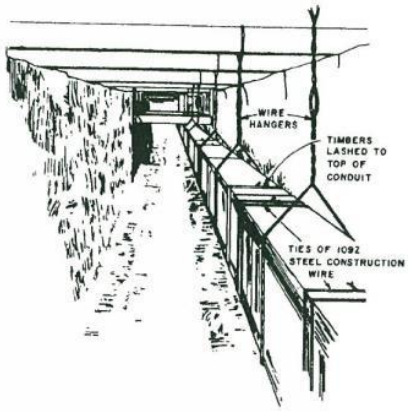


Fig. 1

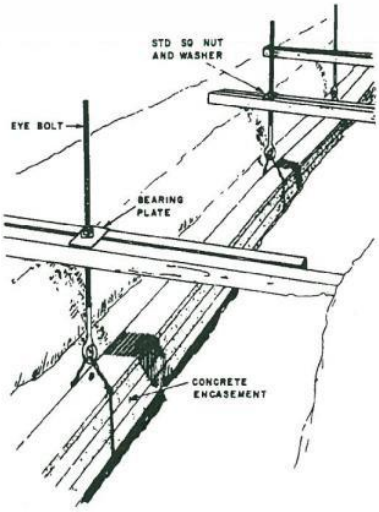


Fig. 2

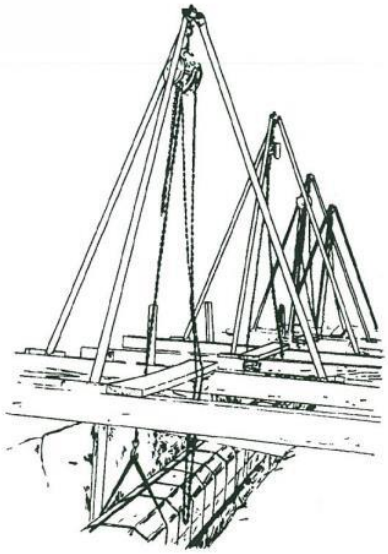


Fig. 3

3. LOWERING THE STRUCTURE

3.01 When it is necessary to lower an existing conduit structure, it will generally be practical to do it without demolishing the conduit. However, where the increased depth involves excavation sheathing and heavy timbering, or blasting is required, removal of the conduit from the cables may be advisable. In the latter case the cables must be adequately protected against the blasting. In the case of multiple tile duct, it will generally be advisable to remove it and replace it with our present standard conduit.

3.02 Where obstructions, such as sewers, water or gas mains, prevent lowering the conduit in the existing formation, it may be necessary to break off the conduit for some distance on both sides of the obstruction and to rebuild the structure in a shallower formation, using standard split conduit and split fittings.

3.03 The lowering operation shall be done in a careful manner to prevent swaying of the structure and to avoid abrupt changes in grade that would damage the cables or ducts. To guard against such damage it is recommended that the duct structure be weakened purposely at points along its length and supported on both sides of these points, so that if any stresses are set up in the structure which would cause it to break the fracture will take place at the weakened section, where it is supported. The weakening of the structure may be done by cutting around the concrete envelope to a depth of about 1 or 1 1/4 inch. The distance between such cuts will depend upon the lifting capacity of the equipment to be used, as well as the weight and configuration of the structure. Structures up to 24 ducts in size can usually be handled in this manner. The gradual lowering operation should be done section by section. The first section should be lowered about six inches the next one 12″ and so on, and preferably the sections from both ends of the structure should be lowered simultaneously. Once the structure has been lowered it shall be jacketed with 2 to 3 inches of concrete for a distance of 2 or 3 feet at each cut

3.04 It is essential that the base, upon which any conduit will rest, be well compacted or be constructed to prevent any settling Otherwise cracking and misalignment of the duct structure is very likely to occur. As there is such a large variety of conditions that may be encountered, specific details cannot be provided herein, therefore the engineer shall specify the type of base that shall be prepared.

3.05 If lowering of the manhole is not necessary as part of the rearrangement, the end wall or walls shall be broken out to permit the duct structure to enter at the new level.

3.06 When a manhole wall has been opened for rearrangement, it shall be reconstructed following the same general procedures as those used in making new manholes, making sure that adequate reinforcement is used to assure the necessary strength and a good joint between the wall and the duct structure.

4. REARRANGING TILE DUCT

4.01 Rearranging tile duct should be avoided because it is so fragile Any attempt to move it generally results in cracked, broken and patched up conduit.

4.02 When rearrangement is necessary the tile shall be broken off any existing cables and the whole structure replaced by standard split ducts and fittings.

4.03 While removing tile duct, as well as any other type, extreme care must be exercised to avoid damage to cables. Once the cables are exposed they must be suspended out of the way of other operations to avoid damage.

5. REARRANGEMENT AT NEW MANHOLES

5.01 When an additional manhole is to be constructed in an existing conduit route containing cables the required slack to permit the racking of the existing cables on the manhole walls can be obtained by splaying the ducts of the conduit structure at the manhole entrances

5.02 To splay the ducts, the formation is split vertically and each half is brought into the manhole end-walls as near to the side-walls as possible in order to permit cable racking without bends in the manhole.

5.03 When only a small portion of the ducts have to be brought into the manhole for loading

purposes or for some other reason, the required ducts and cables only, need to be brought into the manhole. The cables would be racked on only one wall and the remaining portion of the conduit structure would by-pass the new-manhole as shown in the following illustration.

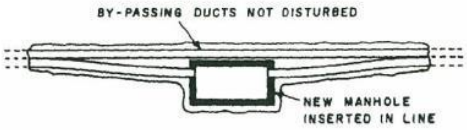


Fig. 4

6. REMOVING IRON AND STEEL PIPE

6.01 Whenever it is required to remove one or more sections of an iron or steel pipe duct containing cable, extreme care must be exercised to avoid damaging the cable, particularly if the cable is of such size as to occupy most of the space in the pipe. Various labor saving devices including oxy-acetylene torches and motor-driven emery disks can be used for this purpose but the successful use of either requires considerable skill and involves more than average risk of damage to the sheath.

6.02 Removing pipe by means of a manually operated pipe ripper, while somewhat slower and more laborious than other methods, is less apt to entail damage to the cable and is generally more readily adaptable to use under the various conditions in which pipe conduit will be found One of the most satisfactory tools for use with this method is the B Pipe Ripper

B Pipe Ripper

6.03 The B Pipe Ripper is a hand operated tool designed to cut a lengthwise slot in the wall of standard weight steel or iron pipe through the shearing action of a cutting blade which pivots around two fulcrum points It is not intended to cut through couplings, which should be removed by sawing or other means. As illustrated, the tool consists of a hardened steel blade and two bearing points assembled in a head section which is attached to a tubular steel handle to provide the necessary leverage

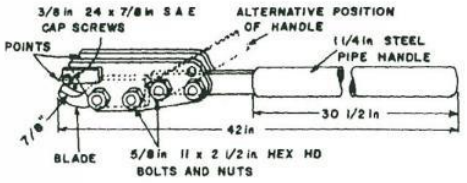


Fig 5 - B Pipe Ripper

6.04 Two positions are provided for attaching the handle to the cutting head, one position being in line with the head and the other at an angle of about 30 degrees to it. The angle position of the handle is more convenient when working on a vertical pipe, as it places the handle in a position permitting it to be grasped more readily from below.

6.05 The bearing points are triangular in shape and can be rotated to bring into use any one of the three points. This should be done whenever the points become worn to the extent that they slip on the pipe.

Use of B Ripper

6.06 The tool can be used on a 3 inch or larger pipe containing a full size (2-5/8 inch diameter) cable or on any size pipe in which there is sufficient space between the cable and pipe wall to permit the blade to be inserted If an end of the pipe is accessible, the tool can be started at that point by inserting the blade between the pipe and the cable and exerting a pull away from the pipe. At other points, the tool can be started by making a suitable opening in the pipe with a hack saw and inserting the blade of the pipe ripper at that point

6.07 In operating the tool, the best progress will be made if the handle is not swung to the limit of its movement but is moved only far enough to advance the tool about 3/8 inch per cut If a deeper cut is attempted the operator may encounter difficulty in restoring the tool for the next cut because of the resulting raggedness of the edges.

6.08 As the work progresses a ribbon of metal will be cut from the pipe leaving a slot about

1 inch wide. On completion of the ripping, a spreading tool, such as the B Pipe Spreader, should be inserted in the slot to open the pipe sufficiently to allow it to be removed from the cable

B Pipe Spreader

6.09 The B Pipe Spreader consists of a tubular steel handle terminating in a hardened steel fork which is designed to engage the edges of the pipe wall at the slot. There are no replacement parts to this tool.

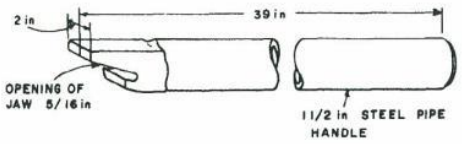


Fig. 6 - B Pipe Spreader

Use of B Spreader

6.10 Pipe Spreaders are used in pairs to work on opposite sides of the cut made by the ripper. Engage the edge of the pipe wall in the jaw of the fork and pull away from the pipe Using the leverage provided by the tool, bend the wall of the pipe outward on both sides of the cut until the opening has been enlarged sufficiently to permit the cable to pass.

7. REPAIRING MAIN CONDUIT

7.01 As mentioned above, when breaking away old conduit, care must be exercised so that the cable will not be damaged

7.02 During this work it is necessary to support the cables temporarily by means of houseline, rope slings or other suitable means lashed to timbers spanning the trench or other supports

7.03 The conduit structure is restored using split duct and fittings and encasing the formation as outlined in the section covering the assembly of Main Conduit

All Bell structure relocations, breakout / modification of structure can only be done by a Bell Approved civil contractor.

Bell Canada confined spaces are federally regulated under the confined space act and only Bell Canada approved contractors can enter our confined spaces, there is no exception to this policy.



PLANVIEW Utility Services Ltd. Bell

CONTRACTOR:

TENDER BREAKDOWN

Bell Network # J33602
LOCATION: QEW Fort Erie

DATE: 15-Mar-19

ARB TO	ARB	WORK DESCRIPTION	SURFACE	QUANTITY	PRICE	TOTAL Labour/Equip	TOTAL Materials
				Unit in Metre or stated			
PLACEMENTS							
Plan 401							
1	2	Place 2-SPLIT PVCD2 (splits, handle ±cables) - Labour & Equipment	BLVD.	71		$ -	
1	2	Place 2-SPLIT PVCD2 (splits, handle ±cables) - Materials	BLVD.	71			$ -
		Placement Total-Pg 1-Labour & Equipment	**$0.00**				
		Placement Total-Pg 1-Material	**$0.00**				

PLANVIEW Utility Services Ltd. Bell

CONTRACTOR:

TENDER BREAKDOWN

Bell Network # J33602
LOCATION: QEW Fort Erie

DATE: 15-Mar-19

ARB TO	ARB	WORK DESCRIPTION	SURFACE	QUANTITY	PRICE	TOTAL Labour/Equip	TOTAL Materials
				Unit in Metre or stated			
REMOVALS							
Plan 401							
1	2	Exposed Existng Cables & Move - Labor & Equipment	BLVD.	71		$ -	
1	2	Breakout exsiting 2PVCD2 to expose cable - Labor & Equipment	BLVD.	71			$ -
		Removal Total-Pg 2-Labour & Equipment	**$0.00**				

PLANVIEW Utility Services Ltd. Bell

CONTRACTOR:

TENDER BREAKDOWN

Bell Network # J33602
LOCATION: QEW Fort Erie

DATE: 15-Mar-19

ARB TO	ARB	WORK DESCRIPTION	SURFACE	QUANTITY	PRICE	TOTAL Labour/Equip	TOTAL Materials
				Unit in Metre or stated			
PROTECTION							
		Protection Total-Pg 3-Labour & Equipment	**$0.00**				
		Protection Total-Pg 3-Material	**$0.00**				

PLANVIEW Utility Services Ltd. Bell

CONTRACTOR:

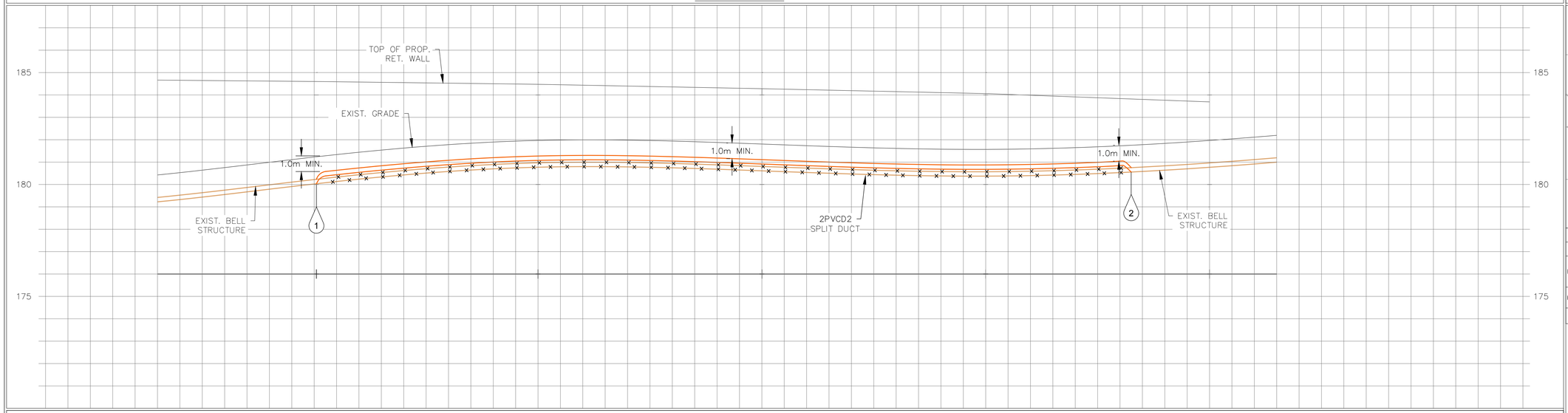
TENDER BREAKDOWN

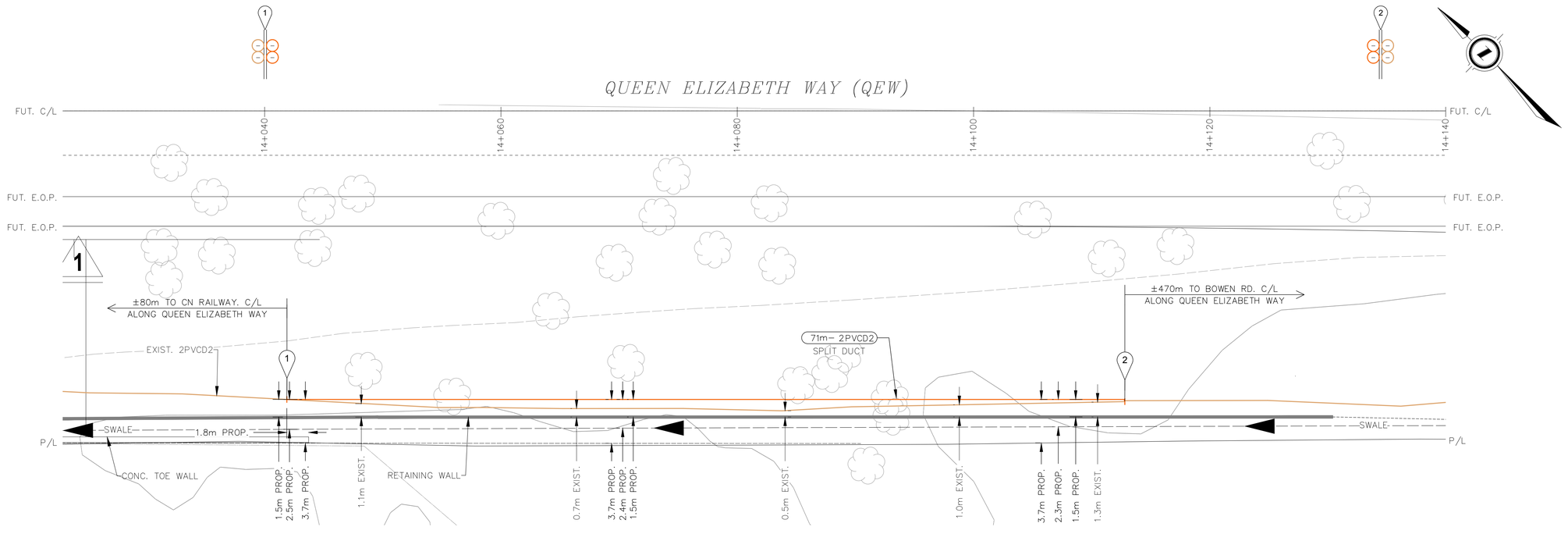
Bell Network # J33602
LOCATION: QEW Fort Erie

DATE: 15-Mar-19

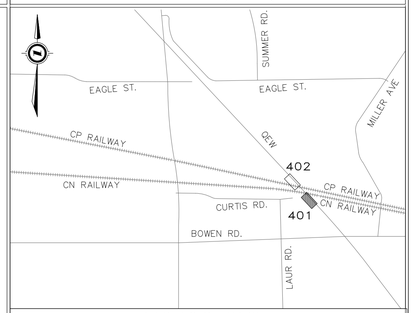
ARB TO	ARB	WORK DESCRIPTION	SURFACE	QUANTITY	PRICE	--------	TOTAL
				Unit in Metre or stated			
EXTRAS							
			UNIT				
	EXTRAS	011532NM : PLACE ASPHALT	M2				$ -
	EXTRAS	011534NM : PLACE CONCRETE	M2				$ -
	EXTRAS	011536NM : PLACE HOT COLD PATCH	M2				$ -
	EXTRAS	011538NM : REMOVE ASPHALT	M2				$ -
	EXTRAS	011539NM : REMOVE CONCRETE	M2				$ -
	EXTRAS	016957NM : PLACE INTERLOCKING BRICK	M2				$ -
	EXTRAS	016958NM : REMOVE INTERLOCKING BRICK	M2				$ -
	EXTRAS	011518NM : ROCK REMOVAL	CU. M				$ -
	EXTRAS	011335NM : Miscellaneous Material	EA				$ -
	EXTRAS	011415NM : Bulldozer	HR				$ -
	EXTRAS	011416NM : Heavy Excavator	HR				$ -
	EXTRAS	016959NM : Water Barge	HR				$ -
	EXTRAS	011417NM : Heavy Roller	HR				$ -
	EXTRAS	016960NM : Vacumn Truck	HR				$ -
	EXTRAS	011418NM : Hourly rate light equipment	HR				$ -
	EXTRAS	011419NM : Hourly rate Medium equipment	HR				$ -
	EXTRAS	011337NM : Hourly Rate Overtime	HR				$ -
	EXTRAS	011421NM : Flagging services	HR				$ -
	EXTRAS	Pay Duty Police	HR				$ -
	EXTRAS	Handle additional cable	EACH				$ -
					TOTAL		$ -
		PLACEMENT					
		Placement Total-Labour & Equipment	$0.00				
		Placement Total-Material	$0.00				
		Placement Total	$0.00				
		REMOVALS					
		Removal Total - Labour & Equipment	$0.00				
		Removal Total	$0.00				
		PROTECTION					
		Protection Total-Labour & Equipment	$0.00				
		Protection Total-Material	$0.00				
		Protection Total	$0.00				
		EXTRAS					
		Extras Total - Labour & Equipment	$0.00				
		Bell Grand Total	$0.00				

PROFILE VIEW HORIZONTAL SCALE: 1:200 VERTICAL SCALE: 1: 100





KEY MAP (N.T.S)



TRENCHING SUMMARY

PLACEMENT

FROM	TO	TO DO	LENGTH	#DUCTS	TYPE OF DUCT	SURFACE TYPE	YEAR	COVER (mm)	CABLE	SPLIT	EXCAVATION METHOD
1	2	PL	71	2	PVCD2 SPLIT	GRASS	2019	1000	–	–	OPEN–TRENCH
		TOTAL	71								

CAUTION

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BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

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NOT FOR CONSTRUCTION

ISSUE NO.	DATE	INIT.	REASON FOR ISSUE	QC REF. #
1	14-MAR-2019	JC	PRELIMINARY	QC19-0000106

NOTES

1. FROM (1) TO (2) EXPOSE BELL DUCTS AND MOVE 1.5m AWAY FROM RETAINING WALL AS SHOWN.
2. SEE PLANS 701 & 702 FOR GENERAL DETAILS.
3. THIS DRAWING WAS CREATED ON "THE LAND BASE" PROVIDED BY "THE CONSULTANT".

LEGEND

- HEAVY LINE INDICATES PROPOSED WORK
- EXISTING BELL CANADA M.H. & CONDUIT
- WATERMAIN & VALVE (GV, WV)
- GASMAIN & VALVE
- BURIED HYDRO
- ROGERS CABLE
- TELUS
- ALLSTREAM
- TTC STREETCAR TRACKS
- EXISTING BELL CANADA BURIED CABLE
- SANITARY SEWER WITH MANHOLE (SAN MH)
- STORM SEWER WITH MANHOLE (STM MH)
- BP EXISTING BELL POLE & ANCHOR
- EXISTING JOINT BELL – HYDRO POLE
- HP EXISTING HYDRO POLE WITH ANCHOR
- FH HYDRANT
- TREE

R/W	MC AUTORITY	DATE REC'D
BELL CANADA	XXXXXXX	NOV. XX, 2015

PLANVIEW DRAFTER:	JAYSON CABOTE
PLANVIEW COORDINATOR:	FADWA SAMARA
PLANVIEW COORDINATOR TELE.:	647–521–6951
STRUCTURE MANAGER ASSOCIATE:	CAROL–ANN SMITH
STRUCTURE MANAGER ASSOCIATE PHONE:	289–800–7110
BELL CONSTRUCTION MANAGER:	CHRIS GILL
BELL CONSTRUCTION MANAGER TELE.:	905–577–6812

Bell | PLANVIEW Utility Services Ltd.

REASON FOR WORK:

RETAINING WALL CONFLICT

2

PROJECT NO.: 18–4–0179

CLLI CODE: FTERON02

NETWORK NO.: J33602

HORIZONTAL SCALE: 1:200 (4 2 0 4)

EXCHANGE OR TOLL ROUTE: FORT ERIE

SWITCHING CENTRE: 871

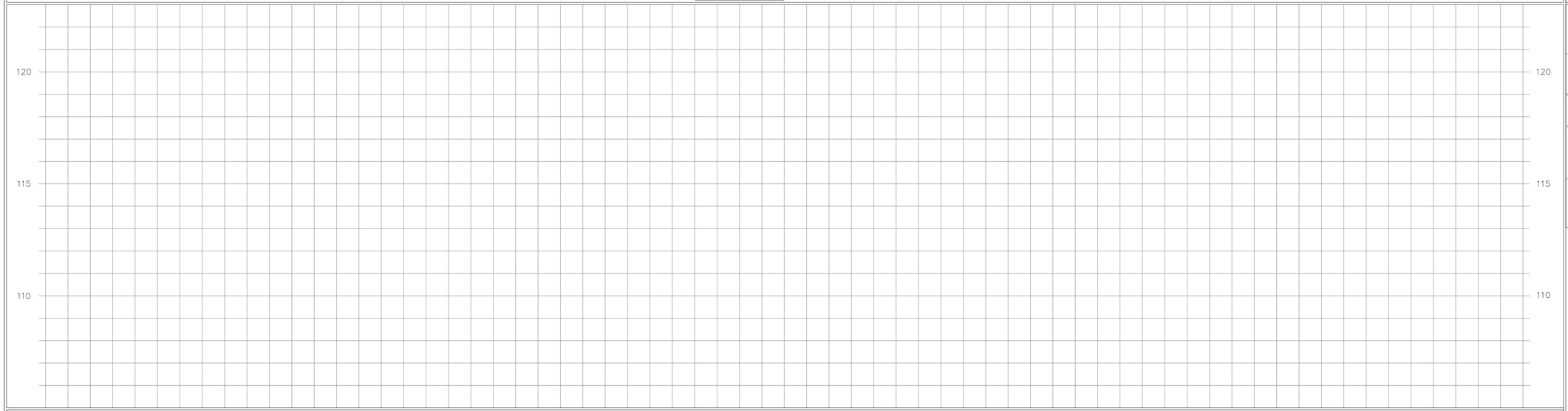
VERTICAL SCALE: 1:100 (2 1 0 2)

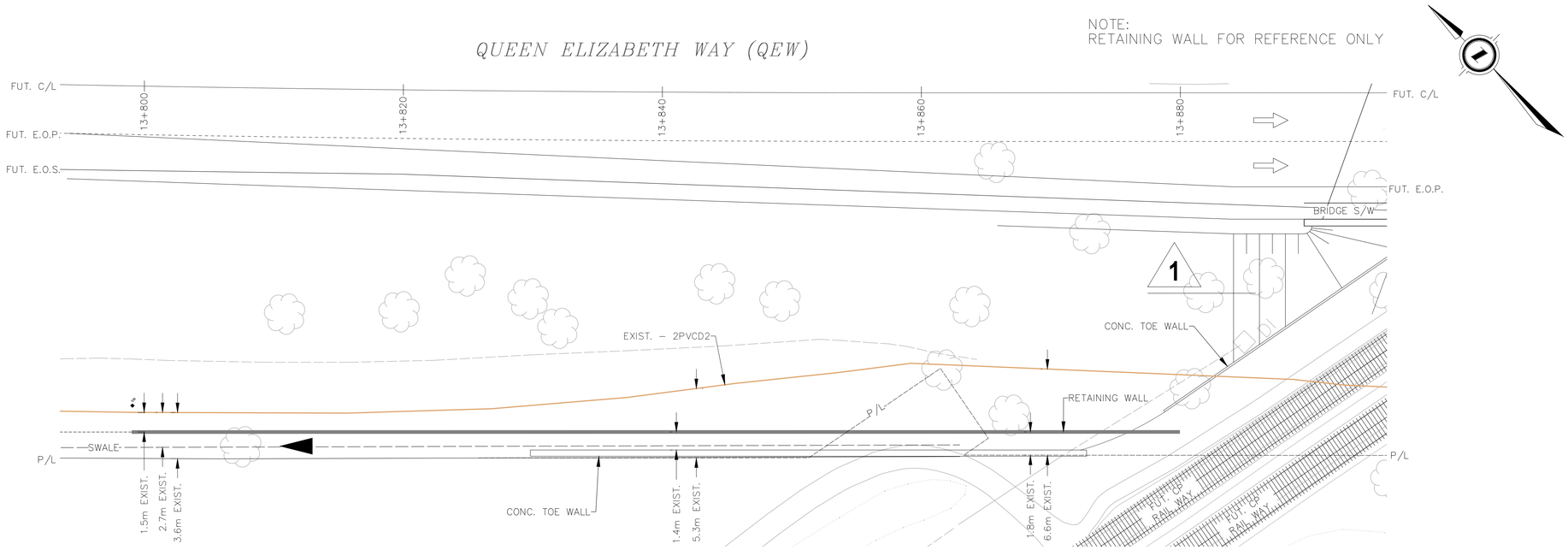
STREET NAMES: QUEEN ELIZABETH WAY

PLAN NO.: 401

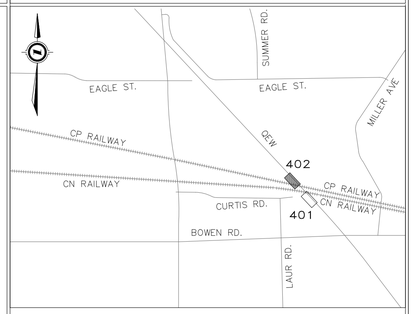
MC AUTHORITY: FORT ERIE

PROFILE VIEW HORIZONTAL SCALE: 1:200 VERTICAL SCALE: 1: 100





KEY MAP (N.T.S)



PLANVIEW DRAFTER:	JAYSON CABOTE
PLANVIEW COORDINATOR:	FADWA SAMARA
PLANVIEW COORDINATOR TELE.:	647-521-6951
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BELL CONSTRUCTION MANAGER:	CHRIS GILL
BELL CONSTRUCTION MANAGER TELE.:	905-577-6812

Bell | PLANVIEW Utility Services Ltd.

REASON FOR WORK:

PROJECT NO.: 18-4-0179

CLLI CODE: FTERON02

NETWORK NO.: J33602

HORIZONTAL SCALE: 1:200 (4 2 0 4)

EXCHANGE OR TOLL ROUTE: FORT ERIE

SWITCHING CENTRE: 871

VERTICAL SCALE: 1:100 (2 1 0 2)

STREET NAMES: QUEEN ELIZABETH WAY

PLAN NO.: 402

MC AUTHORITY: FORT ERIE

CAUTION

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NOT FOR CONSTRUCTION

ISSUE NO.	DATE	INIT.	REASON FOR ISSUE	QC REF. #
1	14-MAR-2019	JC	PRELIMINARY	QC19-0000106

NOTES

1. SEE PLANS 701 & 702 FOR GENERAL DETAILS.
2. THIS DRAWING WAS CREATED ON "THE LAND BASE" PROVIDED BY "THE CONSULTANT".

LEGEND

- HEAVY LINE INDICATES PROPOSED WORK
- EXISTING BELL CANADA M.H. & CONDUIT
- WV — WATERMAIN & VALVE
- GV — GASMAIN & VALVE
- BURIED HYDRO
- ROGERS CABLE
- TELUS
- ALLSTREAM
- TTC STREETCAR TRACKS
- SAN MH — EXISTING BELL CANADA BURIED CABLE
- SANITARY SEWER WITH MANHOLE
- STM MH — STORM SEWER WITH MANHOLE
- BP — EXISTING BELL POLE & ANCHOR
- EXISTING JOINT BELL - HYDRO POLE
- HP — EXISTING HYDRO POLE WITH ANCHOR
- FH — HYDRANT
- TREE

R/W	MC AUTORITY	DATE REC'D
BELL CANADA	XXXXXXX	NOV. XX, 2015

GENERAL NOTES

1. THESE GENERAL NOTES APPLY TO ALL PLANS IN THIS PROJECT. FOR SPECIFIC NOTES REFER TO THE INDIVIDUAL PLANS.
2. CONFLICTS TO BE ADDRESSED TO BELL STRUCTURES MANAGER.
3. ALL CONDUIT TO BE ROPED.
4. THE CONTRACTOR SHALL PLACE A "DETECTABLE PULLING TAPE (MULE TAPE WITH A TRACER WIRE)" BETWEEN ALL MANHOLES, IN A TOP DUCT, WHERE THERE ARE NO CABLES. THIS TAPE ALLOWS FOR THE LOCATION OF THE STRUCTURE.
5. MINIMUM COVER 1.0m UNLESS OTHERWISE INDICATED.
6. DEPTH OF EXISTING BELL CONDUIT MUST BE DETERMINED AT TIME OF CONSTRUCTION.
7. CONTRACTOR IS TO ELIMINATE ANY STANDING WATER AT THE CONSTRUCTION SITE IN ORDER TO MINIMIZE THE RISK OF WEST NILE VIRUS.
8. CONTRACTOR IS RESPONSIBLE FOR EXPOSING ALL UTILITIES THAT CROSS THE PROPOSED DUCT STRUCTURE AFTER THE UTILITIES LOCATES ARE MARKED IN FIELD.
9. ALL RESTORATION REQUIREMENTS INCLUDING BACKFILL AND COMPACTION TO MEET APPROPRIATE MUNICIPAL SPECIFICATIONS AND STANDARDS.
10. WHERE NO SEPARATION IS AVAILABLE, PLACE POLYETHYLENE SHEET BETWEEN NEW CONCRETE AND EXISTING UTILITIES TO PREVENT ADHESION.
11. BACKFILL AFTER CONCRETE HAS TAKEN ITS INITIAL SET, OR, IF BACKFILLING PRIOR TO SETTING OF THE CONCRETE PLACE A LAYER OF POLYETHYLENE OVER CONCRETE TO PREVENT ADHESION OF EARTH.
12. ALL PAVEMENT AND SIDEWALK CUTS TO HAVE STRAIGHT EDGES.
13. REPLACE SIDEWALK BY THE FULL SECTION.
14. CONTRACTORS TO TUNNEL ALL CURBS AND TREE ROOTS ENCOUNTERED.
15. MH BUILDS – THE CONTRACTOR SHALL PROVIDE DIGITAL PICTURES TO THE SATISFACTION OF THE CONTRACT INSPECTOR, SHOWING ALL INTERNAL HARDWARE, COMPONENTS ETC. HAVE BEEN BUILT TO BCP STANDARDS.
16. ON ALL MANHOLE REBUILDS THE DUCTS SHALL BE SPLAYED, TO THE SATISFACTION OF THE CONTRACTOR INSPECTOR, TO FACILITATE THE RE-RACKING OF ALL CABLES.
17. ALL MANHOLE LIDS TO BE 30", EXCEPT WHERE SURROUNDING CONDITIONS REQUIRE A 27" LID.
18. CONCRETE TESTING – SLUMPS, 7 DAY AND 28 DAY COMPRESSION, AIR ENTRAINMENT TESTING AS PER BCP 622-2002-105 LAB RESULTS TO BE SENT TO bellinspection@planview.ca
19. DRAWINGS ARE NOT TO BE SCALED. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ORIGINATOR BEFORE COMMENCING THE WORK.
20. ELEVATIONS ARE ARBITRARY UNLESS A VERTICAL BENCH MARK IS FOUND IN THE VICINITY OF THE PROPOSED WORK SITE.
21. WHEN BREAKING OUT EXISTING DUCTS, WITH CABLES INSIDE, A STEEL U-GUARD OR SIMILAR PROTECTIVE ELEMENT MUST BE SLID INTO THE DUCT TO PROTECT THE CABLE DURING BREAKOUT WITH JACK HAMMERS OR SIMILAR DEVICES
22. CONTRACTOR MUST ENSURE DUCTS ARE CAPPED, PLUGGED, OR SEALED AS PER BCP STANDARDS

CONTRACT INSPECTOR NOTES:

1. CALL ORIGINATOR TO VERIFY ALL R.O.W. APPROVALS PRIOR TO CONSTRUCTION START.
2. TO FORWARD AN "AS CONSTRUCTED" FIELD PLAN TO ORIGINATOR ON COMPLETION OF ORDER.
3. MH BUILDS – THE CONTRACTOR SHALL PROVIDE DIGITAL PICTURES TO THE SATISFACTION OF THE CONTRACT INSPECTOR, SHOWING ALL INTERNAL HARDWARE, COMPONENTS ETC. HAVE BEEN BUILT TO BCP STANDARDS.
4. ON ALL MANHOLE REBUILDS THE DUCTS SHALL BE SPLAYED, TO THE SATISFACTION OF THE CONTRACTOR INSPECTOR, TO FACILITATE THE RE-RACKING OF ALL CABLES.
5. CONCRETE TESTING – SLUMPS, 7 DAY AND 28 DAY COMPRESSION, AIR ENTRAINMENT TESTING AS PER BCP 622-2002-105 LAB RESULTS TO BE SENT TO bellinspection@planview.ca

MATERIALS:

1. PVCD1 – RIGID PLASTIC 90mm DUCTS CONCRETE ENCASED – PLACED WITH OPEN TRENCH. DESIGN OF CHOICE UNLESS OTHERWISE SPECIFIED.
2. PVCD2 – RIGID PLASTIC 90mm DUCTS – PLACE WITH OPEN TRENCH UNLESS OTHERWISE SPECIFIED
3. HDPE – SEMI-FLEXIBLE 100mm PLASTIC DUCTS – PLACED BY DIRECTIONAL BORE

SHORT FORMS

ASPH.	ASPHALT
BLVD.	BOULEVARD
BOB	BOTTOM OF BANK
C/L	CENTER LINE
CONC.	CONCRETE
D/W	DRIVEWAY
F/L	FENCE LINE
GVL	GRAVEL
INTR.	INTERLOCKING
P/L	PROPERTY LINE
S/W	SIDEWALK
TOB	TOP OF BANK

CAUTION

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NOT FOR CONSTRUCTION

ISSUE NO.	DATE	INIT.	REASON FOR ISSUE	QC REF. #
1	14-MAR-2019	JC	PRELIMINARY	QC19-0000106

LEGEND

- HEAVY LINE INDICATES PROPOSED WORK
- EXISTING BELL CANADA M.H. & CONDUIT
- WATERMAIN & VALVE
- GASMAIN & VALVE
- BURIED HYDRO
- ROGERS CABLE
- TELUS
- ALLSTREAM
- TTC STREETCAR TRACKS
- EXISTING BELL CANADA BURIED CABLE
- SANITARY SEWER WITH MANHOLE
- STORM SEWER WITH MANHOLE
- EXISTING BELL POLE & ANCHOR
- EXISTING JOINT BELL – HYDRO POLE
- EXISTING HYDRO POLE WITH ANCHOR
- HYDRANT
- TREE

R/W	MC AUTORITY	DATE REC'D

Bell

PLANVIEW Utility Services Ltd.

REASON FOR WORK:
BRIDGE REPLACEMENT

PROJECT NO.:
18-4-0179

CLLI CODE: FTERON02

NETWORK NO.: J33602

HORIZONTAL SCALE: N.T.S. (4 2 0 4)

EXCHANGE OR TOLL ROUTE: FORT ERIE

SWITCHING CENTRE: 871

VERTICAL SCALE: N.T.S. (2 1 0 2)

STREET NAMES: QUEEN ELIZABETH WAY

PLAN NO.: 701

MC AUTHORITY: FORT ERIE

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS OTHERWISE INDICATED. DO NOT SCALE DRAWINGS.
2. READ THIS DRAWING IN CONJUNCTION WITH "GENERAL CONSTRUCTION DETAILS".
3. UNLESS NOTED, USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES.
4. ALL WORK SHALL BE IN ACCORDANCE WITH ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS (REGULATIONS).
5. REFER TO BELL CANADA PRACTICE 622-5002-200 STANDARD (PRACTICE) FOR ADDTIONAL REQUIREMENTS, EXCEPT AS NOTED.
6. THE DESIGN AND CONSTRUCTION OF ALL WORK ON THIS PROJECT IS TO CONFORM TO THE ONTARIO BUILDING CODE 2006, INCLUDING ALL AMMENDMENTS AND THE RELEVANT LISTED C.S.A. STANDARDS INCLUDING THE LATEST REVISIONS.
7. THE CONTRACTOR SHALL CHECK AND VERIFY ALL CONDITIONS AND MEASURMENTS AT THE SITE AND REPORT TO THE ENGINEER ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION OF THE JOB BEFORE PROCEEDING WITH THE WORK.
8. CONSTRUCTION, FABRICATION AND SHOP DRAWING REVIEW MUST BE PROVIDED AS PER CODE.
9. APPROVED SHALL MEAN APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.
10. DELIVER, HANDLE AND STORE MATERIALS TO AVOID DAMAGE IN ANY MANNER.
11. MAINTAIN A SET OF DRAWINGS ON SITE AND UPDATE AS NECESSARY WITH CONSTRUCTION RECORD INFORMATION.
12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES OR SERVICES AFFECTED BY THIS CONSTRUCTION.
13. CONTRACTOR MUST OBTAIN APPROVAL FROM BELL CANADA'S ENGINEER OR HIS REPRESENTATIVE ON REINFORCING BARS PLACEMENT BEFORE PLACEMENT BEFORE POURING CONCRETE.
14. CONFORM TO THE REQUIREMENTS OF THE LATEST ISSUE OF ALL PERTINENT BELL CANADA PRACTICES.
15. THE CONTRACTOR IS RESPONSIBLE TO REPAIR ALL CRACKS AND FAULTS OF THE MANHOLE UP TO 100 DAYS AFTER COMPLETION OF THE WORK BY EPOXY CONCRETE COMPOUNDS THAT ARE APPROVED BY THE ENGINEER.
16. LOCATION OF REINFORCING BARS TO BE ADJUSTED TO CLEAR INSERTS AND DUCT OPENINGS. DO NOT EXCEED AN 8mm TOLERANCE IN THE DEPTH OF REINFORCEMENT AND A 30mm TOLERANCE FOR LATERAL SPACING.
17. UNLESS OTHERWISE INDICATED ON DRAWINGS, DISTANCE BETWEEN ROOF SLAB AND FINAL GROUND GRADE IS SET TO 700mm. SOIL COVER MUST NOT EXCEED 2000mm OVER THE MANHOLE ROOF.
18. SOIL COVER ON ROOF EXTERIOR SHALL EQUAL OR EXCEED MUNICIPAL REQUIREMENTS.
20. CONSTRUCT A DRIP GROOVE IN THE CEILING OF THE MANHOLE AROUND THE COLLAR OPENING 75mm MINIMUM AWAY FROM THE EDGE.
21. PLACE INTERNAL WATERSTOP AT ALL COLD JOINTS.
22. IF PARTICULAR CONDITIONS ARE FOUND ON THE WORKING SITE (OUTSTANDING STANDARDS: SOFT SOILS, OVERLOADING, MINIMUM COVER, ETC.) THE CONTRACTOR MUST INFORM THE BELL PROJECT MANAGER TO ADAPT THE PLANS ACCORDINGLY WITH EXISTING CONDITIONS.

CONCRETE:

1. ALL CONCRETE COMPONENTS AND PLACING METHODS SHOULD MEET CANADIAN STANDARDS CAN/CSA 1-23.1, A-23.3. TESTS WILL BE DONE ACCORDINGLY TO CAN/CSA A23.2 STANDARD.
2. CONCRETE PROPERTIES:
   EXPOSURE CATEGORY: C-1
   COMPRESSIVE STRENGTH: 35MPa
   WATER/CEMENT RATIO MAXIMUM: 0.4
   AIR ENTRAINED: 5-8 %
   TEST SLUMP RANGE: 80 ± 20mm, COARSE AGGREGATE SHALL BE ANGULAR, WELL GRADED WITH MAXIMUM SIZE OF 20mm.
3. THE CONCRETE COVER WILL BE 50, 60 OR 75mm AS INDICATED ON THE DRAWINGS. USE PLASTIC CHAIR TO MAINTAIN THE SPACING FOR THE ROOF AND THE FLOOR.

   IF CONCRETE OF MANHOLE WALLS IS CAST DIRECTLY AGAINST EARTH, THE FOLLOWING SHALL BE APPLIED:

   - CONCRETE COVER SHALL BE NOT LESS THAN 75mm ON THE SIDE EXPOSED TO SOIL.
   - MANHOLE WALLS THICKNESS SHALL BE INCREASED BY 15mm.

4. NO STEEL CHAIR SHALL BE ALLOWED FOR ROOF CONSTRUCTION, STAINLESS CHAIRS SUCH AS EPOXY COATED STEEL CHAIRS ARE ACCEPTED.
5. DO NOT MAKE HOLES THROUGH THE CONCRETE OTHER THAN THOSE INDICATED ON THE DRAWINGS, WITHOUT APPROVAL FROM THE ENGINEER OR HIS REPRESENTATIVE.
6. ALL INTERNAL FORMWORK STEEL TIES REMAINING IN WALLS SHALL BE REMOVED TO 25mm FROM EXPOSED SURFACES AFTER FORMS ARE STRAPPED. THE RESULTING VOID MUST BE FILLED WITH A NON-SHRINK, ANTI-COROSSION MORTAR.

CAST-IN-PLACE CONCRETE:

1. CONCRETE MATERIAL AND METHODS OF CONCRETE CONSTRUCTION CAN/CSA-A23.1-94.
   CODE FOR THE DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS CAN3-A23.3-04.
2. THE CLEAR DISTANCE BETWEEN REINFORCING STEEL AND SURFACE OF CONCRETE SHALL BE AS FOLLOWS:
   FOOTINGS 75mm TO MAIN STEEL.
3. ALL REINFORCING BARS SHALL BE SUPPORTED IN THE FORMS AND SPACED WITH STANDARD ACCESSORIES.
4. REINFORCING IS TO BE GENERALLY DETAILED IN ACCORDANCE WITH R.S.I.C. MANUAL OF STANDARD PRACTICE (LATEST EDITION).
5. CONCRETE PLACING, CURING AND TESTING TO CONFORM TO CAN3-A23.1 AND A23.2-94.
6. FORMWORK AND TOLERANCES TO CONFORM TO ACI 347-78.
7. GROUT BENEATH BEARING PLATES OF STEEL COLUMNS AND STEEL BEAMS WITH DRY-PACK NON-SHRINKING GROUT TO MANUFACTURERS INSTRUCTIONS.
8. PLACE SLAB ON GRADE ON SOIL CAPABLE OF SUSTAINING 24 kPa WITHOUT SETTLEMENT RELATIVE TO THE BUILDING FOOTINGS/WALLS. AS A MINIMUM, PLACE SLAB ON 150mm THICK GRANULAR 'A' COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY. REFER TO GEOTECHNICAL REPORT FOR RECOMMENDATIONS FOR FILL REMOVAL OR COMPACTION.
9. FOR THICKNESS OF SLAB ON GRADE, SEE FOUNDATION PLAN AND MAINTAIN SLAB THICKNESS AT ALL DEPRESSIONS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT OF FINISHES AND DEPRESSIONS. AT ALL DEPRESSIONS, REINFORCE SLAB ON GRADE WITH WWM 305 x 305 MW37.4 x MW37.4 U.N.O..
10. ALL SPLICES SHALL BE CLASS 'B', U.N.O..
11. ALL EMBEDDED STEEL EXPOSED TO THE EXTERIOR OR EXTERIOR WALL CAVITIES SHALL BE GALVANIZED.
12. ALL ANCHOR BOLTS SHALL BE SET BY TEMPLATE.
    TEMPLATE INFORMATION TO BE PROVIDED BY STEEL FABRICATOR AS REQUIRED.
13. ALL REINFORCING STEEL IN PLACE TO BE INSPECTED BY THE ENGINEER BEFORE POURING CONCRETE.
14. SAW CUT JOINT SEALANT FILLER SHALL BE AN ELASTOMERIC SEMI-RIGID MATERIAL WITH A DUROMETER SHORE HARDNESS NUMBER OF 40+.

FOUNDATION:

1. FOUND ALL SPREAD FOOTINGS ON NATURAL UNDISTURBED SOIL CAPABLE OF SUSTAINING 200 kPa UNLESS NOTED OTHERWISE ON DRAWINGS.
2. FOUND ALL FOOTINGS WHICH WILL BE EXPOSED TO FROST ACTION IN THE COMPLETED BUILDING A MINIMUM OF 1200mm BELOW FINISHED GRADE.'
3. DO NOT EXCEED A RISE OF 7 IN A RUN OF 10 IN THE LINE OF SLOPE BETWEEN ADJACENT FOOTING EXCAVATIONS OR ALONG STEPPED FOOTINGS. UNLESS NOTED FOR STEPPED FOOTINGS, USE STEPS NOT EXCEEDING 600mm IN HEIGHT AND NOT LESS THAN 1200mm IN LENGTH.
4. FOOTING ELEVATIONS CONFORMING WITH NOTES 1, 2 AND 3 ABOVE AND BASED ON INFORMATION AVAILABLE AT THE TIME OF TENDER. IF UPON EXCAVATION TO THE LEVELS SHOWN, THESE CONDITIONS ARE NOT FULFILLED, OR ARE FULFILLED AT HIGHER ELEVATIONS THAN INDICATED, FOOTINGS MAY BE RAISED OR LOWERED, BUT ONLY WITH THE APPROVAL OF THE STRUCTURAL AND GEOTECHNICAL ENGINEER.
5. MAINTAIN UNSUPPORTED SIDES OF EXCAVATION ONLY IF SAFE INCLINATION OF THE SIDES OF THE EXCAVATION IS PROVIDED IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS AND OR MUNICIPAL OR PROVINCIAL REGULATIONS.
6. ERECT, MAINTAIN AND IF REQUIRED, REMOVE A SUPPORTING SHORING SYSTEM ALONG THE SIDES OF THE EXCAVATION. DESIGN SUCH SYSTEM IN ACCORDANCE WITH THE SOIL REPORT RECOMMENDATIONS.
7. PROTECT SOIL FROM FREEZING ADJACENT TO AND BELOW ALL FOOTINGS.
8. BACKFILL AGAINST FOUNDATION WALL IN SUCH A MANNER THAT THE LEVEL OF BACKFILLING ON ONE SIDE OF THE WALL IS NEVER MORE THAN 450mm DIFFERENT FROM THE LEVEL ON THE OTHER SIDE OF THE WALL, EXCEPT WHERE TEMPORARY SUPPORT FOR THE WALL IS PROVIDED OR WALLS ARE DESIGNED AS CANTILEVER WALLS.
9. SOIL BEARING CAPACITY SPECIFIED MUST BE VERIFIED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACING OF THE FOUNDATIONS AND ANY NON-CONFORMANCE WITH THE SPECIFIED MINIMUM CAPACITIES MUST BE IMMEDIATELY REPORTED TO THE STRUCTURAL ENGINEER.
10. SOFT AREAS UNCOVERED ON EXCAVATION SHALL BE SUB EXCAVATED TO SOUND MATERIAL AND FILLED WITH CLEAN FREE DRAINAGE GRANULAR MATERIAL COMPACTED TO 100% STANDARD PROCTOR DRY DENSITY.

REINFORCING STEEL:

1. REINFORCING STEEL SHALL BE NEW, CANADIAN MADE AND CONFORMING TO THE LATEST ISSUE OF CSA G 30.18, GRADE 400 (400 MPa YIELD STRENGTH).
2. WHEN AN OVERLAPPING OF REINFORCING BARS IS NECESSARY (EX.: TO REPLACE THE BARS THAT WERE CUT), IT MUST BE NOT LESS THAN 30 TIMES THE DIAMETER OF BARS AND AT LEAST 300mm. ALL OVERLAPPING SHOULD MEET CANADIAN STANDARD CAN/CSA A-23.1.

INSPECTION:

INDEPENDENT INSPECTION SHALL BE CARRIED OUT FOR:

1. GEOTECHNICAL INSPECTION AND TESTING OF SOIL.
2. STRUCTURAL STEEL ERECTION AND TESTING.
3. CONCRETE STRENGTH: THREE CYLINDER SAMPLES TO BE COLLECTED. ONE SAMPLE TO BE CRUSHED AT 7 DAYS. TWO SAMPLES TO BE CRUSHED AT 28 DAYS.

MATERIALS & STANDARDS:

UNLESS OTHERWISE NOTED ON THE DRAWINGS, THE FOLLOWING MATERIALS SHALL BE USED FOR CONSTRUCTION:

1.	CONCRETE:	35 MPa – 28 DAY MIN. COMP. STRENGTH FOR FOOTINGS 35 MPa – 28 DAY MIN. COMP. STRENGTH OTHERWISE. TO C.S.A. A23.3-94 & A23.2 ALL SURFACES EXPOSED TO FREEZE THAW CYCLES SHALL HAVE 4-7% AIR ENTRAINMENT.
2.	BEARING GROUT:	35 MPa – 28 DAY MIN. COMP. STRENGTH NON-SHRINK, NON METALLIC
3.	REINFORCING STL.:	BILLET STL. BARS TO 930.18-GRADE 400R, GRADE 400W WHERE WELDING IS REQUIRED.
4.	WELDED STL. WIRE FABRIC:	G30.5
5.	ANCHOR BOLTS, NUTS & WASHERS:	ASTM A307 & A36 OR AS APPROVED BY THE ENGINEER.
6.	HIGH STRENGTH BOLTS:	ASTM A325
7.	STEEL SHAPES AND PLATES:	G40.21-350W, CAN/CSA-S16.1-94
8.	WELDING:	CSA W59, W55 AND W47. SERIES E480XX ELECTRODES
9.	BLOCK:	20 MPa CONCRETE ON NET AREA TO CSA A165 SERIES AND AS REQUIRED TO PRODUCE SPECIFIED f'm VALUES.
10.	MORTAR:	TYPE S TO CSA A179
11.	GROUT MASONRY:	TO CSA A179 AND TO STRENGTH OF 20 MPa MIN. U.N.O.
12.	WIRE REINFORCED (MASONRY):	CSA G30.3 & ASTM A82 (HOT DIP GALV.)
13.	LIGHTWEIGHT STEEL FRAMING:	TO CSA S136, IDENTIFIED AS TO GRADE, MECHANICAL PROPERTIES AND METALLIC COATINGS.

ABBREVIATIONS:

BEW	–	BOTTOM EACH WAY
B.U.L.	–	BOTTOM UPPER LEVEL
B.L.L.	–	BOTTOM LOWER LEVEL
B.L.	–	BLOCK LINTEL
C.J.	–	CONTROL JOINT
CANT.	–	CANTILEVERED BEAM
CONT.	–	CONTINUOUS
DCA	–	DRILLED CONCRETE ANCHORS
DCAA	–	DRILLED CONCRETE ADHESIVE ANCHORS
FF	–	FINISHED FLOOR
HEF	–	HORIZONTAL EACH FACE
HIF	–	HORIZONTAL INSIDE FACE
HOF	–	HORIZONTAL OUTSIDE FACE
SPD	–	STANDARD PROCTOR DENSITY
SPMDD	–	STANDARD PROCTOR MAXIMUM DRY DENSITY
TJ	–	TIE JOIST
T.U.L.	–	TOP UPPER LEVEL
T.L.L.	–	TOP LOWER LEVEL
U.N.O.	–	UNLESS NOTED OTHERWISE
VB	–	VERTICAL BRACE
VEF	–	VERTICAL EACH FACE
VIF	–	VERTICAL INSIDE FACE
VOF	–	VERTICAL OUTSIDE FACE
WWF	–	WELDED WIRE FABRIC

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LEGEND

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R/W	MC AUTORITY	DATE REC'D

Bell

PLANVIEW Utility Services Ltd.

REASON FOR WORK:
BRIDGE REPLACEMENT

PROJECT NO.:
18-4-0179

CLLI CODE: FTERON02
NETWORK NO.: J33602

HORIZONTAL SCALE: N.T.S. (4 2 0 4)
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SWITCHING CENTRE: 871

VERTICAL SCALE: N.T.S. (2 1 0 2)
STREET NAMES: QUEEN ELIZABETH WAY

PLAN NO.: 702
MC AUTHORITY: FORT ERIE