

APPENDIX 'A'

MANITOBA HYDRO STREET LIGHTING STANDARDS



STANDARDS

for 66kV and Below



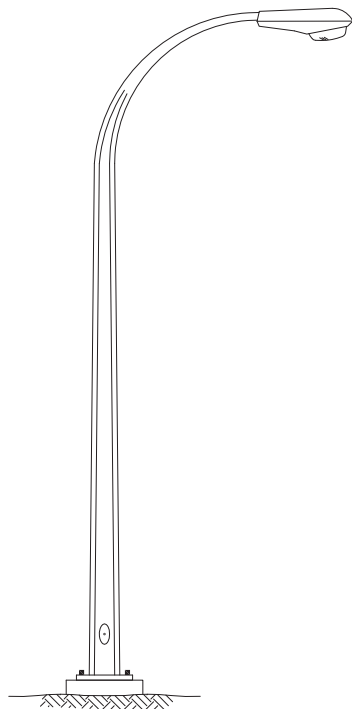
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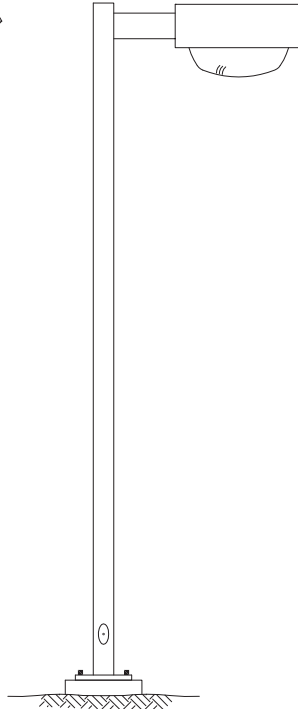
SECTION 300
STREET LIGHT POLES AND BASES

TITLE OF STANDARD DRAWING	DRAWING NUMBER	SHEET NO.	REV DATE	REV NO.
STANDARD STEEL STREET LIGHT POLES	CD300-1	1	13-01	3
NON-STANDARD STREET LIGHT POLES	CD300-2	1	18-04	2
		2	18-04	0
STANDARD CONCRETE STREET LIGHT POLES	CD300-3	1	13-01	0
INSTALLATION OF PRECAST CONCRETE BASE	CD300-6	1	10-08	3
		2	10-08	1
		3	10-08	0
METHOD FOR ANCHOR ROD TIGHTENING	CD300-9	1	10-08	0
BREAKAWAY BASE INSTALLATION	CD300-10	1	16-06	4
		2	10-08	0
INSTALLATION OF ALUMINUM STREET LIGHT STANDARDS ON BRIDGES AND DIVIDER STRIPS	CD300-11	1	13-01	0
		2	13-01	0
INSTALLATION METHOD FOR DIRECT-BURIAL CONCRETE 4.6m POST TOP AND 11.3m AND 13.7m DAVIT POLES	CD300-14	1	10-08	0
RECOMMENDED METHOD OF LIFTING ASSEMBLED STREET LIGHT POLE AND BASE	CD300-16	1	13-01	1
RECOMMENDED METHOD OF LIFTING CONCRETE STREET LIGHT POLE	CD300-17	1	13-01	0
RIGGING WEIGHTS OF STREET LIGHT COMPONENTS	CD300-18	1	18-04	1
STANDARD STREET LIGHT BRACKET ARMS	CD300-20	1	17-11	5

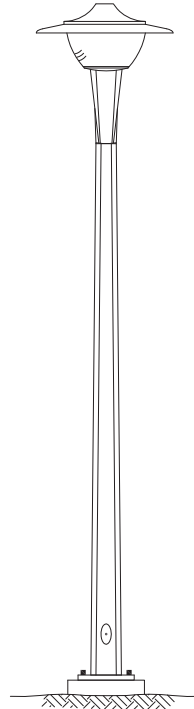
TITLE OF STANDARD DRAWING	DRAWING NUMBER	SHEET NO.	REV DATE	REV NO.
MINIMUM VERTICAL CLEARANCE BETWEEN LUMINAIRE ARM AND OTHER PLANT	CD300-21	1	17-11	1
STANDARD LED LUMINAIRES	CD300-24	1 2	16-12 16-12	1 1
STANDARD HPS LUMINAIRES	CD300-25	1 2	17-11 15-02	7 1



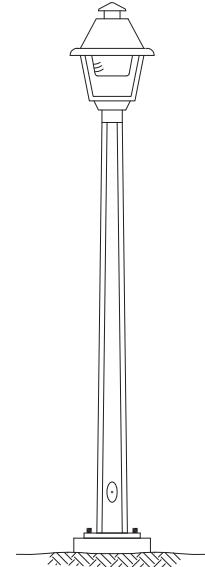
DAVIT BM
(BASE MOUNTED)



SQUARE BM
(BASE MOUNTED)



**POST-TOP
CONTEMPORARY BM**
(BASE MOUNTED)



**POST-TOP
COLONIAL BM**
(BASE MOUNTED)

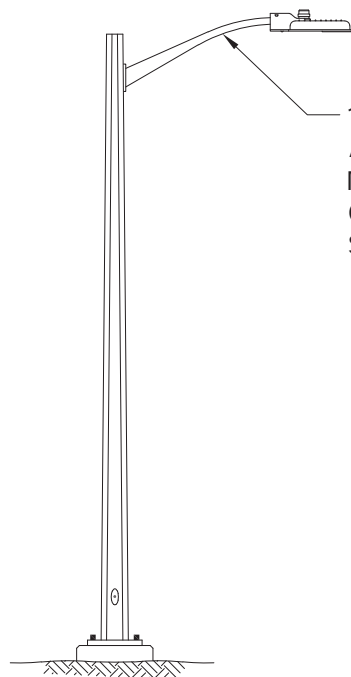
POLE TYPE	COLOUR	MOUNTING HEIGHT m (ft)	ARM REACH m	BOLT SQUARE mm	BOLT CIRCLE mm	STORES CODE NO.	CABLE LENGTH m **
DAVIT BM	GALVANIZED	7.7 (25)	1.8	179	254	75 42 26	11
DAVIT BM *	GALVANIZED	9.1 (30)	2.4	197	279	75 43 30	13
DAVIT BM	GALVANIZED	10.7 (35)	3.0	206	292	75 44 36	15
DAVIT BM	GALVANIZED	13.7 (45)	3.0	243	343	75 46 45	18
SQUARE BM	DARK BRONZE	6.1 (20)	0.5	179	254	75 42 20	8
SQUARE BM	DARK BRONZE	10.7 (35)	0.5	206	292	75 45 30	14
POST-TOP BM CONTEMPORARY	GALVANIZED	6.1 (20)	N/A	179	254	75 41 22	7
POST-TOP BM COLONIAL	GALVANIZED	4.7 (15)	N/A	179	254	75 41 15	6

NOTES:

* FOR REPLACEMENT PURPOSES; NOT TO BE USED FOR NEW INSTALLATIONS.

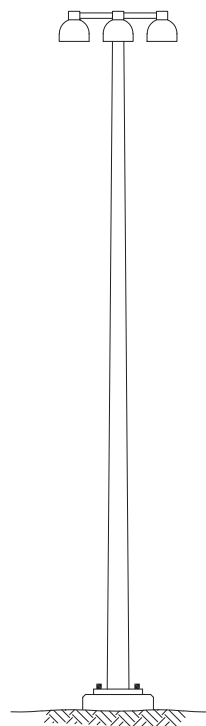
** LENGTH OF 2 CONDUCTORS #12 CABLE REQUIRED PER POLE.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS			
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-28	13-01	3	ADDED CONTEMPORARY AND COLONIAL POLES	STANDARD STEEL STREET LIGHT POLES			
	12-05	2	REVISED DRAWING & CANCELLED SHEETS 2 AND 3				
	94-09	1	DELETED ORNAMENTAL				
DRAWN W.B./CAD	CHECKED L.D./D.O.	DATE 88-06	CD 300-1		SHT	REV	
					0001 OF 1	03	



1.8m STEEL BRACKET
ARM ONLY. DO NOT
MOUNT ALUMINUM ARM
ON 16.8m AND 19.8m
STRAIGHT SHAFT POLES.

STRAIGHT SHAFT



HI-MAST

POLE TYPE	COLOUR	MOUNTING HEIGHT m (ft)	ARM REACH m **	BOLT SQUARE mm	BOLT CIRCLE mm	STORES CODE NO.	CABLE LENGTH m ***
STRAIGHT SHAFT	GALVANIZED	7.7 (25)	1.8	179	254	05-05-78	11
STRAIGHT SHAFT *	GALVANIZED	9.1 (30)	3.0	197	279	05-05-79	14
STRAIGHT SHAFT	GALVANIZED	10.7 (35)	3.0	206	292	05-05-80	15
STRAIGHT SHAFT	GALVANIZED	13.7 (45)	3.0	243	343	05-05-81	18
STRAIGHT SHAFT	GALVANIZED	16.8 (55)	1.8	N/A	483	75-46-55	20
STRAIGHT SHAFT	GALVANIZED	19.8 (65)	1.8	N/A	483	75-46-65	23
HI-MAST ****	GALVANIZED	30.5 (100)	N/A	PER DESIGN	PER DESIGN	N/A	N/A

NOTES:

- * FOR REPLACEMENT PURPOSES; NOT TO BE USED FOR NEW INSTALLATIONS.
- ** DO NOT MOUNT ALUMINUM ARM ON 16.8m AND 19.8m. DO NOT USE ALUMINUM ARMS WITH 1000W HPS LUMINAIRES.
- *** LENGTH OF 2 CONDUCTORS #12 CABLE REQUIRED PER POLE.
- **** HI-MAST POLES ARE DESIGNED PER INSTALLATION.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS				
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11				NON-STANDARD STREET LIGHT POLES				
		18-04	2					ADDED SHEET 2, TABLE & NOTES, RESEALED
		92-11	1					CHANGE ALUM. TO STEEL ARM
DRAWN C.A.	CHECKED L.D.	DATE 18-04		CD 300-2		SHT 0001 OF 2	REV 02	

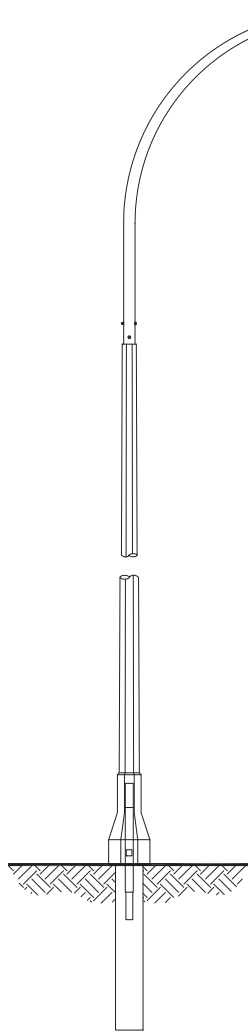
THERE ARE A NUMBER OF STYLES AND TYPES OF STREET LIGHT POLES WHICH HAVE BEEN USED, IN LIMITED QUANTITIES, IN ORDER TO MEET ROADWAY LIGHTING REQUIREMENTS IN SPECIAL CIRCUMSTANCES.

DAVIT TYPE STREET LIGHT POLES WITH DOUBLE AND TRIPLE ARM ARRANGEMENTS HAVE BEEN PURCHASED TO LIGHT INTERSECTIONS WITH UNUSUAL ROADWAY CONFIGURATIONS. STRAIGHT SHAFT ALUMINUM POLES WITH TAPERED ALUMINUM BRACKET ARMS HAVE BEEN USED FOR BRIDGE LIGHTING AND IN OTHER CIRCUMSTANCES, PRIMARILY FOR ESTHETIC REASONS.

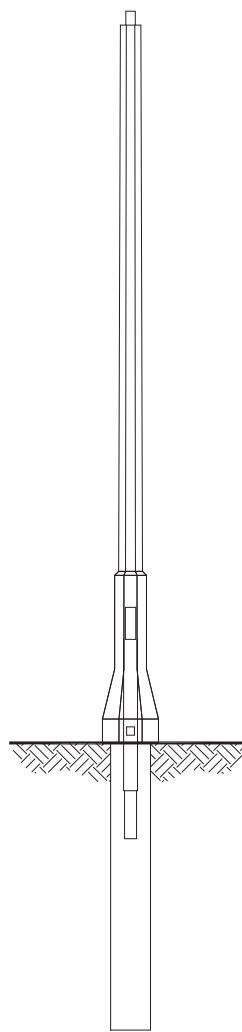
SPECIAL STREET LIGHT POLES HAVE BEEN USED AT LARGE HIGHWAY INTERCHANGES AND ON MAJOR ROADWAYS WHERE HIGHER MOUNTING HEIGHTS CAN BE USED EFFECTIVELY TO DRASTICALLY REDUCE THE NUMBER OF POLES WHICH WOULD OTHERWISE BE REQUIRED. THE TWO MOST COMMON STYLES OF POLES USED TO ACHIEVE SUCH HIGHER MOUNTING HEIGHTS (i.e. 16.8m, 19.8m AND 30.5m).

NON-STANDARD STREET LIGHT POLES ARE, ON OCCASION, AVAILABLE FROM CENTRAL STORES, BUT GENERALLY, NON-STANDARD STREET LIGHT POLES MUST BE PURCHASED AS REQUIRED.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS					
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11				NON-STANDARD STREET LIGHT POLES					
DRAWN C.A.	CHECKED L.D.	DATE 18-04	CD 300-2		<table border="1"> <tr> <td>SHT</td> <td>REV</td> </tr> <tr> <td>0002 OF 2</td> <td>00</td> </tr> </table>	SHT	REV	0002 OF 2	00
SHT	REV								
0002 OF 2	00								



DAVIT DB
(DIRECT BURIAL)



POST-TOP DB
(DIRECT BURIAL)

POLE TYPE	COLOUR	MOUNTING HEIGHT m (ft)	ARM REACH m	STORES CODE NO.	CABLE LENGTH m *
POST-TOP DB	BLACK	4.7 (15)	N/A	03 67 39	6
DAVIT DB	BLACK	11.3 (37)	3.0	03 65 29	15
DAVIT DB	BLACK	13.7 (45)	3.0	03 65 30	18

NOTES:

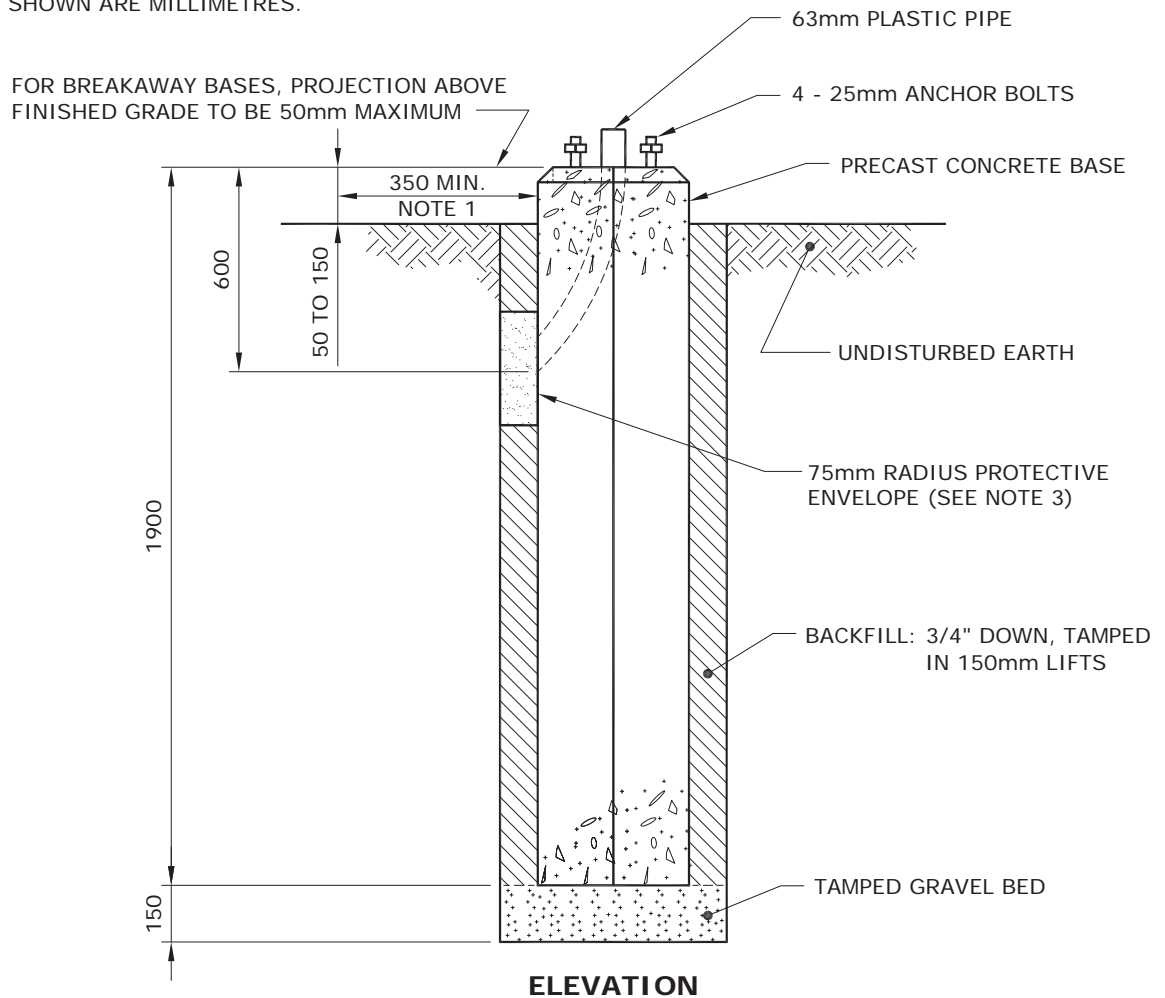
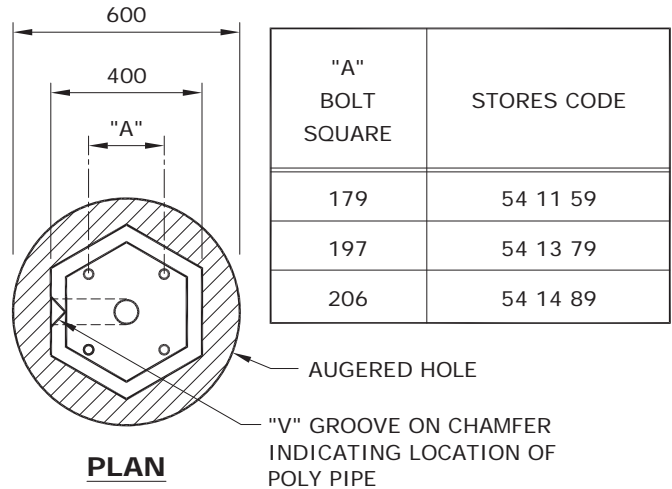
* LENGTH OF 2 CONDUCTORS #12 CABLE REQUIRED PER POLE.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS					
ORIGINAL DRAWING SEALED BY D.R. ORR 13-02-12				STANDARD CONCRETE STREET LIGHT POLES					
DRAWN C.A.	CHECKED L.D./D.O.	DATE 13-01	CD 300-3		<table border="1"> <tr> <td>SHT</td> <td>REV</td> </tr> <tr> <td>0001 OF 1</td> <td>00</td> </tr> </table>	SHT	REV	0001 OF 1	00
SHT	REV								
0001 OF 1	00								

7.7 - 10.7 STREET LIGHT POLES

NOTES:

1. FOR FUTURE ACCESS TO LOWER PORTION OF PLASTIC PIPE, LOCATE "V" GROOVE SIDE OF BASE TO ROADWAY PROVIDED THAT:
 - a) A MIN. HORIZONTAL SEPARATION OF 350mm IS MAINTAINED TO ANY PAVED SURFACE OR STRUCTURE; OR
 - b) IF LESS THAN 350mm, ROTATE BASE 90°
2. ROUTE UNDERGROUND CABLES DIRECTLY INTO PLASTIC PIPE.
3. IN BACKFILL AREA, ENCASE UNDERGROUND CABLES IN A 75mm RADIUS ENVELOPE OF EXCAVATED MATERIAL OR SAND TO PROTECT CABLES. DO NOT BACKFILL WITH EXCAVATED MATERIAL OR SAND MORE THAN 1/6 OF THE WAY AROUND BASE.
4. SEE CD300-9 FOR ANCHOR ROD TIGHTENING METHOD.
5. DIMENSIONS SHOWN ARE MILLIMETRES.

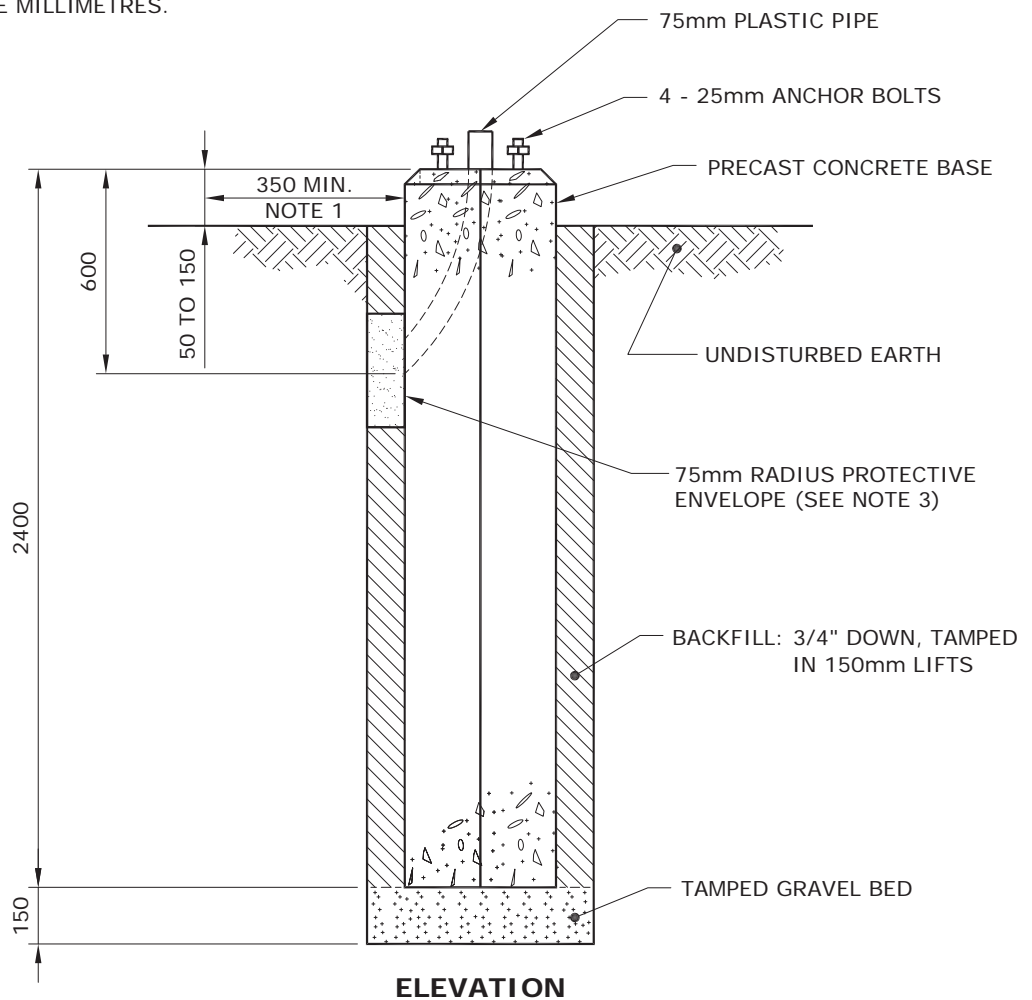
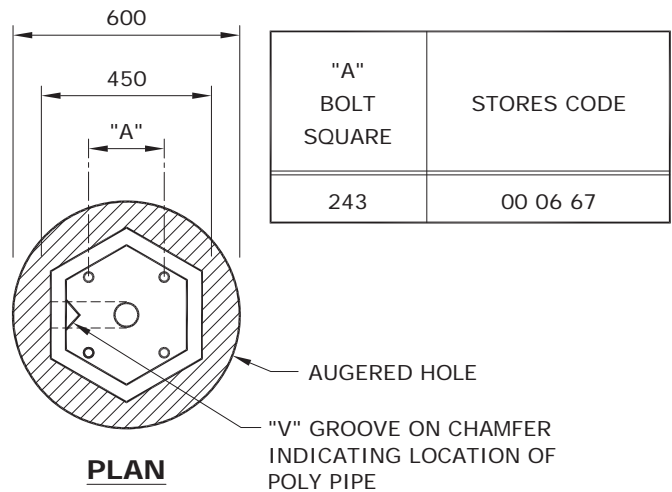


APPROVED	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-29	10-08	3	CHANGED BACKFILL NOTES, AND ADDED SHEET 3	
	99-05	2	SHEET 2 of 2 ADDED, 7.7 - 10.7 STREET LIGHT ADDED	
	96-10	1	V-GROOVE LOCATION, POLY PIPE SIZE NOTES CHANGED	
INSTALLATION OF PRECAST CONCRETE BASE			CD 300-6	
DRAWN W.B./CAD	CHECKED L.D./K.C.H.	DATE 88-06	SHT 0001 OF 3	REV 03

13.7 STREET LIGHT POLE

NOTES:

1. FOR FUTURE ACCESS TO LOWER PORTION OF PLASTIC PIPE, LOCATE "V" GROOVE SIDE OF BASE TO ROADWAY PROVIDED THAT:
 - a) A MIN. HORIZONTAL SEPARATION OF 350mm IS MAINTAINED TO ANY PAVED SURFACE OR STRUCTURE; OR
 - b) IF LESS THAN 350mm, ROTATE BASE 90°
2. ROUTE UNDERGROUND CABLES DIRECTLY INTO PLASTIC PIPE.
3. IN BACKFILL AREA, ENCASE UNDERGROUND CABLES IN A 75mm RADIUS ENVELOPE OF EXCAVATED MATERIAL OR SAND TO PROTECT CABLES. DO NOT BACKFILL WITH EXCAVATED MATERIAL OR SAND MORE THAN 1/6 OF THE WAY AROUND BASE.
4. SEE CD300-9 FOR ANCHOR ROD TIGHTENING METHOD.
5. DIMENSIONS SHOWN ARE MILLIMETRES.

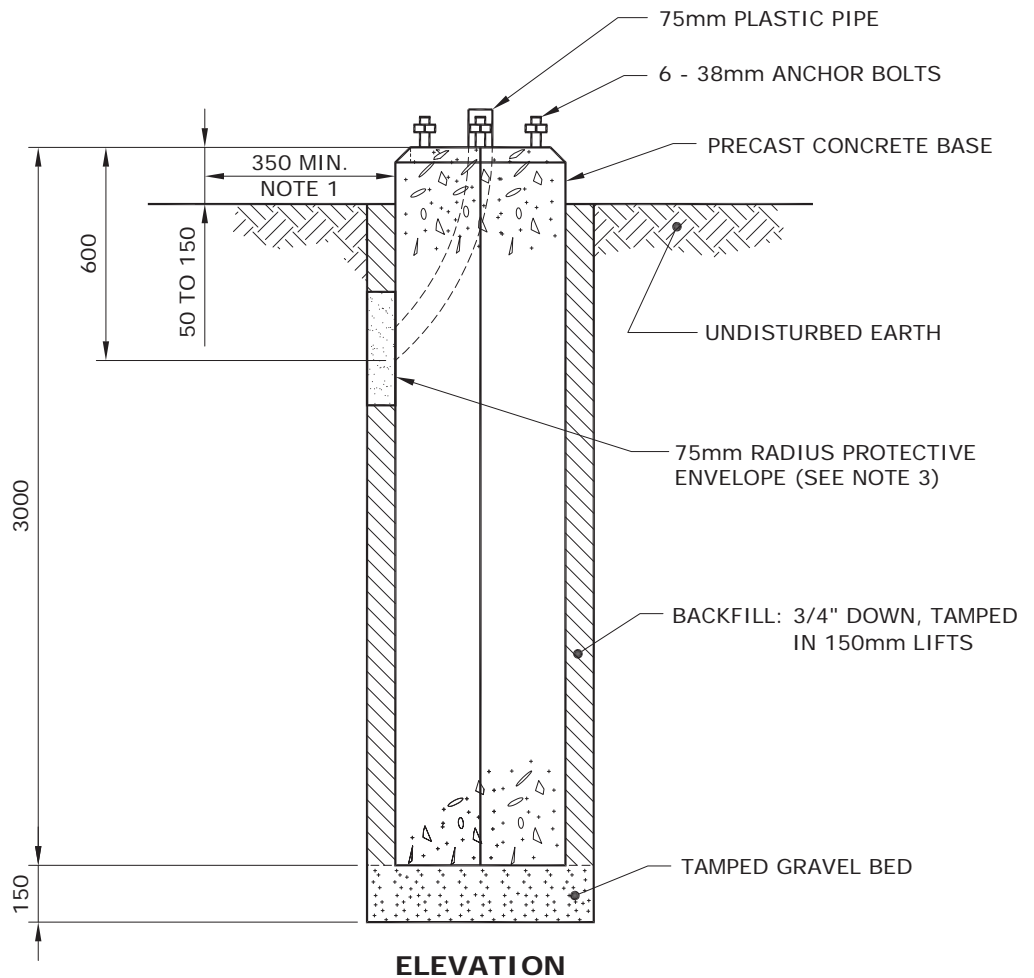
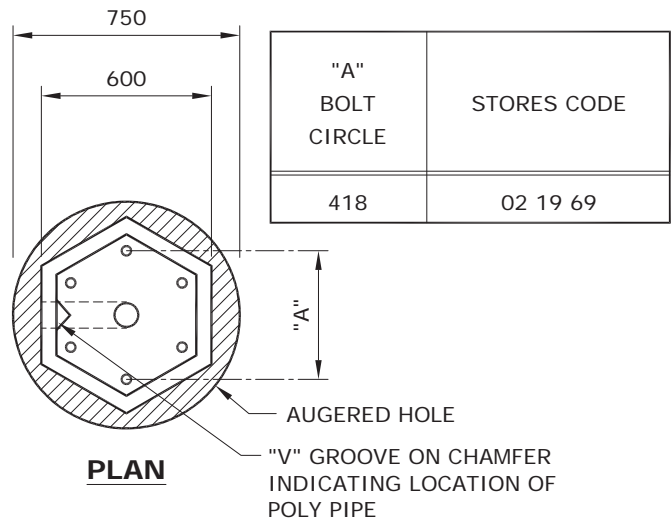


APPROVED	REVISIONS	MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-29		INSTALLATION OF PRECAST CONCRETE BASE	
	10-08	1	CHANGED BACKFILL NOTES, AND ADDED SHEET 3
DRAWN R.L.B./CAD	CHECKED L.D./K.C.H.	DATE 99-05	CD 300-6
		SHT 0002 OF 3	REV 01

16.8m & 19.8m STREET LIGHT POLE

NOTES:

1. FOR FUTURE ACCESS TO LOWER PORTION OF PLASTIC PIPE, LOCATE "V" GROOVE SIDE OF BASE TO ROADWAY PROVIDED THAT:
 - a) A MIN. HORIZONTAL SEPARATION OF 350mm IS MAINTAINED TO ANY PAVED SURFACE OR STRUCTURE; OR
 - b) IF LESS THAN 350mm, ROTATE BASE 90°
2. ROUTE UNDERGROUND CABLES DIRECTLY INTO PLASTIC PIPE.
3. IN BACKFILL AREA, ENCASE UNDERGROUND CABLES IN A 75mm RADIUS ENVELOPE OF EXCAVATED MATERIAL OR SAND TO PROTECT CABLES. DO NOT BACKFILL WITH EXCAVATED MATERIAL OR SAND MORE THAN 1/6 OF THE WAY AROUND BASE.
4. SEE CD300-9 FOR ANCHOR ROD TIGHTENING METHOD.
5. DIMENSIONS SHOWN ARE MILLIMETRES.



APPROVED	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY K.C. HAMILTON 10-08-13			INSTALLATION OF PRECAST CONCRETE BASE	
DRAWN C.A.	CHECKED L.D./K.C.H.	DATE 10-08	CD 300-6	
			SHT 0003 OF 3	REV 00

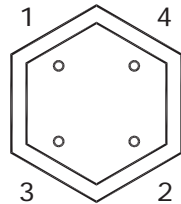
TO DEVELOP THE REQUIRED TENSION ON ANCHOR RODS, THE TURN-OF-NUT METHOD IS USED.

TURN-OF-NUT

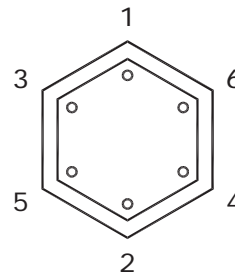
1. ENSURE ALL ANCHOR RODS AND NUTS ARE FREE OF DEBRIS AND THAT THE ANCHOR RODS ARE LUBRICATED.
2. PLACE POLE ONTO CONCRETE PILE, INSTALL WASHERS AND NUTS AND TIGHTEN UNTIL DEVELOPING A SNUG-TIGHTENED CONNECTION.

SNUG-TIGHTENED: THE TIGHTNESS THAT IS ATTAINED AFTER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL FORCE OF A WORKER USING AN ORDINARY ONE FOOT LONG WRENCH.

3. TIGHTENING OF THE BOLTS MUST BE PERFORMED IN A MANNER THAT BRINGS THE FAYING SURFACES UP "EVENLY" AS PER THE STAR PATTERN TIGHTENING SEQUENCE.



FOUR ANCHOR BOLT PATTERN
(13.7m AND BELOW)



SIX ANCHOR BOLT PATTERN
(16.8m AND 19.8m)

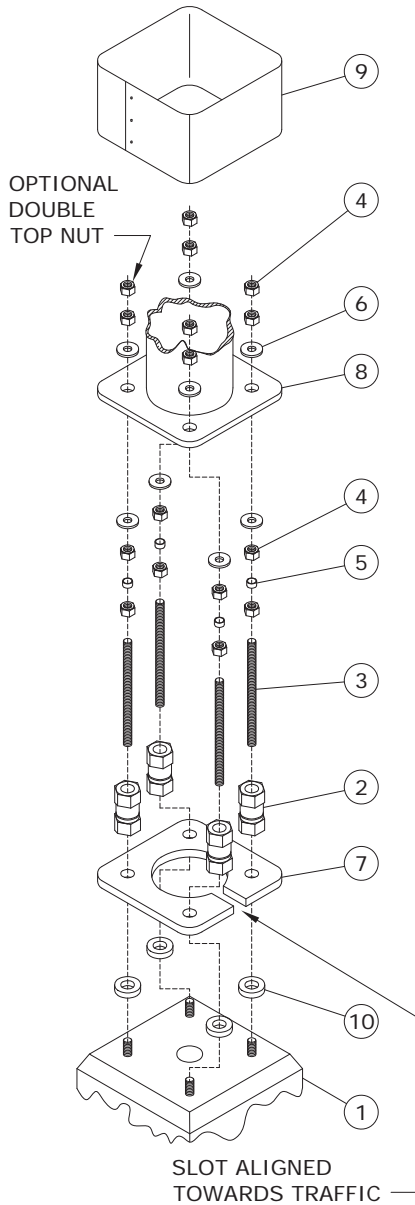
4. ENSURE THE POLE IS PLUMB AND ADD LEVELING SHIMS IF REQUIRED. SNUG-TIGHTEN THE ANCHOR BOLTS AGAIN.
5. BEVELED WASHERS ARE REQUIRED IF THE NUT CANNOT BE BROUGHT INTO FIRM CONTACT WITH THE BASE PLATE.
6. MARK THE REFERENCE LOCATION OF THE NUT AFTER SNUG-TIGHTENING THE PLUMB POLE.
7. FINAL TIGHTENING OF NUTS IS PERFORMED IN INCREMENTS AS PER THE STAR PATTERN, WITH A MINIMUM OF TWO FULL TIGHTENING CYCLES. PROPER TENSIONING IS ACHIEVED WHEN THE NUT IS ROTATED 1/3 OF A TURN BEYOND SNUG-TIGHT. THE TOLERANCE FOR THIS IS PLUS 20°.

APPROVED	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY K.C. HAMILTON 10-08-13			METHOD FOR ANCHOR ROD TIGHTENING	
DRAWN C.A.	CHECKED L.D.	DATE 10-08	CD 300-9	
			SHT 0001 OF 1	REV 00

THE FOLLOWING INSTALLATION INSTRUCTIONS ARE APPLICABLE TO NEW OR EXISTING BREAKAWAY BASE INSTALLATIONS ON CONCRETE BASES.

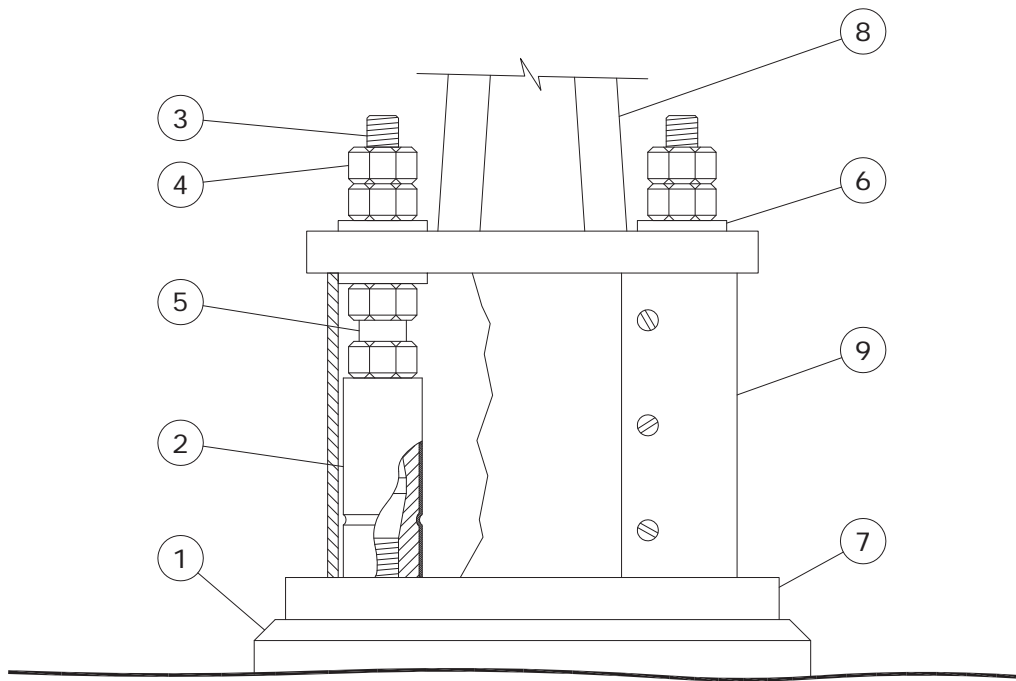
PROCEDURE:

1. CLEAN THE TOP SURFACE OF THE CONCRETE BASE AND ENSURE SURFACE IS FLAT AND LEVEL WITH NO SPALLING OR OTHER SURFACE CONDITIONS THAT MAY AFFECT THE PERFORMANCE OF THE COUPLERS.
 2. THE PREFERRED MAXIMUM HEIGHT ABOVE LEVEL GRADE TO THE BASE OF THE COUPLER IS 50mm OR LESS. THIS PROVIDES THE RECOMMENDED CLEARANCE IN THE EVENT OF A COLLISION WITH THE STRUCTURE.
 3. MEASURE THE HEIGHT OF THE THREADED ANCHOR BOLTS ABOVE THE REACTION PLATE AND VERIFY THIS MEASUREMENT IS BETWEEN 1 1/4" AND 1 5/8".
 4. IF THE EXPOSED LENGTH OF THE ANCHOR BOLT IS GREATER THAN THE RECOMMENDED LENGTH, OPTIONAL SPACERS MAY BE USED (ITEM 10).
 5. IT IS RECOMMENDED THAT THE THREADED ANCHOR BOLT-COUPLER CONNECTION BE COATED WITH RUST-INHIBITING GREASE. THIS WILL FACILITATE REMOVAL OF THE COUPLER WHEN IT IS NECESSARY. A SUITABLE PRODUCT FOR THIS APPLICATION IS ARCAN 1, A WHITE, WATER RESISTANT GREASE MARKETED BY IMPERIAL OIL LTD.
 6. THREAD THE COUPLER ASSEMBLY ON EACH ANCHOR BOLT (IF THE COUPLER ASSEMBLY UPPER STUD BECOMES LOOSE AS A RESULT OF HANDLING, ENSURE THAT THE STUD IS ENGAGED AT LEAST 38mm, BUT NOT MORE THAN 44mm IN THE COUPLER BEFORE LOCKING WITH THE LOCK NUT.)
 7. SNUG UP EACH COUPLER AGAINST THE CONCRETE BASE. TIGHTEN EACH COUPLER ALTERNATELY AND INCREMENTALLY, BY MEANS OF A WRENCH OR A PIPE WRENCH ON THE BOTTOM HEX OF THE COUPLER. USE THE TURN-OF-NUT METHOD AS PER CD300-9.
- NOTE: TIGHTENING THE COUPLER ON THE TOP HEX MAY WEAKEN THE COUPLER AT THE MACHINED GROOVE AND MAKE THE COUPLER UNUSEABLE.**
8. BRING THE LEVELING NUTS (AND HENCE, THE LOWER WASHERS) INTO A LEVEL PLANE AS DESIRED MAKING CERTAIN THAT AT LEAST ONE PLASTIC SPACER REMAINS IN CONTACT WITH ITS LEVELING NUT AND ITS LOCK NUT.
 9. PLACE THE POLE BASE OVER THE PROTRUDING STUDS, AND SECURE THE POLE WITH THE UPPER WASHERS AND RETAINING NUTS.
 10. WITH THE POLE IN THE REQUIRED VERTICAL ORIENTATION, AND BEFORE FINAL TIGHTENING, ENSURE THAT ALL LEVELING NUTS, RETAINING NUTS AND UPPER AND LOWER WASHERS ARE MADE SNUG AGAINST THE POLE BASE PLATE.
 11. TIGHTEN THE RETAINING NUTS WITH THE TURN-OF-NUT METHOD AS PER CD300-9.
 12. MAKE THE NECESSARY WIRING CONNECTIONS, AND INSTALL THE PROTECTIVE SHROUD.



SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

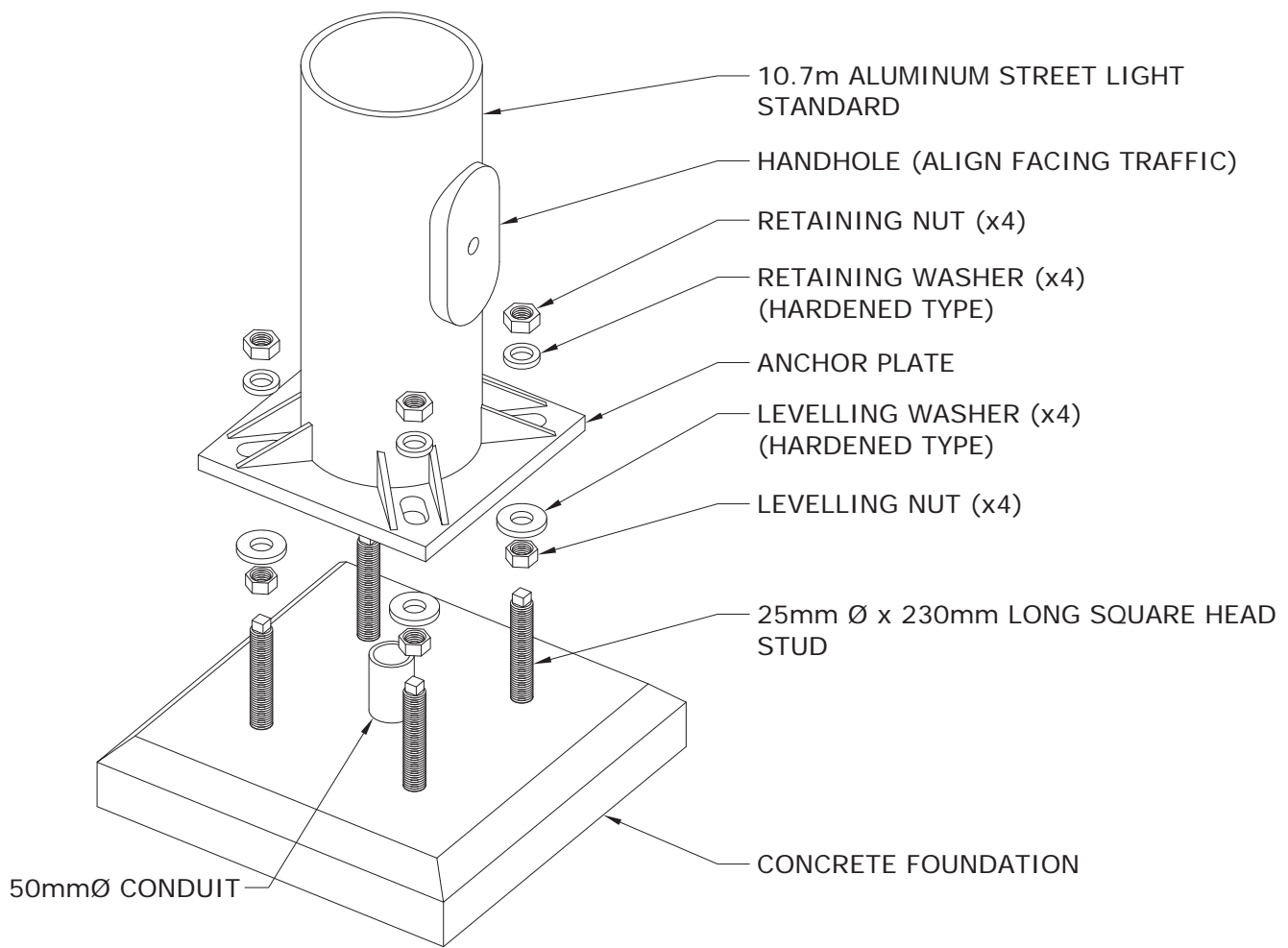
APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY D.R. ORR 16-06-27	16-06	4	CORRECTED TYPO, RESEALED	BREAKAWAY BASE INSTALLATION	
	10-08	3	UPDATED STANDARD, REVISED TITLE, AND ADDED SHEET 2		
	07-06	2	REVISED NOTE 4 AND ADDED NOTE 5		
DRAWN C.A.	CHECKED L.D.	DATE 16-06		CD 300-10	
				SHT	REV
				0001 OF 2	04



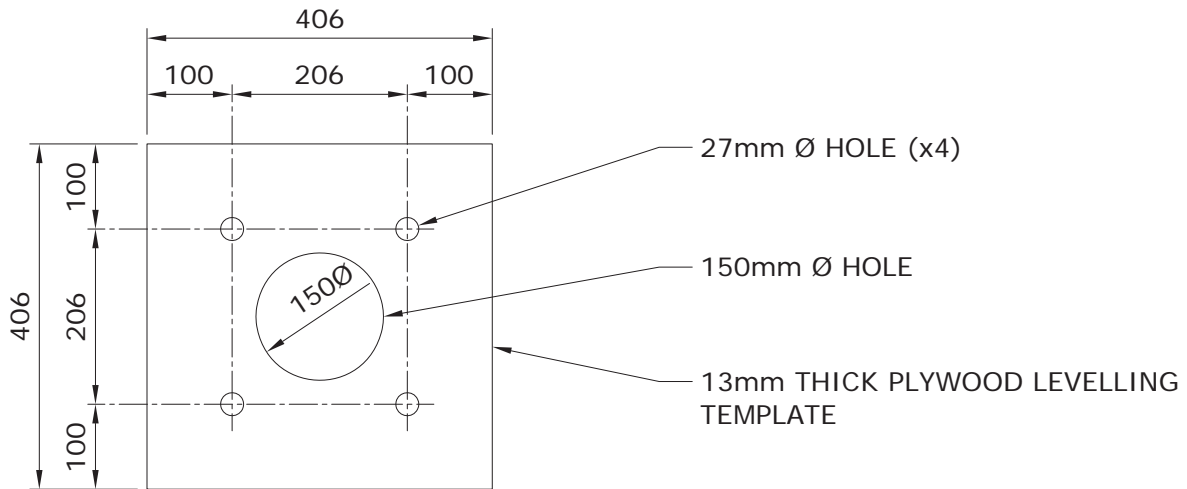
BILL OF MATERIAL

ITEM NO.	DESCRIPTION	QUANTITY
1	CONCRETE BASE	1
2	COUPLING	4
3	1" - 8 UNC GALV. STUD	4
4	1" - 8 UNC GALV. HEAVY HEX NUT	16
5	SPACER	4
6	1" GALV. FLAT WASHER	8
7	REACTION PLATE	1
8	POLE	1
9	SHROUD ASSEMBLY	1
10	GALV. SHIM	4

APPROVED ORIGINAL DRAWING SEALED BY K.C. HAMILTON 10-08-13	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS		
			BREAKAWAY BASE INSTALLATION		
DRAWN C.A.	CHECKED L.D.	DATE 10-08	CD 300-10	SHT 0002 OF 2	REV 00



MOUNTING DETAIL



LEVELLING TEMPLATE

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY D.R. ORR 13-02-13				INSTALLATION OF ALUMINUM STREET LIGHT STANDARDS ON BRIDGES AND DIVIDER STRIPS	
DRAWN C.A.	CHECKED L.D.	DATE 13-01			
				CD 300-11	

ALUMINUM STREET LIGHT STANDARD MOUNTING INSTRUCTIONS

1. ENSURE MOUNTING STUDS ARE COATED WITH WHITE LITHIUM GREASE AND ARE FREE OF DIRT AND OTHER CONTAMINANTS.
2. INSTALL LEVELLING NUTS AND WASHERS. ENSURE THEY ARE LEVEL IN ALL DIRECTIONS BY USING THE LEVELLING TEMPLATE AND A CARPENTER'S LEVEL. FAILURE TO ENSURE LEVEL MOUNTING SURFACE MAY RESULT IN A CRACKED ANCHOR BASE UPON FASTENING CONNECTION WITH AN IMPACT GUN.
3. POSITION ALUMINUM STREET LIGHT STANDARD ONTO LEVELLING WASHERS AND NUTS.
4. INSTALL RETAINING WASHERS AND NUTS TO A SNUG FIT (A FEW IMPACTS WITH IMPACT GUN).
5. SNUG TIGHTENING IS TO PROGRESS SYSTEMATICALLY AND THEN RE-TIGHTENING IN THE SAME SYSTEMATIC MANNER UNTIL THE CONNECTION IS FULLY COMPACTED.
6. TIGHTEN NUTS SYSTEMATICALLY BY 2/3 OF AN ADDITIONAL TURN. SEE CD300-9 FOR ANCHOR ROD TIGHTENING METHOD.

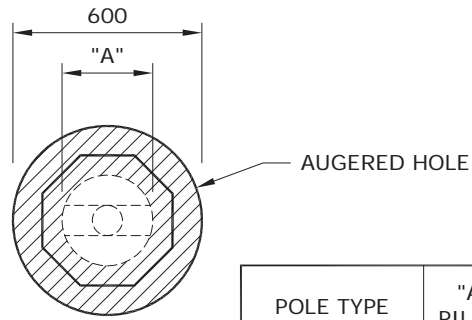
NOTES:

1. STUD SHOULD NOT TURN IN FERRULE WHILE TIGHTENING.
2. SQUARE HEAD STUD TO PROTRUDE APPROXIMATELY ONE NUT THICKNESS BEYOND RETAINING NUT.
3. WHERE THE REMOVAL OF THE STUDS FOR REPAIR OR REPLACEMENT IS REQUIRED, THE FERRULES AND THE STUDS SHALL BE CLEANED TO REMOVE THE OLD THREAD LOCKING COMPOUND. NEW THREAD LOCKING COMPOUND (LOCTITE 262) SHALL BE APPLIED TO THE INSERTION LENGTH OF THE STUDS PRIOR TO TIGHTENING TO FULL DEPTH.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY D.R. ORR 13-02-13				INSTALLATION OF ALUMINUM STREET LIGHT STANDARDS ON BRIDGES AND DIVIDER STRIPS	
DRAWN C.A.	CHECKED L.D.	DATE 13-01	CD 300-11		SHT 0002 OF 2
					REV 00

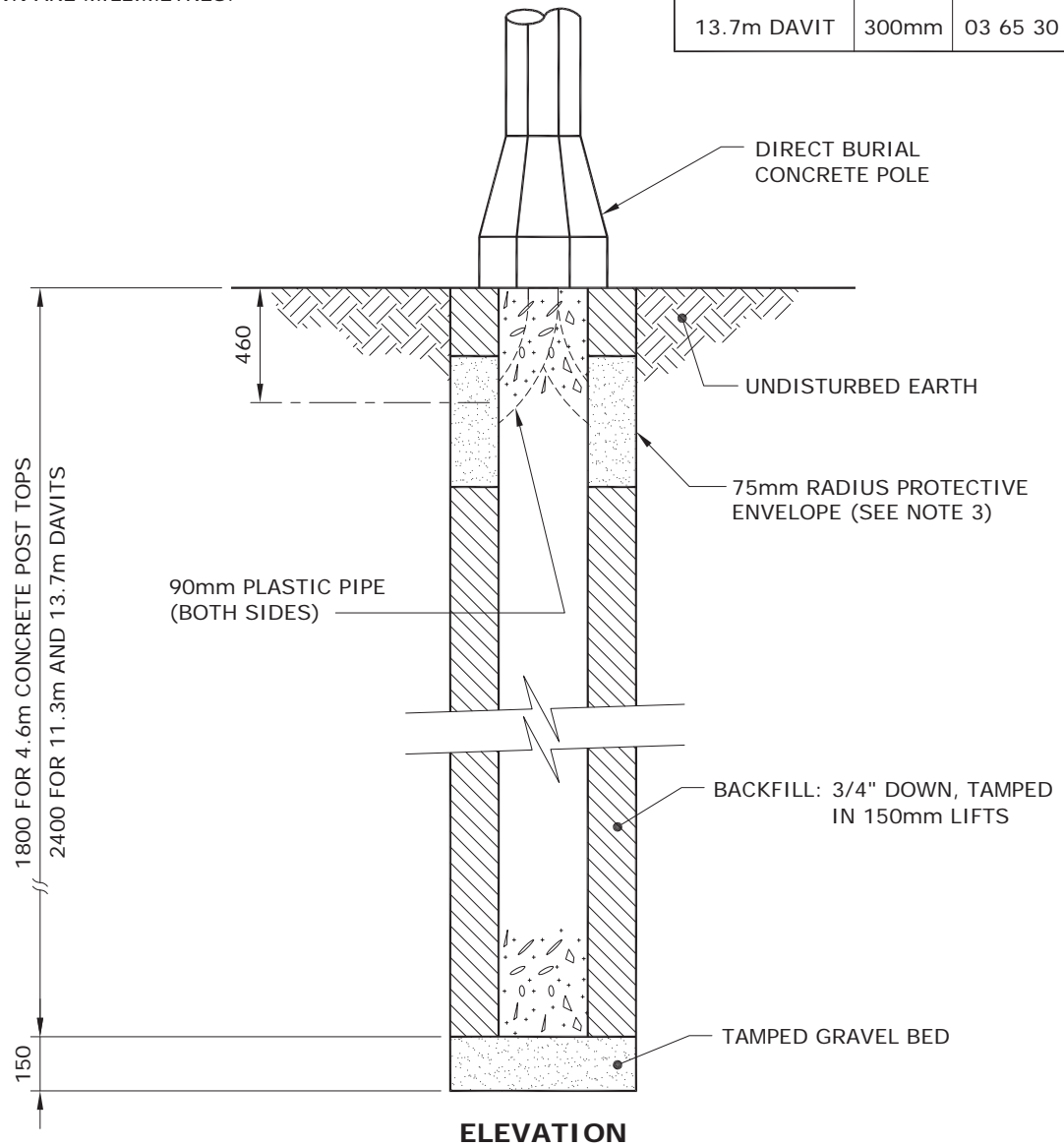
NOTES:

1. A MINIMUM HORIZONTAL SEPARATION OF 350mm MUST BE MAINTAINED TO ANY PAVED SURFACE.
2. ROUTE UNDERGROUND CABLES DIRECTLY INTO PLASTIC PIPE.
3. IN BACKFILL AREA, ENCASE UNDERGROUND CABLES IN A 75mm RADIUS ENVELOPE OF EXCAVATED MATERIAL OR SAND TO PROTECT CABLES. DO NOT BACKFILL WITH EXCAVATED MATERIAL OR SAND MORE THAN 1/6 OF THE WAY AROUND PILE.
4. DIMENSIONS SHOWN ARE MILLIMETRES.

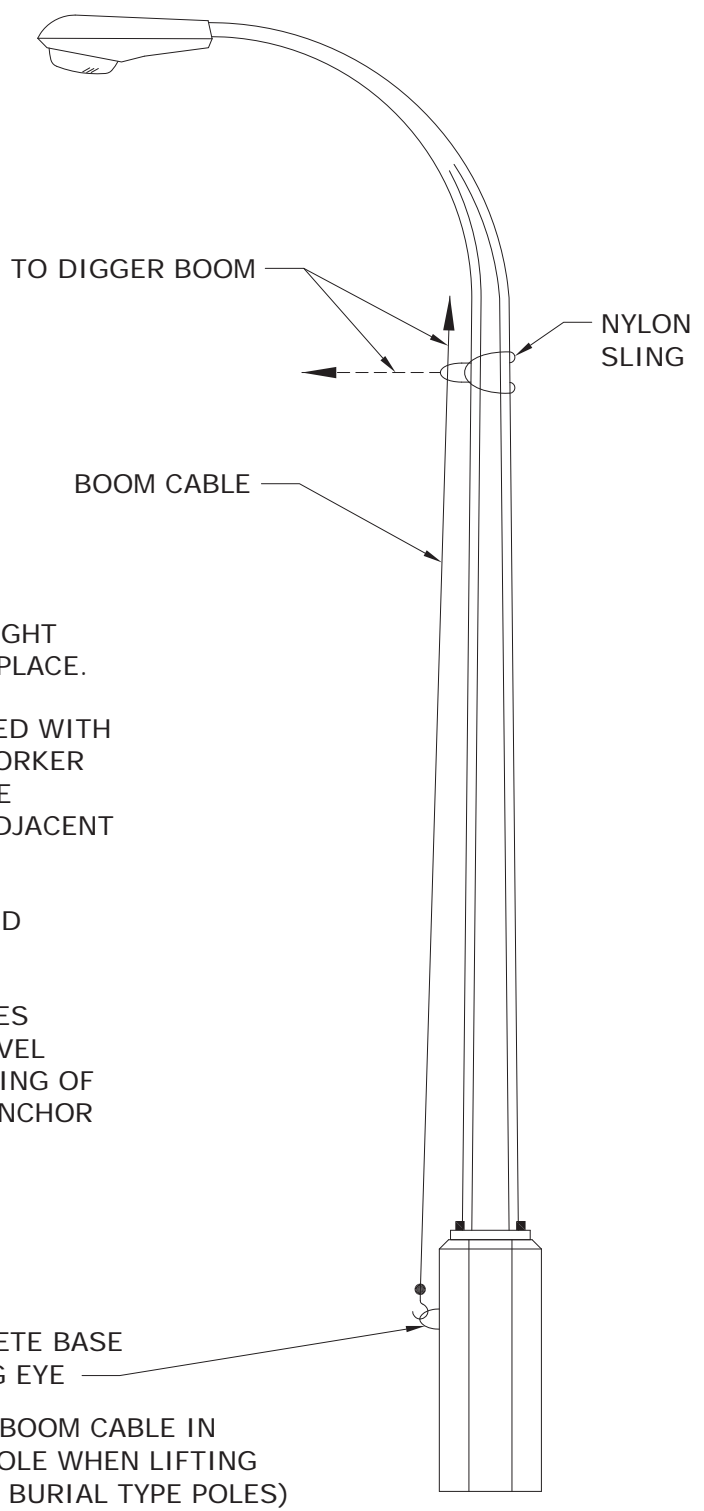


PLAN

POLE TYPE	"A" PILE Ø	STORES CODE
4.6m POST-TOP	250mm	03 67 39
11.3m DAVIT	300mm	03 65 29
13.7m DAVIT	300mm	03 65 30



APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY K.C. HAMILTON 10-08-13				INSTALLATION METHOD FOR DIRECT-BURIAL CONCRETE 4.6m POST TOP AND 11.3m AND 13.7m DAVIT POLES	
DRAWN C.A.	CHECKED L.D.	DATE 10-08	CD 300-14		
			SHT 0001 OF 1	REV 00	



NOTES:

1. DO NOT LIFT ASSEMBLED STREET LIGHT POLE WITH BREAKAWAY DEVICE IN PLACE.
2. STREET LIGHT POLE TO BE INSTALLED WITH HANDHOLE ORIENTED TO ALLOW WORKER WORKING IN THE HANDHOLE TO SEE ONCOMING TRAFFIC IN THE LANE ADJACENT TO THE POLE.
3. CD300-16 APPLIES TO PILE MOUNTED STANDARDS UP TO 10.7m.
4. FOR 13.7m, 16.8m, AND 19.8m POLES INSTALL PILE FIRST, THEN POLE. LEVEL POLE AND PERFORM FINAL TIGHTENING OF ANCHOR NUTS. SEE CD300-9 FOR ANCHOR ROD TIGHTENING METHOD.

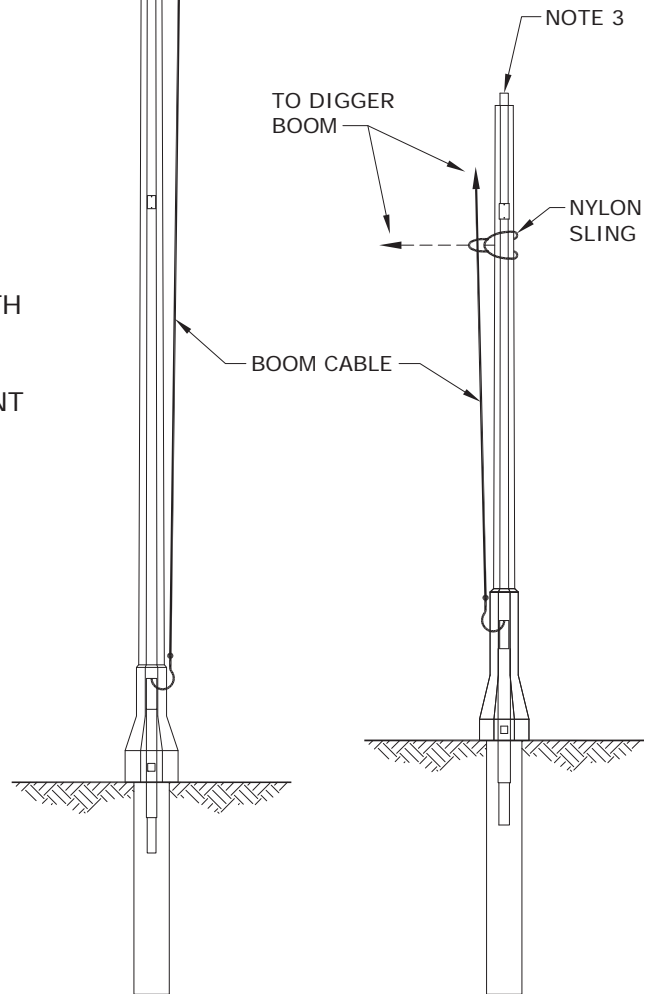
APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-28		13-01 1 REVISED NOTES & TITLE		RECOMMENDED METHOD OF LIFTING ASSEMBLED STREET LIGHT POLE AND BASE	
DRAWN W.B./CAD	CHECKED L.D./D.O.	DATE 88-07	SHT 0001 OF 1		REV 01

NYLON SLING
(SEE NOTE 1)

TO DIGGER BOOM

NOTES:

1. NYLON SLING MUST BE FASTENED ONTO CONCRETE SHAFT BELOW DAVIT ARM CONNECTION.
2. STREET LIGHT POLE TO BE INSTALLED WITH HANDHOLE ORIENTED TO ALLOW WORKER WORKING IN THE HANDHOLE TO SEE ONCOMING TRAFFIC IN THE LANE ADJACENT TO THE POLE.
3. DO NOT LIFT POLE WITH POST-TOP LUMINAIRE INSTALLED.



**CONCRETE
DAVIT POLE**

**CONCRETE
POST-TOP POLE**

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS					
ORIGINAL DRAWING SEALED BY D.R. ORR 13-02-12				RECOMMENDED METHOD OF LIFTING CONCRETE STREET LIGHT POLE					
DRAWN C.A.	CHECKED L.D.	DATE 13-01							
			CD 300-17		<table border="1"> <tr> <td>SHT</td> <td>REV</td> </tr> <tr> <td>0001 OF 1</td> <td>00</td> </tr> </table>	SHT	REV	0001 OF 1	00
SHT	REV								
0001 OF 1	00								

STREET LIGHT POLES *

POLE TYPE	MOUNTING HEIGHT m (ft)	MATERIAL	WEIGHT *, ** kg (±10%)
STRAIGHT SHAFT	10.7 (35)	ALUMINUM	91
DAVIT (DB)	11.3 (37)	CONCRETE	998
DAVIT (DB)	13.7 (45)	CONCRETE	1087
POST TOP (DB)	6.1 (20)	CONCRETE	544
DAVIT	7.7 (25)	STEEL	97
DAVIT	9.1 (30)	STEEL	125
DAVIT	10.7 (35)	STEEL	157
DAVIT	13.7 (45)	STEEL	219
DAVIT	16.8 (55)	STEEL	330
DAVIT	19.8 (65)	STEEL	428
POST TOP	4.7 (15)	STEEL	53
POST TOP	6.1 (20)	STEEL	68
STRAIGHT SHAFT	7.7 (25)	STEEL	90
STRAIGHT SHAFT	9.1 (30)	STEEL	113
STRAIGHT SHAFT	10.7 (35)	STEEL	172
STRAIGHT SHAFT	13.7 (45)	STEEL	220
STRAIGHT SHAFT	16.8 (55)	STEEL	388
STRAIGHT SHAFT	19.8 (65)	STEEL	557

* ALL POLES ARE BASE MOUNTED EXCEPT CONCRETE.

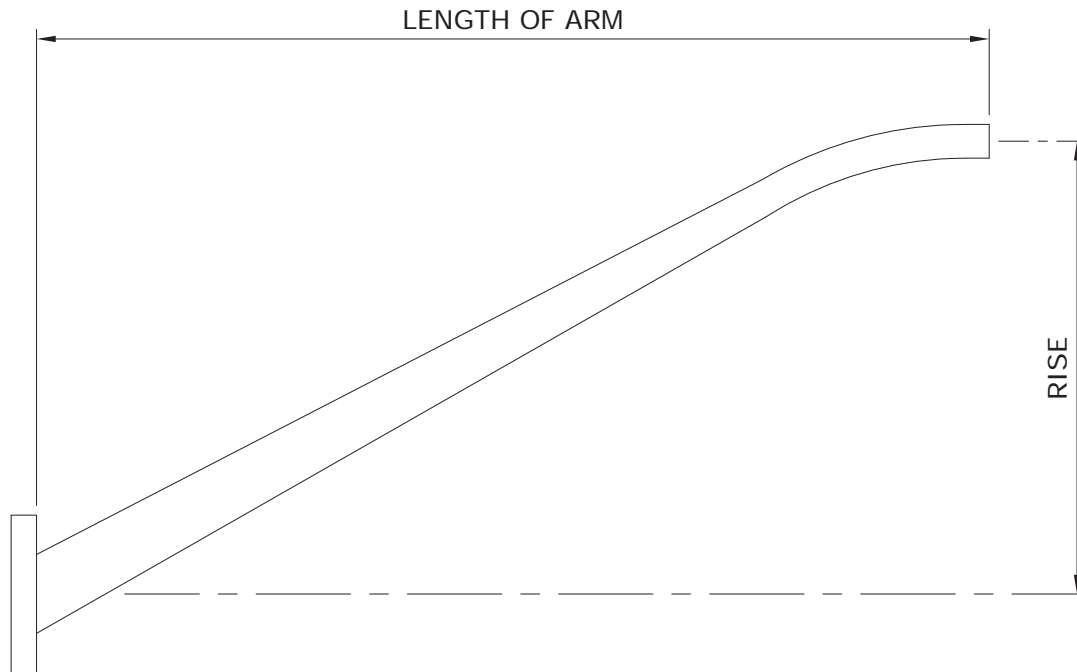
** WEIGHTS DO NOT INCLUDE ARMS OR LUMINAIRES.

*** WEIGHTS GATHERED FROM MANUFACTURER'S DRAWING.

BASES

TYPE	WEIGHT kg (±10%)
179	605
197	605
206	605
243	970
418	2151

APPROVED	REVISIONS	MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY D.R. ORR 16-01-14		RIGGING WEIGHTS OF STREET LIGHT COMPONENTS	
	18-04 1	UPDATED TABLES	
DRAWN C.A.	CHECKED J.R.	DATE 16-01	CD 300-18
			SHT REV 0001 OF 1 01



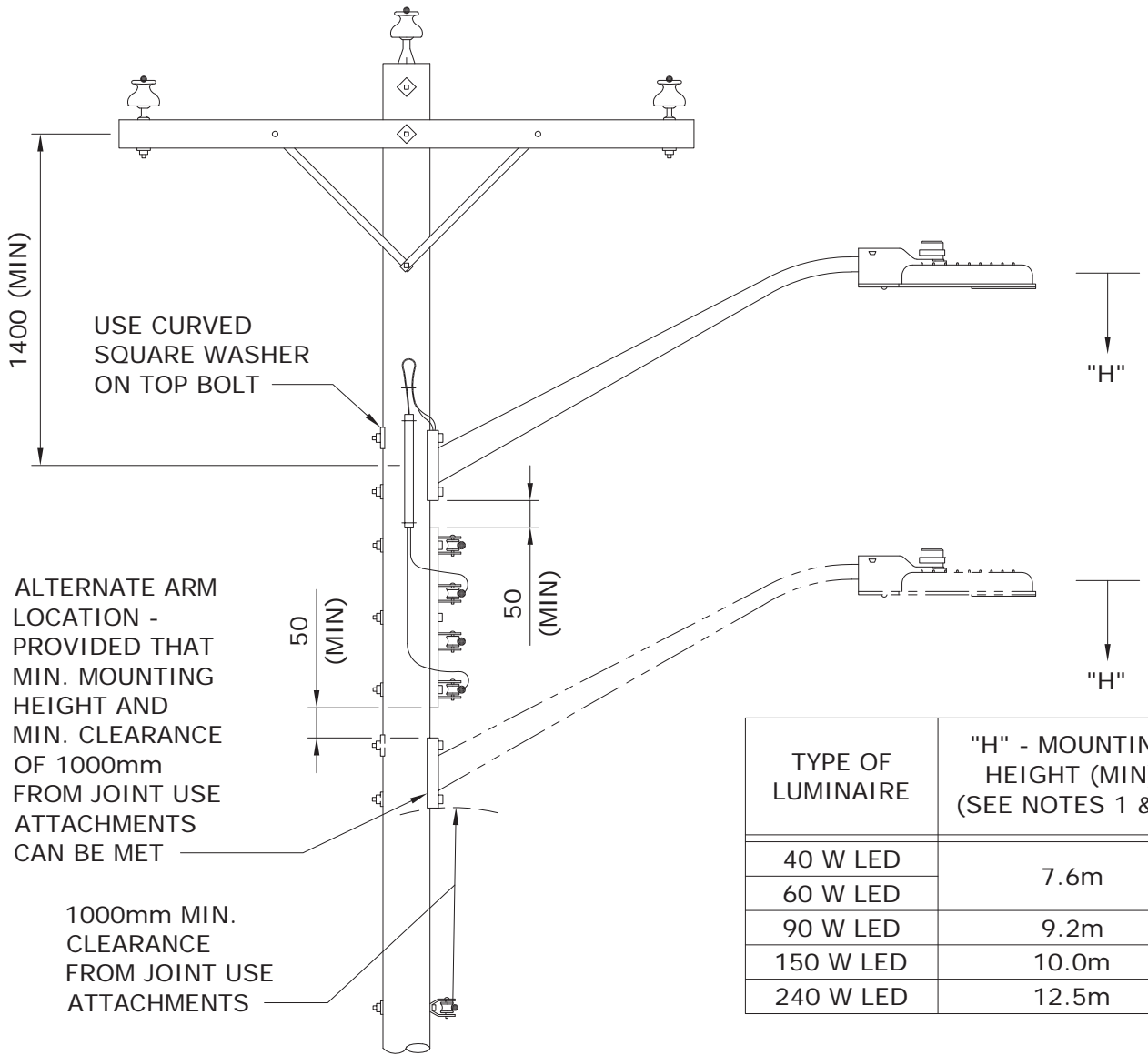
STANDARD STREET LIGHT ARMS				
MATERIAL	LENGTH	RISE	MAXIMUM ALLOWABLE LUMINAIRE WEIGHT	CIIC #
ALUMINUM	3000 mm	1200 mm	25 kg	03 22 10
ALUMINUM	1800 mm	900 mm	25 kg	03 22 06
STEEL	1800 mm	900 mm	30 kg	03 22 08
ALUMINUM	700 mm	300 mm	25 kg	03 25 02

NOTES:

1. ALUMINUM ARM MAY BE MOUNTED ON WOOD OR METAL POLE, EXCEPT **ALUMINUM ARMS SHALL NOT BE MOUNTED ON METAL POLE EXCEEDING 13.7m (45') IN HEIGHT.** ON 16.8m (55') AND 19.8m (65') STEEL POLES USE 1800mm STEEL BRACKET ARM ONLY.
2. 1000W HPS LUMINAIRES TO BE MOUNTED ON STEEL ARMS ONLY.
3. MOUNTING HEIGHT TO BE TAKEN FROM TRAVELLED PORTION OF ROAD.
4. BRIDGE LIGHTING TO USE STEEL BRACKET ARM ONLY.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

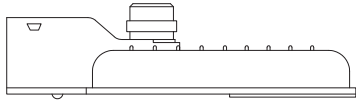
APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 17-11-23	17-11	5	REVISED NOTE 1, RESEALED	STANDARD STREET LIGHT BRACKET ARMS	
	12-06	4	ADDED MOUNTING 1000W HPS NOTE		
	11-05	3	REVISED DRAWING AND NOTES		
DRAWN C.A.	CHECKED L.D.	DATE 17-11	CD 300-20		SHT 0001 OF 1
					REV 05



NOTES:

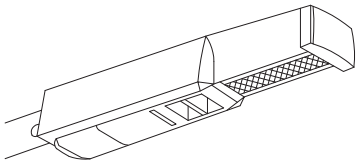
1. SINCE HIGHER LUMINAIRE MOUNTING HEIGHTS USUALLY RESULT IN IMPROVED LIGHT LEVELS; CONSIDERATION SHOULD BE GIVEN TO UTILIZING THE HIGHEST MOUNTING HEIGHT POSSIBLE. CONSIDERATION SHOULD ALSO BE GIVEN TO POTENTIAL FOILAGE AND LIGHT TRESPASS ISSUES.
2. MOUNTING HEIGHT TO BE TAKEN FROM TRAVELLED PORTION OF ROAD.
3. USE 2/C #12 PVC TO WIRE LUMINAIRE AND COVER CABLE WITH GROUND WIRE MOULDING ON POLE.
4. IF STREET LIGHT SERVICE WIRES ARE DEAD-ENDED, BLOCK POLE.
5. FOR STANDARD STREET LIGHT BRACKET ARMS, SEE CD300-20.
6. DIMENSIONS SHOWN ARE MILLIMETRES UNLESS NOTED OTHERWISE.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY D.R. ORR 11-08-09		17-11 1 REPLACED HPS LUMINAIRE WITH LED, & REVISED TABLE		<p align="center">MINIMUM VERTICAL CLEARANCE BETWEEN LUMINAIRE ARM AND OTHER PLANT</p>	
DRAWN C.A.	CHECKED J.R.	DATE 11-08			



LED ROADWAY LUMINAIRE

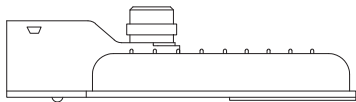
LED ROADWAY LUMINAIRES			
LUMINAIRE WATTAGE (NOMINAL)	REPLACES (HPS)	CIIC	
		GREY	BLACK
40 W LED	70 W HPS	05 15 44	05 15 71
60 W LED	100 W HPS	05 15 45	05 15 73
90 W LED	150 W HPS	05 15 47	05 15 74
150 W LED	250 W HPS	05 15 48	05 15 75
240 W LED	400 W HPS	05 15 49	05 15 76



LED LANE LUMINAIRE

LED LANE LUMINAIRES		
LUMINAIRE WATTAGE (NOMINAL)	REPLACES (HPS)	CIIC
50 W LED	70 W HPS	05 15 50

LED LANE LUMINAIRES ARE AVAILABLE WITH GREY COATING ONLY.



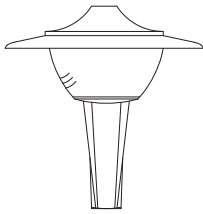
LED DUSK-TO-DAWN LUMINAIRE

LED DUSK-TO-DAWN (AREA) LUMINAIRES		
LUMINAIRE WATTAGE (NOMINAL)	REPLACES (HPS)	CIIC
60 W LED	100 W HPS	05 15 51
90 W LED	150 W HPS	05 15 52

LED DUSK-TO-DAWN LUMINAIRES ARE AVAILABLE WITH GREY COATING ONLY.

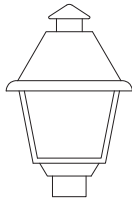
- ALL LED LUMINAIRES AUTOMATICALLY ADJUST FOR EITHER A 120V OR 240V SUPPLY.
- ALL LED LUMINAIRES COME WITH A PHOTOCCELL RECEPTACLE.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY D.R. ORR 15-02-11		16-12 1 REVISED NOTES		STANDARD LED LUMINAIRES	
		DATE 15-02		CD 300-24	
				SHT 0001 OF 2	
				REV 01	



**LED POST TOP LUMINAIRE
- CONTEMPORARY**

LED POST TOP LUMINAIRES - CONTEMPORARY		
LUMINAIRE WATTAGE (NOMINAL)	CIIC	PHOTOMETRIC DISTRIBUTION
60 W LED	05 17 30	ASYMMETRICAL



**LED POST TOP LUMINAIRE
- COLONIAL**

LED POST TOP LUMINAIRES - COLONIAL		
LUMINAIRE WATTAGE (NOMINAL)	CIIC	PHOTOMETRIC DISTRIBUTION
60 W LED	05 17 28	ASYMMETRICAL
60 W LED	05 17 29	SYMMETRICAL



**LED POST TOP LUMINAIRE
- ACORN**

LED POST TOP LUMINAIRES - ACORN		
LUMINAIRE WATTAGE (NOMINAL)	CIIC	PHOTOMETRIC DISTRIBUTION
60 W LED	05 17 26	ASYMMETRICAL
60 W LED	05 17 27	SYMMETRICAL

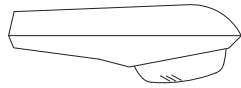


**LED POST TOP LUMINAIRE
- OCTAGONAL LANTERN**

LED POST TOP LUMINAIRES - ACORN		
LUMINAIRE WATTAGE (NOMINAL)	CIIC	PHOTOMETRIC DISTRIBUTION
60 W LED	05 17 32	ASYMMETRICAL
60 W LED	05 17 33	SYMMETRICAL

- LED CONTEMPORARY LUMINAIRES ARE AVAILABLE WITH GREY COATING ONLY. ALL OTHER DECORATIVE LUMINAIRES ARE BLACK.
- ALL LED LUMINAIRES AUTOMATICALLY ADJUST FOR EITHER A 120V OR 240V SUPPLY.
- ALL LED LUMINAIRES COME WITH A PHOTOCCELL RECEPTACLE.

APPROVED	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY D.R. ORR 15-02-11			STANDARD LED LUMINAIRES	
	16-12	1 REVISED NOTES		
DRAWN C.A.	CHECKED L.D./D.O.	DATE 15-02	CD 300-24	

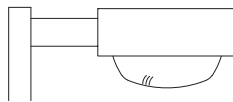


ROADWAY LUMINAIRE

ROADWAY LUMINAIRES - UNPAINTED				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
				70
100	H.P.S.	YES	120/240	46 72 18
150	H.P.S.	YES	120/240	46 72 19
250	H.P.S.	YES	120/240	46 72 21
400	H.P.S.	NO	* 120/240	46 72 22
1000	H.P.S.	NO	* 120/240	46 72 30

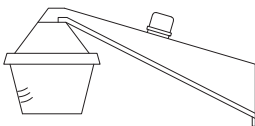
ROADWAY LUMINAIRES - PAINTED BLACK				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
				100
150	H.P.S.	YES	120/240	03 46 76
250	H.P.S.	YES	120/240	03 46 77
400	H.P.S.	NO	* 120/240	03 47 03

* 400 WATT AND 1000 WATT H.P.S. ROADWAY LUMINAIRE IS FACTORY CONNECTED FOR 240 VOLT OPERATION; HOWEVER, RECYCLED LUMINAIRES MAY HAVE BEEN RECONNECTED FOR 120 VOLT OPERATION.
WHEN INSTALLING ANY LUMINAIRE ON A 240 VOLT CIRCUIT, CHECK CONNECTIONS TO ENSURE THAT LUMINAIRE BALLAST IS PROPERLY WIRED FOR 240 VOLT OPERATION.



SQUARE PACK LUMINAIRE

SQUARE PACK LUMINAIRES				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
100	H.P.S.	YES	120/240	46 73 10
150	H.P.S.	YES	120/240	46 73 15
250	H.P.S.	YES	120/240	46 73 25



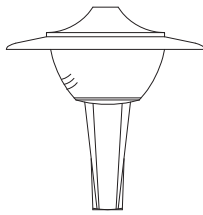
DUSK TO DAWN LUMINAIRE

DUSK TO DAWN (SENTINAL) LUMINAIRES				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
100	H.P.S.	YES	120	46 70 10
150	H.P.S.	YES	120	46 70 25

NOTE: ALL HPS LUMINAIRES EXCEPT 1000W HPS ARE TO BE SUPERCEDED BY LED. SEE CD300-24 FOR DETAILS.

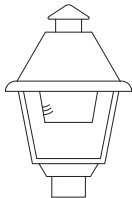
SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

APPROVED		REVISIONS			MANITOBA HYDRO DISTRIBUTION STANDARDS		
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 17-11-23	17-11	7	REVISED NOTE, RESEALED		STANDARD HPS LUMINAIRES		
	15-02	6	REVISED TITLE & ADDED LED NOTE				
	13-01	5	ADDED LUMINAIRES AND SHEET 2				
DRAWN C.A.	CHECKED L.D.	DATE 17-10		CD 300-25		SHT 0001 OF 2	REV 07



**POST TOP LUMINAIRE
- CONTEMPORARY**

POST TOP LUMINAIRES - CONTEMPORARY				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
100	H.P.S.	YES	120	46 72 14



**POST TOP LUMINAIRE
- COLONIAL**

POST TOP LUMINAIRES - COLONIAL				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
100	H.P.S.	YES	120	46 72 15



**POST TOP LUMINAIRE
- ACORN**

POST TOP LUMINAIRES - ACORN				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
100	H.P.S.	YES	120/240	03 72 63



**POST TOP LUMINAIRE
- OCTAGONAL**

POST TOP LUMINAIRES - OCTAGONAL				
WATTAGE	LAMP TYPE	P.E. CELL RECEPTACLE	RATED VOLTAGE	CIIC #
100	H.P.S.	YES	120/240	03 67 33

NOTE: ALL HPS LUMINAIRES ARE TO BE SUPERCEDED BY LED. SEE CD300-24 FOR DETAILS.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS			
ORIGINAL DRAWING SEALED BY D.R. ORR 13-02-12		15-02 1 REVISED TITLE & ADDED LED NOTE		STANDARD HPS LUMINAIRES			
DRAWN C.A.	CHECKED D.O.	DATE 13-01		CD 300-25		SHT 0002 OF 2	REV 01

SECTION 305
PLOWING AND TRENCHING

TITLE OF STANDARD DRAWING	DRAWING NUMBER	SHEET NO.	REV DATE	REV NO.
PLOWING AND TRENCHING DETAILS FOR UNDERGROUND STREET LIGHT CIRCUITS	CD305-1	1 2	96-01 96-01	3 2

TRENCH AND PLOW-IN LOCATION

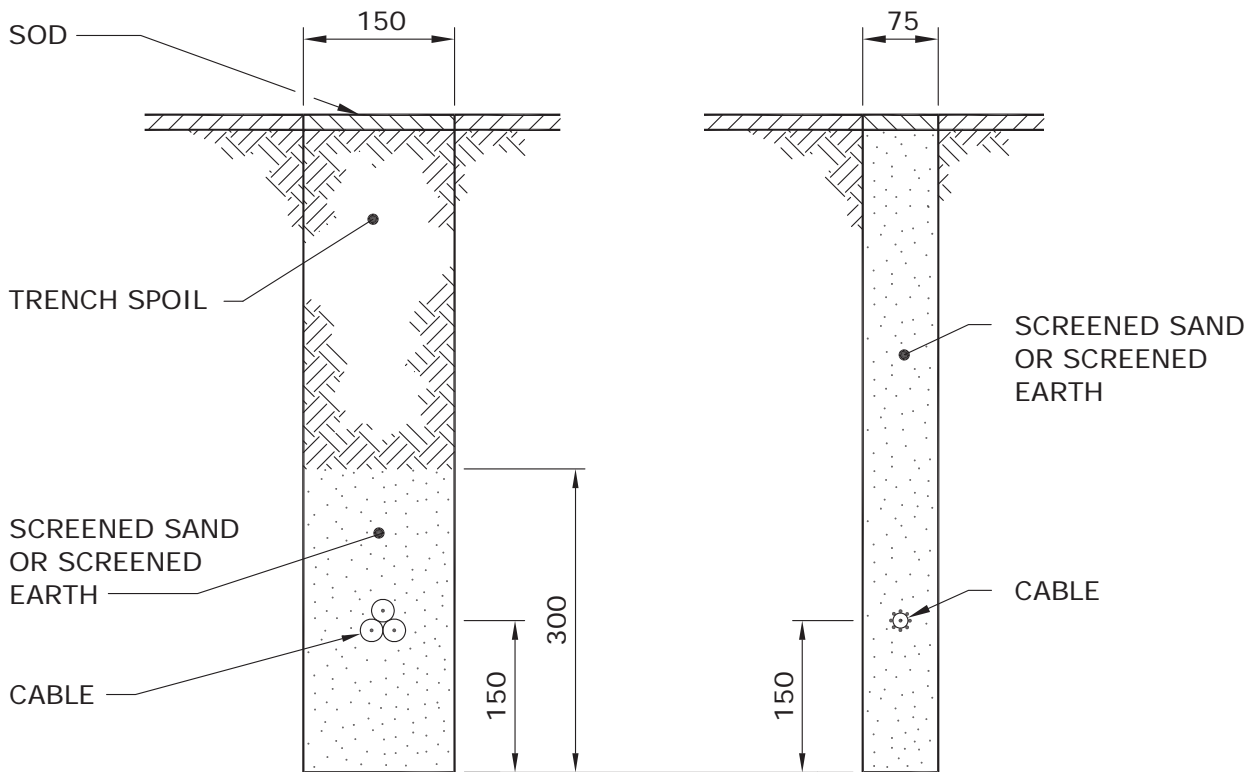
GENERALLY, THE TRENCH LOCATION WILL DICTATE THE LOCATION OF THE LIGHT STANDARDS. CONTACT SHALL BE MADE WITH THE GOVERNING MUNICIPAL AUTHORITY TO DETERMINE THEIR SET BACK REQUIREMENTS. CONTACT SHALL ALSO BE MADE WITH THE CITY OF WINNIPEG UNDERGROUND STRUCTURES OR THE INDIVIDUAL UTILITIES OUTSIDE WINNIPEG TO DETERMINE THE EXISTENCE AND EXACT LOCATION OF OTHER UTILITIES PLANT. THIS INFORMATION WILL BE INCLUDED ON THE WORK ORDER PLANS.

DEPTH OF BURIAL

THE CABLE SHALL BE BURIED BELOW THE SURFACE OF THE EARTH A MINIMUM OF 600mm IN SODDED AREAS AND 1000mm IN ROADWAYS.

TRENCH DETAILS

TYPICAL TRENCH DETAILS FOR SODDED AREAS ARE SHOWN BELOW, FOR TRENCH DETAILS UNDER ROADWAYS REFER TO DRAWING CD205-14. SEE NOTES ON SHEET 2 of 2.



NOTE: DIMENSIONS SHOWN ARE MILLIMETRES.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-28	96-01	3	ROADWAY DEPTH ADDED	PLOWING AND TRENCHING DETAILS FOR UNDERGROUND STREET LIGHT CIRCUITS	
	95-09	2	BURIAL DEPTH NOTE ADDED		
	94-04	1	COMBINED WITH DWG. CD305-2		
DRAWN W.B./CAD	CHECKED	DATE 88-07	CD 305-1		SHT 0001 OF 2
					REV 03

NOTES:

1. FOR TYPICAL TRENCH DETAIL INSTALLATION UNDER ROADWAYS, REFER TO DRAWING CD205-14.
2. THESE ARE ALTERNATIVE TRENCH WIDTHS. A 75mm TRENCH IS PREFERABLE WHERE THE GROUND IS FIRM AND A CLEAN CUT CAN BE MADE. A 150mm TRENCH IS PREFERABLE WHERE THE GROUND IS TOO LOOSE TO MAINTAIN A FIRM TRENCH WALL.
3. THE CABLES INDICATED IN THE VIEWS CAN BE USED IN EITHER TRENCH.
4. THE 75mm TRENCH SHALL BE BACKFILLED WITH SCREENED SAND OR SCREENED EARTH.
5. THE 150mm TRENCH SHALL BE BACKFILLED WITH THE TRENCH SPOIL IF IT IS FREE FROM ROCKS OR DEBRIS. IF THE TRENCH SPOIL CONTAINS ROCKS OR DEBRIS, SCREENED SAND OR SCREENED EARTH SHALL BE INSTALLED AS SHOWN.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS		
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-28				PLOWING AND TRENCHING DETAILS FOR UNDERGROUND STREET LIGHT CIRCUITS		
		96-01	2			NOTES REVISED
		94-04	1			COMBINED WITH DWG. CD305-2
DRAWN W.B./CAD	CHECKED	DATE 88-07	CD 305-1		SHT 0002 OF 2	
					REV 02	

**SECTION 310
STREET LIGHT CIRCUIT
INSTALLATION AND FUSING**

TITLE OF STANDARD DRAWING	DRAWING NUMBER	SHEET NO.	REV DATE	REV NO.
INSTALLATION OF STREET LIGHT CABLES	CD310-1	1	94-04	1
		2	94-04	1
RAYCHEM GELCAP SPLICE	CD310-3	1	17-11	0
		2	17-11	0
		3	17-11	0
CONNECTION DETAIL IN STREET LIGHT STANDARD	CD310-4	1	18-04	2
		2	18-04	1
		3	18-04	0
		4	18-04	0
STREET LIGHT CIRCUIT PROTECTED BY A 60A FUSE AT TRANSFORMER	CD310-8	1	17-11	2
		2	17-11	1
		3	17-11	0
		4	17-11	0
STREET LIGHT CIRCUIT PROTECTED BY 30A FUSE IN STREET LIGHT STANDARD	CD310-9	1	17-11	2
		2	17-11	1
		3	17-11	0
		4	17-11	0
INDIVIDUAL LUMINAIRE PROTECTED BY 15A FUSE IN STREET LIGHT STANDARD	CD310-10	1	18-04	3
		2	18-04	1
		3	18-04	0
		4	18-04	0

1. **GENERAL**

PLOWED-IN CABLES SHALL BE PULLED TO 1m ABOVE GRADE AT EACH STREET LIGHT STANDARD LOCATION. THE CABLE DEPTH SHALL BE MAINTAINED AT THE 600mm PLOW DEPTH AS CLOSE AS POSSIBLE TO THE STREET LIGHT STANDARD LOCATION BEFORE RAISING THE PLOW. THE PLOW SHALL BE RETURNED TO THE 600mm PLOW DEPTH AS CLOSE AS POSSIBLE TO THE CENTRE LINE OF THE STREET LIGHT STANDARD LOCATION.

CABLES LAID IN TRENCHES SHALL HAVE SUFFICIENT SLACK TO ALLOW FOR FUTURE MOVEMENT OR SETTLING OF THE TRENCH FLOOR. CABLES SHALL PROJECT 1m ABOVE GRADE AT EACH LOCATION.

2. **USE OF POLYETHYLENE PIPE**

2.1 WHERE CABLES ARE INSTALLED UNDER EXISTING PAVEMENT, POLYETHYLENE PIPE SHALL BE INSTALLED TO PROTECT THE CABLES IF THE HOLE IS AUGERED OR PUSHED THROUGH MATERIAL CONTAINING ROCKS, STONES, OR DEBRIS.

2.2 AT THE JUNCTION OF THE MAIN TRENCH AND THE STREET OR DRIVEWAY CROSSING, THE BOTTOM OF THE TRENCH SHALL BE BACKFILLED AND TAMPED TO THE LEVEL OF THE POLYETHYLENE PIPES TO PREVENT SHARP BENDS IN THE CABLE AND TRAPPING OF WATER IN THE PIPE.

3. **SPLICES - UNDERGROUND CABLES**

UNDERGROUND STREET LIGHT CABLES (i.e. #4 ALUMINUM CONCENTRIC NEUTRAL CABLE AND 1/0 TRIPLEXED CABLE) ARE TO BE SPLICED USING AN APPROPRIATE COMPRESSION SLEEVE (SEE DRAWING CD210-21) AND THE SPLICE IS TO BE INSULATED USING ONE OF THE FOLLOWING METHODS:

- 1) RAYCHEM RAYVOLVE SPLICE
- 2) PRE-STRETCHED INSULATING TUBING SPLICE
- 3) HEAT SHRINK INSULATING TUBING SPLICE
- 4) TAPED SPLICE

FOR COMPLETE INSTRUCTIONS REGARDING THE ABOVE SPLICES, REFER TO DRAWING CD215-12.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS					
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-28		94-04 1		DWG. REFERENCE CHANGED		INSTALLATION OF STREET LIGHT CABLES			
								DRAWN W.B./CAD	
				CD 310-1		SHT 0001 OF 2		REV 01	

4. **CABLE END CAPS**

STREET LIGHT CABLES WHICH ARE NOT GOING TO BE SPLICED OR TERMINATED IMMEDIATELY FOLLOWING INSTALLATION SHALL BE CUT SQUARE AND SEALED WITH AN END CAP. REFER TO DRAWING CD215-21 FOR DETAILS.

5. **GROUNDING OF STREET LIGHT STANDARDS**

5.1 ALL STREET LIGHT STANDARDS SHALL BE GROUNDED BY CONNECTING THE NEUTRAL TO THE GROUND STUD INSIDE THE STANDARD. REFER TO DRAWING CD310-4 FOR DETAILS.

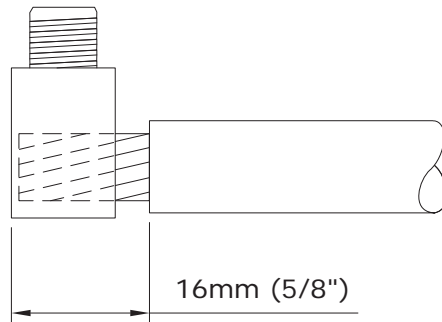
5.2 A GROUND ROD SHALL BE INSTALLED AND CONNECTED TO THE GROUND STUD AT THE LAST STANDARD ON THE STREET LIGHT CIRCUIT.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY E.H. WIEBE 89-04-28		94-04 1 DWG. REFERENCE CHANGED		INSTALLATION OF STREET LIGHT CABLES	
DRAWN W.B./CAD	CHECKED W.C.	DATE 88-07	CD 310-1		SHT 0002 OF 2
				REV 01	

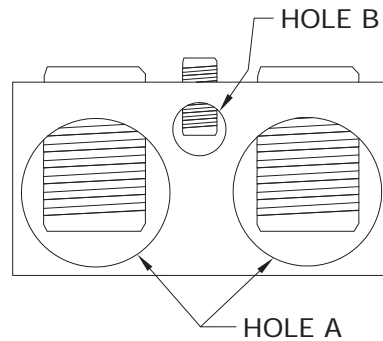
RAYCHEM GELCAP CIIC# 04-29-36

GENERAL INSTRUCTIONS:

1. REMOVE 16mm (5/8") OF INSULATION AND CLEAN EXPOSED ENDS.



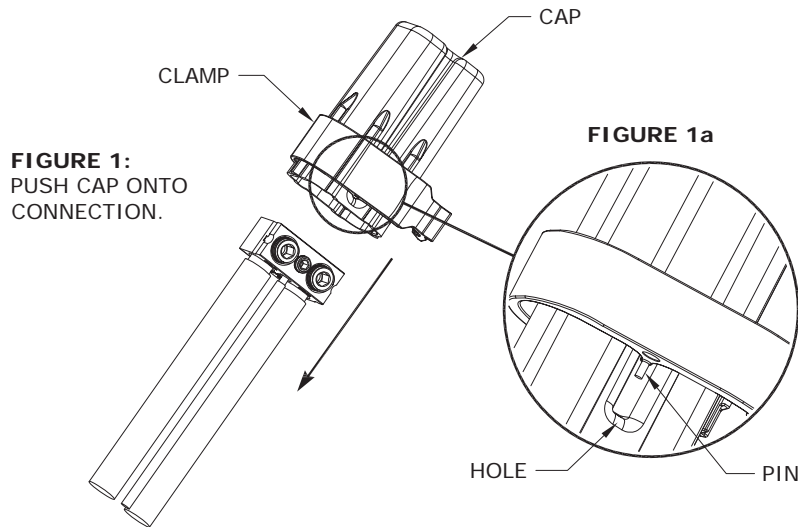
2. INSERT CONDUCTORS INTO CORRECT HOLES AND TORQUE AS SHOWN:



HOLE A		HOLE B	
WIRE RANGE	RECOMMENDED TORQUE VALUES	WIRE RANGE	RECOMMENDED TORQUE VALUES
#14 - 2/0 • STREET LIGHT CIRCUIT CABLES • GROUNDING CONNECTIONS • CONCENTRIC NEUTRAL • FUSE HOLDER WIRE	14 - 20 N-m (120 - 180 in-lbs)	#14 - #6 • LAMP LEADS	14 - 17 N-m (120 - 150 in-lbs)

APPROVED ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
	RAYCHEM GELCAP SPLICE			
DRAWN C.A.	CHECKED L.D.	DATE 17-11	CD 310-3	
			SHT 0001 OF 3	REV 00

- INSTALL CLAMP ON CAP. ENSURE THE TWO PINS ON THE BOTTOM EDGE OF THE CLAMP MATE WITH THE HOLES OF THE CAP AS SHOWN IN FIGURE 1a BELOW.



- INSTALL CAP BY HOLDING ALL WIRES AND PUSHING THE CAP OVER THE CONNECTION ASSEMBLY UNTIL IT GOES NO FURTHER AS SHOWN IN FIGURE 1 ABOVE.
- SNAP CLAMP CLOSED. IF NECESSARY, USE PLIERS TO SNAP CLAMP CLOSED AS SHOWN IN FIGURE 2 BELOW.

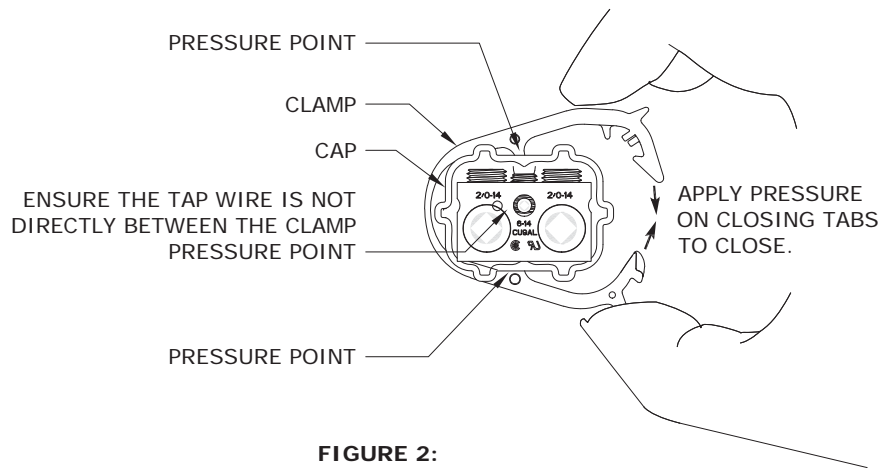
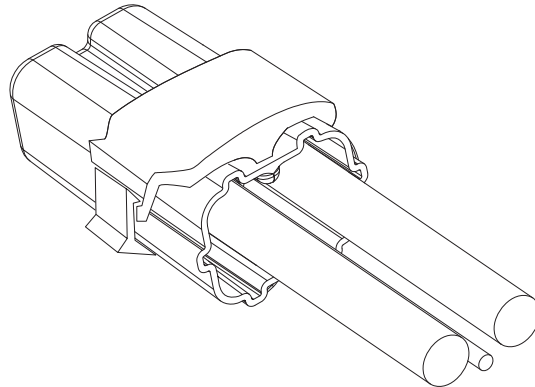


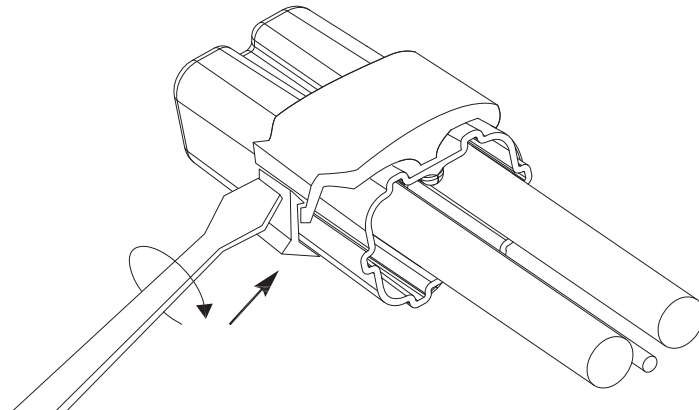
FIGURE 2:
CLAMP PRESSURE POINTS SHOULD FIT INTO OPPOSING GROOVES OF CAP AND APPLY PRESSURE BETWEEN CABLES. SNAP CLAMP CLOSED.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05				RAYCHEM GELCAP SPLICE	
DRAWN C.A.	CHECKED L.D.	DATE 17-11	CD 310-3		
					SHT 0002 OF 3

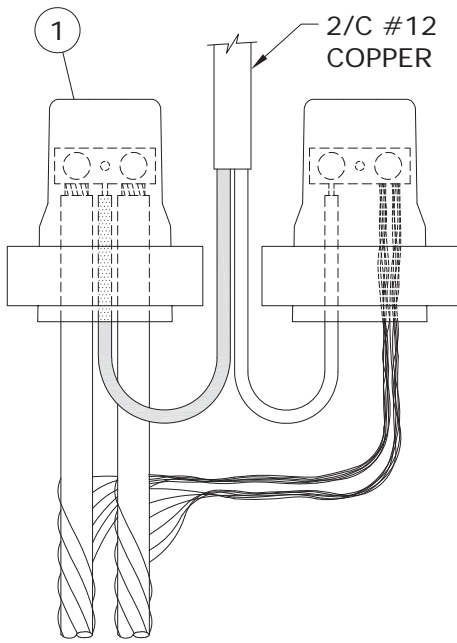
6. INSPECT THE INSTALLATION BY GENTLY PULLING ON THE CAP ENSURING IT IS LOCKED IN PLACE AND COVERS CONNECTOR AND BARE CONDUCTOR. THERE SHOULD BE NO EXPOSED METAL. ENSURE TAP CABLE IS NOT CAUGHT BETWEEN PRESSURE POINTS OF CLAMP. INSTALLATION IS COMPLETE.



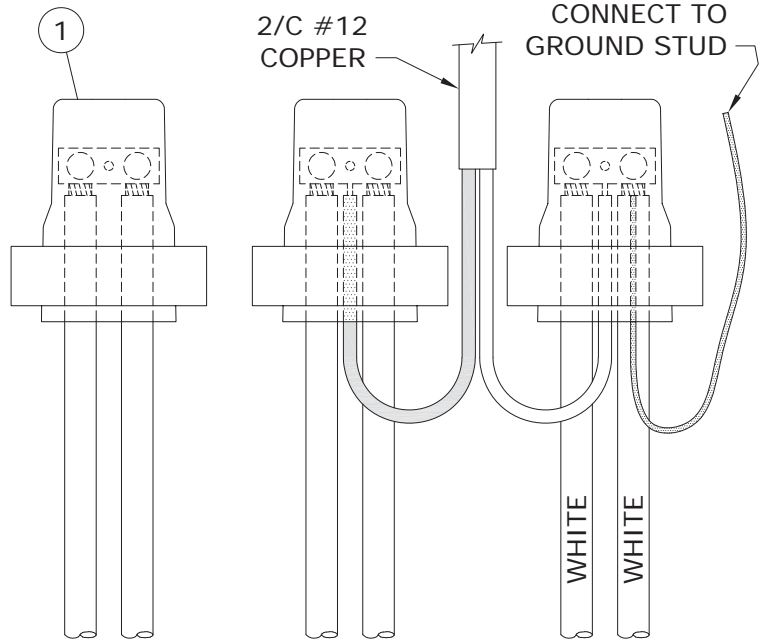
7. TO REMOVE, INSERT SCREWDRIVER BETWEEN THE CLOSING TABS AND TWIST TO OPEN THE CLAMP. REMOVE CAP SLOWLY FROM CONNECTION ALLOWING GEL TO REMAIN IN CAP.



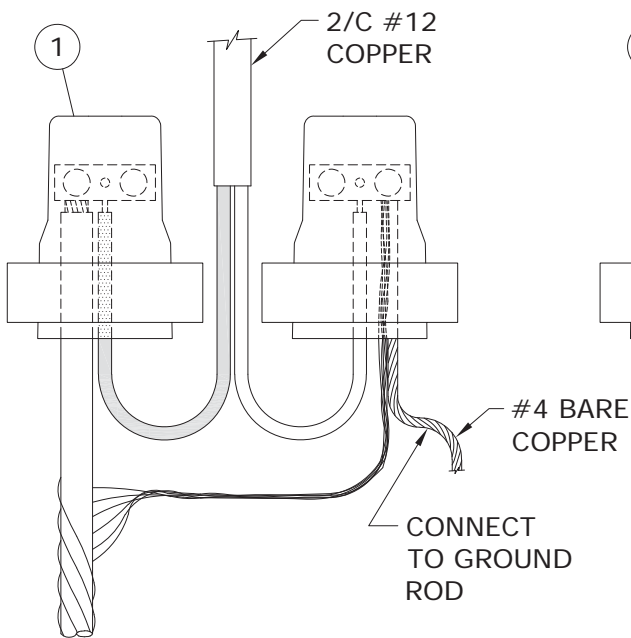
APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05				RAYCHEM GELCAP SPLICE	
DRAWN C.A.	CHECKED L.D.	DATE 17-11	CD 310-3		
					SHT 0003 OF 3



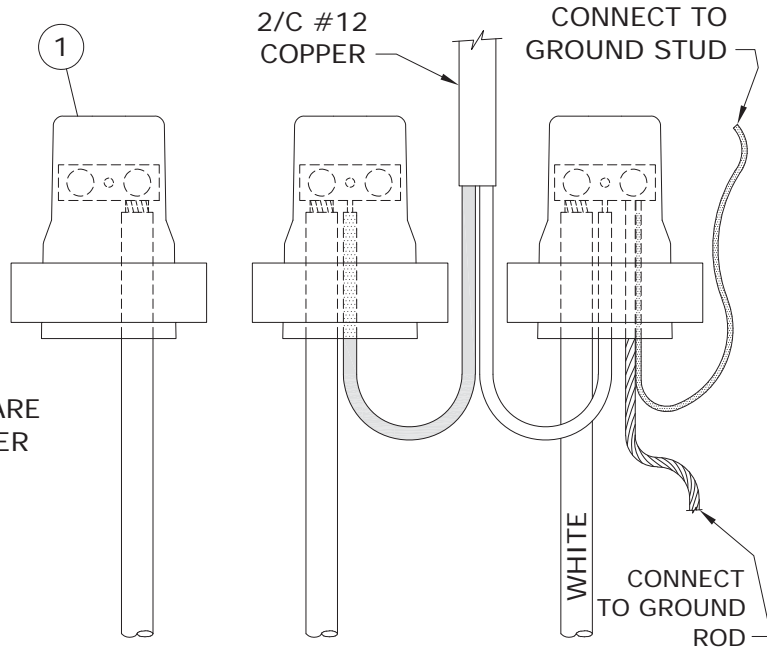
**No. 4 ALUMINUM C/N CABLE
(TYPICAL FEED THROUGH)**



**1/0 ALUMINUM TRIPLEX CABLE
(TYPICAL FEED THROUGH)**



**No. 4 ALUMINUM C/N CABLE
(TYPICAL END OF CIRCUIT)**



**1/0 ALUMINUM TRIPLEX CABLE
(TYPICAL END OF CABLE)**

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11	18-04	2	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT1 TO SHT3, ADDED NEW GELCAP, DWG, REVISED TITLE, RESEALED	CONNECTION DETAIL IN STREET LIGHT STANDARD	
	94-04	1	CONN. REVISED DUE TO INSUL. NEUTRAL		
DRAWN C.A.	CHECKED L.D.	DATE 18-04		CD 310-4	

BILL OF MATERIAL			
ITEM No.	DESCRIPTION	STORES CODE No.	
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX
1	GEL CAP	04-29-36 (2 REQUIRED)	04-29-36 (3 REQUIRED)

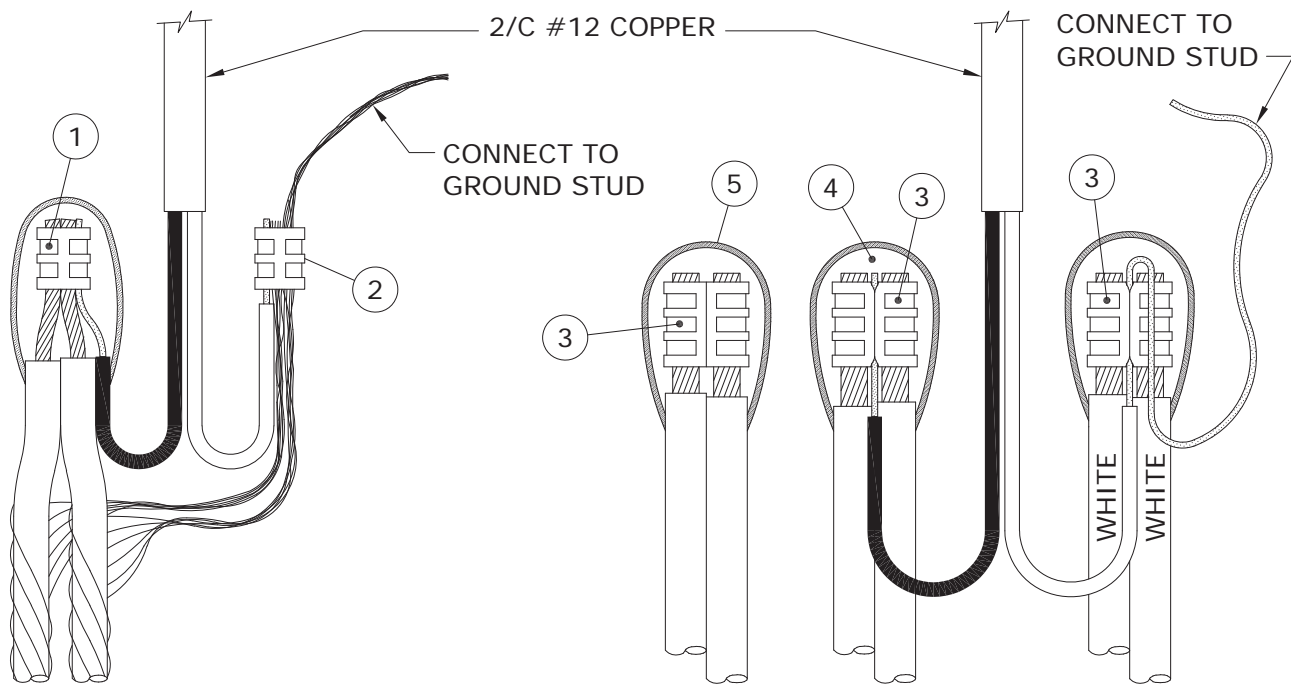
NOTES:

- 1. LEAVE SUFFICIENT SLACK ON CONDUCTORS TO ALLOW REMOVAL FROM HANDHOLE FOR MAINTENANCE.**
2. REFER TO DRAWING CD310-3 FOR GEL CAP INSTALLATION INSTRUCTIONS.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 94-07-03

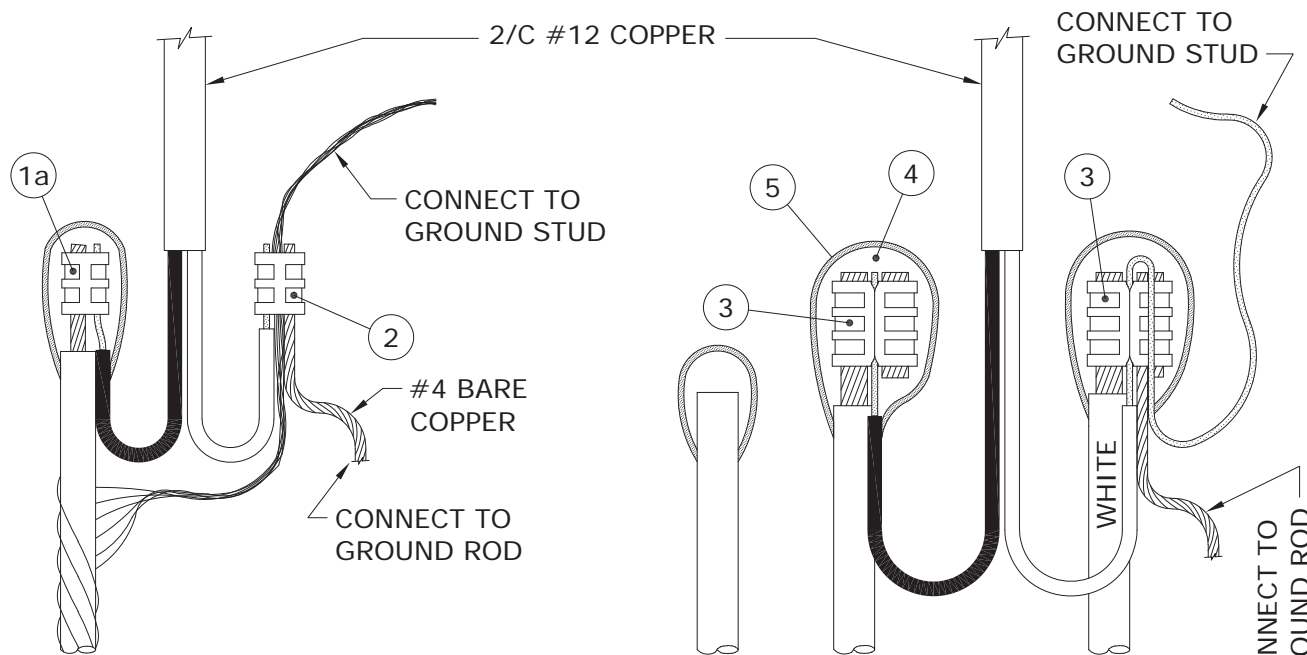
APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11		18-04 1 ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, REVISED TITLE, RESEALED		CONNECTION DETAIL IN STREET LIGHT STANDARD	
C.A.		L.D.		DATE	
				18-04	
				CD 310-4	
				SHT	
				0002 OF 4	
				REV	
				01	

1-04431-DA-56200-0002



**No. 4 ALUMINUM C/N CABLE
(TYPICAL FEED THROUGH)**

**1/0 ALUMINUM TRIPLEX CABLE
(TYPICAL FEED THROUGH)**



**No. 4 ALUMINUM C/N CABLE
(TYPICAL END OF CIRCUIT)**

**1/0 ALUMINUM TRIPLEX CABLE
(TYPICAL END OF CIRCUIT)**

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11		18-04 0 MOVED FROM SHEET 1		<p align="center">CONNECTION DETAIL IN STREET LIGHT STANDARD</p>	
DRAWN C.A.	CHECKED L.D.	DATE 18-04	SHT 0003 OF 4		REV 00

BILL OF MATERIAL

ITEM No.	DESCRIPTION	STORES CODE No.		QUANTITY
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX	
1	'C' TYPE AL. COMPRESSION TAP	74-41-30	---	1
1a	'H' TYPE AL. COMPRESSION TAP	74-40-10	---	1 *
2	'C' TYPE CU. COMPRESSION TAP	74-40-90	---	1
3	'H' TYPE AL. COMPRESSION TAP	---	74-40-60	3 **
4	TAPE, SELF-AMALGAMATING EPR	78-55-23	78-55-23	1/4 ROLL
5	TAPE, COLD WEATHER VINYL	78-55-98	78-55-98	1/4 ROLL

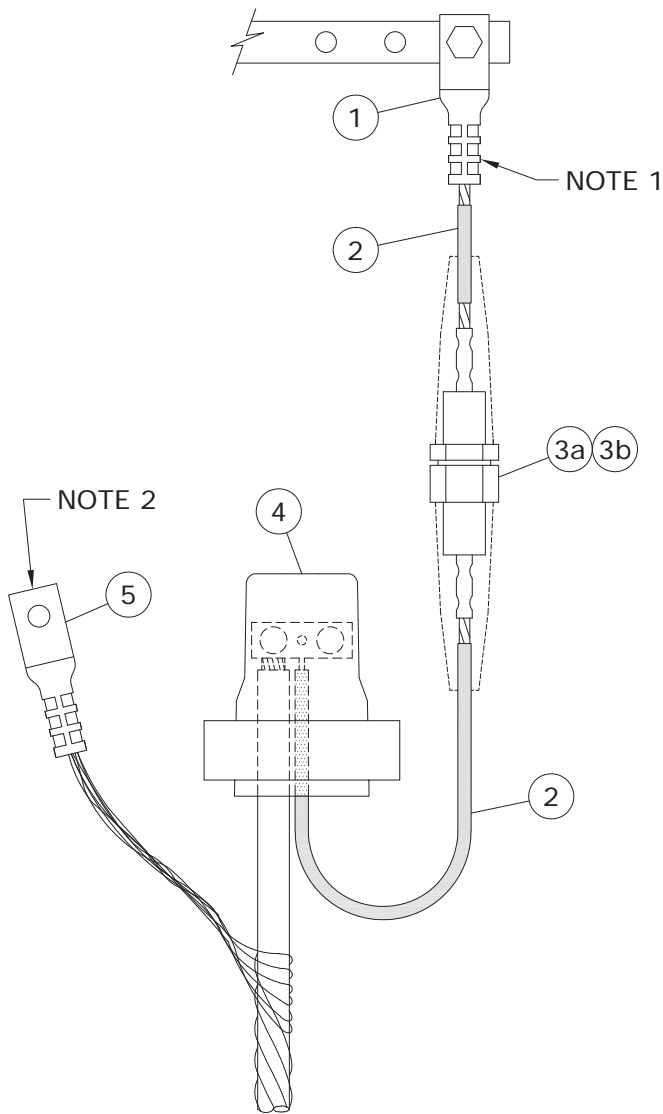
* FOR END OF CIRCUIT WHEN USING ONLY ONE CABLE.

** AT END OF CIRCUIT, QUANTITY MAY BE LESS THAN SHOWN.

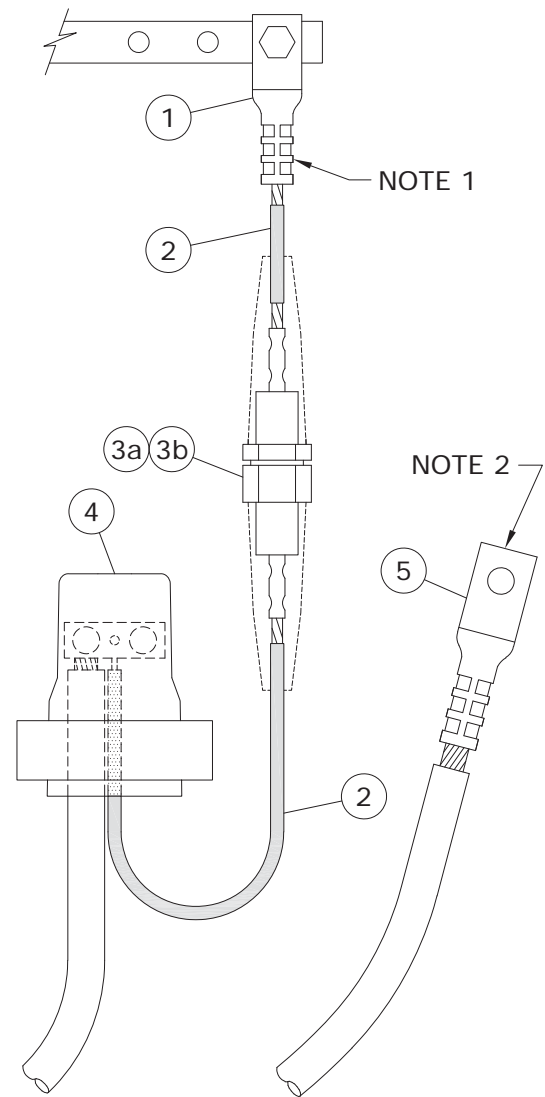
NOTES:

- LEAVE SUFFICIENT SLACK ON CONDUCTORS TO ALLOW REMOVAL FROM HANDHOLE FOR MAINTENANCE.**
- FOR PROPER TAPING PROCEDURE, REFER TO DRAWING CD215-12.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11		18-04 0 MOVED FROM SHEET 2		<p align="center">CONNECTION DETAIL IN STREET LIGHT STANDARD</p>	
DRAWN C.A.	CHECKED L.D.	DATE 18-04	SHT 0004 OF 4		REV 00



**No. 4 ALUMINUM
C/N CABLE**



**1/0 ALUMINUM
TRIPLEX CABLE**

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05	17-11	2	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT1 TO SHT3, ADDED NEW GELCAP DWG, RESEALED	STREET LIGHT CIRCUIT PROTECTED BY A 60A FUSE AT TRANSFORMER	
	94-04	1	CONN. REVISED DUE TO INSUL. NEUTRAL		
DRAWN C.A.	CHECKED L.D.	DATE 17-10		CD 310-8	

BILL OF MATERIAL

ITEM No.	DESCRIPTION	STORES CODE No.		QUANTITY *
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX	
1	LUG, TERMINAL, COMPRESSION	44-66-63	44-66-63	1
2	WIRE, #6 CU., 600V, PVC	93-10-06	93-10-06	1m
3a	FUSEHOLDER, 60A C/W BOOTS	31-91-60	31-91-60	1
3b	FUSE, STREET LIGHT, 60A	31-14-60	31-14-60	1
4	GEL CAP	04-29-36	04-29-36	1
5	LUG, TERMINAL, COMPRESSION	44-66-60	44-66-65	1

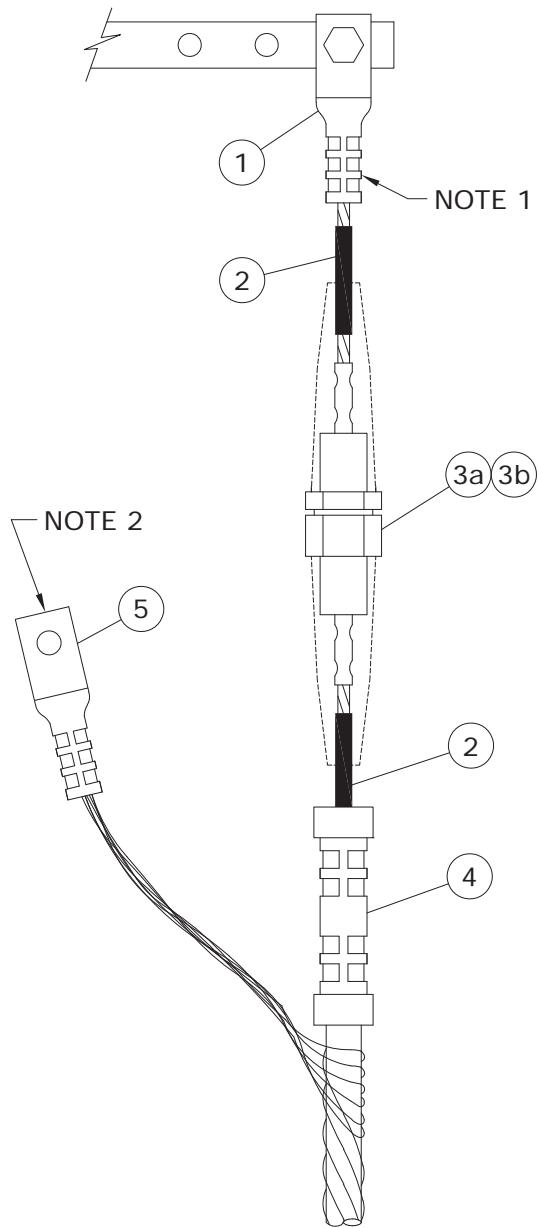
* WHEN CONNECTING BOTH LEGS OF 1/0 ALUMINUM TRIPLEX, DOUBLE QUANTITY OF MATERIAL EXCEPT FOR ITEM No. 5.

NOTES:

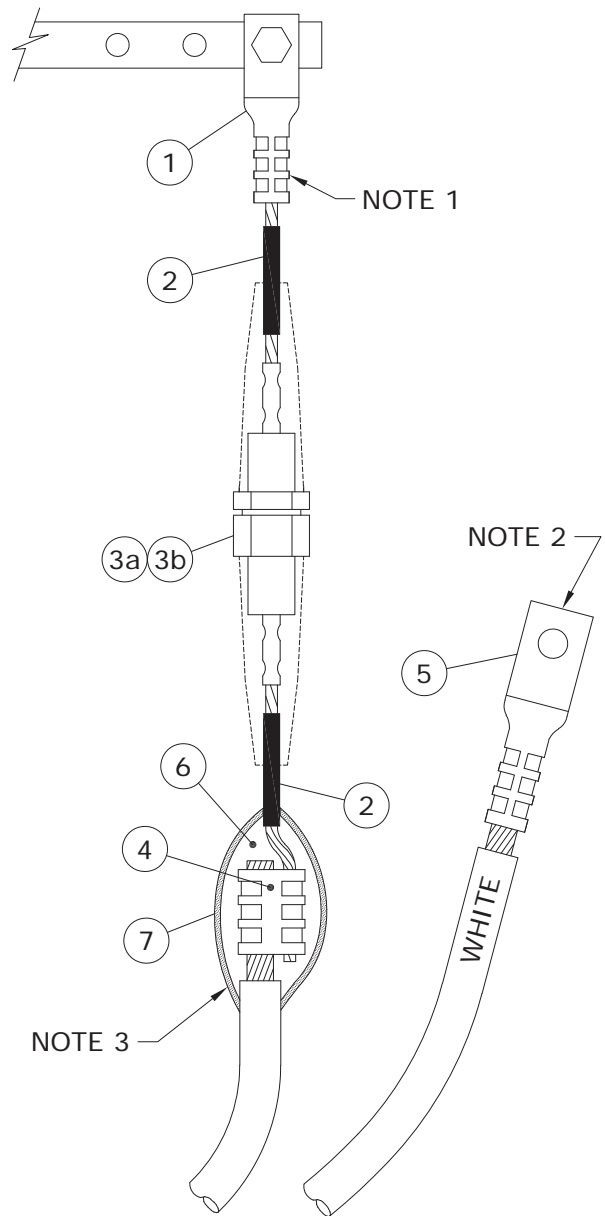
- FOR INFORMATION ON COMPRESSION TERMINAL LUGS, REFER TO DRAWING CD210-27.
- CONNECT TO SECONDARY GROUND BUSHING.
- REFER TO DRAWING CD310-3 FOR GEL CAP INSTALLATION INSTRUCTIONS.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 94-07-03

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS						
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05		<table border="1"> <tr> <td>17-11</td> <td>1</td> <td>ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, RESEALED</td> </tr> </table>		17-11	1	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, RESEALED	<p align="center">STREET LIGHT CIRCUIT PROTECTED BY A 60A FUSE AT TRANSFORMER</p>			
				17-11	1	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, RESEALED				
DRAWN C.A.	CHECKED L.D.	DATE 17-10	CD 310-8		SHT 0002 OF 4	REV 01				



**No. 4 ALUMINUM
C/N CABLE**



**1/0 ALUMINUM
TRIPLEX CABLE**

APPROVED	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05			STREET LIGHT CIRCUIT PROTECTED BY A 60A FUSE AT TRANSFORMER	
	17- 11	0		
DRAWN C.A.	CHECKED L.D.	DATE 17-10	CD 310-8	

BILL OF MATERIAL

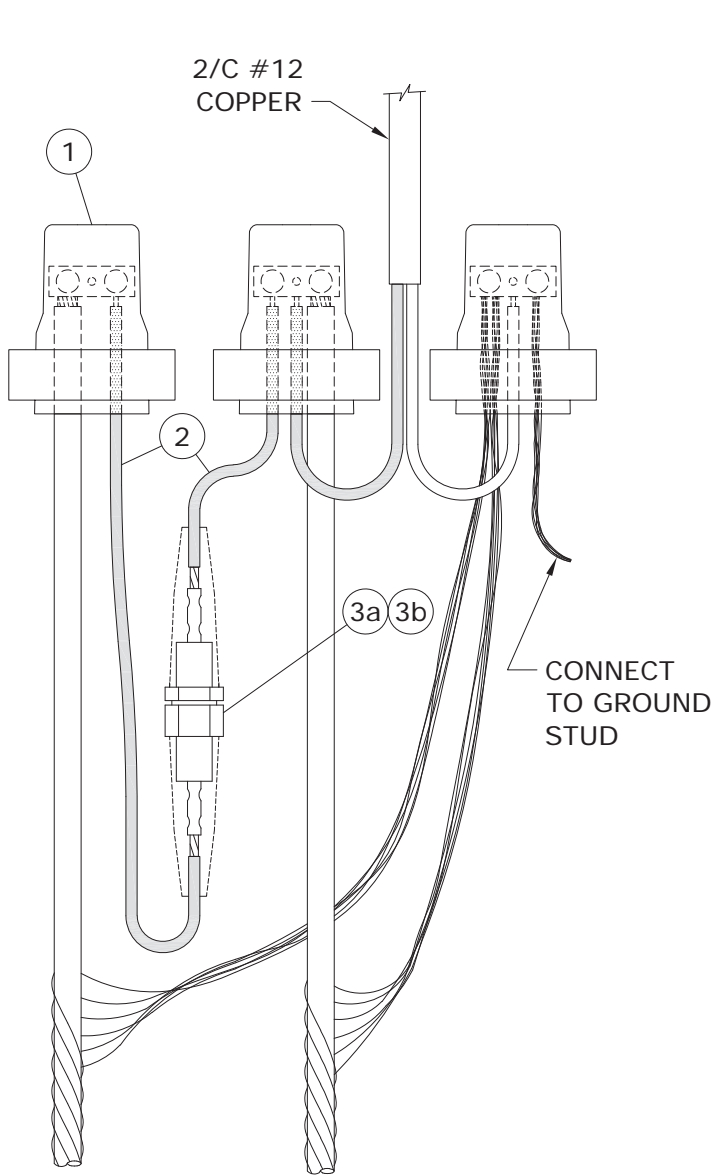
ITEM No.	DESCRIPTION	STORES CODE No.		QUANTITY *
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX	
1	LUG, TERMINAL, COMPRESSION	44-66-63	44-66-63	1
2	WIRE, # 6 CU., 600V, PVC	93-10-06	93-10-06	1m
3a	FUSEHOLDER, 60A C/W BOOTS	31-91-60	31-91-60	1
3b	FUSE, STREET LIGHT, 60A	31-14-60	31-14-60	1
4	INSULATED SLEEVE	74-45-50	---	1
	'H' TYPE COMPRESSION TAP	---	74-40-30	1
5	LUG, TERMINAL, COMPRESSION	44-66-60	44-66-65	1
6	TAPE, SELF-AMALGAMATING EPR	---	78-55-23	1/4 ROLL
7	TAPE, COLD WEATHER VINYL	---	78-55-98	1/4 ROLL

* WHEN CONNECTING BOTH LEGS OF 1/0 ALUMINUM TRIPLEX, DOUBLE QUANTITY OF MATERIAL EXCEPT FOR ITEM No. 5.

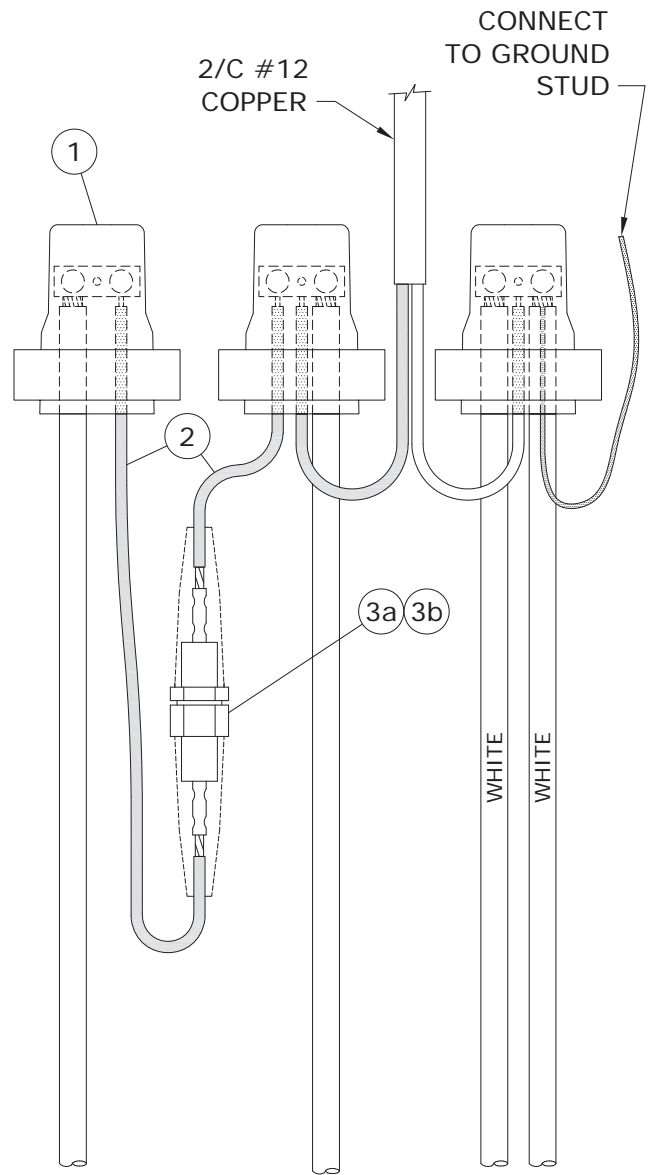
NOTES:

- FOR INFORMATION ON COMPRESSION TERMINAL LUGS, REFER TO DRAWING CD210-27.
- CONNECT TO SECONDARY GROUND BUSHING.
- FOR PROPER TAPING PROCEDURE, REFER TO DRAWING CD215-12.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS			
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05		17-11 0		<p align="center">STREET LIGHT CIRCUIT PROTECTED BY A 60A FUSE AT TRANSFORMER</p>			
DRAWN C.A.	CHECKED L.D.	DATE 17-10		CD 310-8		SHT	REV
						0004 OF 4	00



No. 4 ALUMINUM C/N CABLE



1/0 ALUMINUM TRIPLEX CABLE

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05	17-11	2	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT1 TO SHT3, ADDED NEW GELCAP DWG, RESEALED	STREET LIGHT CIRCUIT PROTECTED BY 30A FUSE IN STREET LIGHT STANDARD	
	94-04	1	CONN. REVISED DUE TO INSUL. NEUTRAL		
DRAWN C.A.	CHECKED L.D.	DATE 17-11		CD 310-9	

BILL OF MATERIAL

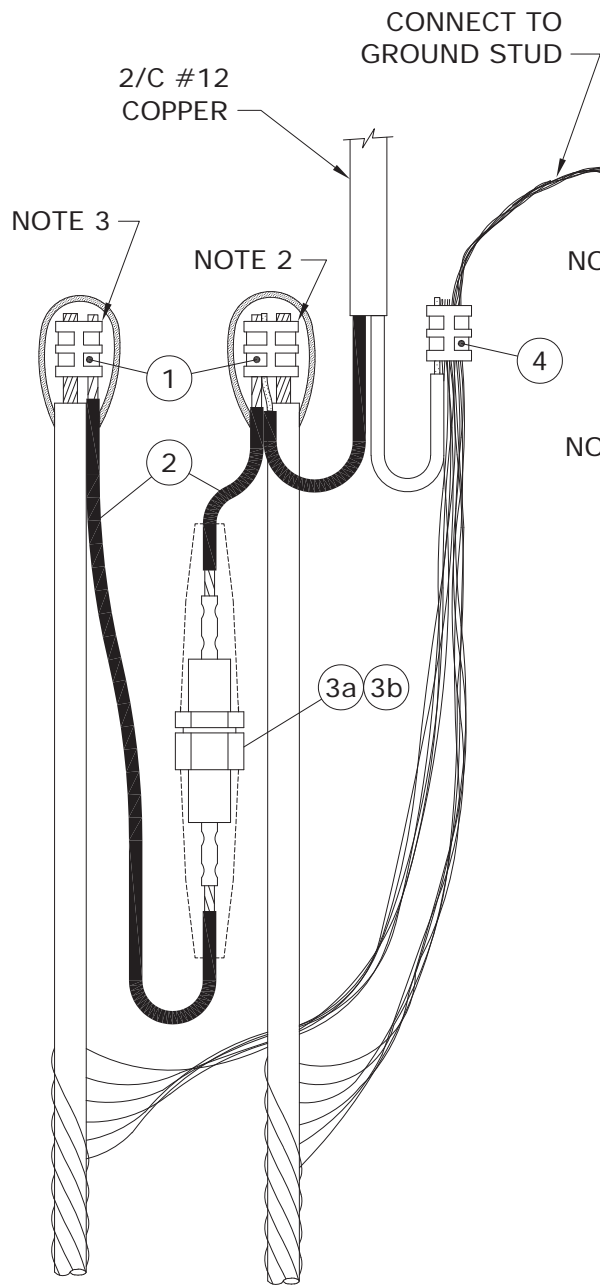
ITEM No.	DESCRIPTION	STORES CODE No.		QUANTITY
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX	
1	GEL CAP	04-29-36	04-29-36	3
2	WIRE, # 8 CU., 600V, PVC	93-10-08	93-10-08	1m
3a	FUSEHOLDER, 15/30A C/W BOOTS	31-91-30	31-91-30	1
3b	FUSE, 30A	31-14-30	31-14-30	1

NOTES:

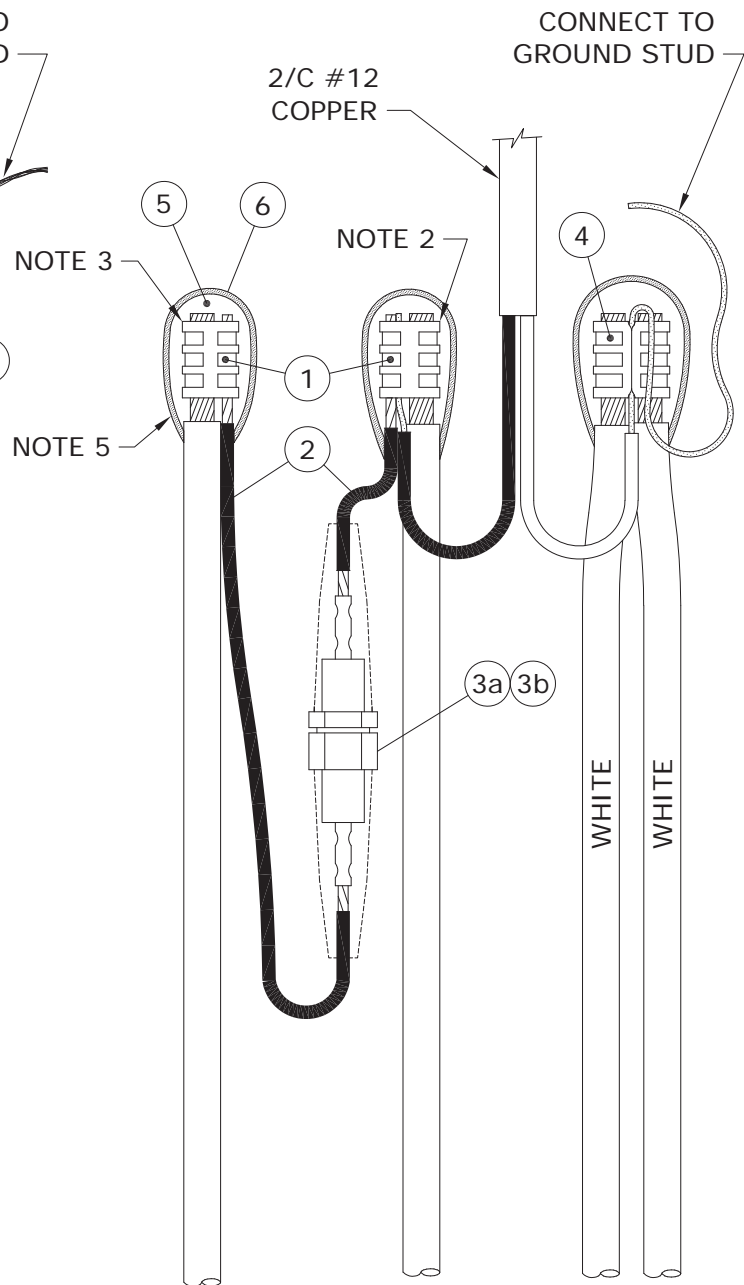
- 1. LEAVE SUFFICIENT SLACK ON CONDUCTORS AND FUSE HOLDER TO ALLOW REMOVAL FROM HANDHOLE FOR FUSE REPLACEMENT AND MAINTENANCE.**
2. FOR SPLICING FEED THROUGH HOT LEG, REFER TO DRAWING CD310-4.
3. FOR GEL CAP INSTALLATION INSTRUCTIONS, REFER TO DRAWING CD310-3.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 94-07-03

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS			
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05		17-11 1 ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, RESEALED		<p align="center">STREET LIGHT CIRCUIT PROTECTED BY 30A FUSE IN STREET LIGHT STANDARD</p>			
				<p align="center">CD 310-9</p>		SHT	REV
						0002 OF 4	01



No. 4 ALUMINUM C/N CABLE



1/0 ALUMINUM TRIPLEX CABLE

APPROVED	REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05			STREET LIGHT CIRCUIT PROTECTED BY 30A FUSE IN STREET LIGHT STANDARD	
17-11	0	MOVED FROM SHEET 1		
DRAWN C.A.	CHECKED L.D.	DATE 17-11	CD 310-9	
		SHT 0003 OF 4		

BILL OF MATERIAL

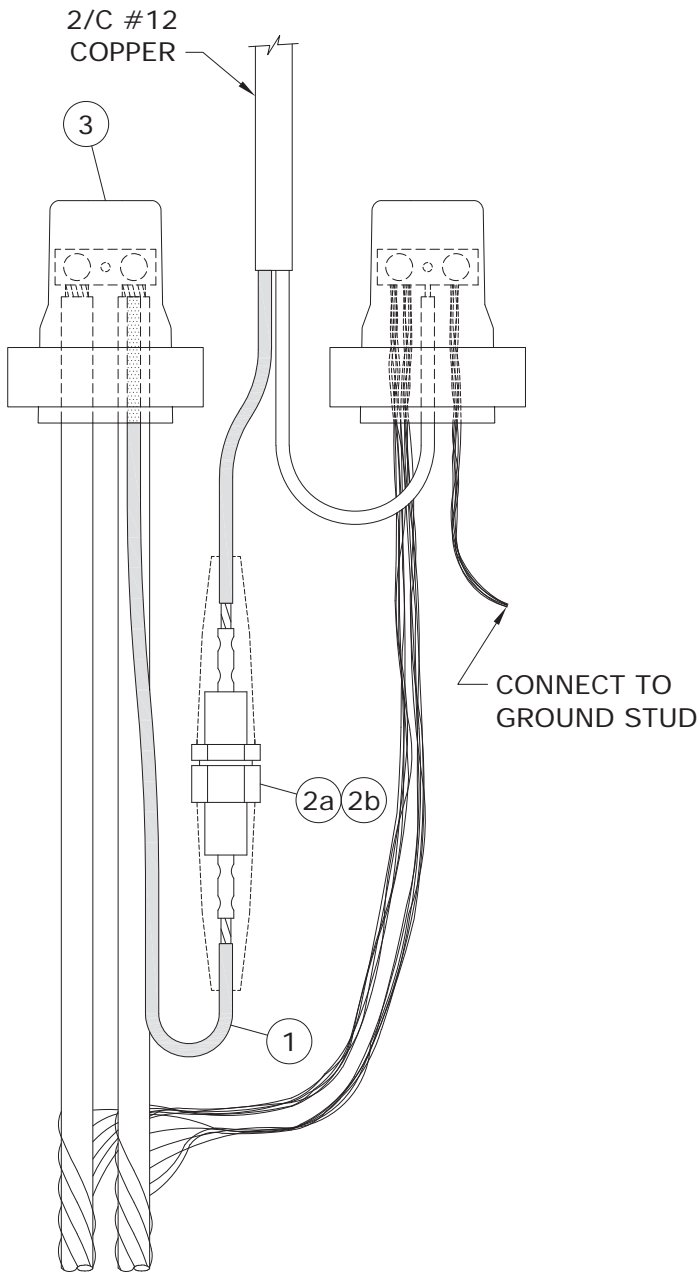
ITEM No.	DESCRIPTION	STORES CODE No.		QUANTITY
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX	
1	'H' TYPE COMPRESSION TAP	74-40-10	74-40-30	2
2	WIRE, # 8 CU., 600V, PVC	93-10-08	93-10-08	1m
3a	FUSEHOLDER, 15/30A C/W BOOTS	31-91-30	31-91-30	1
3b	FUSE, 30A	31-14-30	31-14-30	1
4	'C' TYPE COMPRESSION TAP	74-40-90	---	1
	'H' TYPE COMPRESSION TAP	---	74-40-60	1 *
5	TAPE, SELF-AMALGAMATING EPR	78-55-23	78-55-23	1/4 ROLL
6	TAPE, COLD WEATHER VINYL	78-55-98	78-55-98	1/4 ROLL

* WHEN USING 1/0 ALUMINUM TRIPLEX 1 ADDITIONAL 'H' TYPE COMPRESSION TAP (S.C.# 74 40 60) IS REQUIRED TO CONNECT SECOND (FEED THROUGH) HOT LEG.

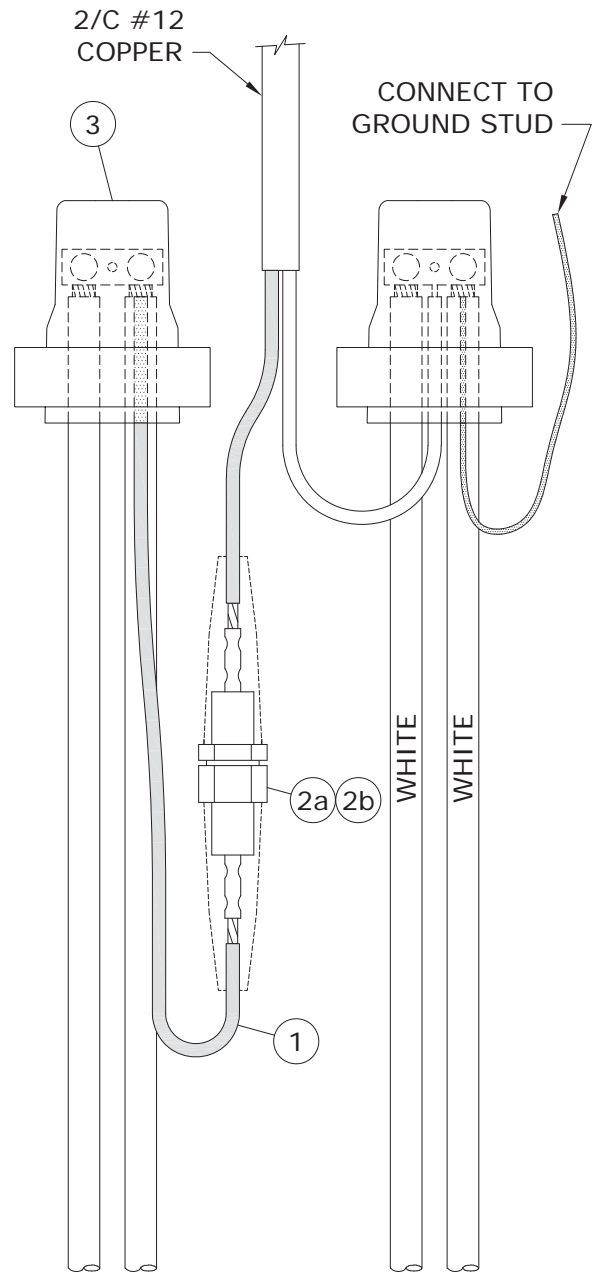
NOTES:

- LEAVE SUFFICIENT SLACK ON CONDUCTORS AND FUSE HOLDER TO ALLOW REMOVAL FROM HANDHOLE FOR FUSE REPLACEMENT AND MAINTENANCE.**
- INSERT #12 COPPER AND #8 COPPER IN SMALL GROOVE.
- INSERT DOUBLE THICKNESS OF #8 COPPER IN SMALL GROOVE.
- FOR SPLICING FEED THROUGH HOT LEG, REFER TO DRAWING CD310-4.
- FOR PROPER TAPING PROCEDURE, REFER TO DRAWING CD215-12.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS			
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-03-05		17-11 0		<p align="center">STREET LIGHT CIRCUIT PROTECTED BY 30A FUSE IN STREET LIGHT STANDARD</p>			
DRAWN C.A.	CHECKED L.D.	DATE 17-11		CD 310-9		SHT	REV
						0004 OF 4	00



No. 4 ALUMINUM C/N CABLE



1/0 ALUMINUM TRIPLEX CABLE

NOTE:

RECOMMENDED FOR PROTECTING LUMINAIRES WHICH ARE TO BE MOUNTED ON STREET LIGHT POLES 16.8m AND HIGHER.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 89-04-28

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11	18-04	3	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT1 TO SHT3, ADDED NEW GELCAP DWG, RESEALED	INDIVIDUAL LUMINAIRE PROTECTED BY 15A FUSE IN STREET LIGHT STANDARD	
	95-01	2	NOTE ADDED		
DRAWN C.A.	CHECKED L.D.	DATE 18-04		CD 310-10	

BILL OF MATERIAL

ITEM No.	DESCRIPTION	STORES CODE No.		QUANTITY
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX	
1	2/C #12 COPPER	93-52-12	93-52-12	1m
2a	FUSEHOLDER, 15/30A C/W BOOTS	31-91-30	31-91-30	1
2b	FUSE, STREET LIGHT, 15A	31-14-15	31-14-15	1
3	GEL CAP	04-29-36	04-29-36	2

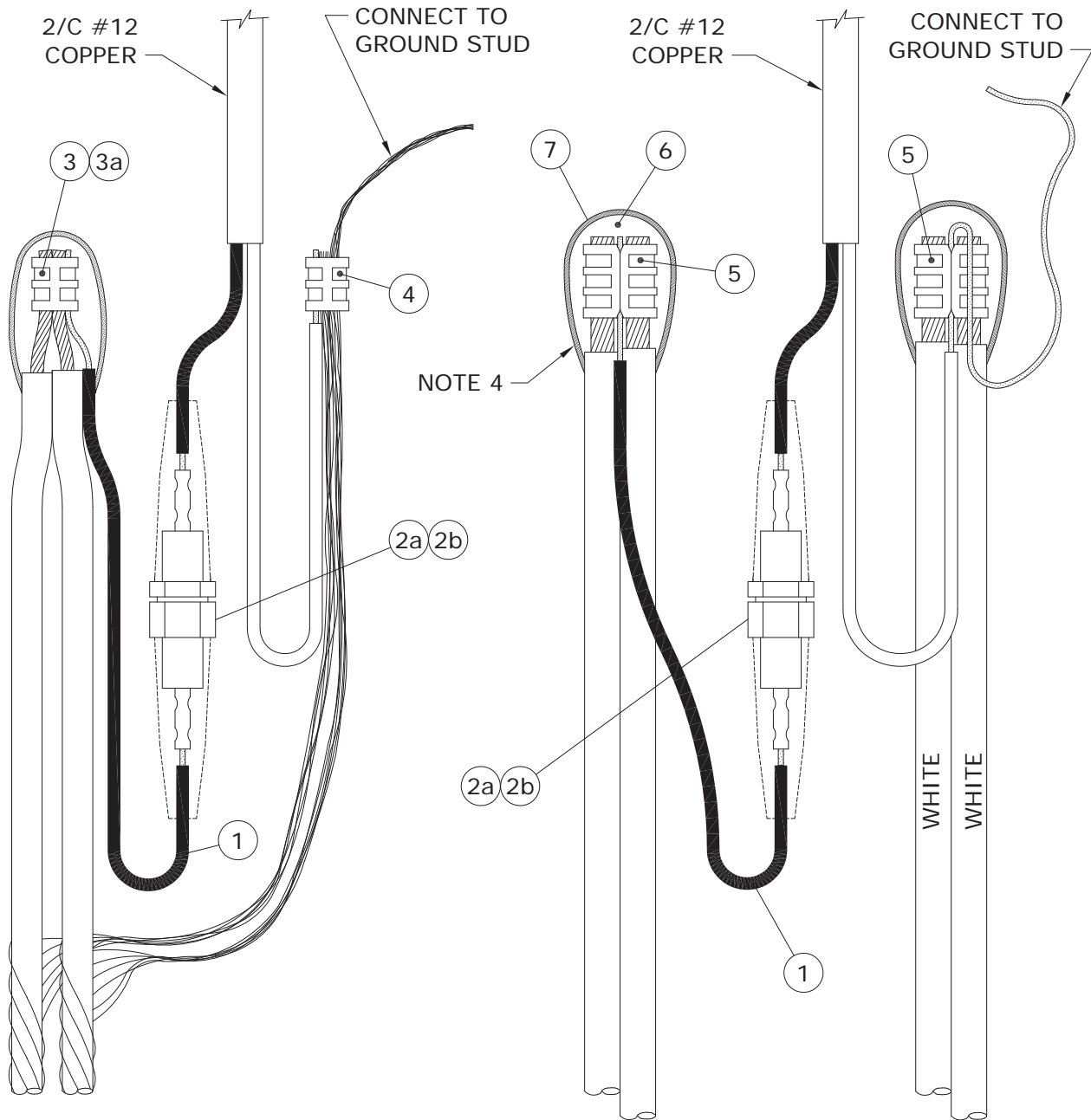
NOTES:

- 1. LEAVE SUFFICIENT SLACK ON CONDUCTORS AND FUSE HOLDER TO ALLOW REMOVAL FROM HANDHOLE FOR FUSE REPLACEMENT AND MAINTENANCE.**
2. FOR SPLICING FEED THROUGH HOT LEG, REFER TO DRAWING CD310-4.
3. FOR END OF CIRCUIT, REFER TO DRAWING CD310-4.
4. FOR GEL CAP INSTALLATION INSTRUCTIONS, REFER TO DRAWING CD310-3.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 94-07-03

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS				
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11		<table border="1"> <tr> <td>18-04</td> <td>1</td> <td>ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, RESEALED</td> </tr> </table>		18-04	1	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, RESEALED	<p align="center">INDIVIDUAL LUMINAIRE PROTECTED BY 15A FUSE IN STREET LIGHT STANDARD</p>	
				18-04	1	ADDED SHT 3 & 4, MOVED PREVIOUS INFO FROM SHT2 TO SHT4, ADDED NEW BOM WITH GELCAP, RESEALED		
DRAWN C.A.	CHECKED L.D.	DATE 18-04	SHT 0002 of 4	REV 01				

CD 310-10



No. 4 ALUMINUM C/N CABLE

1/0 ALUMINUM TRIPLEX CABLE

NOTE:

RECOMMENDED FOR PROTECTING LUMINAIRES WHICH ARE TO BE MOUNTED ON STREET LIGHT POLES 16.8m AND HIGHER.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS	
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11		18-04 0		MOVED FROM SHEET 1	
DRAWN C.A.	CHECKED L.D.	DATE 18-04		<p style="text-align: center;">CD 310-10</p>	

BILL OF MATERIAL

ITEM No.	DESCRIPTION	STORES CODE No.		QUANTITY
		FOR USE WITH #4 AL. C/N	FOR USE WITH 1/0 AL. TRIPLEX	
1	2/C # 12 COPPER	93-52-12	93-52-12	1m
2a	FUSEHOLDER, 15/30A C/W BOOTS	31-91-30	31-91-30	1
2b	FUSE, STREET LIGHT, 15A	31-14-15	31-14-15	1
3	'C' TYPE AL. COMPRESSION TAP	74-41-30	---	1
3a	'H' TYPE AL. COMPRESSION TAP	74-40-10	---	1 *
4	'C' TYPE CU. COMPRESSION TAP	74-40-90	---	1
5	'H' TYPE AL. COMPRESSION TAP	---	74-40-60	3 **
6	TAPE, SELF-AMALGAMATING EPR	78-55-23	78-55-23	1/4 ROLL
7	TAPE, COLD WEATHER VINYL	78-55-98	78-55-98	1/4 ROLL

- * FOR END OF CIRCUIT WHEN USING ONLY ONE CABLE.
- ** AT END OF CIRCUIT, QUANTITY MAY BE LESS THAN SHOWN.

NOTES:

1. LEAVE SUFFICIENT SLACK ON CONDUCTORS AND FUSE HOLDER TO ALLOW REMOVAL FROM HANDHOLE FOR FUSE REPLACEMENT AND MAINTENANCE.
2. FOR SPLICING FEED THROUGH HOT LEG, REFER TO DRAWING CD310-4.
3. FOR END OF CIRCUIT, REFER TO DRAWING CD310-4.
4. FOR PROPER TAPING PROCEDURE, REFER TO DRAWING CD215-12.

APPROVED		REVISIONS		MANITOBA HYDRO DISTRIBUTION STANDARDS			
ORIGINAL DRAWING SEALED BY J.J.D. RINGASH 18-05-11		18-04 0		<p align="center">INDIVIDUAL LUMINAIRE PROTECTED BY 15A FUSE IN STREET LIGHT STANDARD</p>			
DRAWN C.A.	CHECKED L.D.	DATE 18-04		<p align="center">CD 310-10</p>		SHT	REV
						0004 OF 4	00