



**Royal Canadian Mounted Police
Gendarmerie royale du Canada**

**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS A:
Bid Receiving/Réception des soumissions**

RCMP MAIL SERVICES UNIT
BID RECEIVING - Room #A1E431
14200 Green Timbers Way
Surrey, B.C. V3T 6P3

**Facsimile Number for Amendments
Only: 778-290-6110**

**AMMENDMENT #3 TO INVITATION TO
TENDER-APPEL D'OFFRES**

Tender to: Royal Canadian Mounted Police
We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services and construction listed herein and on any attached sheets at the price(s) set out therefor.

Soumission aux: Gendarmerie royale du Canada
Nous offrons par la présente de vendre à Sa Majesté l Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaries

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Facsimile No. - No de télécopieur:

Telephone No. - no de téléphone:

Issuing Office - Bureau de distribution
Royal Canadian Mounted Police (RCMP)
14200 Green Timbers Way
Surrey, B.C. V3T 6P3

Title-Sujet INVITATION TO TENDER - Major Works - Construction of new RCMP Detachment facility in 100 Mile House, B.C.	
Solicitation No. - No. de l'invitation M2989-3-0017	Date: October 17, 2013
Client Reference No. - No. De Référence du Client	
GETS Reference No. - No. de Référence de SEAG PW-13-00496912	
Solicitation Closes -L'invitation prend fin at - à 2:00 P:M. Time Zone: PDT on - le October 28, 2013	
F.O.B. - F.A.B. DESTINATION	
Address Enquiries to: - Adresser toutes questions à: Hedy Sawatzky, Reg Sr Procurement Officer, hedy.sawatzky@rcmp-grc.gc.ca	
Telephone No. - No de téléphone 778-290-2779	Fax No. - N° de FAX: 778-290-6110
Destination of Goods, Services, and Construction: Destinations des biens, services et construction: Royal Canadian Mounted Police (RCMP) #841 and #851 Alder Venue 100 Mile House, B.C.	
This document contains a PERSONNEL SECURITY Clearance requirement.	
Delivery Required - Livraison exigée:	Delivery Offered - Livraison proposée
Name and title of person authorized to sign on behalf of Vendor/Firm Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur	
----- CONTRACTOR'S SIGNATURE	----- DATED



ADDENDUM #3 TO INVITATION TO TENDER

This Amendment #3 is being issued to add Addendum #3 dated October 16, 2013, Document = 25 pages inclusive.

1. This Addendum forms part of the Contract Documents and amends the original Drawings and Specifications dated 2012/03/05.
2. Ensure that all parties submitting bids are award of all items included in this Addendum.

To be noted: There is not an Addendum #2

End of Addendum #3

The following changes/clarifications in the tender documents are effective immediately. This Addendum will form part of the Contract documents.

ANSWERS TO QUESTIONS RAISED BY BIDDERS

ITEM

1) Question:

*"We respectfully submit for your review and approval of the following CertainTeed Gypsum Canada product, corresponding to those listed in Division 9 Section 09 21 16, as shown below in **bold italic** is the product that we would like to submit for approval.*

CertainTeed Gypsum Canada Inc., Diamondback Tile Backer"

1.1) Answer:

Bid as specified to meet or exceed the requirements in 09 21 16, 2.1 Gypsum Board, and 2.1.3, substitutions/requests for equals will be considered with successful contractor.

2) Question:

"Carpet specification appears to be for broadloom carpet - finish schedule indicates carpet tile. Is there a specific product noted?"

2.1) Answer:

Delete reference to "Carpet Tile" replace with "Carpet" in the finish schedule

3) Question:

"Request equal for Trane controls for the project."

3.1) Answer:

Bid to meet or exceed minimum requirements in Mechanical specification section 23 09 01, 23 09 13, 23 09 24, 23 09 25, 23 09 93 and 23 09 94. Substitutions/requests for equals will be considered with successful contractor.

4) Question:

*" I would like to offer our Sikafloor system as an alternate to the specifications for **SEAMLESS EPOXY / QUARTZ FLOORING** (section 09 66 23) "*

4.1) Answer:

Bid as specified to meet or exceed the requirements in 09 66 23, 2.1 Materials and 2.1.1.6, substitutions/requests for equals will be considered with successful contractor.

5) Question:

"We would like to get Trend Controls added as an approved controls manufacturer..."

5.1) Answer:

Bid to meet or exceed minimum requirements in Mechanical specification section 23 09 01, 23 09 13, 23 09 24, 23 09 25, 23 09 93 and 23 09 94. Substitutions/requests for equals will be considered with successful contractor.

6) Question:

"Concerning the metal roofing (Scope 07-46-13) we wish to point out that - of the 3 products specified - 2 are no longer available and the third is not an RCABC-Approved system and therefore unsuitable for a 10-Year RCABC Guarantee (as clause 1.4.3)."

6.1) Answer:

Bid as specified to meet or exceed the requirements in 07 46 13, substitutions/requests for equals will be considered with successful contractor.

7) Question:

"request an approved equal to Section 09 66 23; Seamless Epoxy Flooring. Specified is Stonshield SLT to which our equal is Selbatwede 41."

7.1) Answer:

Bid as specified to meet or exceed the requirements in 09 66 23, substitutions/requests for equals will be considered with successful contractor.

8) Question:

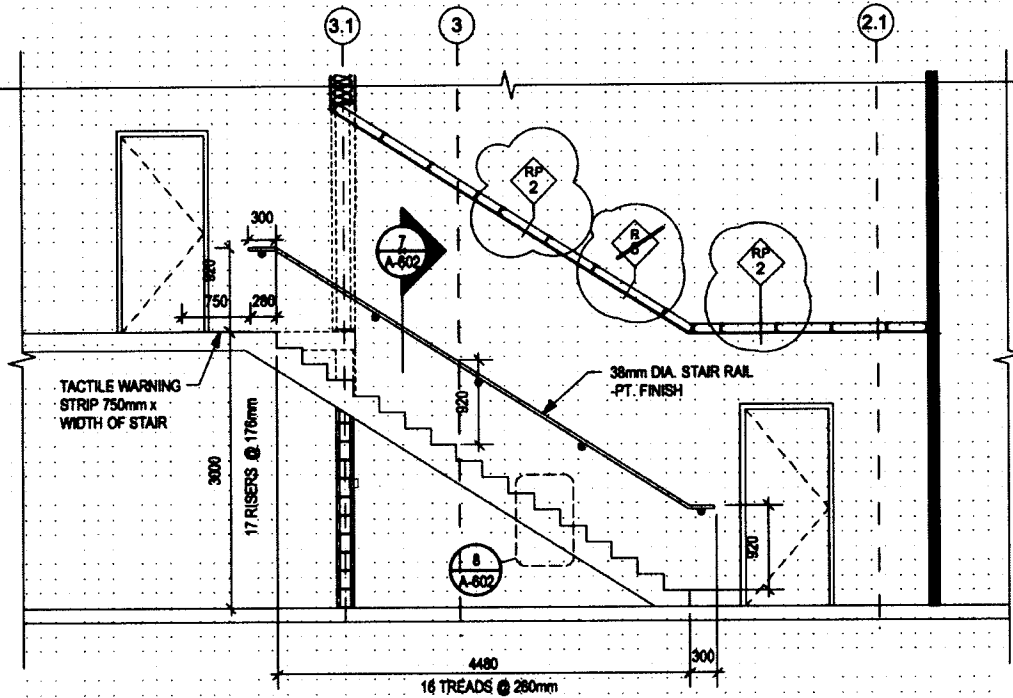
"...request for equals for Maax, Metcraft, Onex, Stern Williams & Zurn products on the New Police Building project in 100 Mile House BC..."

8.1) Answer:

Bid to meet or exceed minimum requirements in Mechanical specification section 22 40 00 and 22 13 00.

CHANGES AND CLARIFICATIONS

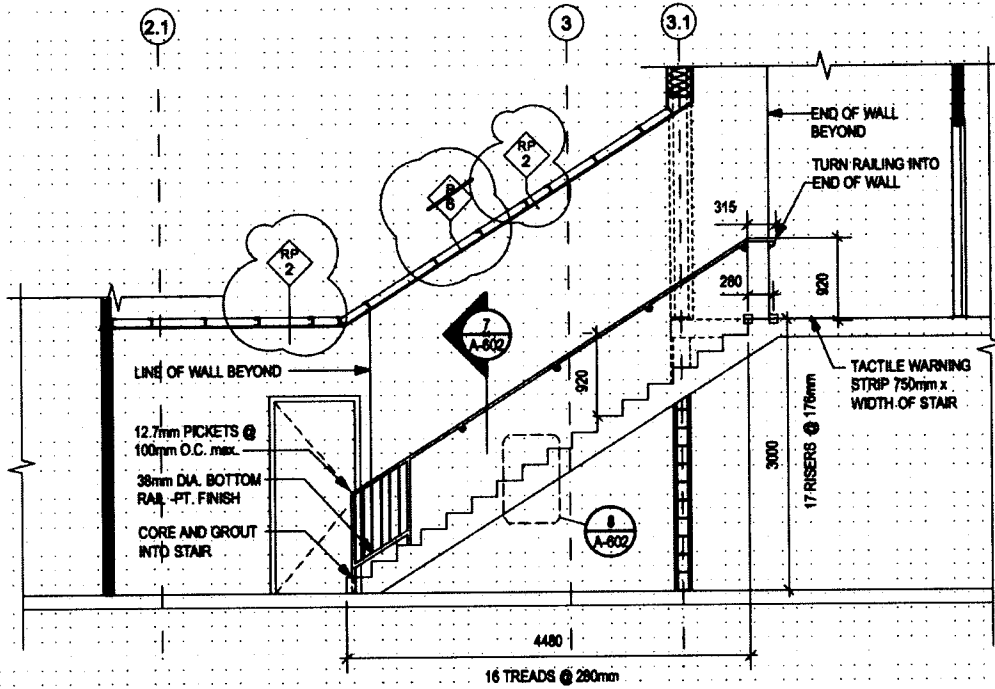
- 9) **DELETE** Ceiling/Sloped Wall Assembly R6 and **ADD** Ceiling RP2 for extent shown, refer to Partial sketch of Drawing "DETAILS A-602", Detail, 9/A-200



9 STAIR SECTION
A-200 SCALE: 1:50

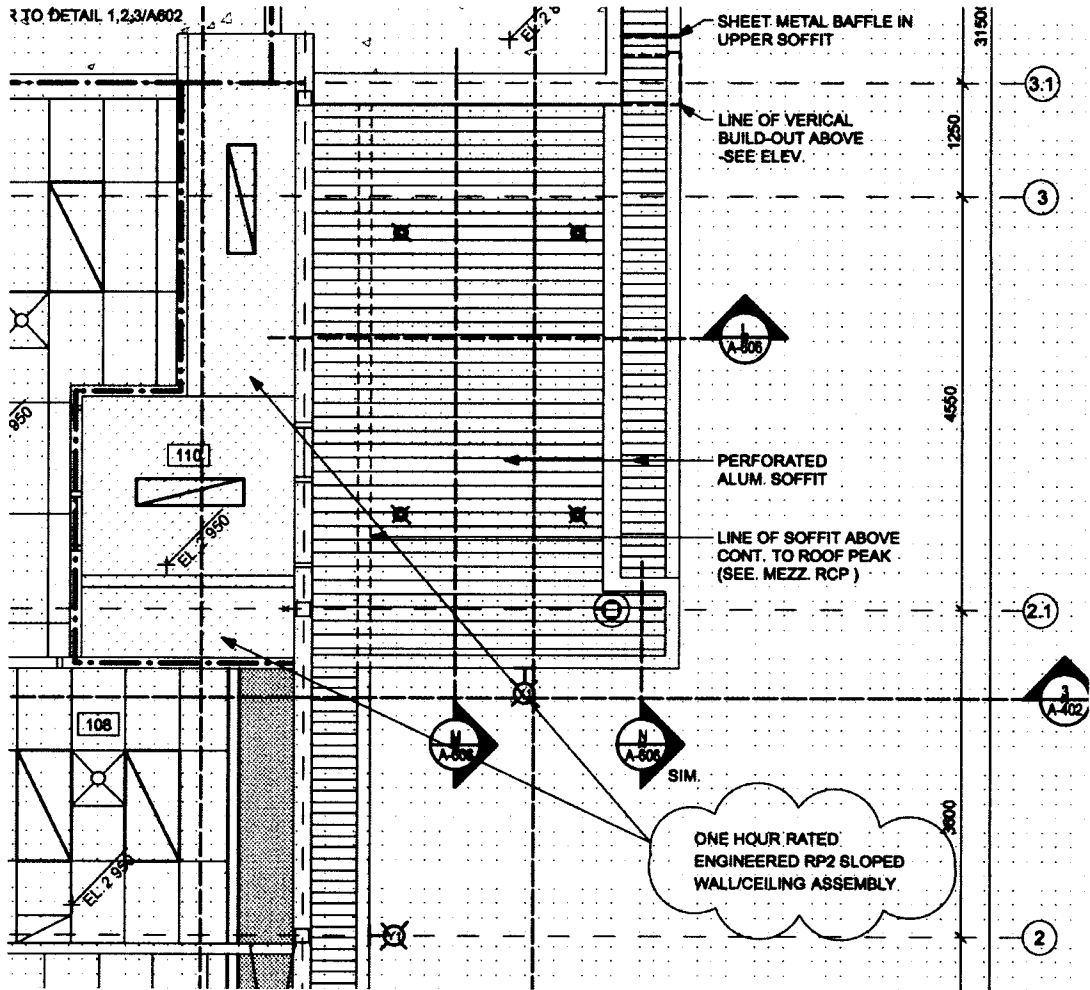
CHANGES AND CLARIFICATIONS

10) **DELETE** Ceiling/Sloped Wall Assembly R6 and **ADD** Ceiling RP2 for extent shown, refer to Partial sketch of Drawing "DETAILS A-602", Details 10/A-200

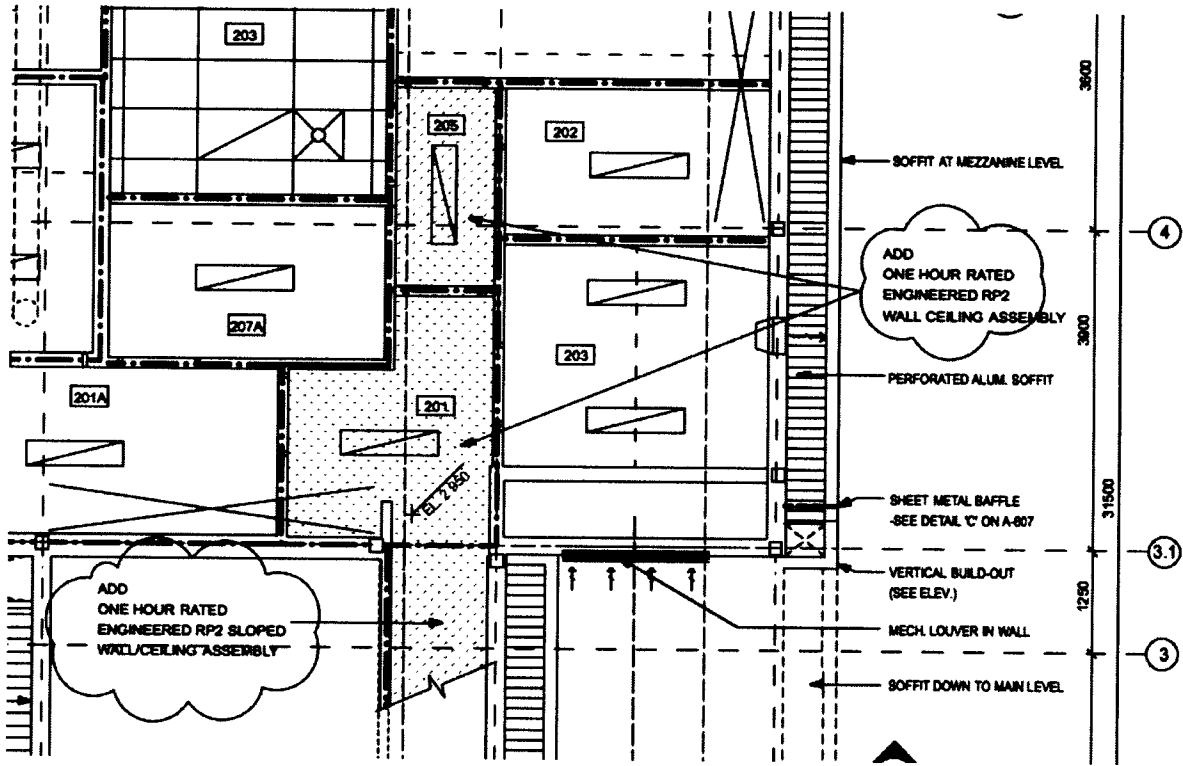


10 STAIR SECTION
A-200 SCALE: 1:50

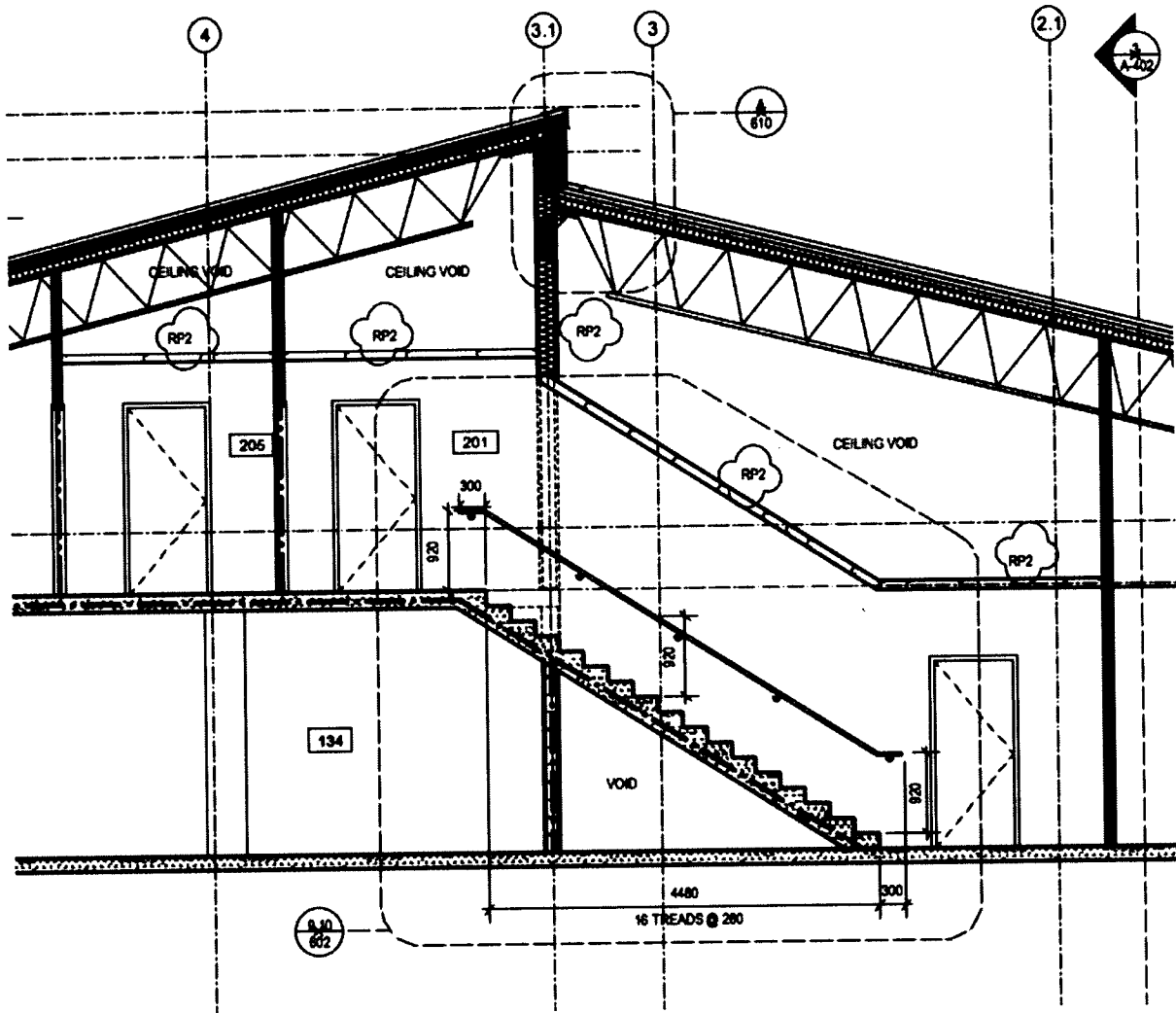
11) DELETE Ceiling/Sloped Wall Assembly R6 and ADD Ceiling RP2 for extent shown, refer to Partial sketch of Drawing "MAIN FLOOR REFLECTED CEILING PLAN A-300"



12) **DELETE** Ceiling/Sloped Wall Assembly R6 and **ADD** Ceiling RP2 for extent shown, refer to Partial sketch of Drawing "MEZZANINE REFLECTED CEILING PLAN A-301"



13) **DELETE** Ceiling/Sloped Wall Assembly R6 and **ADD** Ceiling RP2 for extent shown, refer to Partial sketch of Drawing "BUILDING SECTIONS A-401, Section 3/A401"



14) **Drawing E-100 - Electrical Site Plan & Details**

1. Revise legend and drawing notes as indicated in ESA-01.
2. Revise electrical service entrance section as indicated in ESA-02.
3. Revise circuit for sliding gate to A-6,8

15) **Drawing E-200 - Main Floor Plan Power & Systems**

1. Revise heater in room 307A to unit heater as indicated in Drawing Note 21. Locate unit at south east corner of room.
2. Revise outlet layouts and circuiting in rooms 105, 105A, 109, & 111A as indicated in sketch ESA-3.
3. Revise location of intrusion motion sensor 'Z61' from room 105 to 130 as indicated in sketch ESA-03.
4. Add radio system outlet to north east corner of room 160. Refer to ESA-07 for additional details.
5. Delete radio system outlet from north wall of room 117.

16) Drawing E-201 - Main Floor Plan Lighting

1. Two type 'F2' luminaires in room 111A (east of room 105A) to be complete with frame kit to mount luminaires in gypsum board ceiling.
2. Revise type 'T' luminaire in room 110 to type 'D'.

17) Drawing E-202 - Mezzanine Floor Plan Power, Systems & Lighting

1. Revise equipment layouts in rooms 203 & 204 as indicated in sketch ESA-04. Add second rack cabinet to room 204. Relocate radio equipment from room 204 to room 203. Delete cable tray between the two rooms.
2. Revise type 'P2' luminaire in room 201 to type 'D'.
3. Revise circuit for BMS panel in room 208 to E-7.

18) Drawing E-500 - Electrical Schedules

1. Mechanical equipment schedule: Revise item EB-1 to match drawing note 21 on E-200.
2. Panel A: Delete 15A, 2P breaker (6,8) for Propane Tank Heater. Replace with one 15A, 1P breaker and one 15A, 1P GFI breaker. Allocate GFI circuit for Tower Junction Box.
3. Panel E: Revise as indicated in sketch ESA-05.
4. Revise luminaire type 'B' to LED source. Fail-Safe #FCC-X-4-7500-7-40-120-80/87-ED-LLNLVRS.

19) Drawing E-600 - Power Distribution Single Line Diagram & Electrical Details

1. Revise room 137A service equipment layout as indicated in ESA-06.

20) Drawing E-601 - Life Safety, Door, Telecommunication and Radio System Details

1. Revise Radio System Block Diagram as indicated in sketch ESA-07.
2. Revise Voice and Data Cabling Distribution Detail as indicated in ESA-08.

21) Specification Section 27 10 05 – Structured Cabling for Communications

1. Client will be using VoIP for telephone system. Replace section with attached.

22) Specification Section 28 13 00 – Access Control

1. Remove requirement to supply and install cables.
2. Size EMT to accommodate typical systems cabling. Allow for fill ratio of 50%.

23) Specification Section 28 16 00 – Intrusion Detection

1. Remove requirement to supply and install cables.
2. Size EMT to accommodate typical systems cabling. Allow for fill ratio of 50%.








24) Specification Section 28 23 00 – Video Surveillance

1. Remove requirement to supply and install cables.
2. Size EMT to accommodate systems cabling as indicated in article 3.1.3 of this specification section.

25) Specification Section 28 24 00 – Interview Audio/Video Surveillance

1. Remove requirement to supply and install cables.
2. Size EMT as indicated on drawing E-602.


SYMBOL LEGEND

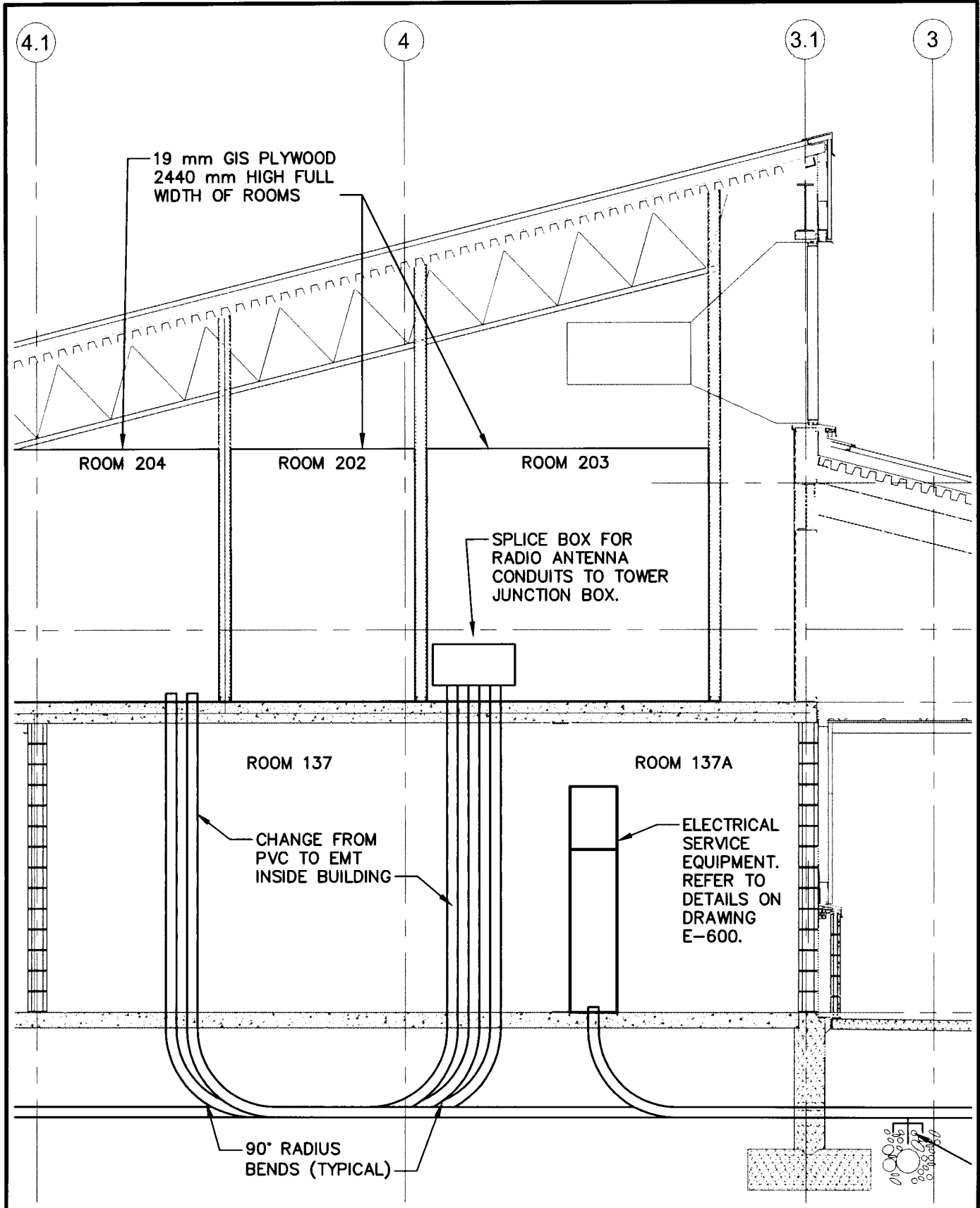
	DUPLEX RECEPTACLE, CSA 5-20R (T-SLOT)
	QUADPLEX RECEPTACLE
	QUADPLEX RECEPTACLE, CSA 5-20R (T-SLOT)
	MANUAL MOTOR STARTER
	MAGNETIC MOTOR STARTER
	DATA/VOIP OUTLET 2D - INDICATES NUMBER OF JACKS
	DATA/VOIP OUTLET, MOUNTED ABOVE COUNTER

DRAWING NOTES

8. APPROXIMATE LOCATION OF FUTURE RADIO SYSTEM ANTENNA. INSTALL 2 x 103 mm, 1 x 53 mm AND 1 x 27 mm DUCTS FROM ROOM 203 TO IN-GRADE 915 x 915 x 915 mm WEATHERPROOF, LOAD BEARING JUNCTION BOX AT THIS LOCATION. COORDINATE INSTALLATION WITH DEPARTMENTAL REPRESENTATIVE. PROPERLY CAP, SEAL AND RECORD LOCATION FOR FUTURE CONNECTION.

W:\V5000\3510 RCMP 100 MILE HOUSE BC\01 DRAWINGS\ELEC\WORKING\3510 E-100.DWG - Tab: ESA-01 LEGEND AND NOTE REVISIONS - 2013-October-16 11:03:06

 MCW Consultants Ltd. 1185 West Georgia St, Suite 1400, Vancouver, BC, V6E 4E6 E-Mail: mcw_van@mcw.com www.mcw.com Tel: 604-687-1821 Fax: 604-683-5881 Vancouver Toronto Winnipeg Moncton Ottawa Halifax Dauphin Kelowna Trail Saint John	PROJECT:	DATE:	PROJ. NO.:	REVISION NO.:
	100 MILE HOUSE POLICE BUILDING 841 & 851 Alder Avenue, 100 Mile House, BC	2013-Oct-16	3510	
	DRAWING TITLE:	DRAWN BY:	REF. DWG. NO.:	DWG. NO.:
LEGEND AND NOTE REVISIONS	PG	E-600	ESA-01	
	SCALE:	ISSUED WITH:		
	N.T.S.	ADD#3		



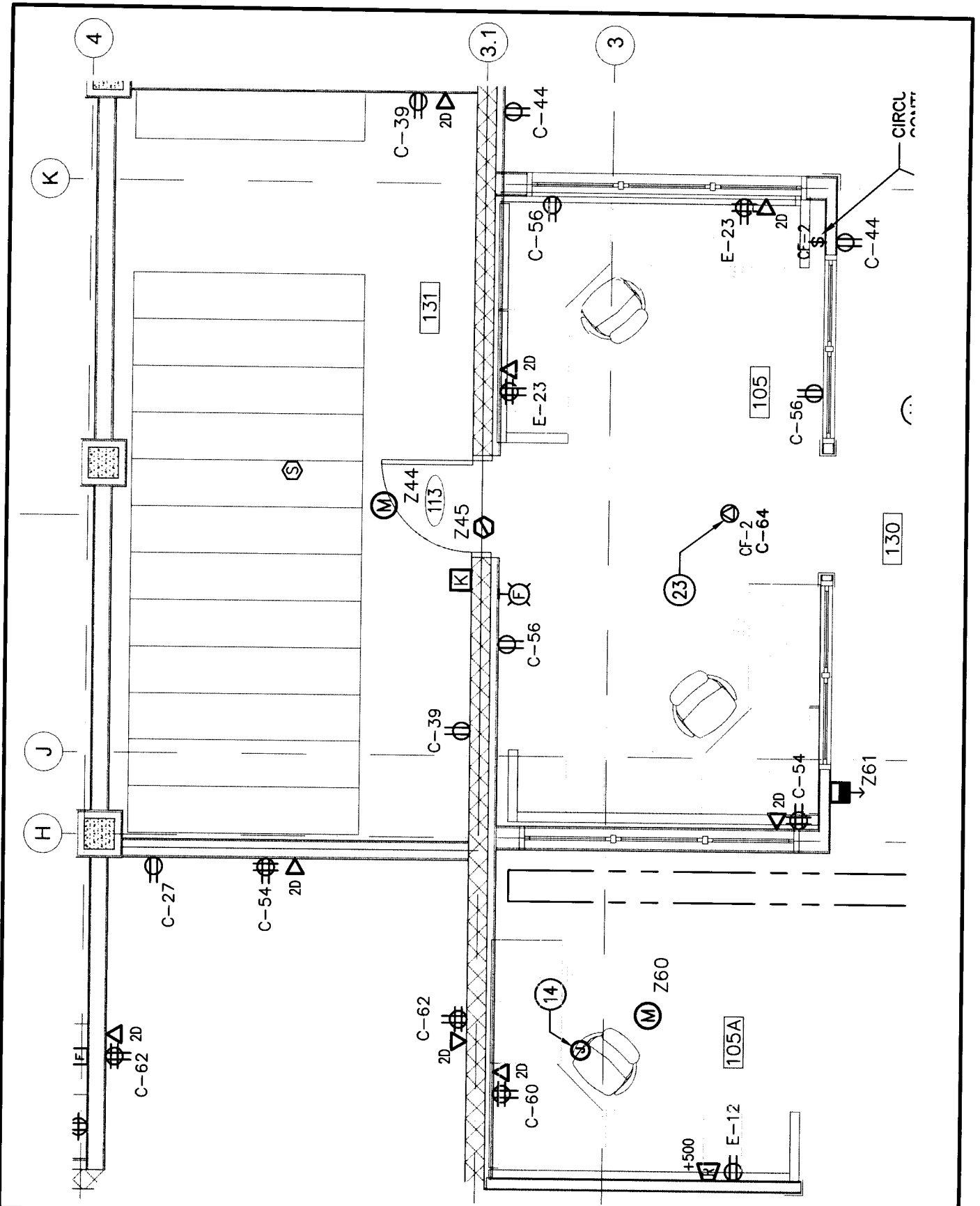
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PROJECT:	100 MILE HOUSE POLICE BUILDING	
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DRAWING TITLE:	SERVICE CONDUIT ENTRY SECTION - PARTIAL	

DATE:	2013-Oct-16	PROJ. NO.:	3510	REVISION NO.:	
DRAWN BY:	PG	REF. DWG. NO.:	E-100	DWG. NO.:	
SCALE:	N.T.S.	ISSUED WITH:	ADD#3		ESA-02

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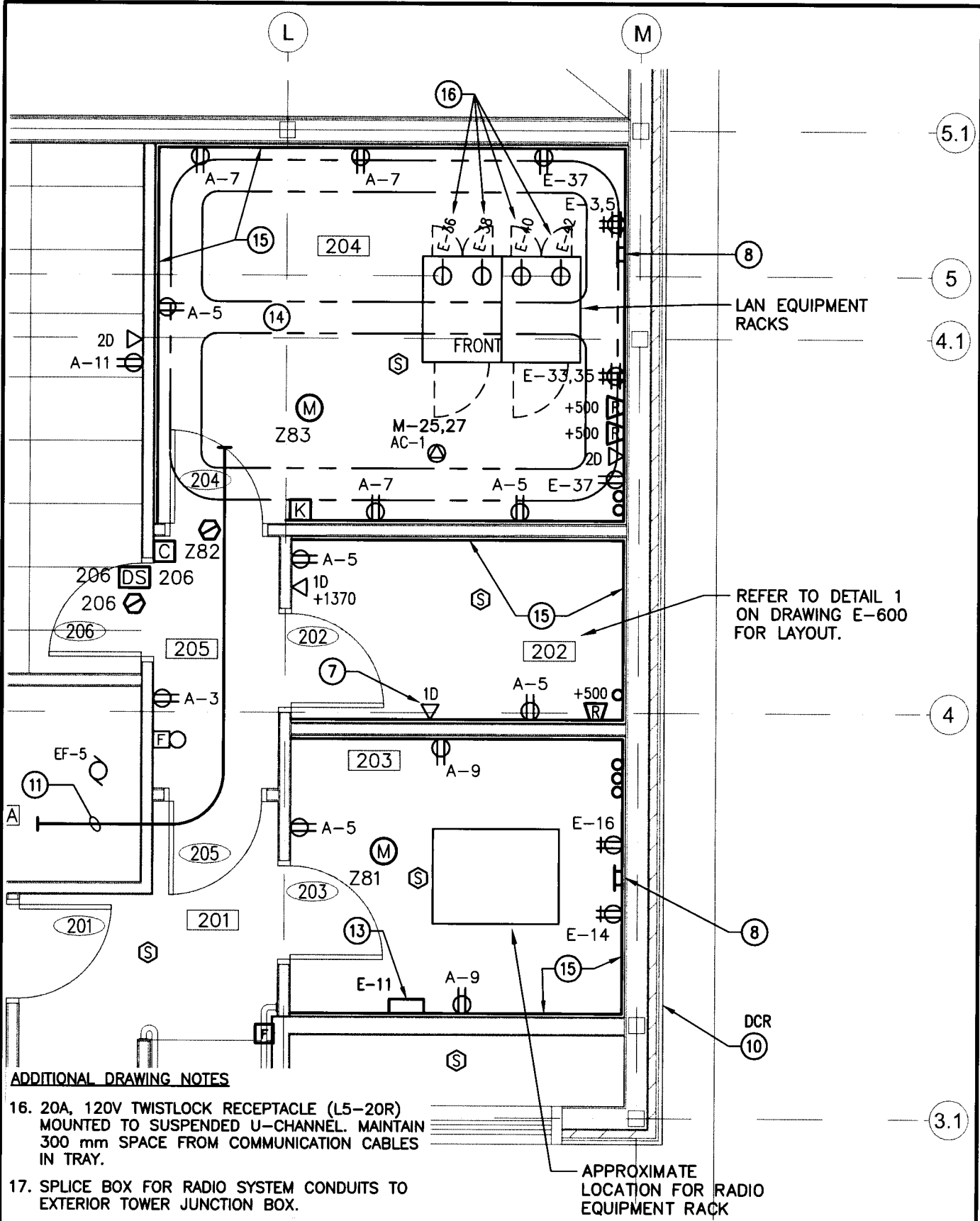
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PROJECT:
100 MILE HOUSE POLICE BUILDING
 841 & 851 Alder Avenue, 100 Mile House, BC

DRAWING TITLE:
**ROOM 105, 105A, 109 & 101A
 OUTLET REVISIONS**

DATE: 2013-Oct-16	PROJ. NO.: 3510	REVISION NO.:
DRAWN BY: PG	REF. DWG. NO.: E-200	DWG. NO.:
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ADDITIONAL DRAWING NOTES

- 16. 20A, 120V TWISTLOCK RECEPTACLE (L5-20R) MOUNTED TO SUSPENDED U-CHANNEL. MAINTAIN 300 mm SPACE FROM COMMUNICATION CABLES IN TRAY.
- 17. SPLICE BOX FOR RADIO SYSTEM CONDUITS TO EXTERIOR TOWER JUNCTION BOX.


REFER TO DETAIL 1 ON DRAWING E-600 FOR LAYOUT.

APPROXIMATE LOCATION FOR RADIO EQUIPMENT RACK

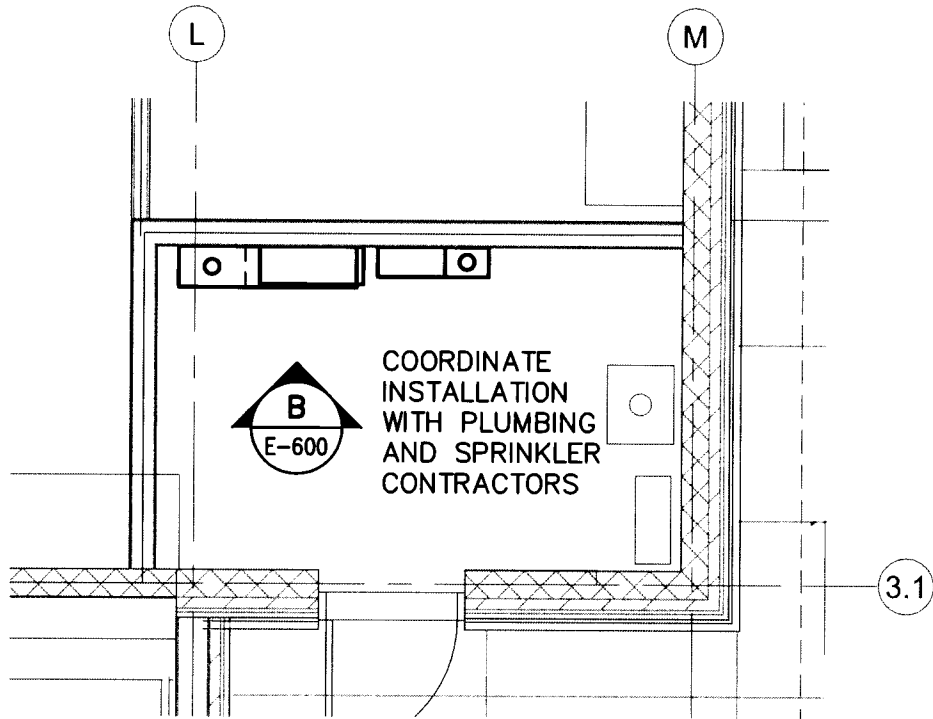
 <p>MCW Consultants Ltd. 1185 West Georgia St, Suite 1400, Vancouver, BC, V6E 4E6 E-Mail: mcw_van@mcw.com www.mcw.com Tel: 604-687-1821 Fax: 604-683-5681 Vancouver Toronto Winnipeg Moncton Ottawa Halifax Dauphin Kelowna Trail Saint John</p>	PROJECT: 100 MILE HOUSE POLICE BUILDING 841 & 851 Alder Avenue, 100 Mile House, BC	DATE: 2013-Oct-16	PROJ. NO.: 3510	REVISION NO.:	
	DRAWING TITLE: EQUIPMENT LAYOUT REVISIONS ROOMS 203 & 204	DRAWN BY: PG	REF. DWG. NO.: E-202	DWG. NO.:	ESA-04
	SCALE: 1:50	ISSUED WITH: ADD#3			

PANEL 'E'		100A, 120/208V, 1 ϕ , 3W - ROOM 117A	
LIGHTING MEZZANINE	15 - 1	2 - 15	PUMP P-5
RECEPTACLES RM 204 [Δ]	20 - 3	4 - 15	BOILER B-1, B-2
RECEPTACLES RM 204 [Δ]	20 - 5	6 - 15	PUMP P-1
BMS PANEL	15 - 7	8 - 15	PUMP P-2
PANIC ALARM SYSTEM [Δ]	15 - 9	10 - 15	DHWT-1,2
DOOR SIGNAL SYSTEM [Δ]	15 - 11	12 - 15	RECEPTACLE RM 105A RADIO
F.A. CONTROL PANEL [Δ]	15 - 13	14 - 20	RECEPTACLE RM 203
RECEPTACLES RM 117	15 - 15	16 - 20	RECEPTACLE RM 203
RECEPTACLES RM 117	15 - 17	18 - 15	UNIT HEATER RM 137A
RECEPTACLE RM 112,115	15 - 19	20 - 15	
RECEPTACLES RM 117	15 - 21	22 - 15	LIGHTING RM 138, 143, 164
RECEPTACLE RM 105	15 - 23	24 - 20	SPRINKLER AIR COMP. SAC-1 [Δ]
RECEPTACLES RM 128	20 - 25	26 - 15	RECEPTACLE RM 146 [Δ]
SPARE	15 - 27	28 - 15	RECEPTACLE ROOM 207A [Δ]
SPARE	15 - 29	30 - 15	RECEPTACLE ROOM 207A [Δ]
RECEPTACLE RM 207A [Δ]	15 - 31	32 - 15	RECEPTACLE ROOM 207A [Δ]
RECEPTACLE RM 204 [Δ]	20 - 33	34 - 15	DOOR OPERATORS RM 101,102 [Δ]
RECEPTACLE RM 204 [Δ]	20 - 35	36 - 20	RECEPTACLE RM 204 [Δ]
RECEPTACLE RM 204 [Δ]	15 - 37	38 - 20	RECEPTACLE RM 204 [Δ]
EXIT LIGHTS	15 - 39	40 - 20	RECEPTACLE RM 204 [Δ]
SPARE	15 - 41	42 - 20	RECEPTACLE RM 204 [Δ]
SPARE	15 - 43	44 - 15	SPARE
SPARE	15 - 45	46 - 15	SPARE
SPARE	15 - 47	48 - 15	SPARE
SPARE	15 - 49	50 - 15	SPARE
SPARE	15 - 51	52 - 15	SPARE
BLANK	- 53	54 -	BLANK

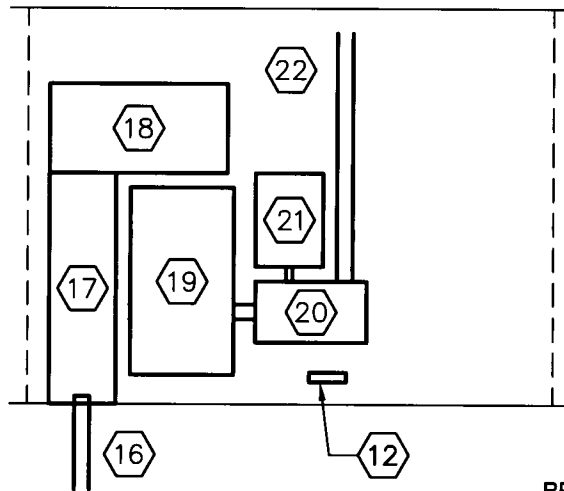
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	100 MILE HOUSE POLICE BUILDING	2013-Oct-16	3510	
	841 & 851 Alder Avenue, 100 Mile House, BC	DRAWN BY:	REF. DWG. NO.:	DWG. NO.:
	DRAWING TITLE:	PG	E-500	
PANEL E - REVISIONS	SCALE:	ISSUED WITH:	EAS-05	
	N.T.S.	ADD#3		

W:\3510\3510 ROOM 100 MILE HOUSE BC\01 DRAWINGS\ELEC\WORKING\3510 E600.DWG -- Tab: ESA-06 ROOM 137A ELECTRICAL SERVICE ENTRANCE DETAILS -- 2013-October-16 11:03:57



PLAN



REFER TO DRAWING
E-600 FOR NOTES.

ELEVATION


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 1185 West Georgia St, Suite 1400, Vancouver, BC, V6E 4E6
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PROJECT:	100 MILE HOUSE POLICE BUILDING
	841 & 851 Alder Avenue, 100 Mile House, BC
DRAWING TITLE:	ROOM 137A ELECTRICAL SERVICE ENTRANCE DETAILS

DATE:	2013-Oct-16	PROJ. NO.:	3510	REVISION NO.:	
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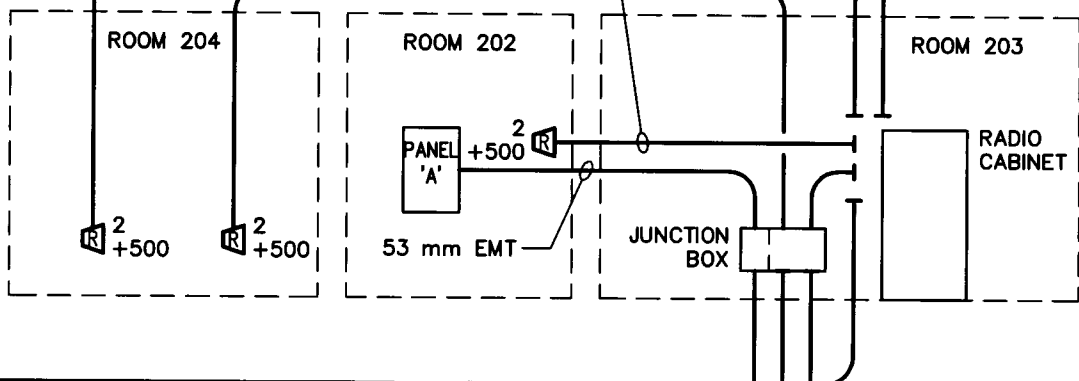
W:\3510\3510 RCMP 100 MILE HOUSE BC\01 DRAWINGS\ELEC\WORKING\3510 E601.DWG - 2013-October-16 11:04:07

BASE ANTENNA WEATHERHEAD (LOCATE AT GRID F-3.1)

27 mm EMT

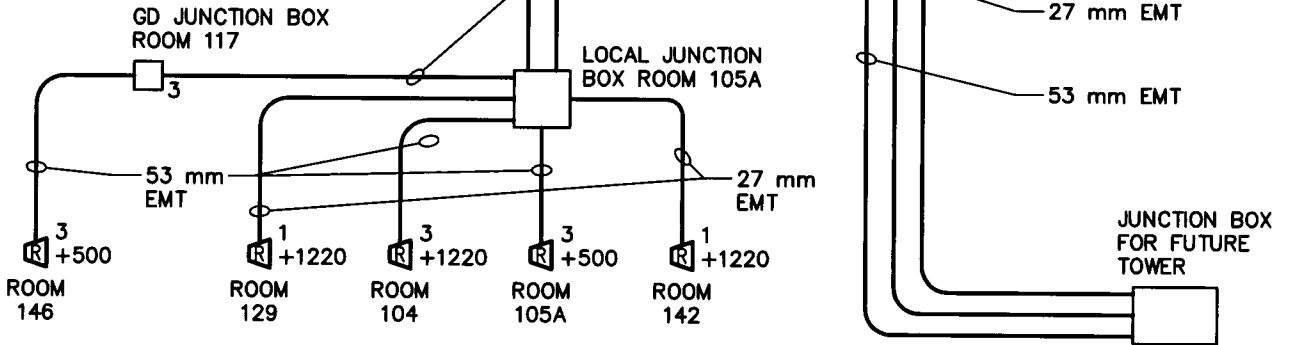
103 mm EMT

DCR ANTENNA WEATHERHEAD



BOX TYPES

- 1: 100 x 100 x 89 mm JUNCTION BOX
- 2: 119 mm SQUARE OUTLET BOX
- 3: 150 x 150 x 100 mm JUNCTION BOX



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PROJECT:
100 MILE HOUSE POLICE BUILDING
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DRAWING TITLE:
RADIO SYSTEM BLOCK DIAGRAM

DATE:
 2013-Oct-16

DRAWN BY:
 PG

SCALE:
 N.T.S.

PROJ. NO.:
 3510

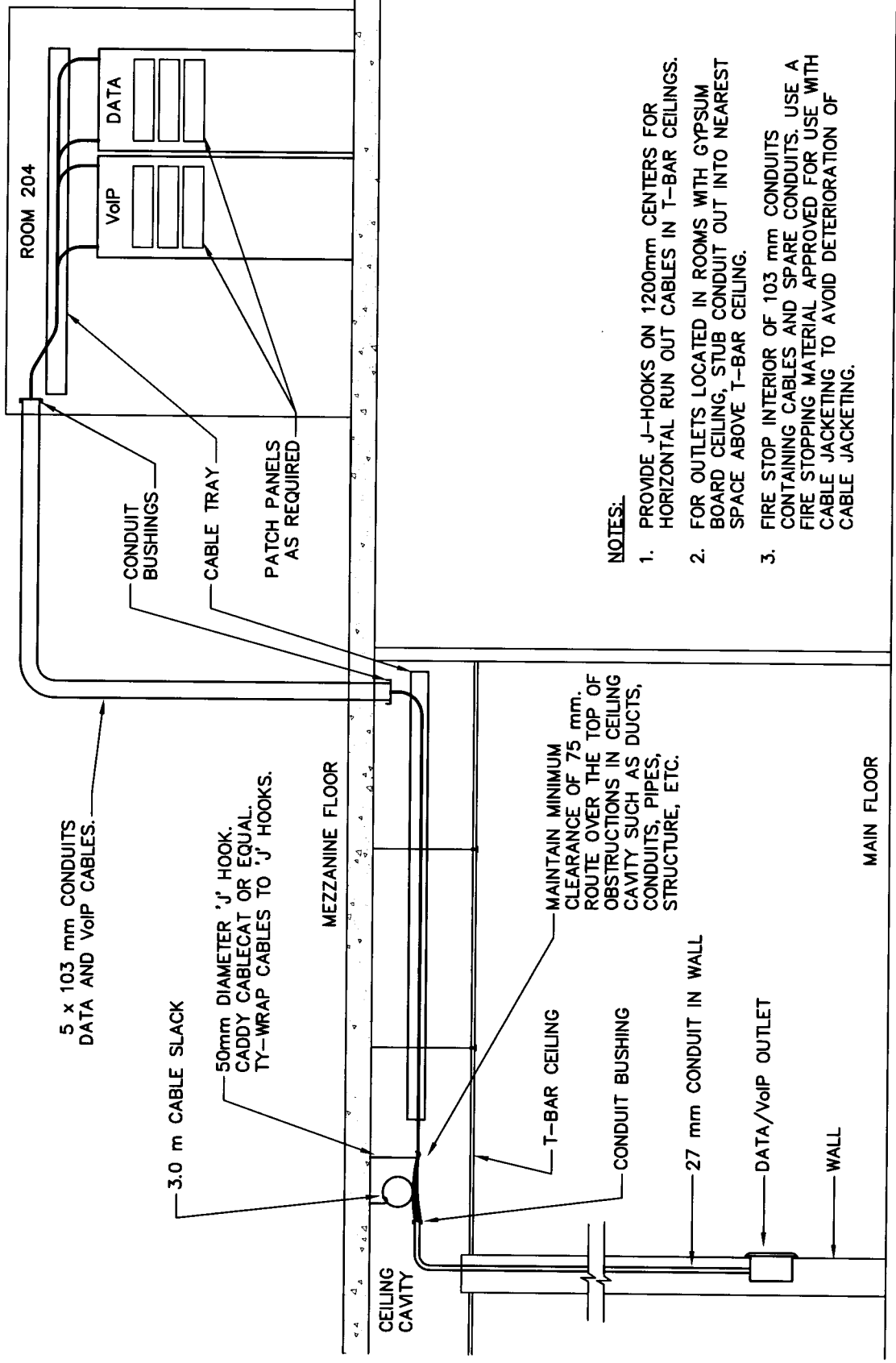
REF. DWG. NO.:
 E-601

ISSUED WITH:
 ADD#3

REVISION NO.:

DWG. NO.:

ESA-07



- NOTES:**
1. PROVIDE J-HOOKS ON 1200mm CENTERS FOR HORIZONTAL RUN OUT CABLES IN T-BAR CEILINGS.
 2. FOR OUTLETS LOCATED IN ROOMS WITH GYPSUM BOARD CEILING, STUB CONDUIT OUT INTO NEAREST SPACE ABOVE T-BAR CEILING.
 3. FIRE STOP INTERIOR OF 103 mm CONDUITS CONTAINING CABLES AND SPARE CONDUITS. USE A FIRE STOPPING MATERIAL APPROVED FOR USE WITH CABLE JACKETING TO AVOID DETERIORATION OF CABLE JACKETING.

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 Dauphin Kelowna Trail Saint John

PROJECT:
100 MILE HOUSE POLICE BUILDING
 841 & 851 Alder Avenue, 100 Mile House, BC

DRAWING TITLE:
**VOICE AND DATA CABLING
 DISTRIBUTION DETAIL - REVISED**

DATE: 2013-Oct-16	PROJ. NO.: 3510	REVISION NO.:
DRAWN BY: PG	REF. DWG. NO.: E-601	DWG. NO.:
SCALE: N.T.S.	ISSUED WITH: ADD#3	ESA-08

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 01 50 – General Instructions.
- .2 Section 26 05 00 – Common Work Results - Electrical
- .3 Section 27 05 28 – Pathways for Communication Systems

1.2 REFERENCES

- .1 Canadian Standards Association
 - .1 CSA-C22.2 No. 214, Communications Cables.
- .2 Telecommunications Industry Association (TIA)/Electronic Industries Alliance (EIA)
 - .1 ANSI/TIA-568-C.0 Generic Telecommunications Cabling for Customer Premises.
 - .2 ANSI/TIA-568-C.1 Commercial Building Telecommunications Cabling standard.
 - .3 ANSI/TIA-568-C.2 Balanced Twisted-pair Telecommunications Cabling and Components standard.
 - .4 TIA-569-B, Commercial Building Standard for Telecommunications Pathways and Spaces.
 - .5 ANSI/TIA -606-B, Administration Standard for Commercial Telecommunications Infrastructure.
 - .6 ANSI/TIA-607-B Telecommunications Grounding (Earthing) and bonding for Customer Premises.
 - .7 National Building Code of Canada 2010.
 - .8 CSA C22.1-2009 Canadian Electrical Code, BC Amendments, Directives and Bulletins.

1.3 SYSTEM DESCRIPTION

- .1 Structured telecommunications wiring system consists of unshielded-twisted-pair cables, terminations, connectors, cross-connection hardware and related equipment installed inside building for occupant's telecommunications systems, including voice and data.
 - .1 VoIP & Data cabling terminations and equipment located in room 204.
- .2 Generally, equip each workstation outlet faceplate with two cables minimum for each work station, printer/fax and copier location for VoIP and Data unless indicated otherwise.
- .3 Telephone and data wiring is to be installed as per details on drawings.
- .4 Provide manufacturer's warranty per clause 3.9.2.

1.4 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 01 50 – General Instructions.
- .2 Submittals to include shop drawings of all components and equipment.

- .3 As-built Records and Drawings:
 - .1 On clean set of drawings mark clearly and neatly in coloured ink, the exact locations of devices and the wiring system and wiring route for the devices as installed. Mark the drawings as work proceeds to avoid errors.
 - .2 Provide electronic drawings in AutoCAD format depicting all construction as indicated on the marked up hard copy drawing and including all labelling and numbering associated with the cable drops. Provide two hard copies and two CDs or DVDs with electronic files. Also include on all CDs/DVDs copies of tel/data wiring test results.
 - .3 Provide two (2) bound complete hard-copy sets of as-built records to the Consultant.
 - .1 Provide and place one hard copy of as-built records for each telecommunications room in plan holder in each telecommunications room.

1.5 CONTRACTOR QUALIFICATIONS

- .1 Upon request by Departmental Representative, provide certified documentation of qualifications described below. Failure to meet or provide such documentation will be the basis for rejection of sub-contractor proposed for work under this Section.
- .2 The cabling Contractor under this Section shall be a certified system vendor of the manufacturer's components and/or cable being bid, and use only technicians fully trained and qualified on installation and testing of the components to be installed.
- .3 All staff performing any type of work contained in this Section shall be certified in the installation, termination and testing of all aspects of UTP Cable systems by:
 - .1 A recognized education institution or,
 - .2 A major cable manufacturer or,
 - .3 Being the holder of the designation of Registered Communications Distribution Designer (RCDD).
- .4 Contractor shall hold appropriate and valid licenses and/or BC Provincial permits to install low voltage cabling.
- .5 Contractor must be certified by the component supplier/s as acceptable installers so the warranty is provided that is specified in clause 3.9 of this section.

Part 2 Products

2.1 HORIZONTAL CABLE

- .1 Four (4) pair, unshielded, twisted, solid copper core, 100 ohm, 24 AWG, blue jacket, Category 6A, FT4 or FT6 rated as required by code.
- .2 Transmission requirements shall conform to or exceed all applicable sections of the TIA/EIA 568-C.1, C.2 current specifications for Category 6A cable and components.
- .3 Electromagnetic radiation: cables shall comply with Class A limits of FCC Part 15, Subpart J for computing devices.

- .4 Nearby sources of radio and electrical interference such as radio transmitters, HVAC, arc welders, motors, intercom or radar installations shall be evaluated for any possible effects.
- .5 Cable manufacturer: To suit provision of warranty per clause 3.9.2.

2.2 HORIZONTAL CABLE CONNECTORS

- .1 Applies to both voice and data terminations.
- .2 All UTP connectors at each horizontal cable run and each patch cord shall meet the following specifications:
 - .1 Category 6A, 110 punch down, individually snap-in and modular, non-keyed
 - .2 VoIP & Data horizontal cable runs shall use 8P/8W female RJ45 components at both ends. T568A pin configuration.
 - .3 Patch cords shall use male RJ45 T568A wired connectors on both ends for data.
 - .4 Cables shall be wired straight through; no crossover is allowed. Pin 1 at one end is connected to Pin 1 at the other end of the cables.
 - .5 Components:
 - .1 Configured to support 8 position EIA/TIA, ISDN cabling.
 - .2 Insulation Displacement Type (IDC), modular, non-keyed, utilizing Cat. 6A block type connectors.
 - .6 Use the same connector type at both ends of cables.
 - .7 Connectors at outlet end: install in appropriate wall plate.

2.3 CABLE MANAGEMENT

- .1 Black metal suitable for mounting in 483 mm racks.
- .1 Frontside horizontal cable management, 5 metal finger style, minimum 57 mm deep.
- .2 Must not take up more than 1 unit of rack space.
- .3 Install as specified and/or directed by Departmental Representative.
- .4 Provide one 10.0 m roll of 13 mm wide Velcro to supplement cable management. Give to Departmental representative.
- .5 Manufacturer: Hammond #PCMBS19001BK1 or #PCMBS19003BK1

2.4 RACK UNIT – CABINET

- .1 Standard complete EIA ventilated enclosed rack cabinet suitable for 483mm standard rack-mount equipment.
- .2 Size: Approx. 2134 mm (H) x 800 mm (W) x 1016 mm (D) with minimum 44U vertical space for equipment.
- .3 Top mounted fan unit: 250 CFM.
- .4 Two rack mounted 20A, 120V input power bars, equipped with six 5-20R (T-Slot) outlets, a 4.57 m shielded cord with L5-50R plug, with reset breaker but no on off switch. Quantity: Minimum 2 per cabinet.
- .5 Solid steel sides.

- .6 Black finish.
- .7 Four adjustable rails. Rails with square cut-outs to accept cage nuts. 200 cage nuts that accept #10-32 screws to be supplied.
- .8 Locking steel doors with mechanical latches. Magnetic latches not acceptable. Provide two keys. Perforated front and back doors. Doors shall be capable of being interchanged to create opposite door swing as may be required. Rear doors to be dual.
- .9 Two rail mounted vented shelf units. Shelves shall be 2U high, 483 mm rack mountable, minimum 406 mm deep, front or flush mounting type – not center mount.
- .10 Cable management panels installed between each pair of 24 port patch panels. Panels shall be 1 U space, all metal and have five metal fingers minimum 57 mm deep. Quantity: Six per cabinet.
- .11 Vertical cable management: As large as possible yet still fit in 800 mm wide cabinet. Minimum 100 mm wide, 100 mm deep on both sides.
- .12 Cabinet quantity: Two

2.5 PATCH PANELS

- .1 Modular angled patch panels, Category 6A, black finish.
- .2 24 port 1U, high density, female 8P/8W
- .3 Suitable for mounting on 483 mm rack unit
- .4 Must not take up more than 1 unit of rack space
- .5 Provide number of patch panels as required to terminate all VoIP and data drops. Mount starting at the top of the rack. Use the top 24 port patch panel to terminate the tie cables from the data rack to the VoIP and room 207A racks.
- .6 Patch panels for data horizontal cabling except as indicated.
- .7 Manufacturer: To suit provision of warranty per clause 3.9.2.

2.6 FLUSH FACEPLATES FOR WALL-MOUNTED OUTLETS

- .1 Angle down style for use on all flush mounted voice and data wall outlets.
- .2 Supply 4 port face plate. Install blanks on all unused ports.
- .3 Single gang, flush mounted – white colour
- .4 Label to identify jacks

2.7 MODULAR VOICE AND DATA JACKS

- .1 For installation in face plates
- .2 Non-keyed, 4 pair, 8P/8W modular jacks, Category 6A.
- .3 Snap-in type connectors.
- .4 Colour coded: Blue.
- .5 Manufacturer: To suit provision of warranty per clause 3.9.2.

2.8 VOICE INCOMING CABLE

- .1 Minimum 100 pair, 24 AWG, solid copper, Cat. 3, FT4 rated if installed in conduit.
- .2 Terminate all incoming Cat. 3 on wall mounted BIX blocks in room 204. Provide 25 pair Cat. 3 cables (one cable per 24-port patch panel) from the wall mounted BIX blocks to the 24 port patch panels in the VoIP rack, with one pair terminated per jack and two pairs terminated at the last jack.

2.9 BUILDING ENTRANCE PROTECTORS

- .1 Provided by communication service provider.

Part 3 Execution

3.1 RACK INSTALLATION

- .1 Install the racks in room 204.
- .2 Provide patch panels and power bars in the rack.
- .3 Cables connected to the rear of the patch panels shall be dressed horizontally.
- .4 Cables terminating on each row of connectors shall be collected together with Velcro straps.
- .5 Hardwire UTP cables directly to the patch panel connectors.
- .6 Label all equipment as specified.
- .7 Ground rack to the ground bar in room 204.
- .8 Install RJ45 patch panels and horizontal cable management panels mounted between patch panels. No gaps between any panels.
- .9 Orient rack to allow access to both front and back.
- .10 Fasten rack at four points to floor. Provide seismic bracing at top to wall as required.

3.2 HORIZONTAL CABLE INSTALLATION

- .1 Install each cable in one continuous run from the racks in room 204 to the faceplate. Breaks or splices not allowed.
- .2 No single cable run shall exceed 90.0 metres in length, measured from the terminations in room 204 to each RJ45 faceplate jack. Ensure this distance is not exceeded before installing the cabling system.
- .3 Locate all cables:
 - .1 At least 130 mm from power lines carrying 2 kVA or less.
 - .2 At least 300 mm from power lines carrying 2 kVA to 5 kVA.
 - .3 At least 600 mm from power lines carrying more than 5 kVA.
 - .4 At least 130 mm from fluorescent luminaires.
 - .5 At least 300 mm from electric motors and transformers.
- .4 Terminate VoIP and data cables with female RJ45 components at both ends.

- .5 Cables connected to each row of patch panel jacks shall be dressed horizontally, collected together, and velcroed as a group. Each group of cables shall be routed to the side in a straight line parallel to the floor, and not allowed to hang loosely.
- .6 Cable bends shall not be less than the minimum radius specified by the manufacturer for the particular cable in use and shall be made without strain or stress to the cable.
- .7 In spaces with UTP terminations, cable bend radii shall not be less than 8 times the cable diameter.
- .8 Cables shall be installed perpendicular or parallel to building lines. 'Shortest routes' are unacceptable.
- .9 Label cables as specified in article 3.12 of this specification section.
- .10 Ensure that all clearances between the installed cables and any type of electrical equipment, lines and lighting are met and/or exceeded such that EMI is well within acceptable industry specifications.
- .11 Should the Contractor encounter cable runs that cannot be installed to meet required clearance specifications, then the Contractor shall install fully satisfactory shielding.
- .12 Install all cables in conduit stubs and on J-hooks as indicated in details on the drawing. Minimum conduit size 27 mm conduit with no more than 7 cables. Each conduit to have a woven nylon pull string installed with the cables. Tie off pull string at each end.
- .13 Make allowance to return to site following the project being substantially completed and after the Departmental Representative's furniture arrives. Install voice and data cabling in furniture raceway if the furniture has a raceway. If there is no raceway install the cabling on the surface to surface mounted outlets. Use Panduit-style plastic raceway for mechanical protection of the cable on the furniture. Install cables hidden from normal view at the furniture.

3.3 UTP CABLE TERMINATIONS

- .1 All terminations to the UTP cable shall be properly connected using industry-standard Insulation Displacement Connection conventions and procedures to connector and in full compliance with the manufacturer's installation specifications and instructions.
- .2 Maintain the cable twist up to the connection point at both ends of the cables. Remove a maximum of 12 mm of the cable jacket, measured from the connection point.

3.4 CABLE SLACK FOR TERMINATED CABLES

- .1 For each cable run terminated, there shall be a minimum cable slack of 3.0 m at the originating end (room 204), laid down neatly in an 'S' configuration and velcroed in the cable tray. At the workstation/desk outlet, provide 1.0 metre slack.
- .2 Place cable slack in the ceiling or as deemed appropriate by the Departmental Representative, on condition that storage of slack is neat.

3.5 TIE CABLES BETWEEN DATA AND VOIP CABINETS

- .1 Install 6 Cat. 6A cables between data and VoIP cabinets in room 204.

- .2 Install a patch panel labelled as 'Tie Panel' as the first and top most patch panel of the data cabinet.
- .3 It is common for a fibre termination enclosure to be rack mounted above, with this specialty purpose tie panel located directly beneath.
- .4 Terminate using positions "←----- #1 – 6---→".
- .5 Terminate in VoIP cabinet on the first and top most patch panel, in first 6 jack positions, labelled as "←-----Ties to LAN Cabinet #1 – 6-----→".

3.6 TIE CABLES BETWEEN ROOM 204 AND ROOM 207A

- .1 Run 6 Cat. 6A cables from room 204 to the room 207A.
- .2 Use same data patch panel labelled as 'Tie Panel' described above.
- .3 Terminate using positions #7-12. Label as "←-----Ties to PTSS Room #7-12-----→".
- .4 Terminate in room 207A on a high density patch panel fixed to a 4-U hinged wall mount bracket, 150 mm deep, in first 6 jack positions, labelled as "←-----Ties to LAN Cabinet #1-6-----→".

3.7 PATCH CABLES

- .1 Provide:
 - .1 One (1) 1.5 m patch cord for every drop installed at the cabinet end.
 - .2 Twenty (20) 2.1 m patch cords
 - .3 One (1) 3.0 or 4.5 m patch cord for every drop installed at the workstation end. Ideally a 50/50 mixture.
 - .4 Six (6) 4.5 m patch cords.
 - .5 Six (6) 6.0 m patch cords.
 - .6 Six (6) 7.6 m patch cords.
- .2 All patch cords must be white or off-white, Cat. 6A, bootless, snagless with strain relief.
- .3 Supply one roll each of minimum 12 mm wide vinyl tape for cable identification in the following colours: red, blue, green, yellow, black & white.

3.8 BUILDING ENTRANCE PROTECTORS

- .1 Ground connection as specified in Section 26 05 28.

3.9 GROUNDING

- .1 Ground all racks with minimum #6 insulated copper ground wire.
- .2 Ensure metal-to-metal contact is established when installing ground to painted surfaces.

3.10 UTP CABLE TESTING

- .1 Testing, general:
 - .1 Perform a basic link test to verify and ensure full functional capabilities.
 - .2 Test each cable on a pair-to-pair basis ensuring continuity and eliminating the possibilities of shorts or reversals.

- .3 Use testing equipment based on TDR (Time Domain Reflectometry) technology.
 - .4 Test each cable to ensure compliance with transmission requirements outlined in this specification.
 - .5 Provide printouts of all test results, including a record of the length of each drop and soft records of the testing results on two CDs.
 - .6 Test all cables.
 - .7 All testing shall be performed in both directions.
- .2 Test all cables with a Level III tester for conformance with basic link performance as described in EIA/TIA-568-C series standards.
- .3 Documentation of tests will be given in report form and will, at minimum, contain the following data:
- | | |
|--|-----------------------|
| DATE | IMPEDANCE |
| OPERATOR | WIRE MAP |
| LOCATION | NEXT (PAIR-TO-PAIR) |
| CABLE # | PSNEXT |
| CABLE TYPE | RETURN LOSS |
| TESTER, MAKE AND MODEL | ELFEXT (PAIR-TO-PAIR) |
| TEST RESULTS (PAIRS) | PSELFEXT |
| ATTENUATION | PROPAGATION DELAY |
| LENGTH | DELAY SKEW |
| PINS 1, 2 / PINS 3,6 / PINS 4, 5 /
PINS 7,8 | |
- .4 Testing shall be done in the presence of the Departmental Representative.
 - .5 No marginal pass or conditional pass will be accepted.

3.11 UTP CABLE DOCUMENTATION AND CERTIFICATION

- .1 Provide record drawings upon completion.
 - .1 Indicate all changes.
 - .2 Indicate cable IDs adjacent to outlets.
 - .3 Indicate conduit runs, pull boxes and conduit sizes on record drawings.
- .2 Provide a Category 6A certificate document issued by the cable/component manufacturer guaranteeing transmission capabilities of the cabling system to support Category 6A applications for a period of minimum 15 years.
- .3 Installation technicians shall be certified through the manufacturer's certification program. Technicians shall provide evidence of their training certification, or Contractor shall supply documentation verifying their current participation in the manufacturer's certification program.
- .4 Manufacturer's certification:
 - .1 The manufacturer's certification shall guarantee that design and installation on the part of the certified Contractor will not negate or void any portion of the certified system.

- .2 Manufacturer shall guarantee that:
 - .1 All material and labour is covered for the full certification period.
 - .2 In the event that the Contractor is no longer in business, the full certification remains valid and will be covered by the manufacturer.
- .5 The installed structured cabling system shall be covered by a warranty which includes, as a minimum:
 - .1 15 year coverage.
 - .2 Warranty against defects in material and workmanship from the date of interim acceptance of installation.
 - .3 Repair or replacement of a failed component, covering parts and labour, at no charge to the Departmental Representative.
 - .4 Single point of contact for all warranty service.
- .6 Upon request and at no additional cost to Departmental Representative, provide a manufacturer's technical representative to conduct an on-site visit to ensure complete technical compliance.

3.12 LABELLING

- .1 General:
 - .1 Bold face laser quality printed labels, black print on white background.
 - .2 Handwritten labels of any kind are not acceptable.
- .2 Cable Labels:
 - .1 To TIA-606-B (fs.xy-r1:p1)
 - .2 Label both ends of all cables with cable ID identical to patch panels. Place labels minimum 300 mm from each jack or connector.
 - .3 Provide heat-shrink cable labels for telecommunication cables. Do not apply heat to labels or cables.
- .3 Label each 8P/8W, jack with the cable ID.
- .4 Label patch panel port positions starting in sequence from the top patch panel.

3.13 NEW TELEPHONE SERVICE

- .1 Arrange to have communication service provider to install new service cable from the utility service pole and demarcation in room 204 and terminated on IDC BIX block connectors on the exterior plywood wall. Cable must be terminated with appropriate lightning protection. Pull into the same conduit a CATV cable, where a CATV service cable is available.
- .2 Install 25 pair Cat. 3 cable from demarcation point BIX block to 24 port patch panel in Network cabinet. Terminate one pair per port on patch panel.

END OF SECTION