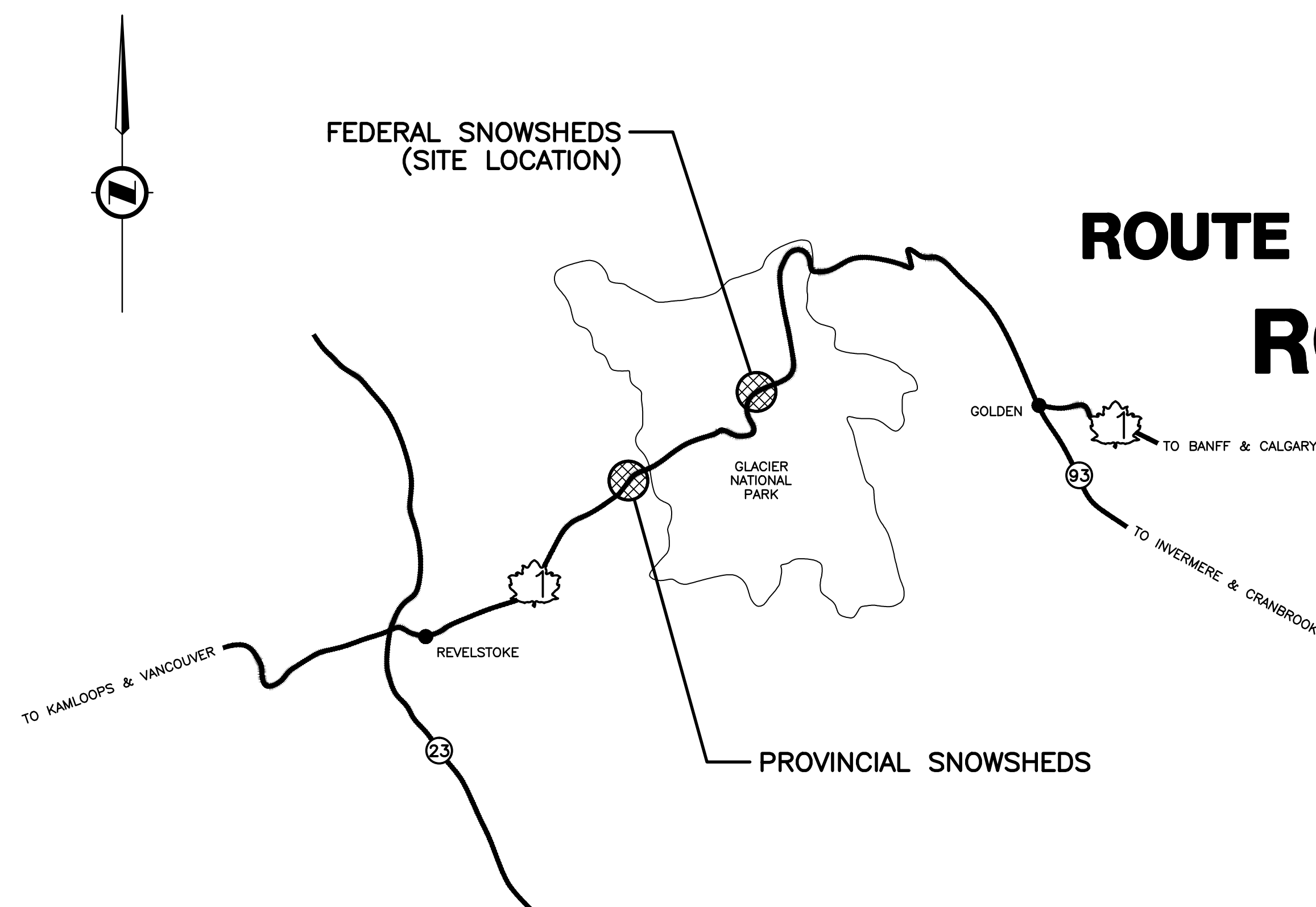


PARKS CANADA  
GLACIER NATIONAL PARK

ROUTE 1 (TRANS-CANADA HIGHWAY) THROUGH ROGERS PASS  
ROGERS PASS SNOWSHED LIGHTING

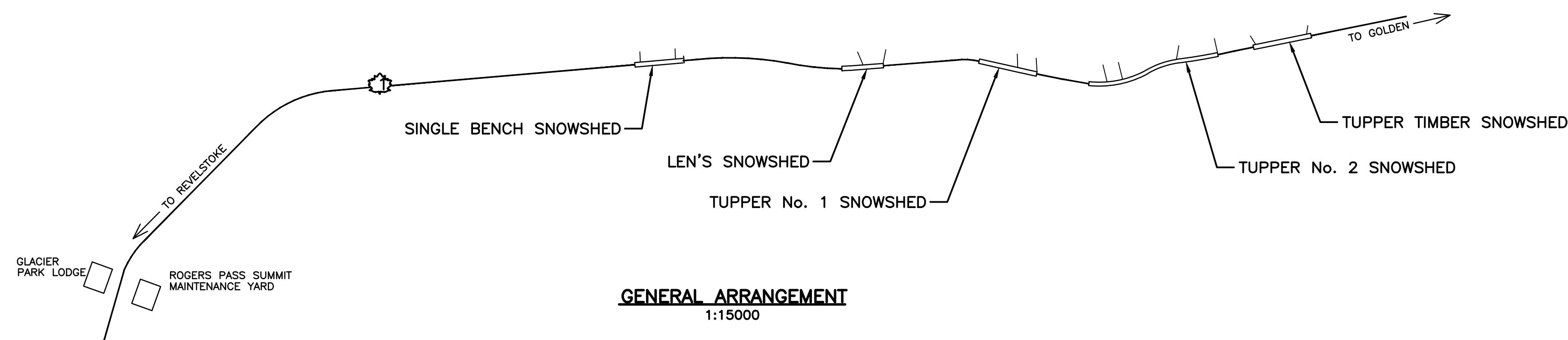
TUPPER No. 2 LIGHTING

PROJECT No. 201422



AREA PLAN  
N.T.S.

REFER TO HIGH AND LOW VOLTAGE POWER  
DISTRIBUTION SYSTEMS DRAWINGS FOR  
ALL FIVE SNOW SHEDS



GENERAL ARRANGEMENT  
1:15000



PROJECT LOCATION  
N.T.S.

GENERAL NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS.
- ELECTRICAL WORK SHALL CONFORM TO LATEST EDITION OF CANADIAN ELECTRICAL CODE AND BULLETINS PUBLISHED BY THE BC SAFETY AUTHORITY.
- WORK SHALL CONFORM TO ALL APPLICABLE REGULATIONS OF THE WORKERS' COMPENSATION BOARD (WCB).
- THE CONTRACTOR SHALL SUPPLY ALL MATERIALS, EQUIPMENT AND LABOUR TO COMPLETE THE WORKS, EXCEPT AS NOTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL FOR ALL WORK INCLUDED IN THIS CONTRACT. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE CURRENT BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE TRAFFIC CONTROL MANUAL FOR WORK ON ROADWAYS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES FOR PERMITS AND INSPECTIONS, AS REQUIRED BY THE BC SAFETY AUTHORITY.
- ALL COMMON CIRCUIT WIRING SHALL BE TAGGED AND TY-RAPPED AS DETAILED IN THE MMCD, SECTION 16550, SUBSECTION 3.13 AND THESE DRAWINGS.
- ALL CONDUCTORS SHALL BE RW90 STRANDED COPPER, UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL CONCRETE BASES AND JUNCTION BOX SYMBOLS ARE NOT TO SCALE.
- CONTRACTOR SHALL CONFIRM NEW SERVICE LOCATIONS WITH BC HYDRO. CONTACT TYLER KELLY. TEL. 250-832-1235.

- THE CONTRACTOR SHALL OBTAIN PERMISSION FROM THE PARKS CANADA REPRESENTATIVE PRIOR TO TURNING OFF OR REMOVING ANY EXISTING ELECTRICAL EQUIPMENT.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH AN ITEMIZED SPREADSHEET OF ALL ITEMS TO BE REMOVED AND RETURNED TO THE PUBLIC WORKS YARD. THE CONTRACTOR SHALL NOT PROCEED WITH THE EQUIPMENT REMOVALS UNTIL CONFIRMED BY PUBLIC WORKS.
- THE CONTRACTOR SHALL ENSURE THERE IS NO INTERRUPTION OF EXISTING NIGHT TIME LIGHTING DURING CONSTRUCTION, UNLESS APPROVED BY THE ENGINEER.
- ENSURE CLEARANCES FROM OVERHEAD UTILITY LINES MEET UTILITY AND WORKSAFE BC REGULATIONS PRIOR TO CONCRETE BASE INSTALLATION. CONTACT PBX ENGINEERING IN THE EVENT OF CONFLICT.
- ALL EXISTING WIRING, CONDUIT AND BASES TO BE REMOVED SHALL BE DISPOSED OFF SITE BY THE CONTRACTOR.

LEGEND:

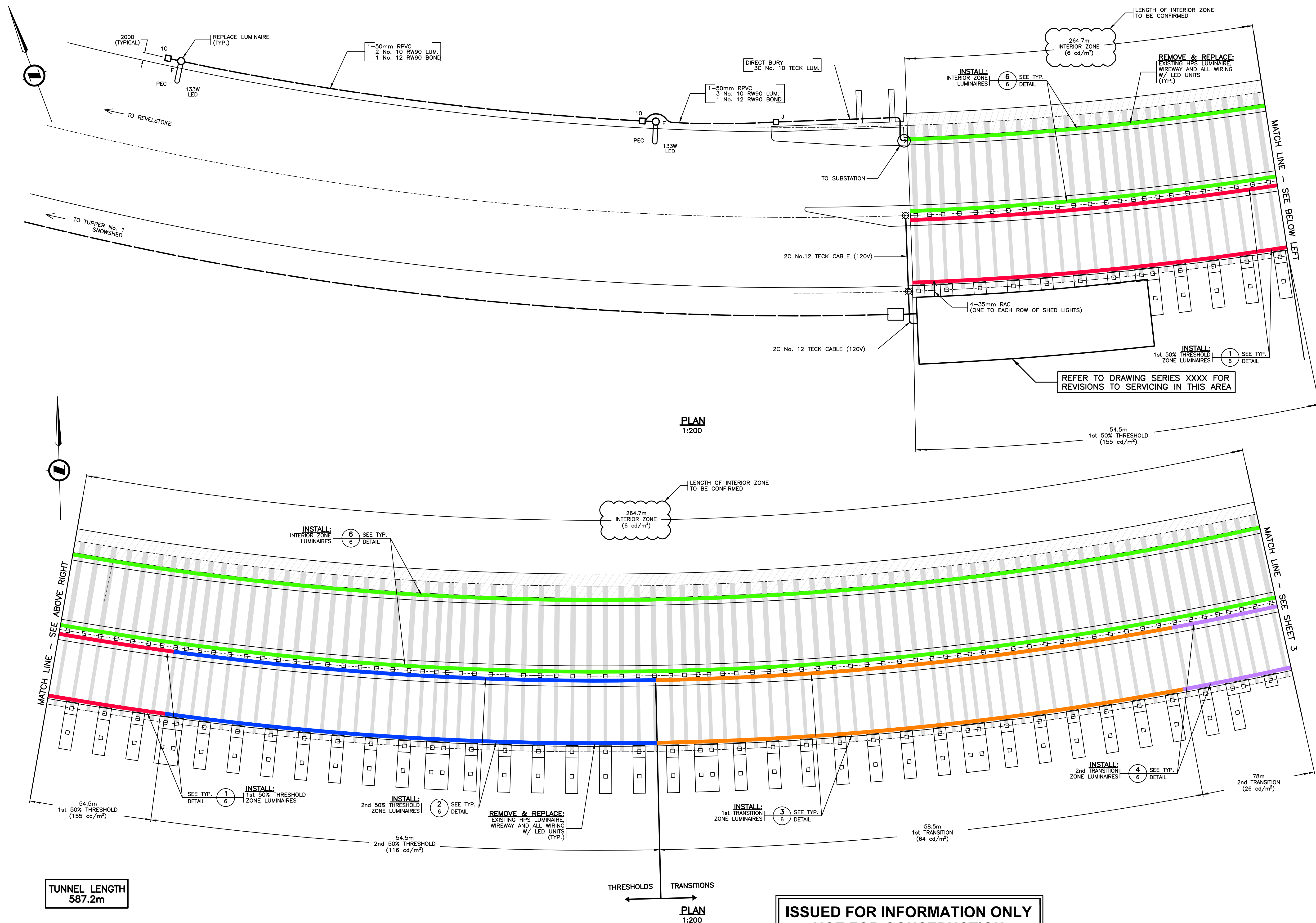
- BC MINISTRY OF TRANSPORTATION 11.0m DAVIT STREETLIGHT POLE, 133W LED 120V LED LUMINAIRE (PART No. LRL NXT-60M-700MA-120V TYPE 2ES)  
C/W PEC FRANGIBLE BASE
- BC MINISTRY OF TRANSPORTATION 884 JUNCTION BOX
- BC MINISTRY OF TRANSPORTATION TYPE 10 JUNCTION BOX
- BC MINISTRY OF TRANSPORTATION ISLAND FLASHERS (2 PER LOCATION)

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NOT FOR CONSTRUCTION

P1	Feb. 18 2015	ISSUED FOR INFORMATION	PBX	PB
No.	Date	Description	Drawn by Dessiné par	Approved Approuvé
Revision / Revision				
A	Detail number	A Numéro de détail		
B	Sheet number	B Numéro de la feuille		
Linear dimensions in millimetres		Dimensions linéaires en millimètres		
Consultant's Stamp		Eng. Stamp		
Sceau de l'expert-conseil		Sceau de l'ingénieur		
Client/client				
Parks Canada Agency Western and Northern Region		L'Agence Parcs Canada Ouest et Nord Région		
Consultant's Name				
Nom de l'expert-conseil				
PBX ENGINEERING				
PBX ENGINEERING Ltd. Suite 200 - 2612 Bridge St. Victoria BC, V8T 4S9 Tel 250-388-7222 www.pbsexeng.com				
Project title/Titre du projet				
ROGERS PASS SNOWSHED LIGHTING				
TRANS CANADA HIGHWAY THROUGH ROGERS PASS				
GLACIER NATIONAL PARK				
Drawing title/Titre du dessin				
TUPPER No. 2 SNOWSHED LIGHTING				
COVER SHEET, INDEX & GENERAL ARRANGEMENT				
Surveyed by/Arpenté par	Drawn by/Dessiné par	Date		
	PBX	2015-02-27		
Designed by/Concept par	Reviewed by/Revisé par	Scale/Echelle		
AB	CE	AS NOTED		
Client Acceptance/Acceptation du client		Approved by/Approuvé par		
PARK RESPONSIBLE OFFICER/AGENT RESPONSABLE				
Date	A & E SERVICES/GÉNIE ET ARCHITECTURE	Date		
Project No./No du projet	Asset No./N° du bien	Sheet No./N° de la feuille		
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Drawing Reference No./No de référence du dessin				
G2002R1				



4-13230 - Snowshed Lighting - Design Drawings - Glacier National Park - 18/02/2015 4:24 PM - JESSE GIBSON



LINETYPE	QUANTITY	LABEL	LUM. SPACING*	DESCRIPTION OF OPERATION		DESCRIPTION	FIXTURE LUMENS	FIXTURE WATTS	LLF	TOTAL WATTS	FILE NAME
				DAY	NIGHT*						
(RED)	118		1.5m (WB) 1.9m (EB)	ON 100%	SELECT LUMINAIRES ON 10%	FV32-240-XP-G2(R4)5102(ASYM)2X150W-500mA-277	37995	362	0.65	42716	240 LED IES - T31573 - FV32-240-XP-G2(R4)5102(ASYM)2X150W-500mA-277.ies
(BLUE)	80		2.25m (WB) 2.5m (EB)	ON 100%	SELECT LUMINAIRES ON 10%	FV32-240-XP-G2(R4)5102(ASYM)2X150W-500mA-277	37995	362	0.65	28960	240 LED IES - T31573 - FV32-240-XP-G2(R4)5102(ASYM)2X150W-500mA-277.ies
(ORANGE)	56		4.25m (WB) 4.5m (EB)	ON 100%	SELECT LUMINAIRES ON 10%	FV32-240-XP-G2(R4)5102(ASYM)2X150W-500mA-277	37995	362	0.65	20272	240 LED IES - T31573 - FV32-240-XP-G2(R4)5102(ASYM)2X150W-500mA-277.ies
(PURPLE)	56		5.5m (WB) 5.5m (EB)	ON 100%	SELECT LUMINAIRES ON 20%	FV32-120-XP-G2(R4)5096(ASYM)1X150W-500mA-277	17663	181	0.65	10136	120 LED IES - T31715A - FV32-120LED-5102(ASYM)1X150W-500mA-277.ies
(CYAN)	34		12.0m (WB) 11.0m (EB)	ON 100%	SELECT LUMINAIRES ON 20%	FV32-120-XP-G2(R4)5096(ASYM)1X150W-500mA-277	17663	181	0.65	6154	120 LED IES - T31715A - FV32-120LED-5102(ASYM)1X150W-500mA-277.ies
(GREEN)	54		19.0m (WB) 20.0m (EB)	ON 100%	SELECT LUMINAIRES ON 20%	FV32-120-XP-G2(R4)5096(ASYM)1X150W-500mA-277	17663	181	0.65	9774	120 LED IES - T31715A - FV32-120LED-5102(ASYM)1X150W-500mA-277.ies
TOTAL	398									118012	

\* APPROXIMATE - SEE RISER DIAGRAM ON SHEET 6

#### NOTES:

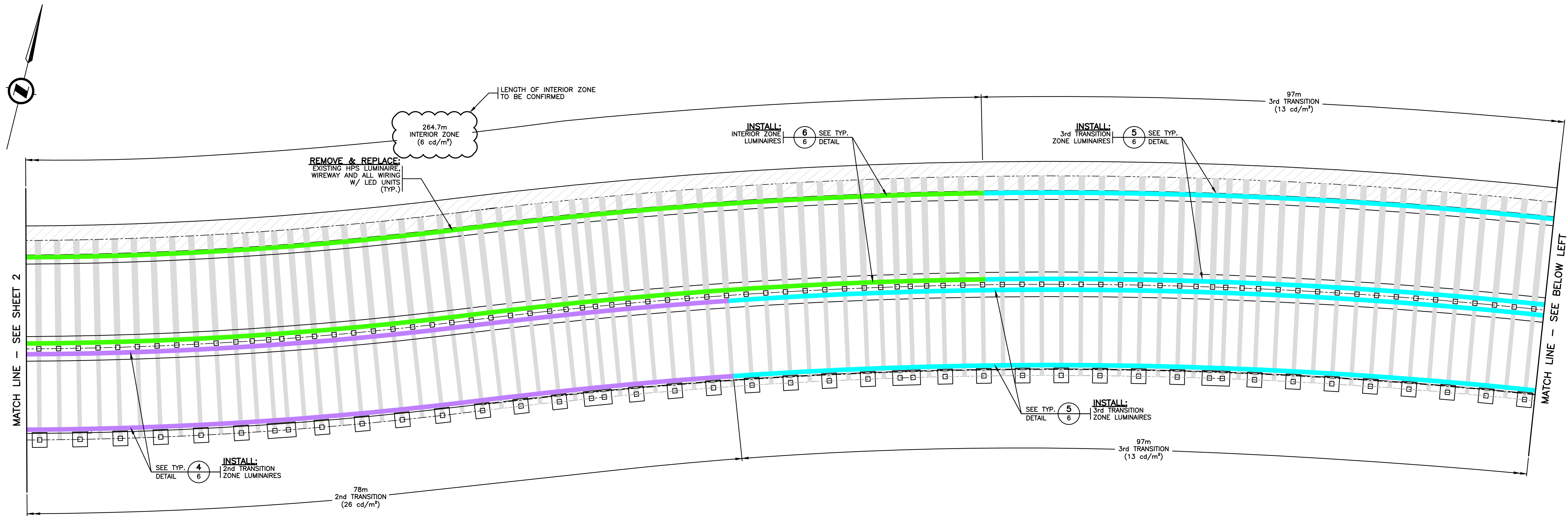
- REFER TO TYPICAL LUMINAIRE MOUNTING DETAILS ON SHEET 6 FOR LUMINAIRE SPACING IN EACH ZONE.
- REFER TO RISER DIAGRAM ON SHEET 7 FOR OVERALL LUMINAIRE LAYOUT AND WIRING.
- REFER TO LUMINAIRE TABLE (CURRENT SHEET FOR DAYTIME AND NIGHTTIME OPERATION).
- ILLUMINANCE IN TUNNEL SHALL BE:
  - DAYTIME: AS NOTED ON PLAN (VARIES THROUGH TUNNEL)
  - NIGHTTIME: 1.2cd/m<sup>2</sup>

ALL EQUIPMENT IS EXISTING  
UNLESS NOTED OTHERWISE

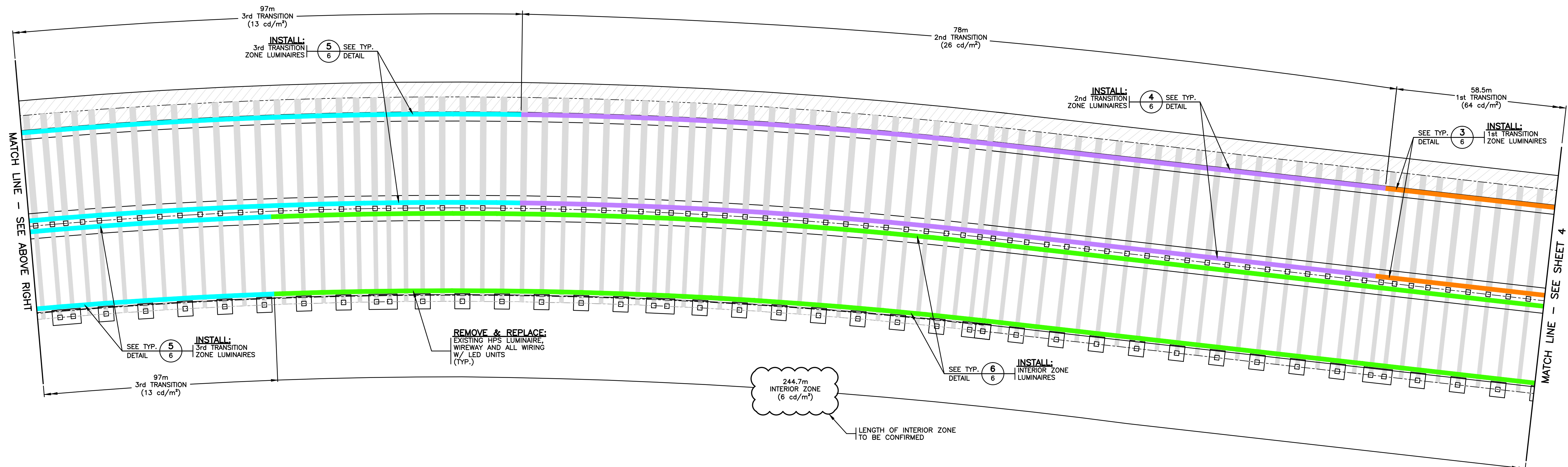
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Revision / Revision				
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Client/client				
Parks Canada Agency Western and Northern Region				
L'Agence Parcs Canada Ouest et Nord Région				
Consultant's Name Nom de l'expert-conseil				
PBX ENGINEERING Ltd. Suite 200 - 2612 Bridge St. Victoria BC, V8T 4S9 Tel 250.388.7222 www.pbxing.com				
Project title/Titre du projet				
ROGERS PASS SNOWSHED LIGHTING				
TRANS CANADA HIGHWAY THROUGH ROGERS PASS				
GLACIER NATIONAL PARK				
Drawing title/Titre du dessin				
TUPPER No. 2 SNOWSHED LIGHTING				
PLAN LUMINAIRE LAYOUT (SHEET 1 OF 3)				
Surveyed by/Arpenté par	Drawn by/Dessiné par	Date		
	PBX	2015-02-27		
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AB	CE	AS NOTED		
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G2002R1				



4-113230 - Snowshed Lighting - Glacier National Park\01 - Design\Drawings\ACAD\Snowshed Lighting\Tup2-03.dwg, 18/02/2015 4:24 PM, JESSE GIBSON



PLAN  
1:200



PLAN  
1:200


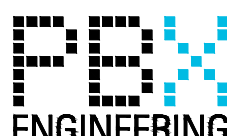
TUNNEL LENGTH  
587.2m

REFER TO SHEET 2 FOR NOTES  
ON LUMINAIRE SPACING AND OPERATION

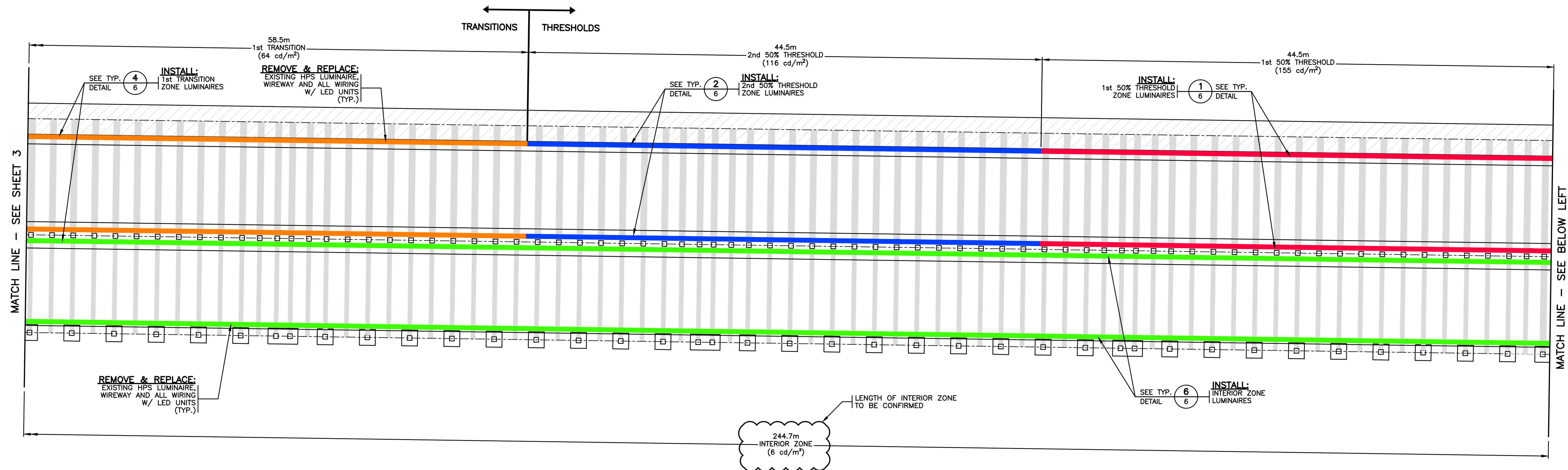
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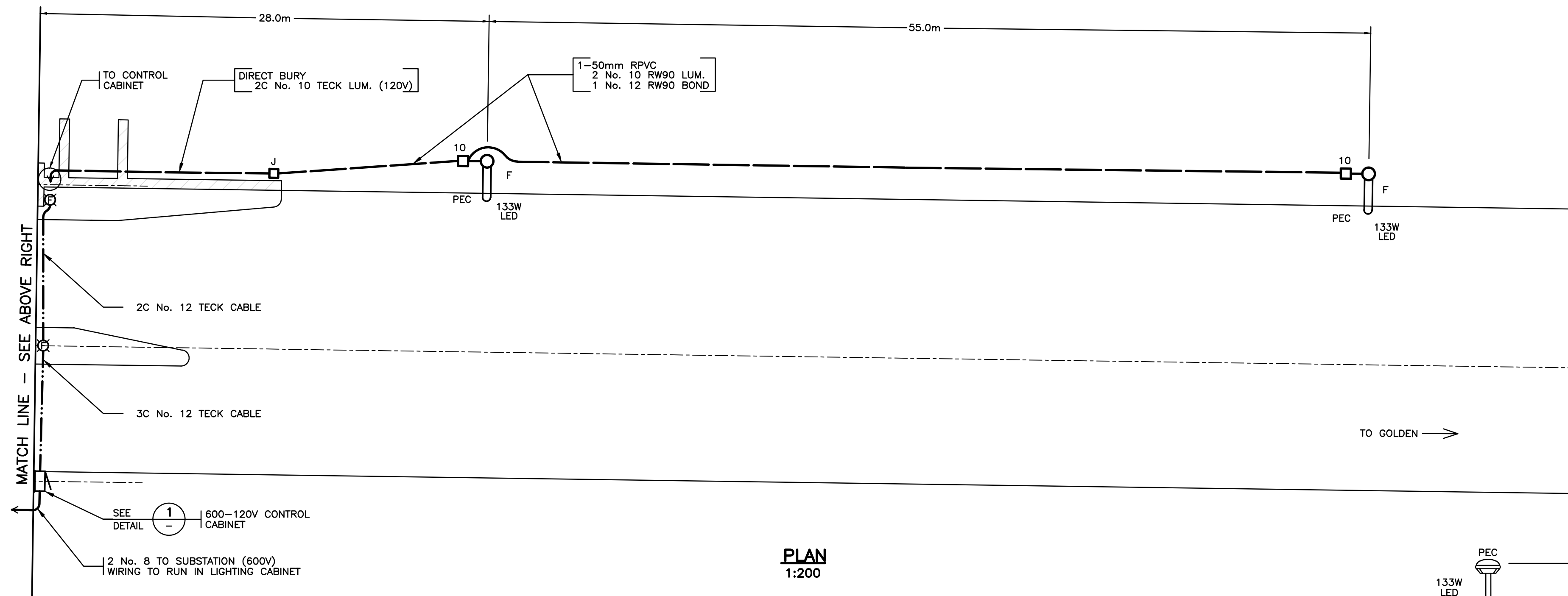
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No.	Date	Description	Drawn by Dessiné par	Approved Approuvé			
Revision / Revision							
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Client/client							
<div><div></div><div>Parks Canada Agency Western and Northern Region</div></div>					<div>L'Agence Parcs Canada Ouest et Nord Région</div>		
Consultant's Name Nom de l'expert-conseil							
<div></div>					<div>PBX ENGINEERING Ltd. Suite 200 - 2612 Bridge St. Victoria BC, V8T 4S9 Tel 250.388.7222 www.pbxeng.com</div>		
Project title/Titre du projet							
ROGERS PASS SNOWSHED LIGHTING							
TRANS CANADA HIGHWAY THROUGH ROGERS PASS							
GLACIER NATIONAL PARK							
Drawing title/Titre du dessin							
TUPPER No. 2 SNOWSHED LIGHTING							
PLAN LUMINAIRE LAYOUT (SHEET 2 OF 3)							
Surveyed by/Arpenté par	Drawn by/Dessiné par	Date					
	PBX	2015-02-27					
Designed by/Concept par	Reviewed by/Revisé par	Scale/Echelle					
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PARK RESPONSIBLE OFFICER/AGENT RESPONSIBLE		Date	A & E SERVICES/GÉNIE ET ARCHITECTURE				
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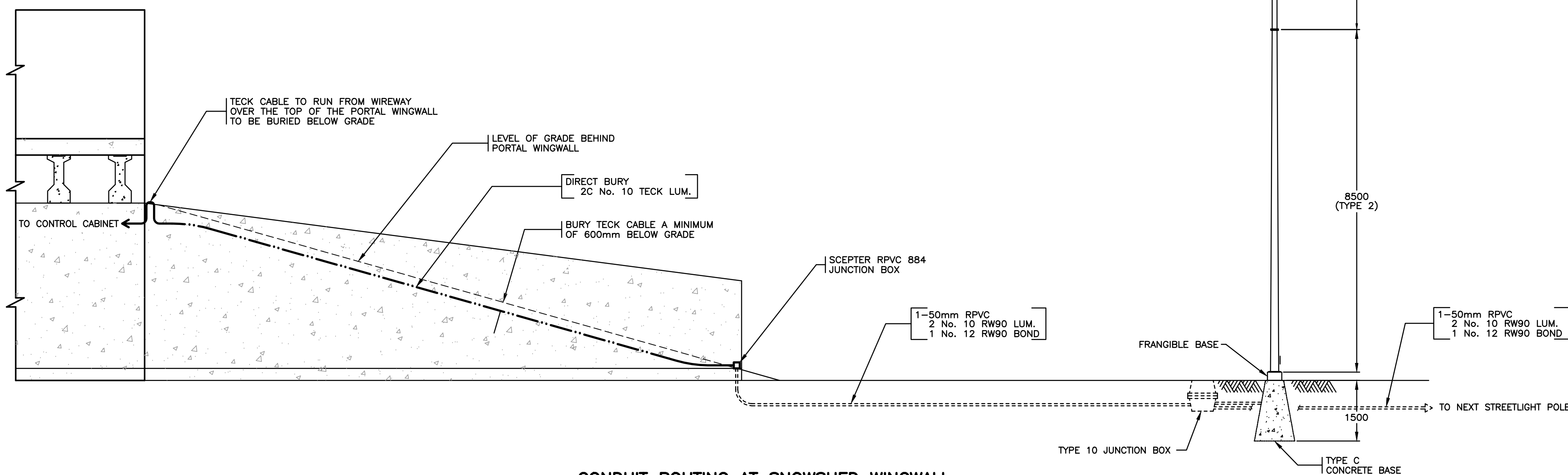




PLAN  
1:200

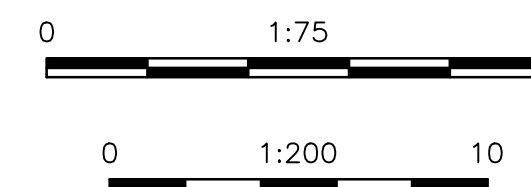


PLAN  
1:200





CONDUIT ROUTING AT SNOWSHED WINGWALL  
(TYPICAL FOR EAST AND WEST PORTAL)  
1:75

TUNNEL LENGTH  
587.2m



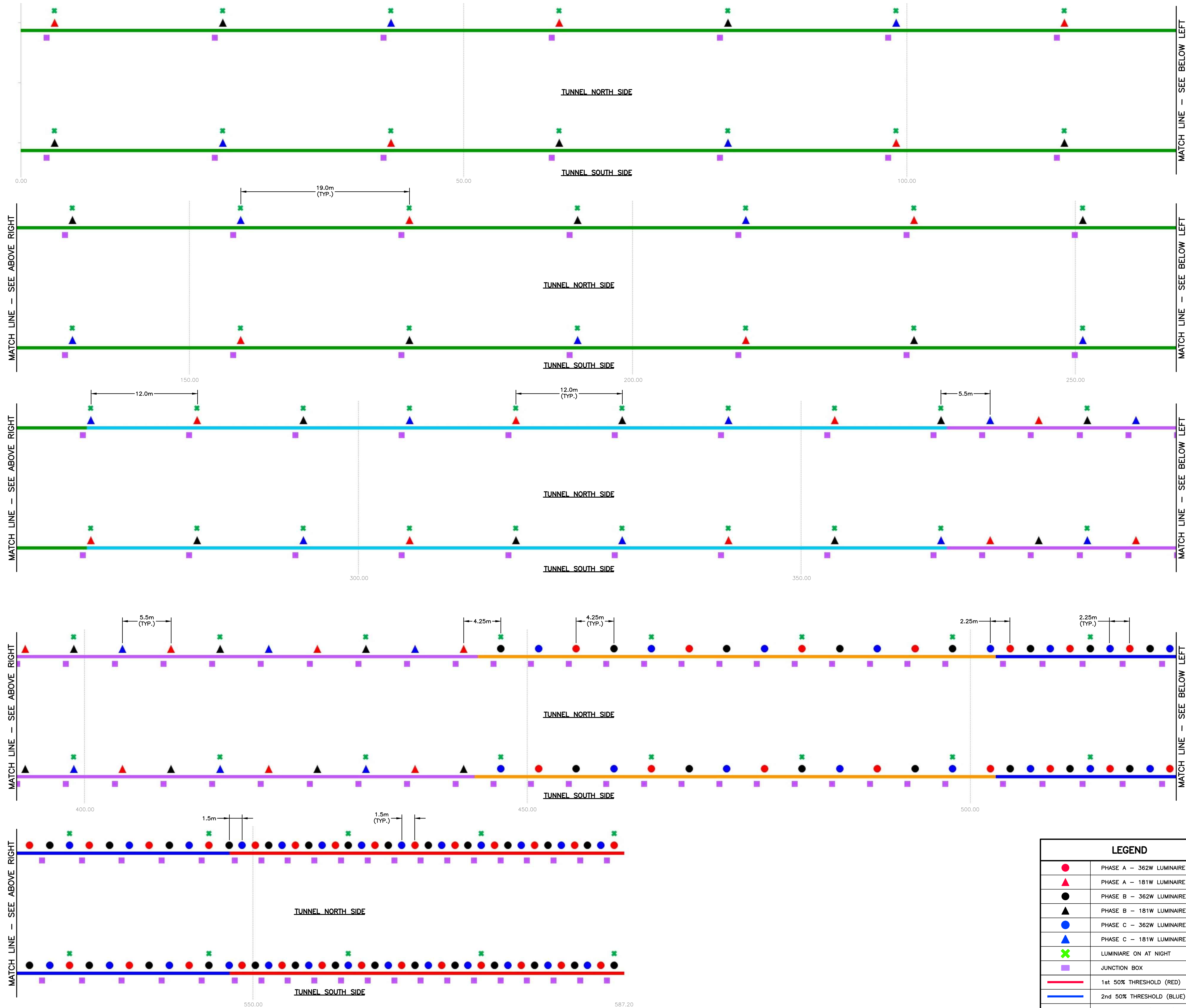
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Revision / Revision				
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Project title/Titre du projet				
ROGERS PASS SNOWSHED LIGHTING				
TRANS CANADA HIGHWAY THROUGH ROGERS PASS				
GLACIER NATIONAL PARK				
Drawing title/Titre du dessin				
TUPPER No. 2 SNOWSHED LIGHTING				
PLAN LUMINAIRE LAYOUT (SHEET 3 OF 3)				
Surveyed by/Arpenté par	Drawn by/Dessiné par	Date		
	PBX	2015-02-27		
Designed by/Concept par	Reviewed by/Revisé par	Scale/Echelle		
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Project No./No du projet	Asset No./N° du bien	Sheet No./N° de la feuille		
201422		4		
Drawing Reference No./No de référence du dessin				
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4-13230 - Snowshed Lighting - Glacier National Park\01 - Design\Drawings\ACAD\Snowshed Lighting\Tup2-07.rpt; 18/02/2015 4:24 PM JESSE GIBSON



**NOTES:**

- UNLESS OTHERWISE INDICATED, LUMINAIRE SPACING IN EACH ZONE SHALL BE PER DETAILS ON SHEET E05.
- LUMINAIRES ON SOUTH SIDE OF TUNNEL SHALL BE LOCATED DIRECTLY OPPOSITE LUMINAIRES ON NORTH SIDE OF TUNNEL.
- JUNCTION BOXES ARE SHOWN RELATIVE (EAST AND WEST) TO LUMINAIRES. REFER TO DETAILS ON SHEET E05 FOR ACTUAL MOUNTING AND CONNECTION TO LUMINAIRES.

ALL CONDUCTORS IN CONDUIT FROM JUNCTION BOX TO JUNCTION BOX SHALL BE 4 No. 2 + 1 No. 6

TUNNEL SHOWN STRAIGHT FOR PLACEMENT CLARITY

DETAIL 1 TUNNEL LUMINAIRES (WESTBOUND)  
1:200

LEGEND	
●	PHASE A - 362W LUMINAIRE
▲	PHASE A - 181W LUMINAIRE
●	PHASE B - 362W LUMINAIRE
▲	PHASE B - 181W LUMINAIRE
●	PHASE C - 362W LUMINAIRE
▲	PHASE C - 181W LUMINAIRE
✕	LUMINAIRE ON AT NIGHT
■	JUNCTION BOX
—	1st 50% THRESHOLD (RED)
—	2nd 50% THRESHOLD (BLUE)
—	1st TRANSITION (ORANGE)
—	2nd TRANSITION (PURPLE)
—	3rd TRANSITION (CYAN)
—	INTERIOR (GREEN)

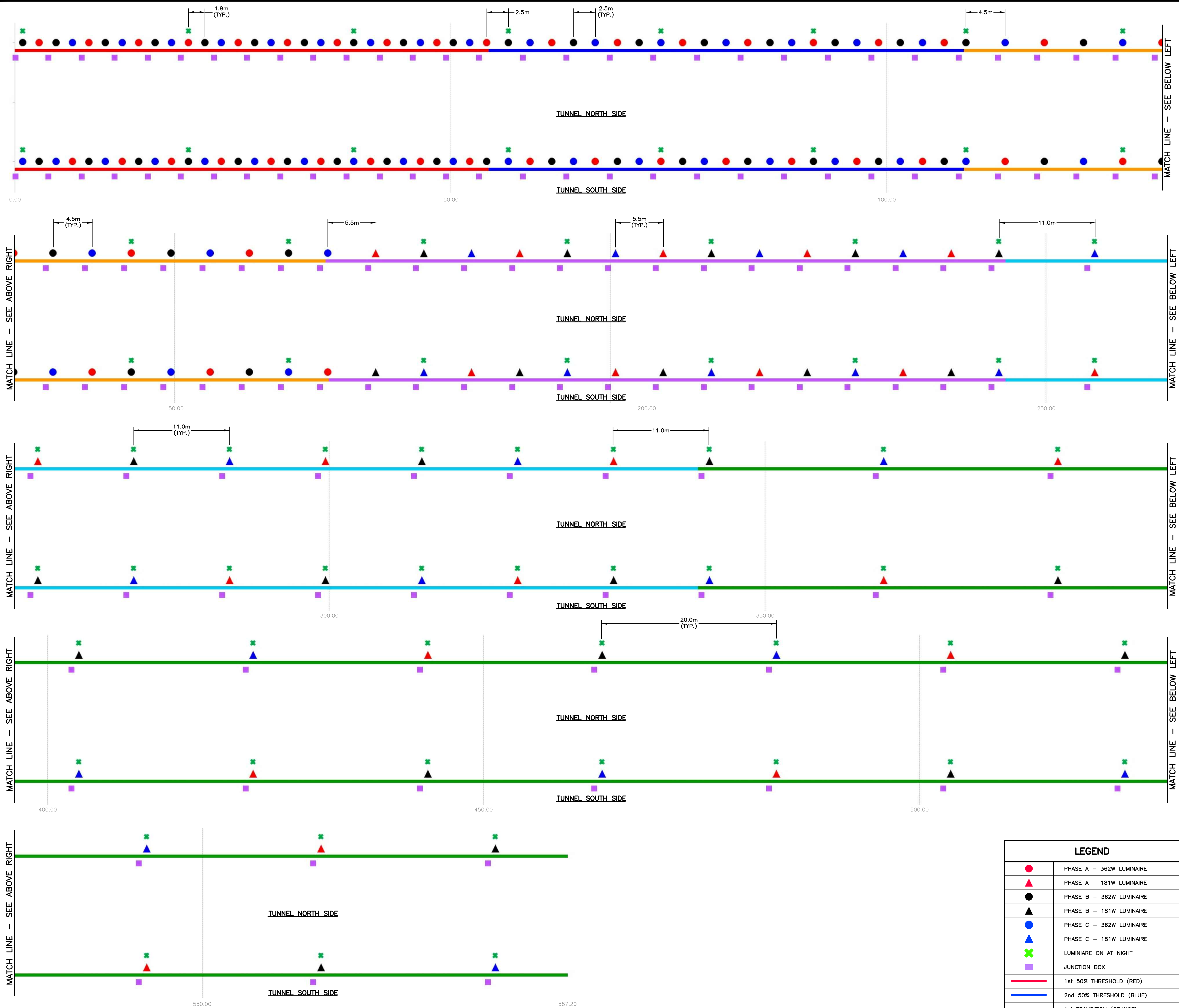
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Revision / Revision									
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B	Sheet number	B Numéro de la feuille							
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PBX ENGINEERING Ltd. Suite 200 - 2612 Bridge St. Victoria BC, V8T 4S9 Tel 250.388.7222 www.pbxing.com									
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ROGERS PASS SNOWSHED LIGHTING									
TRANS CANADA HIGHWAY THROUGH ROGERS PASS									
GLACIER NATIONAL PARK									
Drawing title/Titre du dessin									
TUPPER No. 2 SNOWSHED LIGHTING									
DETAILS TUNNEL LUMINAIRE RISER DIAGRAM (SHEET 1 OF 2)									
Surveyed by/Arpenté par	Drawn by/Dessiné par	Date							
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201422		7							
Drawing Reference No./No de référence du dessin									
G2002R1									





- NOTES:**
- UNLESS OTHERWISE INDICATED, LUMINAIRE SPACING IN EACH ZONE SHALL BE PER DETAILS ON SHEET E05.
  - LUMINAIRES ON SOUTH SIDE OF TUNNEL SHALL BE LOCATED DIRECTLY OPPOSITE LUMINAIRES ON NORTH SIDE OF TUNNEL.
  - JUNCTION BOXES ARE SHOWN RELATIVE (EAST AND WEST) TO LUMINAIRES. REFER TO DETAILS ON SHEET E05 FOR ACTUAL MOUNTING AND CONNECTION TO LUMINAIRES.

ALL CONDUCTORS IN CONDUIT FROM JUNCTION BOX TO JUNCTION BOX SHALL BE 4 No. 8 + 1 No. 10 BOND  
SOUTH SIDE CONDUIT SHALL ALSO CARRY  
2 No. 8 BOND  
600V SUBSTATION (WEST END)  
TO 600-120V CONTROL CABINET (EAST END)

TUNNEL SHOWN STRAIGHT  
FOR PLACEMENT CLARITY

DETAIL 1 TUNNEL LUMINAIRES  
1:200 (EAST BOUND)

LEGEND	
	PHASE A - 362W LUMINAIRE
	PHASE A - 181W LUMINAIRE
	PHASE B - 362W LUMINAIRE
	PHASE B - 181W LUMINAIRE
	PHASE C - 362W LUMINAIRE
	PHASE C - 181W LUMINAIRE
	LUMINAIRE ON AT NIGHT
	JUNCTION BOX
	1st 50% THRESHOLD (RED)
	2nd 50% THRESHOLD (BLUE)
	1st TRANSITION (ORANGE)
	2nd TRANSITION (PURPLE)
	3rd TRANSITION (CYAN)
	INTERIOR (GREEN)

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0 1:200 10

P1	Feb. 18 2015	ISSUED FOR INFORMATION	PBX	PB					
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ROGERS PASS SNOWSHED LIGHTING									
TRANS CANADA HIGHWAY THROUGH ROGERS PASS									
GLACIER NATIONAL PARK									
Drawing title/Titre du dessin									
TUPPER No. 2 SNOWSHED LIGHTING									
DETAILS TUNNEL LUMINAIRE RISER DIAGRAM (SHEET 2 OF 2)									
Surveyed by/Arpenté par	Drawn by/Dessiné par	Date							
	PBX	2015-02-27							
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