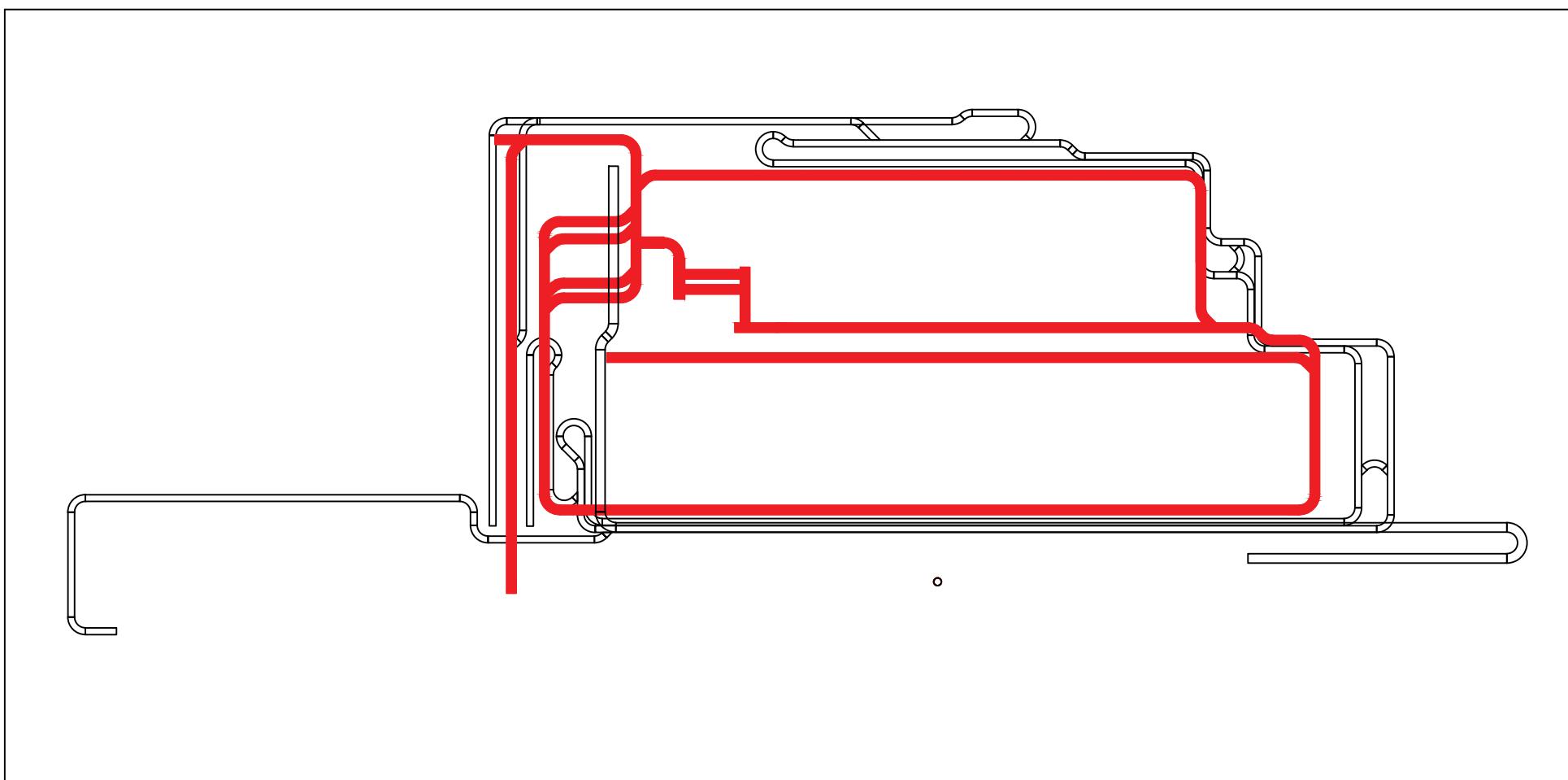


# LANS FACILITY CONVEYANCE - STORE ORDER TOTE LINE

## INTERCONNECT DRAWING PACKAGE BERKSHIRE GREY



FILENAME	SH	REV	DWGDESC
LANS-S-I	I	-	TITLE SHEET
LANS-S-II	II	-	NOTES
LANS-S-00	00		LANS FACILITY CONVEY STORE - MCC - OVERVIEW
LANS-S-01	01		LANS FACILITY CONVEY STORE - PULL CORDS
LANS-S-10	10		SECTION - FPP POWER
LANS-S-11	11		LANS FACILITY CONVEY STORE - FPP - OVERVIEW
LANS-S-12	12		LANS FACILITY CONVEY STORE - FPP L1
LANS-S-13	13		LANS FACILITY CONVEY STORE - FPP L2
LANS-S-14	14		LANS FACILITY CONVEY STORE - FPP L3
LANS-S-15	15		LANS FACILITY CONVEY STORE - FPP L4
LANS-S-16	16		LANS FACILITY CONVEY STORE - FPP L5
LANS-S-30	30		SECTION - AUX POWER
LANS-S-31	31		LANS FACILITY CONVEY STORE - AUX - OVERVIEW
LANS-S-50	50		SECTION - LOGIC POWER
LANS-S-51	51		LANS FACILITY CONVEY STORE - LOGIC - OVERVIEW
LANS-S-70	70		SECTION - COMMUNICATION
LANS-S-71	71		LANS FACILITY CONVEY STORE - COMM - OVERVIEW
LANS-S-90	90		SECTION - ADDITIONAL INFORMATION
LANS-S-92	92		RAT-HPD CABLE ASSEMBLY V2
LANS-S-93	93		SAFETY ZONE - PULL CORD DEVICE WIRING DETAIL - SINGLE
LANS-S-94	94		SAFETY ZONE - PULL CORD DEVICE WIRING DETAIL - DUAL
LANS-S-95	95		BRAKE ROLLER CONNECTIONS
LANS-S-96	96		LANS FACILITY CONVEY - BARCODE SCANNERS
LANS-S-100	100		LANS FACILITY CONVEY STORE - MCC CABLES & TERMINATIONS
LANS-S-101	101		LANS FACILITY CONVEY STORE - BARCODE CABLES & TERMINATIONS

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.

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REV	DATE	ENGR.	DESCRIPTION



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DATE	06/30/2021
SCALE	NTS
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
TITLE SHEET

REV	SECT.	DETAIL	JOB#
A	PREV.		114650
A	SHEET I NEXT II	DWG LANS-S-I	

1 2 3 4 5 6 7 8

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
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 SPLICE 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

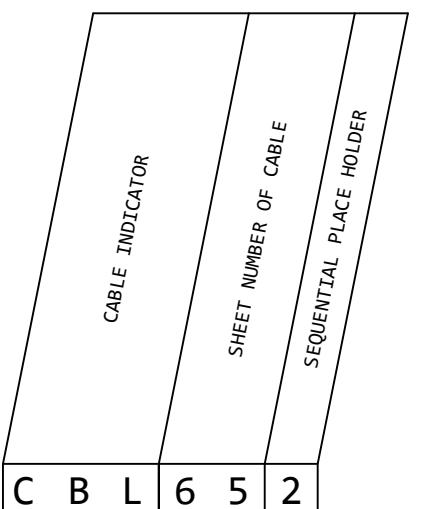
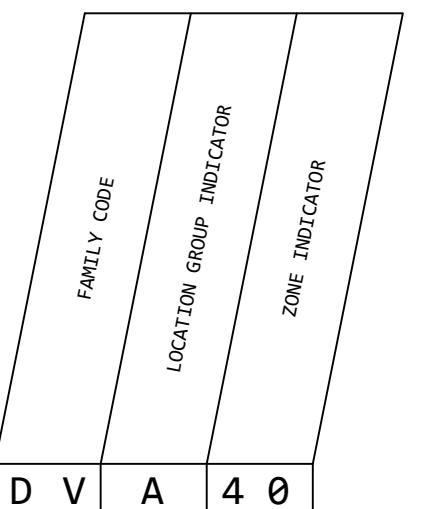
Leave 5' of slack on the cables to be terminated inside the electrical cabinet.

## ADDITIONAL PACKOUT STATIONS/CONVEYANCE

Red traces shown on SHEETS 11, 31, 51, 71 indicate additional or updated interconnects.

## 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  
LABEL

CABLE  
LABEL

C			
B			
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REV	DATE	ENGR.	DESCRIPTION



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DRAWN	MC
APPROVED	

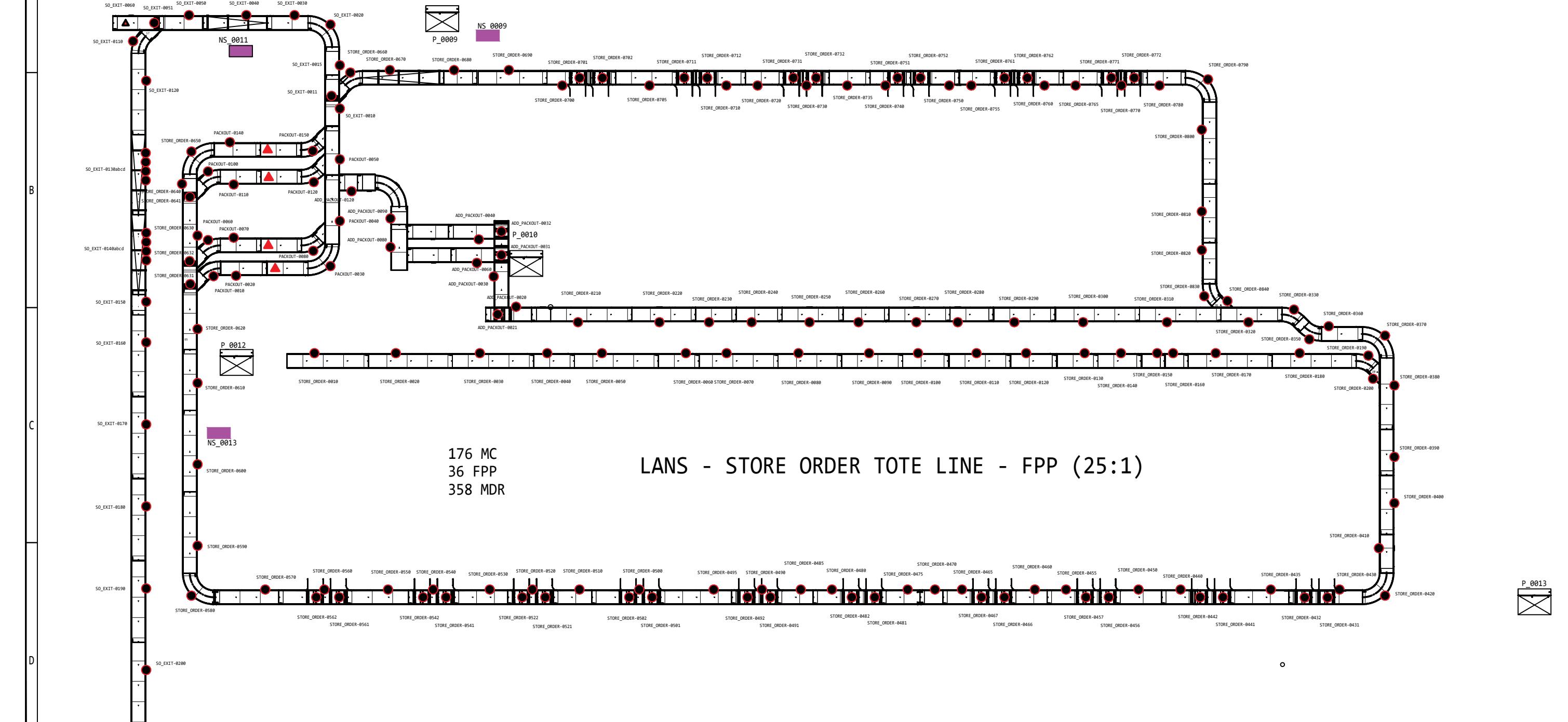
RPS  
INTERCONNECT DRAWING PACKAGE  
NOTES

REV  
A  
SECT.  
PREV.  
I  
SHEET  
II  
NEXT  
00  
JOB# 114650  
DWG LANS-S-II

NOTE:

- This drawing illustrates the approximate locations of all Interroll MultiControl Cards (MCC), shown by the red dots.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.

A

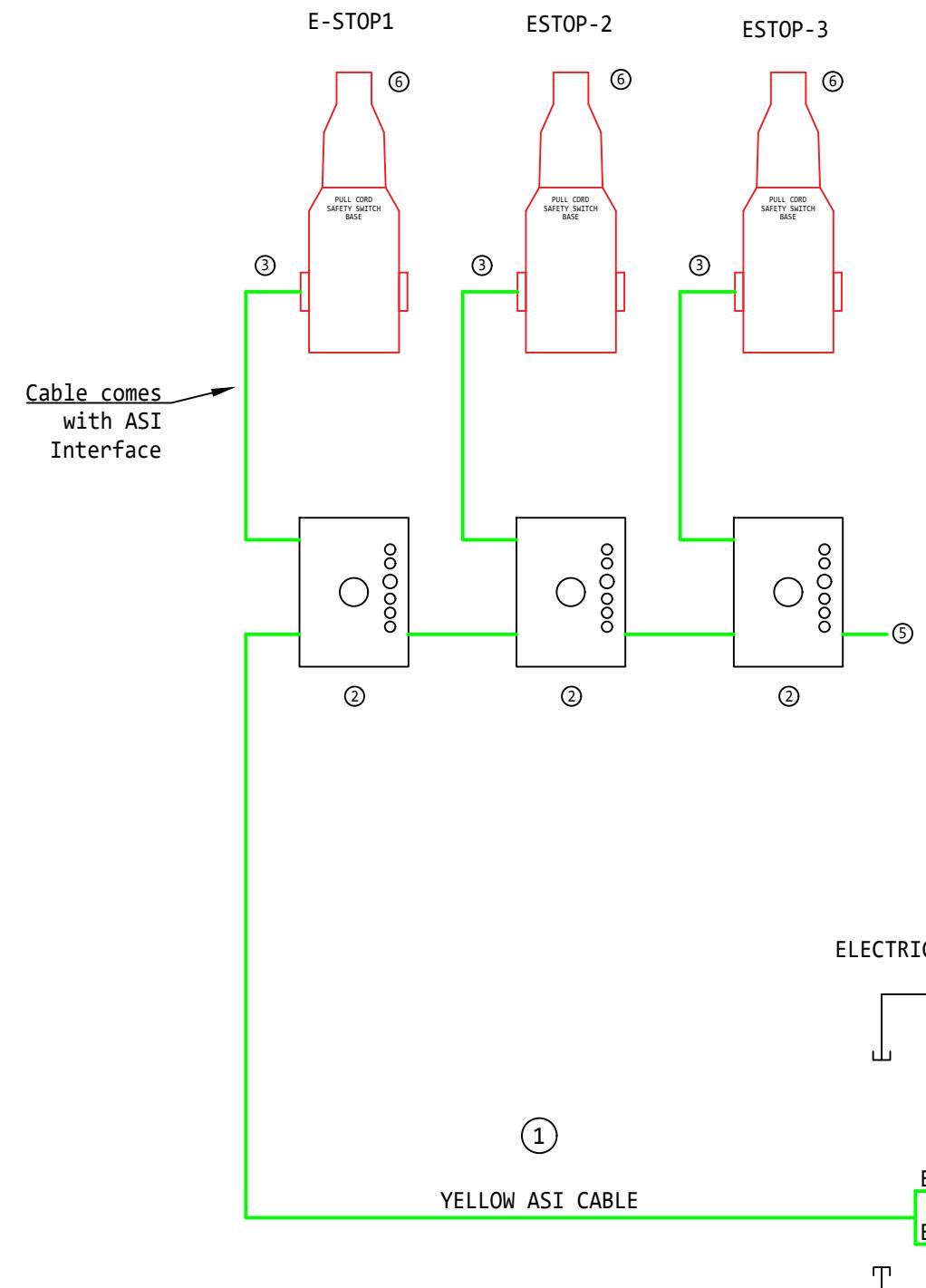
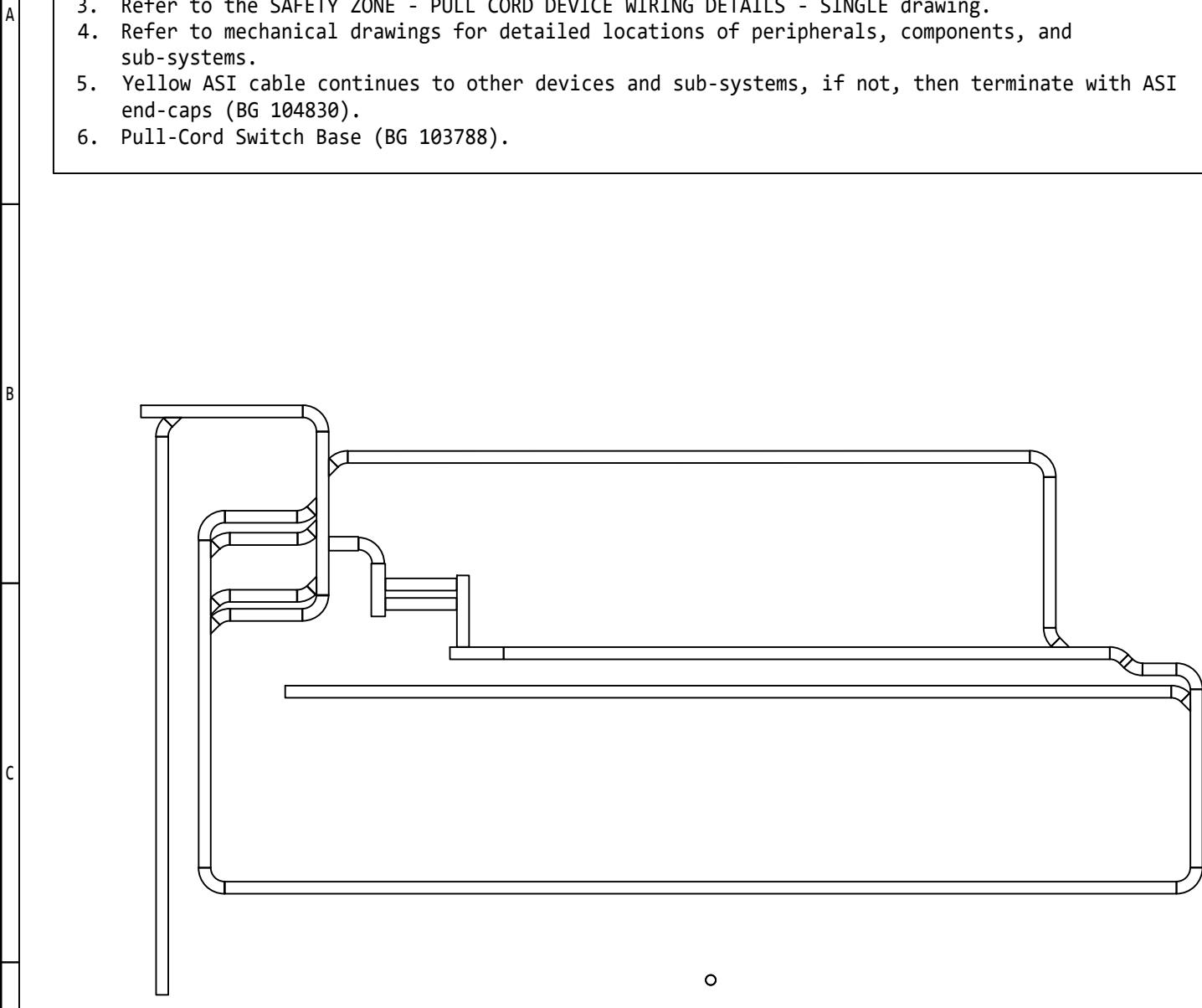


C			<b>BERKSHIRE GREY</b> 140 SOUTH ROAD BEDFORD, MA 01730	THIS DRAWING IS THE PROPERTY OF BERKSHIRE GREY INC. NEITHER THE DRAWING, NOR INFORMATION DERIVED FROM IT IS TO BE GIVEN TO OTHERS. NO USE IS TO BE MADE OF IT WHICH IS OR MAY BE INJURIOUS TO BERKSHIRE GREY.  DATE 04/29/2021 SCALE N/A DRAWN MC APPROVED	RPS/SPS INTERCONNECT DRAWING PACKAGE LANS FACILITY CONVEY STORE - MCC - OVERVIEW	REV	SECT.	DETAIL	JOB#
B						II			114650
A						00			DWG LANS-S-00
REV	DATE	ENGR.				01			

**NOTE:**

1. Connections to ASI I/O Link Modules use yellow ASI cables with 1.5mm<sup>2</sup> 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).

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



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REV	DATE	ENGR. DESCRIPTION



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

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - PULL CORDS

REV	A	SECT. PREV. 00	DETAIL 00	JOB# 114650
SHEET	A	SHEET 01	NEXT 10	DWG LANS-S-01

1 2 3 4 5 6 7 8

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# SECTION FPP POWER

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REV	DATE	ENGR.	DESCRIPTION



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DATE	04/29/2021
SCALE	N/A
DRAWN	MC
APPROVED	

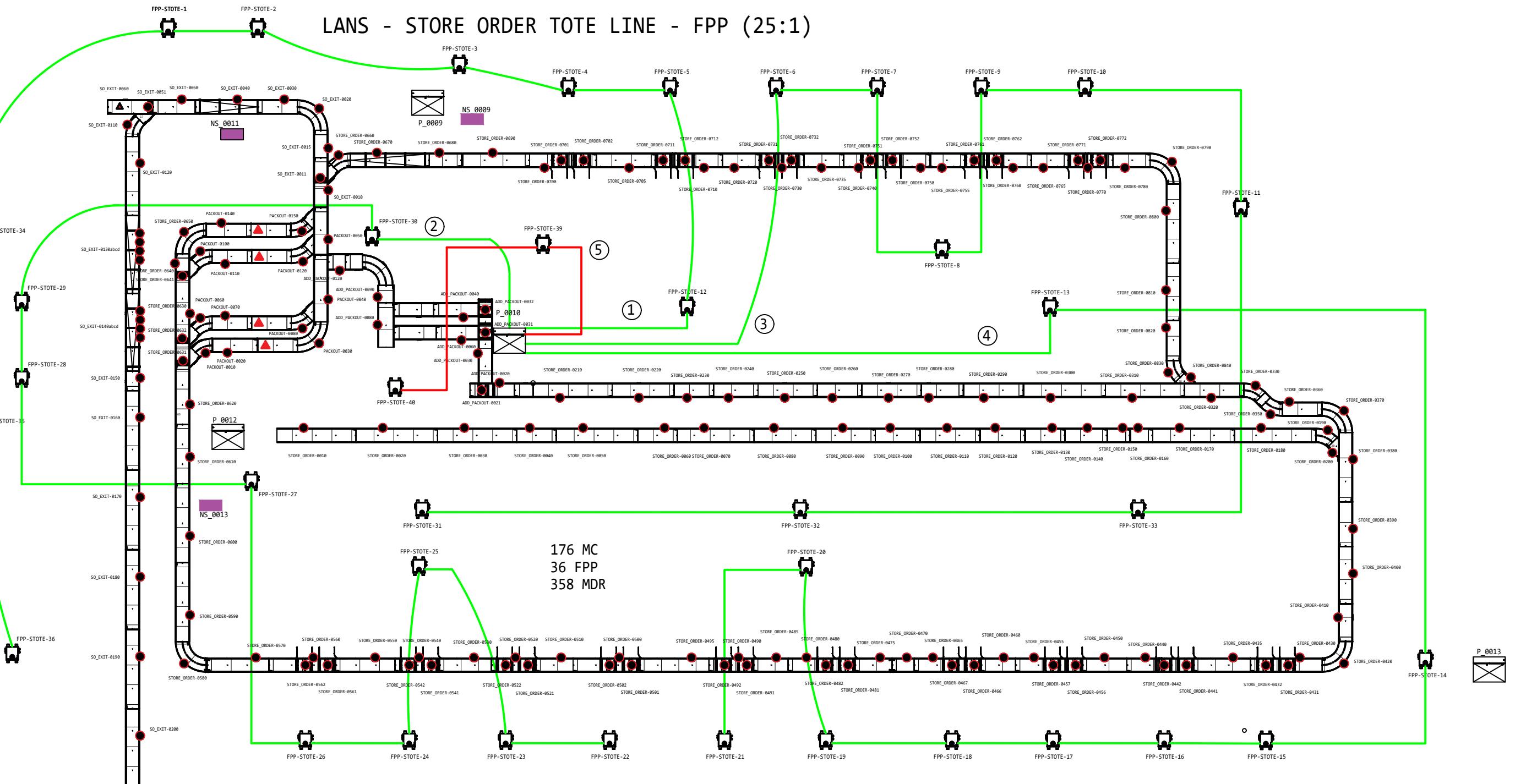
RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
SECTION - FPP POWER

REV	SECT.	DETAIL	JOB#
PREV.	01		114650
SHEET	10		
NEXT	11		DWG LANS-S-10

NOTE:

- This drawing illustrates the Field Power Panel (FPP) interconnects for the Interroll MultiControl cards using 14/4 SOOW cables. The suggested connection paths are separated into loops and each loop is shown separately on subsequent SHEETS.
- The connections to the electrical cabinet and approximate cable lengths, for each loop, are shown per subsequent SHEETS.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- The red dots mark the approximate locations of each Interroll MultiControl card. The red triangles mark the name of the conveyor sections which do not have MCC's.

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C			<b>RPS/SPS</b> INTERCONNECT DRAWING PACKAGE LANS FACILITY CONVEY STORE - FPP - OVERVIEW	REV	SECT.	DETAIL	JOB#
B				10			114650
A				11			DWG LANS-S-11
REV	DATE	ENGR.		NEXT			
C							
B							
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REV	DATE	ENGR.	DESCRIPTION				



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - FPP - OVERVIEW

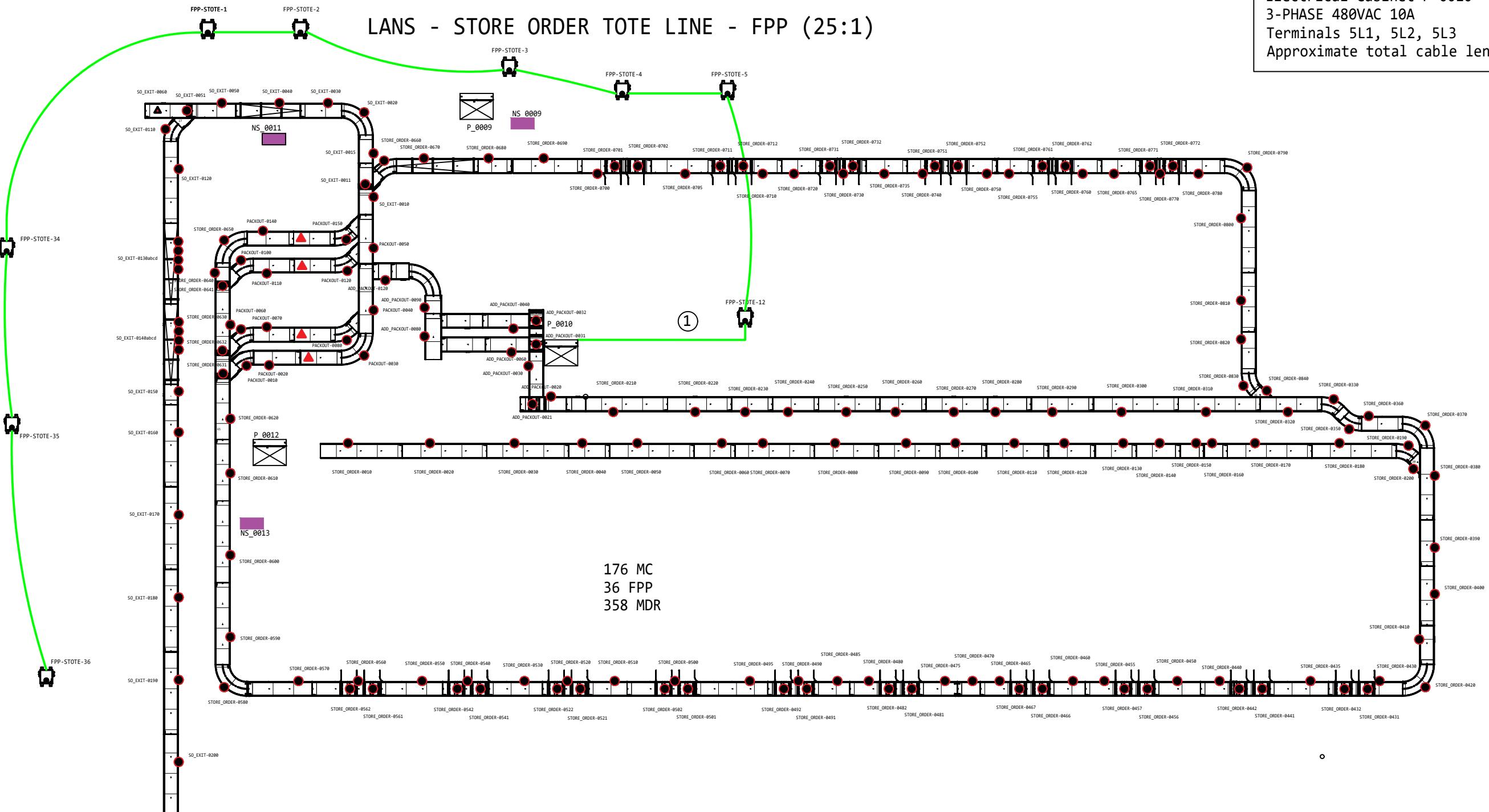
REV	A
SHEET	12
DWG	LANS-S-11

NOTE:

- This drawing illustrates the Field Power Panel (FPP) interconnects for the Interroll MultiControl cards using 14/4 SOOW cables. The suggested connection paths are separated into loops and each loop is shown separately on subsequent SHEETS.
- The connections to the electrical cabinet and approximate cable lengths, for each loop, are shown per subsequent SHEETS.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- The red dots mark the approximate locations of each Interroll MultiControl card. The red triangles mark the name of the conveyor sections which do not have MCC's.

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REV	DATE	ENGR. DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - FPP - L1

REV	SECT.	DETAIL	JOB#
PREV.	11		114650
SHEET	12		LANS-S-12
NEXT	13		

NOTE:

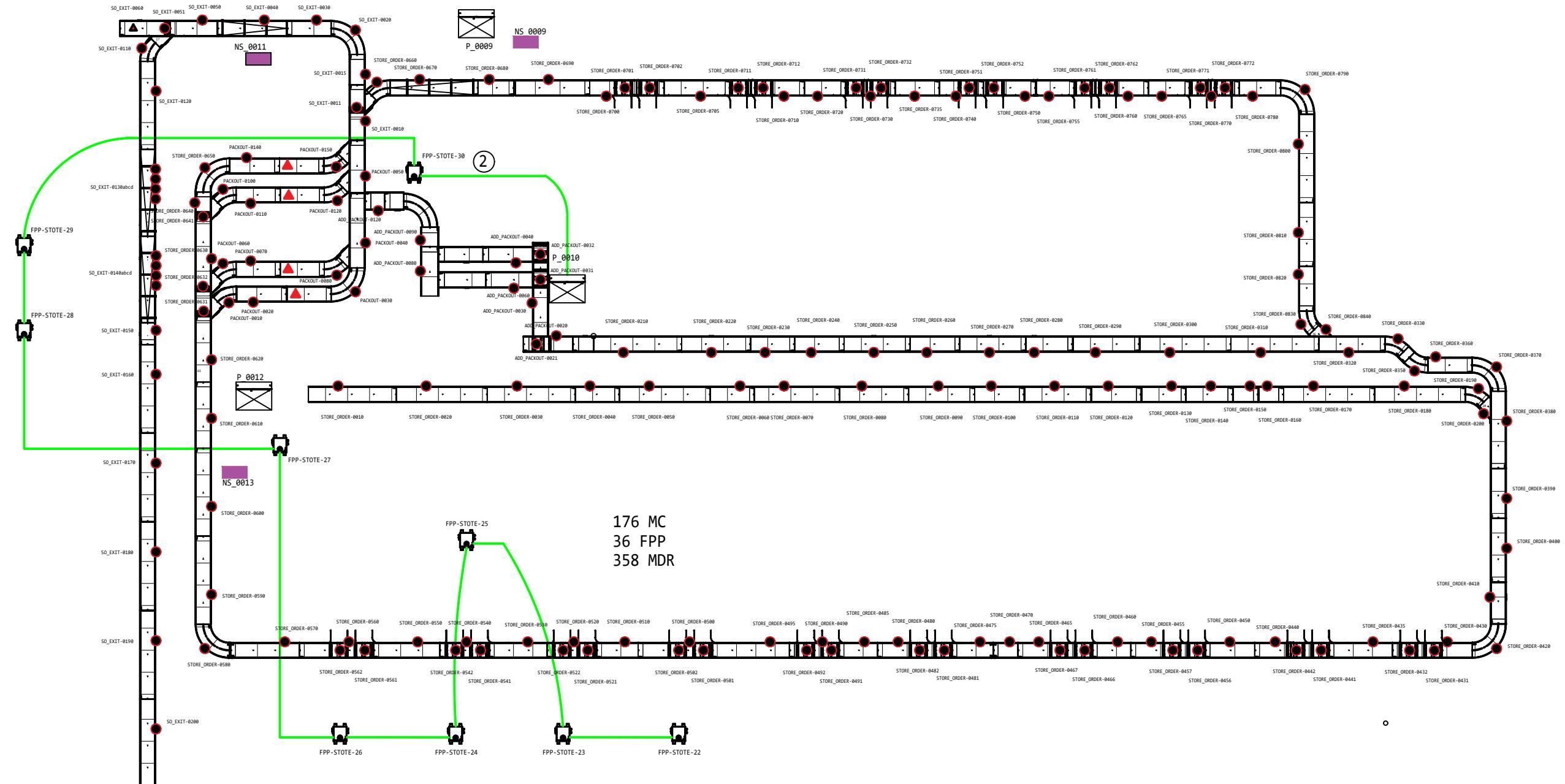
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- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- The red dots mark the approximate locations of each Interroll MultiControl card. The red triangles mark the name of the conveyors which do not have MCC's.

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## LANS - STORE ORDER TOTE LINE - FPP (25:1)

**LOOP2 Connection**  
**Electrical Cabinet P-0010**  
**3-PHASE 480VAC 10A**  
**Terminals 6L1, 6L2, 6L3**  
**Approximate total cable length = 90m**



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REV	DATE	ENGR. DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - FPP - L2

REV	SECT.	DETAIL	JOB#
PREV.	12		114650
SHEET	13		LANS-S-13
NEXT	14		

NOTE:

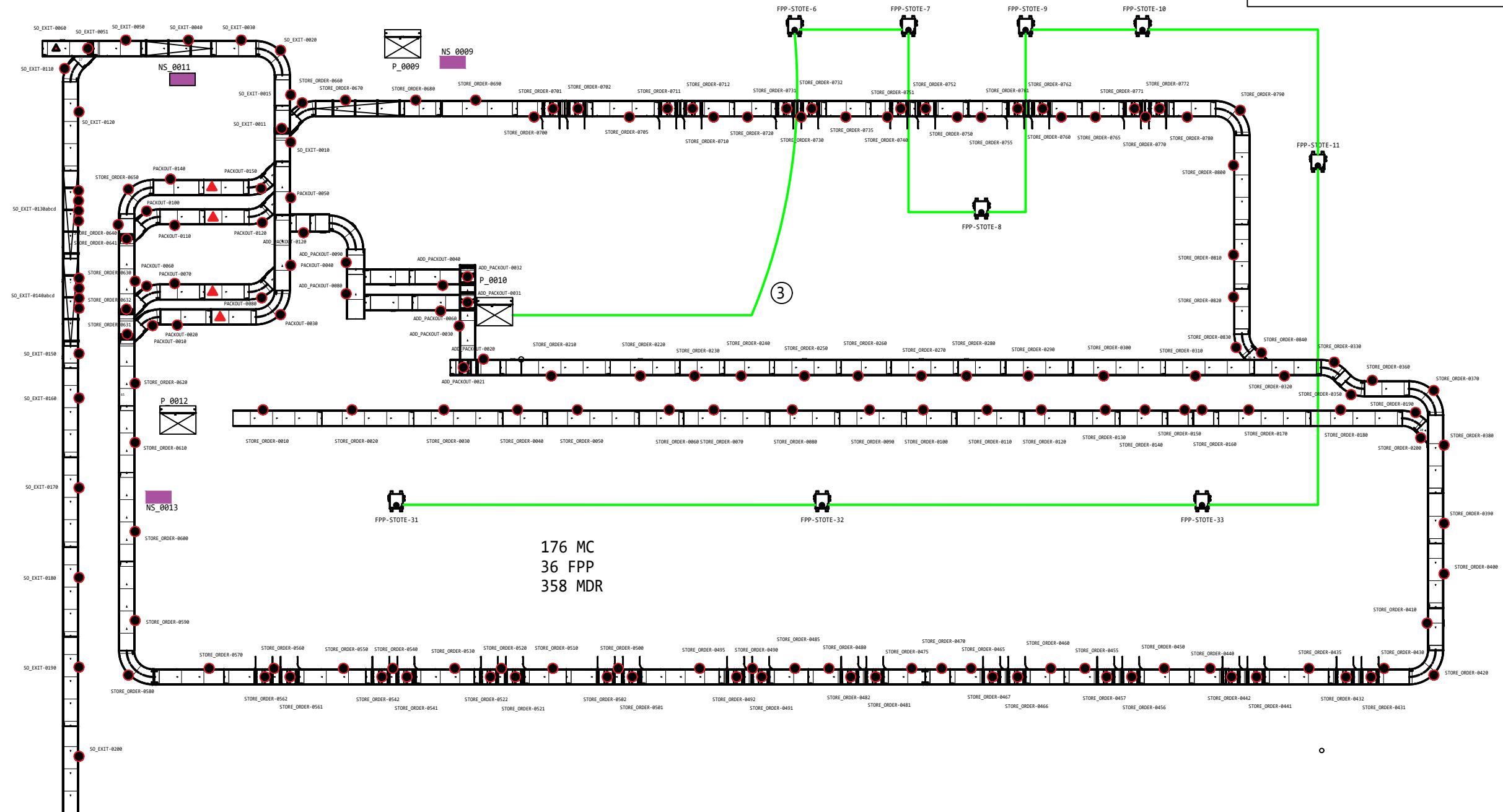
- This drawing illustrates the Field Power Panel (FPP) interconnects for the Interroll MultiControl cards using 14/4 SOOW cables. The suggested connection paths are separated into loops and each loop is shown separately on subsequent SHEETS.
- The connections to the electrical cabinet and approximate cable lengths, for each loop, are shown per subsequent SHEETS.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- The red dots mark the approximate locations of each Interroll MultiControl card. The red triangles mark the name of the conveyors which do not have MCC's.

A

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## LANS - STORE ORDER TOTE LINE - FPP (25:1)

**LOOP3 Connection**  
**Electrical Cabinet P-0010**  
**3-PHASE 480VAC 10A**  
**Terminals 7L1, 7L2, 7L3**  
**Approximate total cable length = 120m**



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REV	DATE	ENGR. DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - FPP - L3

REV	SECT.	DETAIL	JOB#
PREV.	13		114650
SHEET	14		LANS-S-14
NEXT	15		

NOTE:

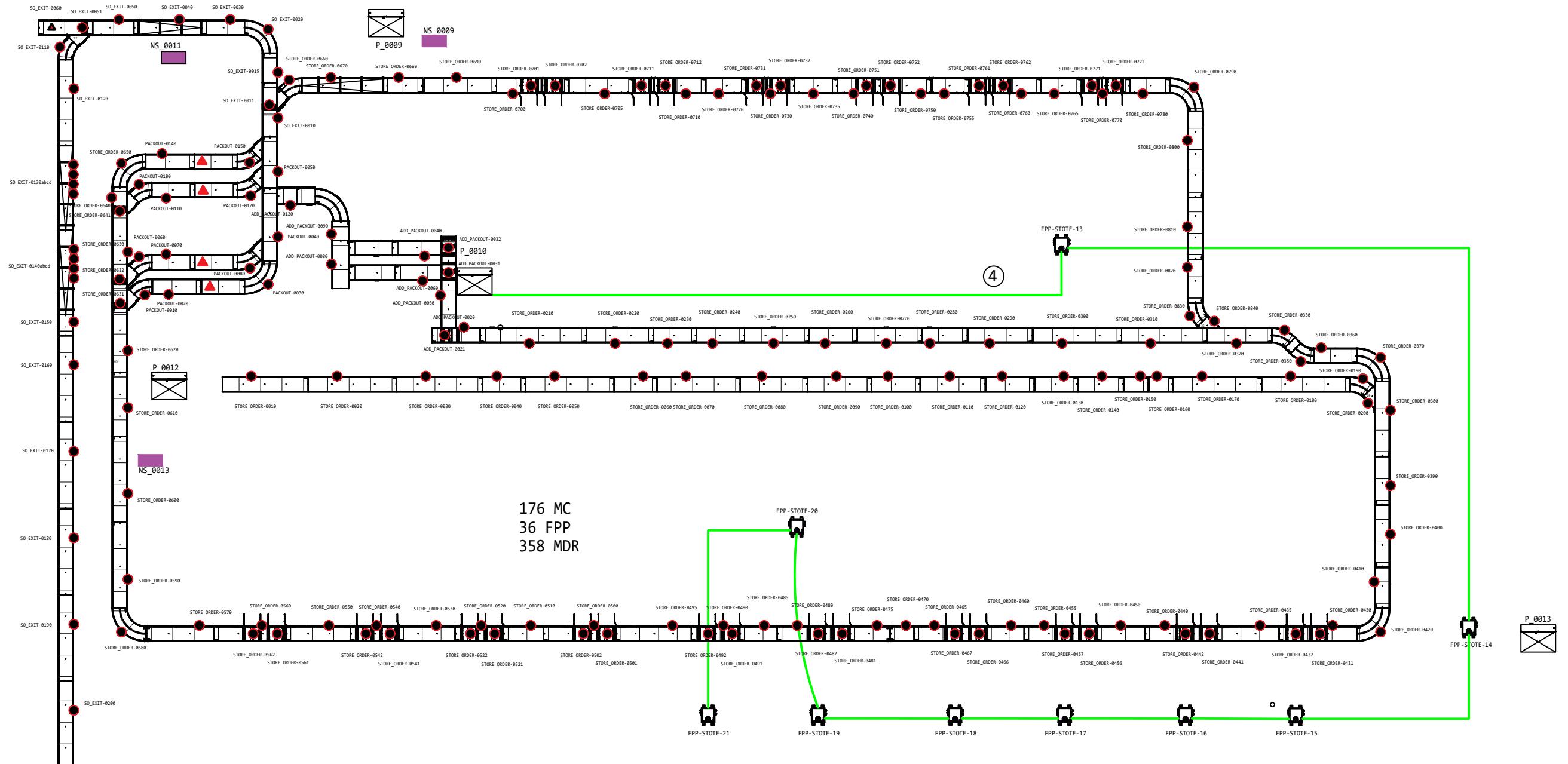
- This drawing illustrates the Field Power Panel (FPP) interconnects for the Interroll MultiControl cards using 14/4 SOOW cables. The suggested connection paths are separated into loops and each loop is shown separately on subsequent SHEETS.
- The connections to the electrical cabinet and approximate cable lengths, for each loop, are shown per subsequent SHEETS.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- The red dots mark the approximate locations of each Interroll MultiControl card. The red triangles mark the name of the conveyors which do not have MCC's.

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A

## LANS - STORE ORDER TOTE LINE - FPP (25:1)

**LOOP4 Connection**  
**Electrical Cabinet P-0010**  
**3-PHASE 480VAC 10A**  
**Terminals 8L1, 8L2, 8L3**  
**Approximate total cable length = 95m**



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REV	DATE	ENGR. DESCRIPTION



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DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - FPP - L4

REV	SECT.	DETAIL	JOB#
PREV.	14		114650
SHEET	15		LANS-S-15
NEXT	16		

NOTE:

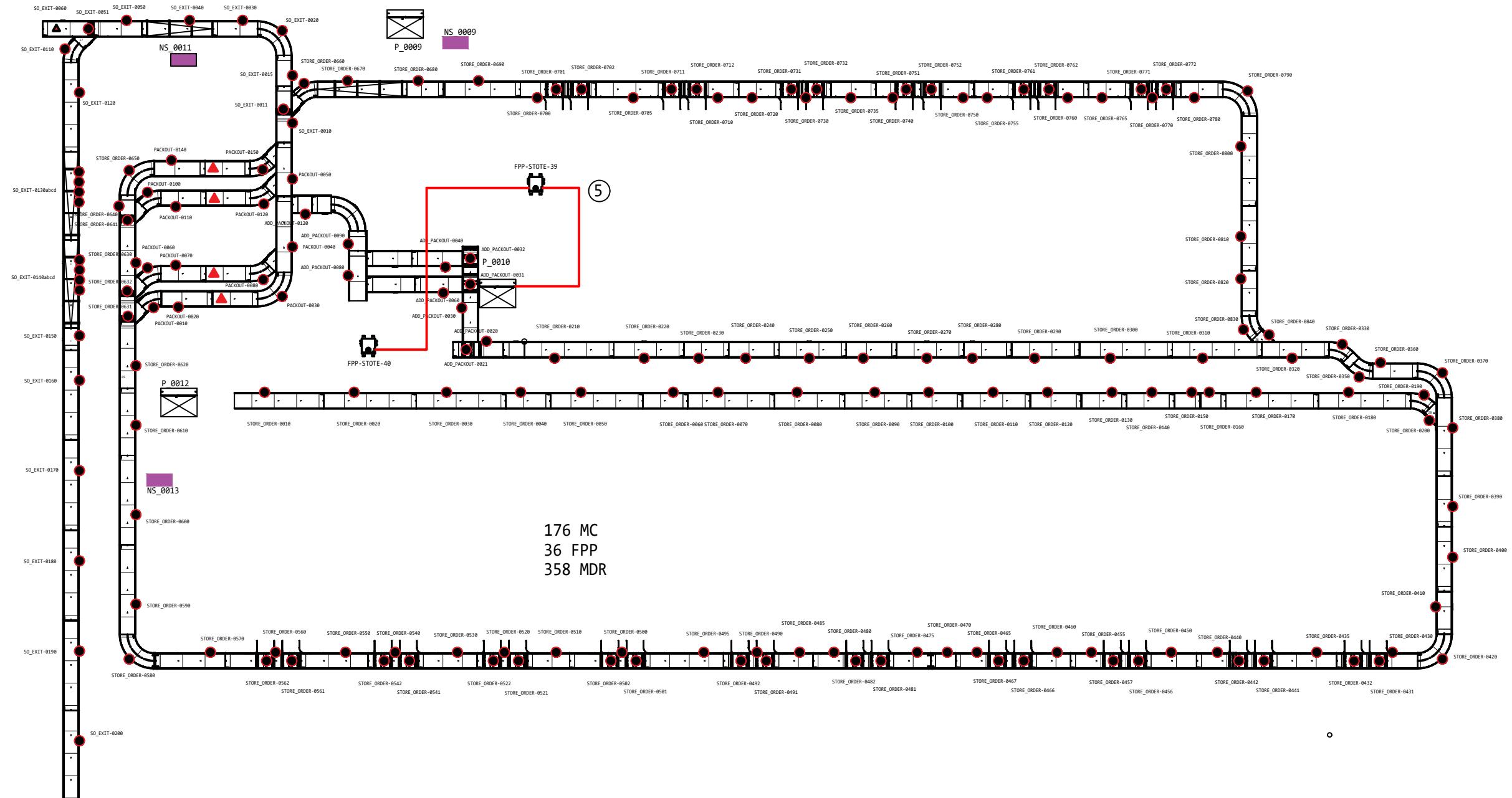
- This drawing illustrates the Field Power Panel (FPP) interconnects for the Interroll MultiControl cards using 14/4 SOOW cables. The suggested connection paths are separated into loops and each loop is shown separately on subsequent SHEETS.
- The connections to the electrical cabinet and approximate cable lengths, for each loop, are shown per subsequent SHEETS.
- Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
- The red dots mark the approximate locations of each Interroll MultiControl card. The red triangles mark the name of the conveyor sections which do not have MCC's.

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A

## LANS - STORE ORDER TOTE LINE - FPP (25:1)

**LOOP5 Connection**  
**Electrical Cabinet P-0010**  
**3-PHASE 480VAC 10A**  
**Terminals - (e.g. in series with LOOP2)**  
**Approximate total cable length = 50m**



C		
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REV	DATE	ENGR. DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - FPP - L5

REV	SECT.	DETAIL	JOB#
PREV.	15		114650
SHEET	16		LANS-S-16
NEXT	30		

1 2 3 4 5 6 7 8

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# SECTION AUX POWER

C			
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A			
REV	DATE	ENGR.	DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
SECTION - AUX POWER

REV	SECT.	DETAIL	JOB#
PREV.	16		114650
SHEET	30		
NEXT	31		DWG LANS-S-30

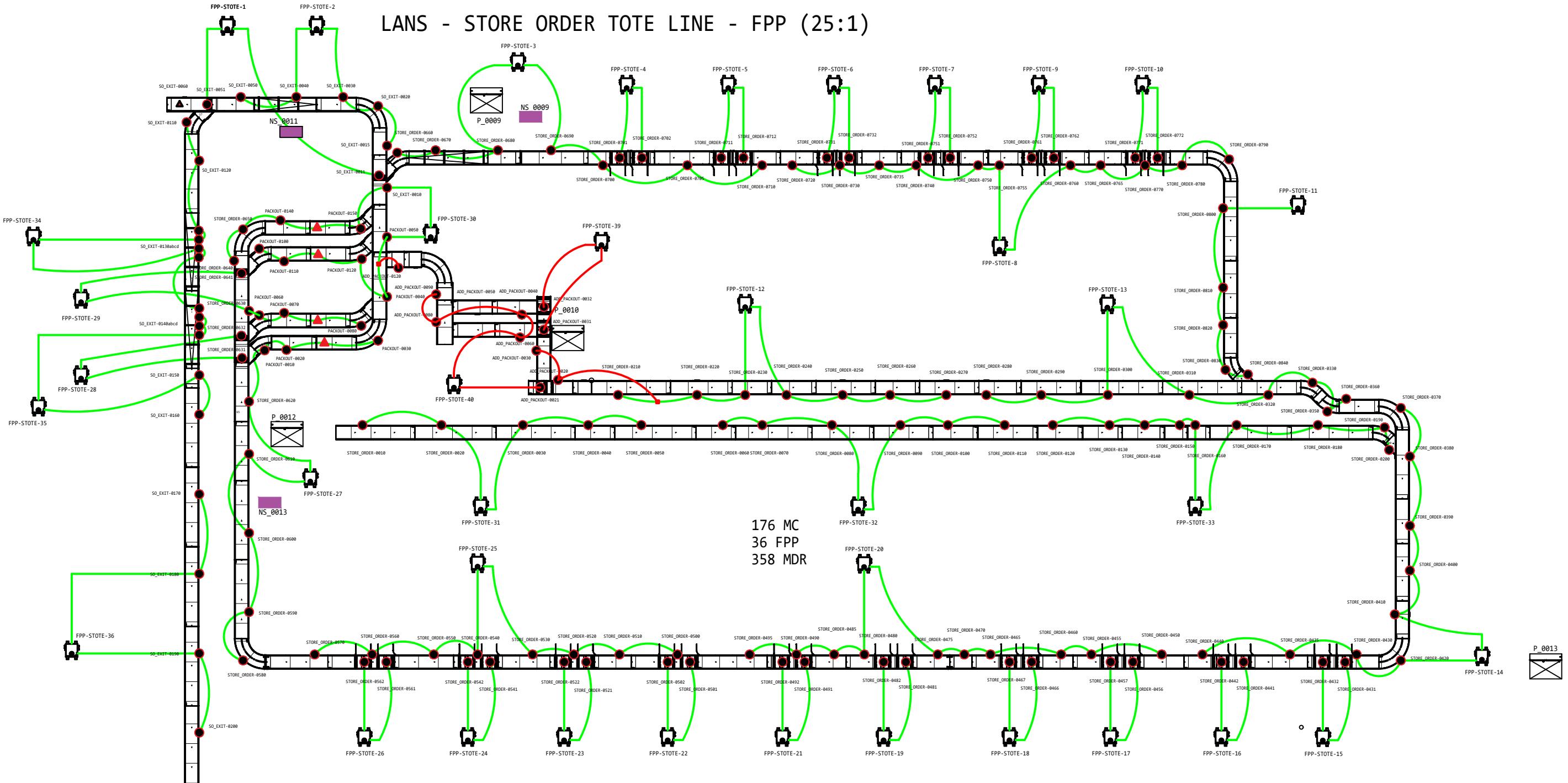
NOTE:

- This drawing illustrates the AUX power (or motor power) interconnects for the Interroll MultiControl cards using BLACK ASI cables. Use BLACK ASI cable with 2.5 mm<sup>2</sup> cross-section or 14AWG equivalent (20A max rated).
- The suggested connection paths are separated into loops and each loop is shown separately on subsequent SHEETS.
- The red dots mark the approximate locations of each Interroll MultiControl card.
- At all ASI cable ends, leave approximately 12" excess of ASI and terminate with ASI end-cap (BGPN 104830).
- For ASI cable splices, use ASI Splitters (BGPN 105733).

A

A

## LANS - STORE ORDER TOTE LINE - FPP (25:1)



C		
B		
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REV	DATE	ENGR. DESCRIPTION



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RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - AUX - OVERVIEW

REV	SECT.	DETAIL	JOB#
A	PREV.	30	114650
A	SHEET	31	LANS-S-31
	NEXT	50	

1 2 3 4 5 6 7 8

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# SECTION LOGIC POWER

C			
B			
A			
REV	DATE	ENGR.	DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
SECTION - LOGIC POWER

REV	SECT.	DETAIL	JOB#
PREV.	31		114650
SHEET	50		
NEXT	51		DWG LANS-S-50

**NOTE:**

- This drawing illustrates the logic power interconnects for the Interroll MultiControl cards using RED ASI cables. Use RED ASI cable with 1.5 mm<sup>2</sup> cross-section or 16AWG equivalent (16A max rated).
- MCC cable and termination information are available in the ADDITIONAL INFORMATION section.
- At all ASI cable ends, leave approximately 12" excess of ASI and terminate with ASI end-cap (BGPN 104830).
- For ASI cable splices, use ASI Splitters (BGPN 105733).

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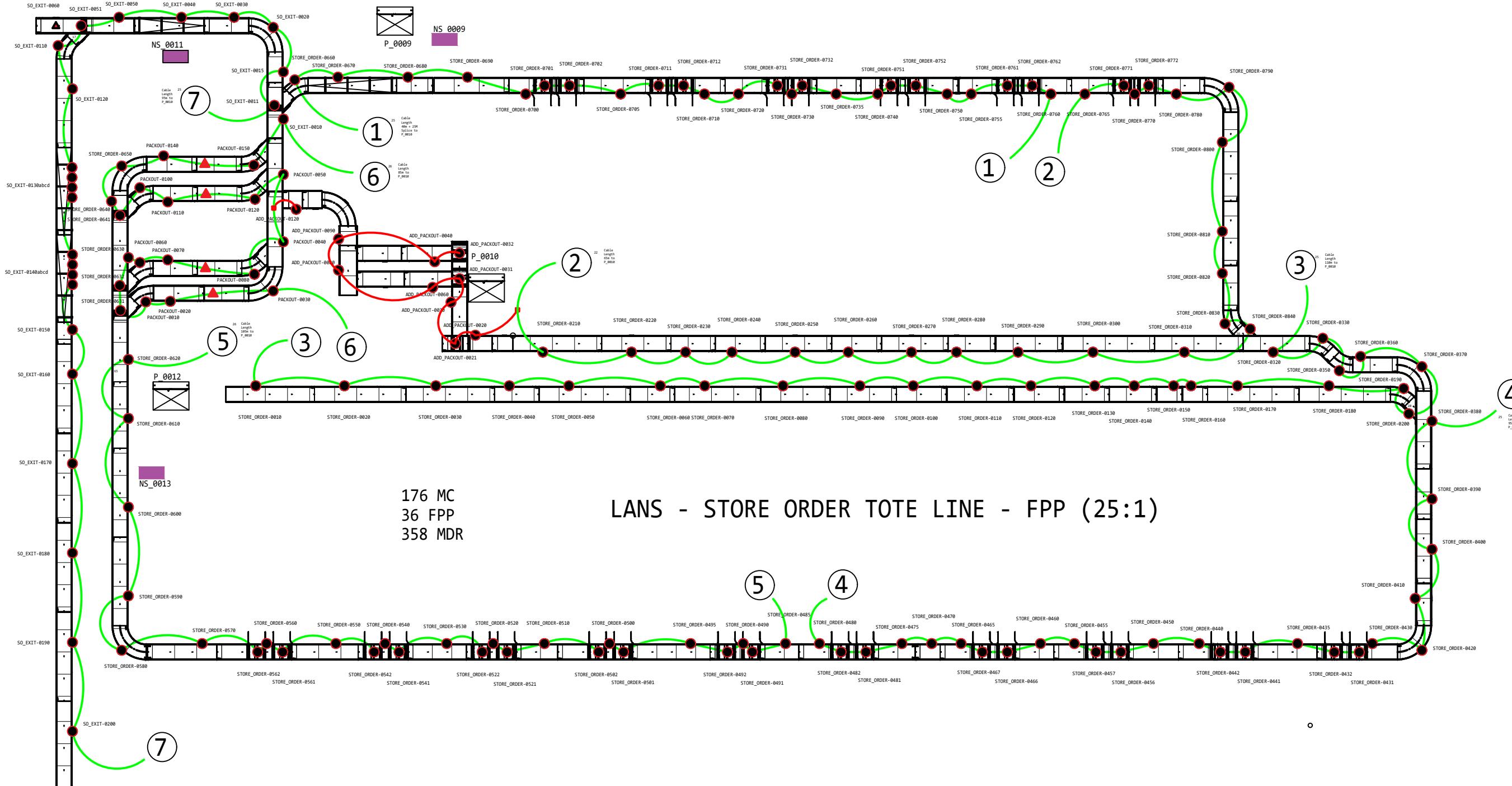
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REV	DATE	ENGR. DESCRIPTION



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SCALE	N/A
DRAWN	MC
APPROVED	

RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY STORE - LOGIC - OVERVIEW

REV	SECT.	DETAIL	JOB#
PREV.	50		114650
SHEET	51		
NEXT	70		DWG LANS-S-51

1 2 3 4 5 6 7 8

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# SECTION COMMUNICATION

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REV	DATE	ENGR.	DESCRIPTION



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DRAWN	MC
APPROVED	

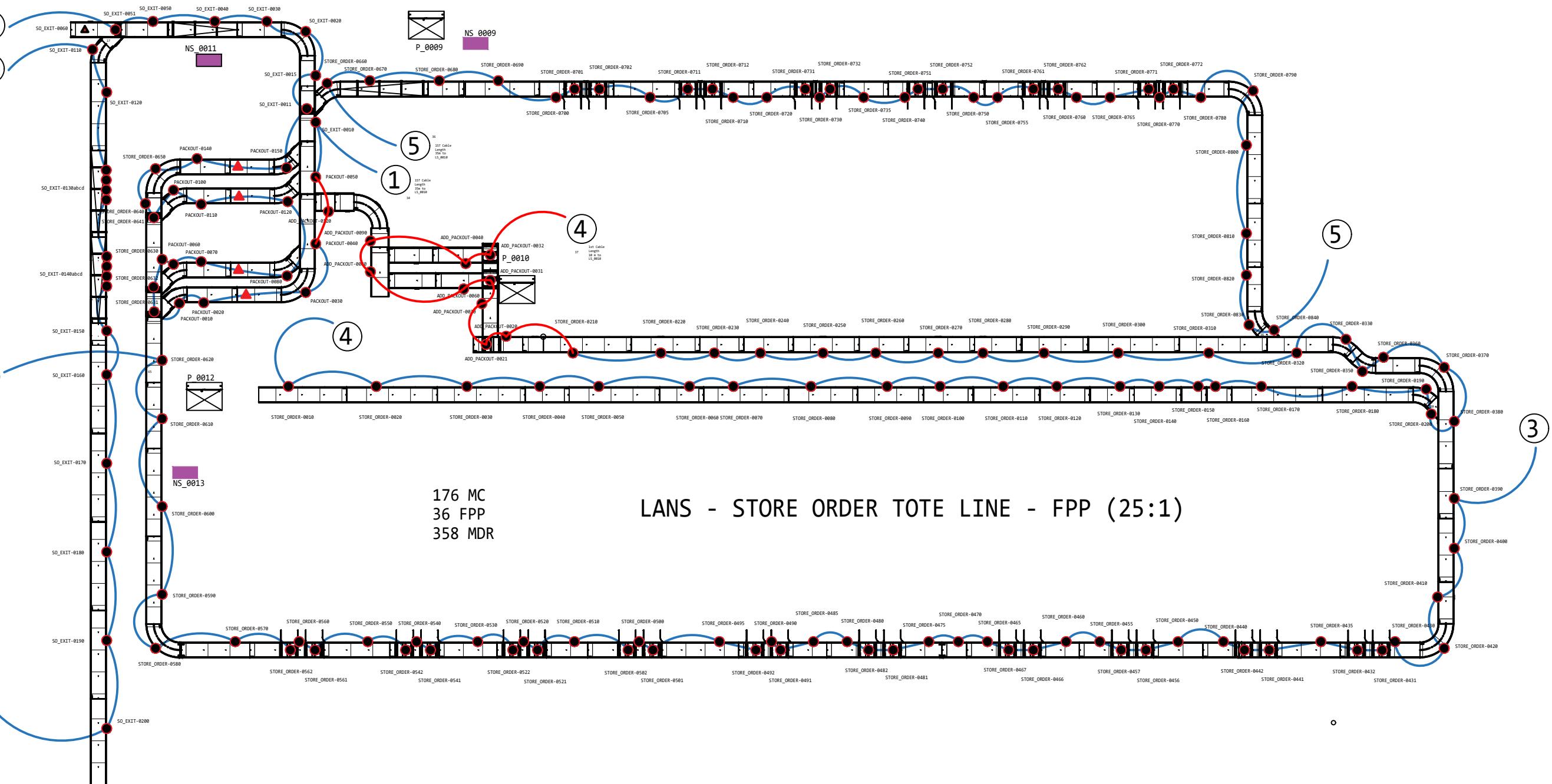
RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
SECTION - COMMUNICATION

REV	SECT.	DETAIL	JOB#
PREV.	51		114650
SHEET	70		
NEXT	71	DWG	LANS-S-70

**NOTE:**

- This drawing illustrates the communication interconnects for the Interroll MultiControl cards using a combination of MALE DCODE to MALE DCODE cables and MALE DCODE to RJ45 cables.
- The suggested connection paths are separated into loops and each loop is shown separately on subsequent SHEETS.
- MCC cable and termination information are available in the ADDITIONAL INFORMATION section.

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B						PREV.	70		
A						SHEET	71		
REV	DATE	ENGR.				DWG	LANS-S-71		

1 2 3 4 5 6 7 8

A A  
B B  
C C  
D D

# SECTION ADDITIONAL INFORMATION

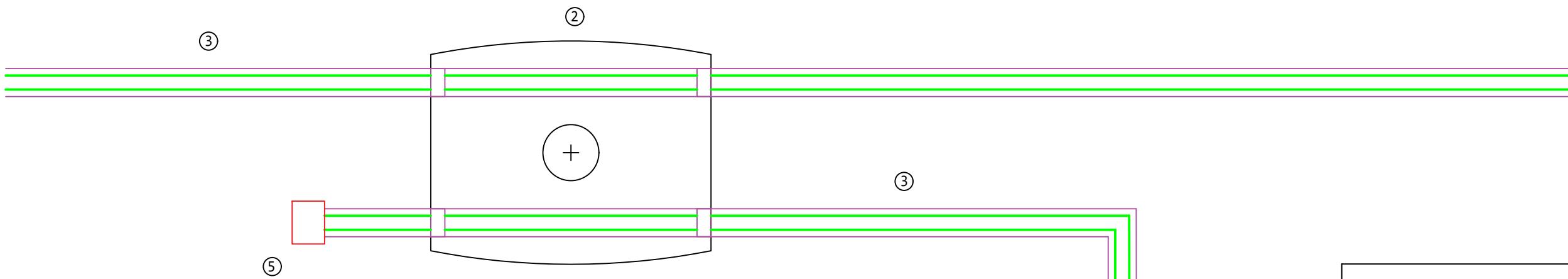
C				RPS/SPS INTERCONNECT DRAWING PACKAGE SECTION - ADDITIONAL INFORMATION	REV A	SECT.	DETAIL	JOB# 114650 DWG LANS-S-90
B						PREV.	71	
A						SHEET	90	
REV	DATE	ENGR.	DESCRIPTION			NEXT	92	



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140 SOUTH ROAD  
BEDFORD, MA 01730

DATE 04/29/2021  
SCALE N/A  
DRAWN MC  
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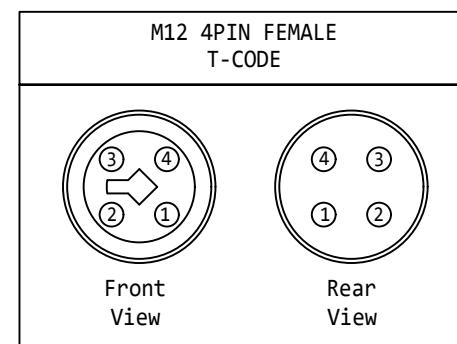
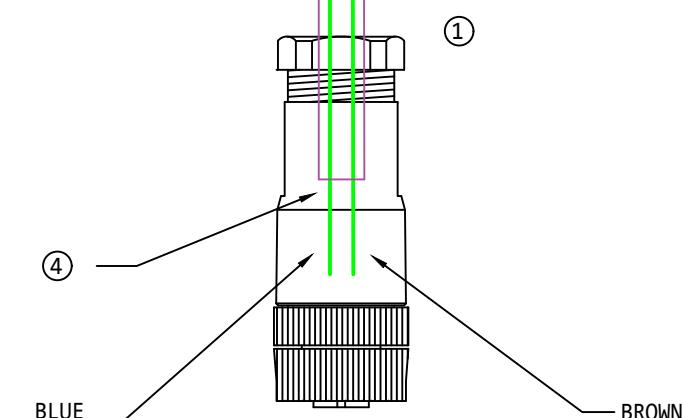
## BALI RIGHT-ANGLE TRANSFER HPD CABLE ASSEMBLY V2



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 2.5mm<sup>2</sup>, 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.



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REV	DATE	ENGR.	DESCRIPTION



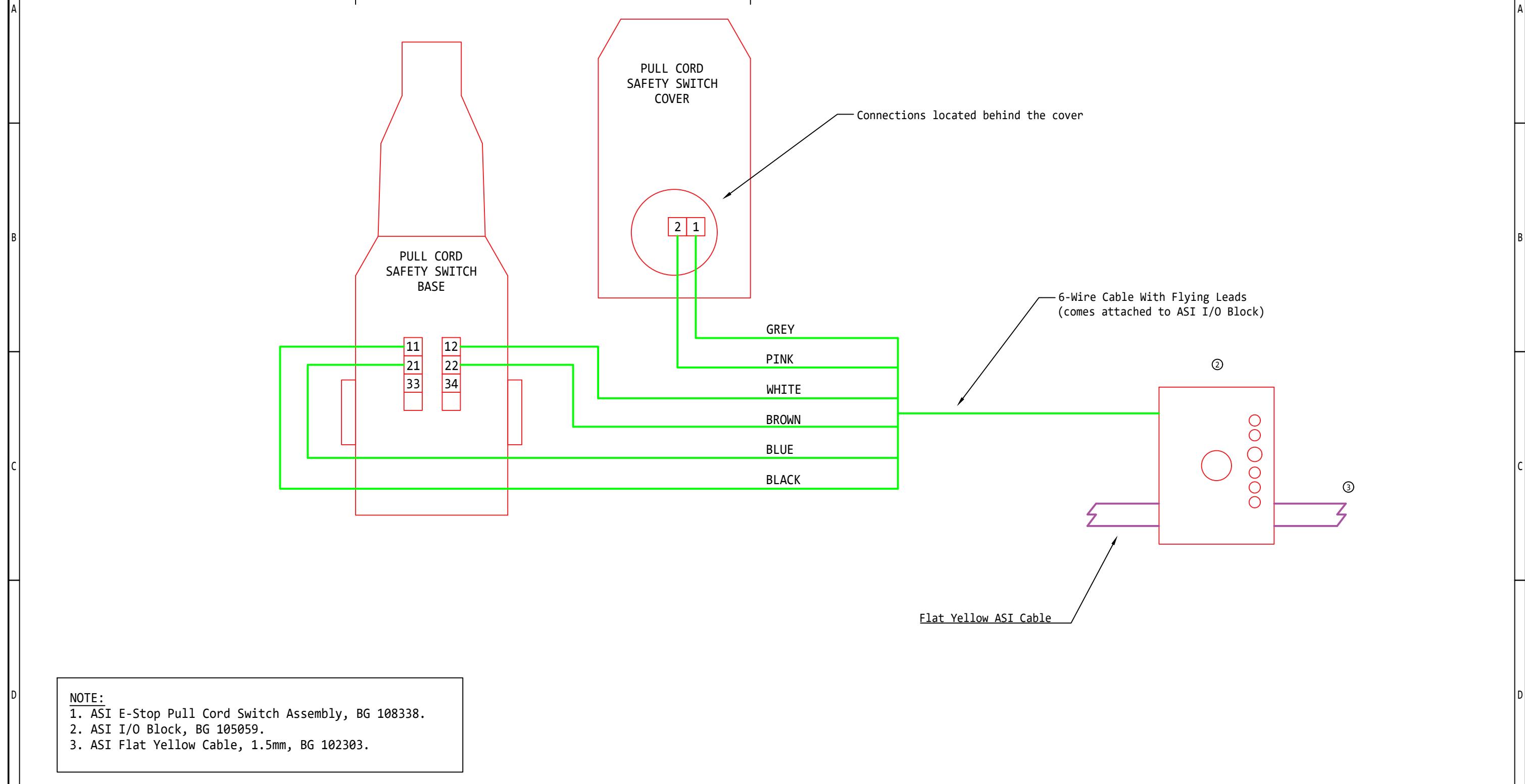
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DRAWN MC  
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RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
RAT-HPD CABLE ASSMEBLY V2

REV	SECT.	DETAIL	JOB#
A	PREV.	90	114650
	SHEET	92	LANS-S-92
	NEXT	93	

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RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
SAFETY ZONE - PULL CORD DEVICE WIRING DETAIL - SINGLE

REV	SECT.	DETAIL	JOB#
PREV.	92		114650
SHEET	93		LANS-S-93
NEXT	94		

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

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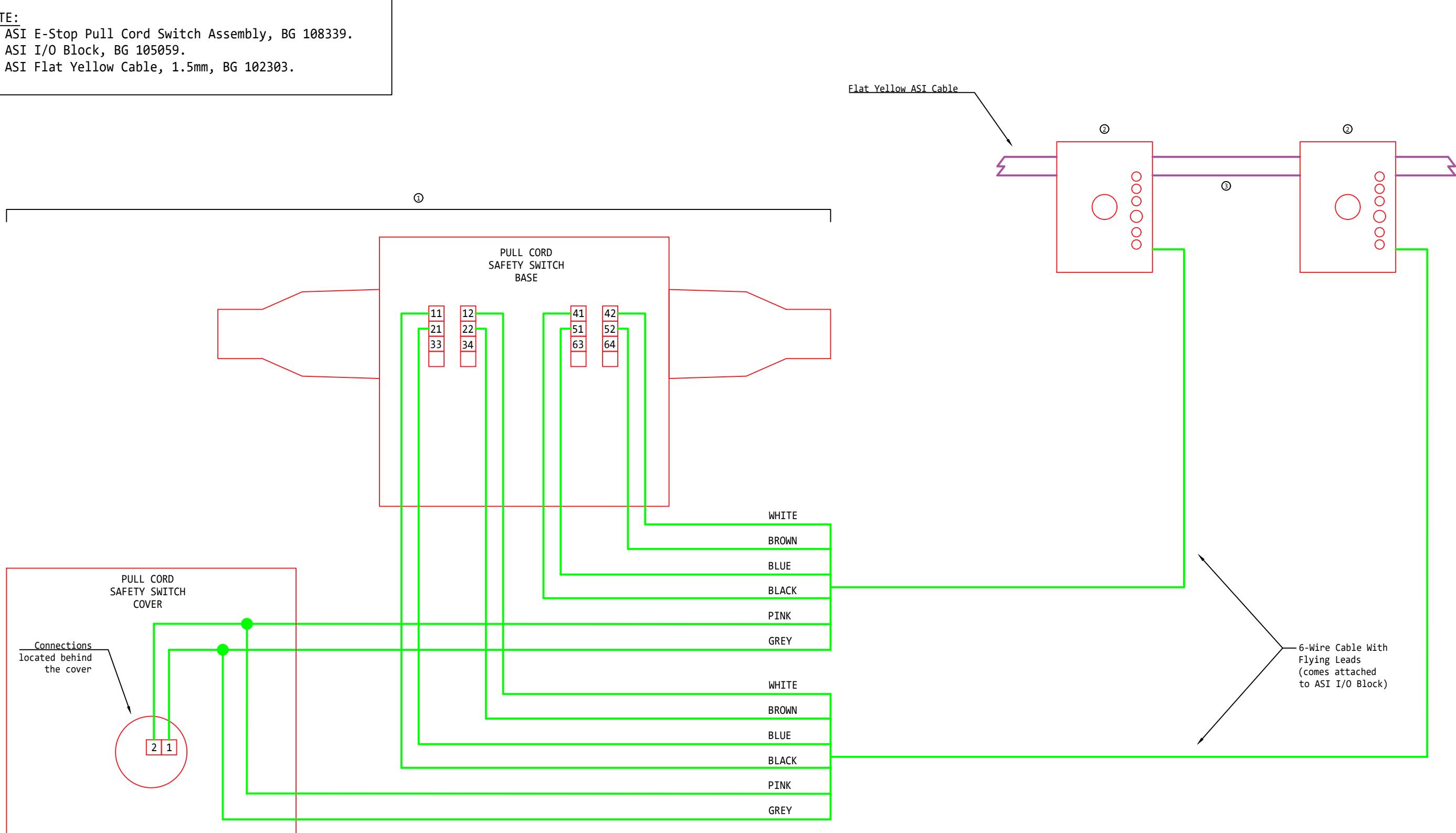
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SCALE	N/A
DRAWN	MC
APPROVED	

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

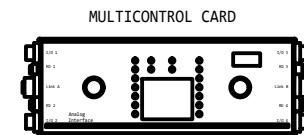
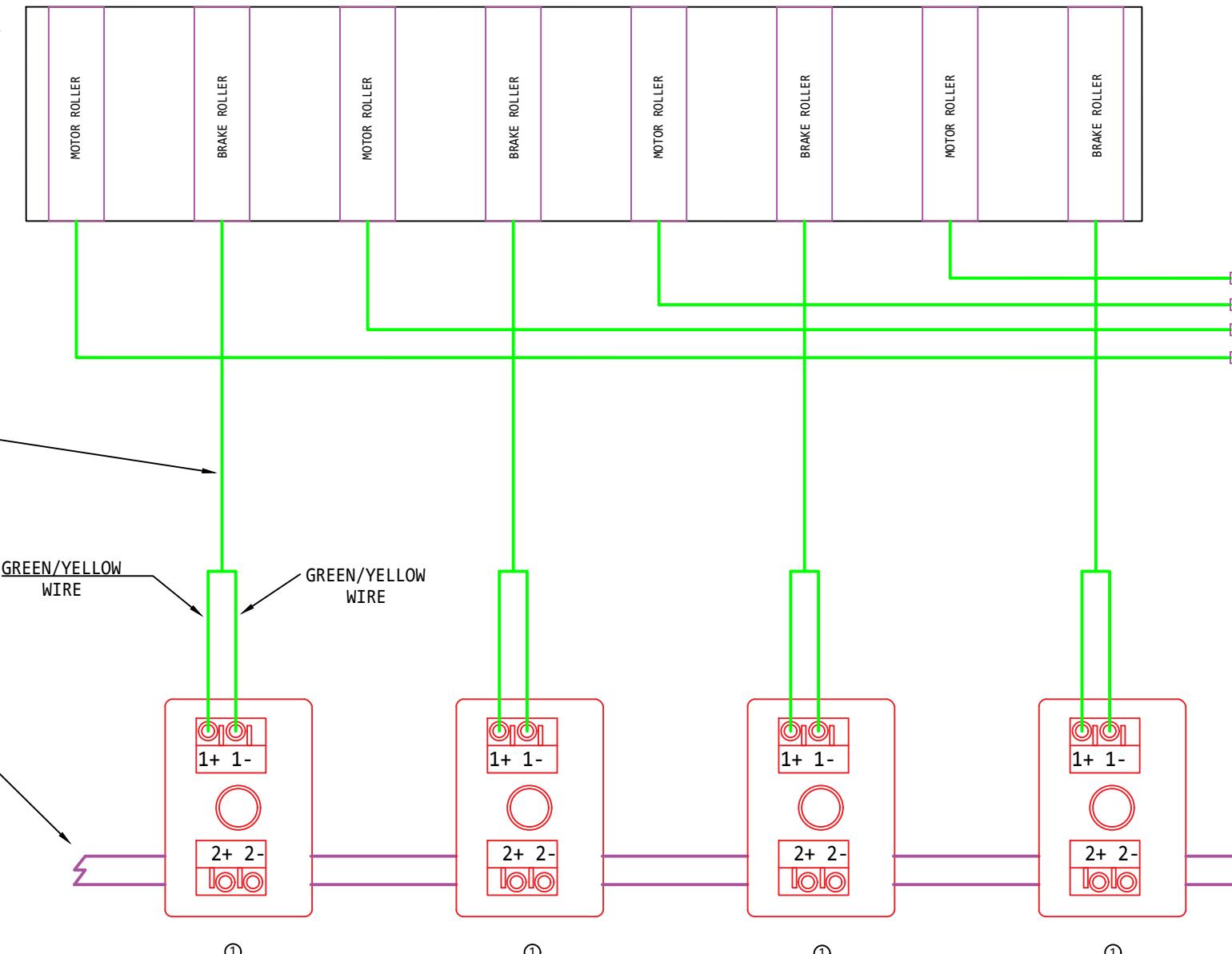
REV	SECT.	DETAIL	JOB#
PREV.		93	114650
SHEET		94	LANS-S-94
NEXT		95	

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.

## BRAKE ROLLER CONNECTIONS

## Decline Conveyor Section



NOTE:

1. This drawing illustrates the approximate locations and naming conventions of TOTE Line, BOX Line, PACKOUT, and EMPTY OR FULL barcode scanners.
2. Refer to the mechanical drawings for detailed locations of all peripherals, components, and sub-systems.
3. PACKOUT, BOX, and EMPTY OR FULL barcode scanner BG ASM 109058 (BG 105190, SICK CLV622-1120 - this uses 12pin m12 female cordset cable).
4. TOTE Line barcode scanner BG ASM 109130 (BG 104500, SICK LECTOR621 V2D621R-MSFBB5 - this uses 17pin m12 female cordset cable).
5. Barcode scanner power splices into nearby RED ASI using module BG 109453 (20A max) or BG 109755 (8A max).
6. CAUTION - specifically for SICK scanners - check vendor datasheet for proper input 24VDC polarity pin-outs.

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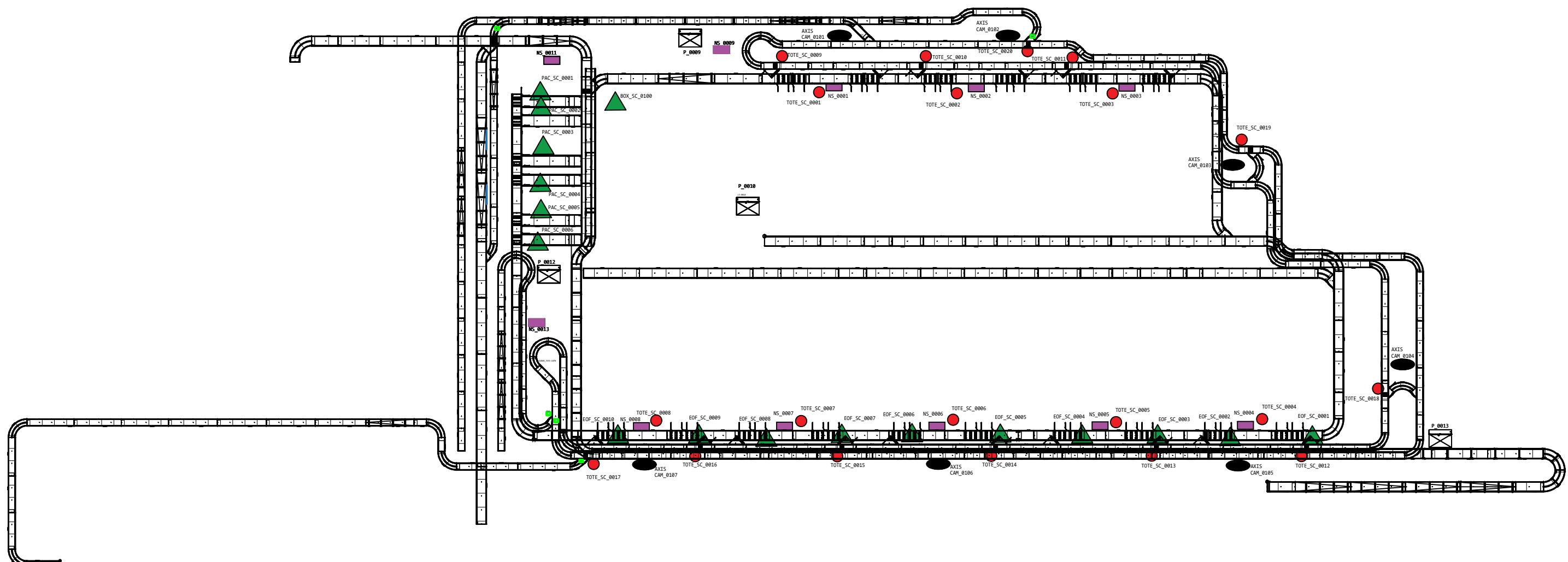
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RPS/SPS  
INTERCONNECT DRAWING PACKAGE  
LANS FACILITY CONVEY - BARCODE SCANNERS

REV	SECT.	DETAIL	JOB#
PREV.	95		114650
SHEET	96		
NEXT	100		DWG LANS-S-96

C			
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REV	DATE	ENGR.	DESCRIPTION



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RPS/SPS

REV	SECT.	DETAIL	JOB#	114650
	PREV.	96		
A	SHEET	100	DWG	LANS-S-100
	NEXT	101		

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REV	DATE	ENGR.	DESCRIPTION



140 SOUTH ROAD

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JOB#	11
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