

ON BOTH ENDS OF BRIDGE:
 INST. 2-WAY MANHOLE
 AROUND EXISTING 4-3 INCH.
 CONDUIT BANK OUTSIDE THE
 LIMITS OF EXCAVATION
 FOR BRIDGE CONSTRUCTION.
 CAREFULLY BREAK AWAY
 ENCASEMENT AND CONDUIT
 TO EXPOSE CABLE.
 CO-ORDINATE EXACT LOCATION
 OF TEMP. WOOD POLES WITH PLD ENGINEER
 AND BRIDGE CONSTRUCTION CONTRACTORS.

**PLD. FACILITIES
 REMOVAL & TEMPORARY REROUTE PLAN**

NOTE:

1. ALL MATERIALS MUST BE APPROVED BY P.L.D. ENGINEERING DIVISION.
2. EXISTING CABLES MAY HAVE ASBESTOS FIREPROOFING.
3. FOLLOW P.L.D. U.G. STANDARDS & SPECIFICATIONS FOR CONSTRUCTION & MATERIALS. SUPPLEMENTAL SHEETS PROVIDING DETAILS ARE ATTACHED.
4. PROPOSED P.L.D. U.G. FACILITIES MUST CLEAR OTHER U.G. UTILITIES OR STRUCTURES BY 1FT. VERTICAL AND 3.5 FT. HORIZONTAL.
5. SEAL THE ENDS OF ALL UNUSED CABLES AFTER PULLING THEM INTO MANHOLES.
6. VERTICAL CONDUIT TRANSITIONS MUST NOT EXCEED 4" IN 8' OF DUCT.
7. INSTALL 3/16" DIAMETER YELLOW POLYPROPYLENE ROPE IN ALL NEW CONDUIT.
8. THESE PLANS DO NOT SHOW UTILITIES NOT OWNED BY P.L.D.
9. PERMANENT AND TEMPORARY DUCT ENTRANCE INTO P.L.D. MANHOLES OR HANDHOLES ARE TO BE SAWCUT.
10. ALL SALVAGED MATERIAL IS TO BE DELIVERED TO P.L.D. BY CONTRACTOR IN USABLE CONDITION.
11. CONTRACTOR SHALL REMOVE CONSTRUCTION DEBRIS FROM P.L.D. STRUCTURES.
12. ALL CABLES ARE TO BE TAGGED WITH P.L.D. STANDARD TAGS PROVIDED BY THE CONTRACTOR, TRAIN AND RACK ALL CABLES. USE SUR-RACK STANCHIONS & CABLE ARMS. USE STAINLESS STEEL HARDWARE. (INCIDENTAL TO "INSTALL CABLE").
13. HANDHOLES ON ST. LTG. STANDARDS ARE TO FACE AWAY FROM ON-COMING TRAFFIC.
14. WHERE TEMPORARY DUCTS ARE REMOVED OR ABANDONED, NEATLY PATCH THE STRUCTURE WALL WITH BRICK OR MORTAR DEPENDENT UPON THE STRUCTURE COMPOSITION.
15. CALL P.L.D. SYSTEMS OPERATOR (313-267-4150) TO DE-ENERGIZE & ENERGIZE CIRCUITS.
16. CALL P.L.D. ENGINEER (313-267-7216) FOR INSPECTION OF CONSTRUCTION BEFORE POURING CONCRETE.
17. IF PROBLEMS OCCUR ON THE CIRCUITS AT THE TEMPORARY REROUTED LOCATIONS, THE CONTRACTOR WILL BE RESPONSIBLE FOR CORRECTION IN A TIMELY MANNER.
18. SERIES STREET LIGHTING CABLE SPLICES ARE LEAD WIPE TYPE.

CALL MISS DIG

* QUANTITIES MAY VARY DUE TO FIELD CONDITIONS.

INSTALL	PAYMENT ITEMS
2 Ea	45 Ft. C12 Wood Pole (Fit Up as Prim. & Sec. C.P.)
2 Ea	Code 009-00 St. Ltg. Standard & Foundation
2 Ea	6 Ft. Clamp-On Bracket Arm (36" Rise)
2 Ea	PLD Handhole (30in. Round) W/Frame & Cover
300 Ft*	Conduit, Encased, EB20 TC6 1-3"
200 Ft*	Conduit, Encased, EB20 TC6 6-5"
50 Ft*	Conduit, DB 80, TC2 3-4"
200 Ft*	Cable, St. Ltg., 7.5KV, 2-1/C *8 L.C.
200 Ft*	Cable, St. Ltg., 2KV, 3-1/C *2 RHH & RHW (Color-Coded)
50 Ft*	Cable, St. Ltg., 2KV, 2-1/C *2 RHH & RHW (Color-Coded)
100 Ft*	Cable, St. Ltg., 2KV, 1/C *2 RHH & RHW (Color-Coded)
100 Ft*	Cable, 15KV., 3-1/C *350KCM, U.R.D./P.J.
200 Ft*	Cable, 7KV., 1-3/C * 350KCM, P.I.L.C.P.J.
2 Ea	Luminaire, 250 S.V. Cobra Head
2 Ea	Manhole, 2-Way
100 Ft*	Cable, 15KV, 2-1/C *2 U.R.D./P.J.
200 Ft*	Triplex, *2 O.H. Line
200 Ft*	3-2/0 O.H. Line
200 Ft*	2-#6 O.H. Line Wire
2 Ea	H.H. (OR M.H.), Remove
4 Ea	Remove & Salvage O.P., Luminaire, Coil
300 Ft*	Remove Cable and Duct Bank
2 Ea	Wood Pole, Remove
6 Ea*	Remove O.H. Lines Installed for Temp.
30 Ea*	Make Cable Splice
2 Ea*	Vector Out Manhole
50 Ft*	Conduit Repair
4 Ea	Remove Foundation
1 Ea*	Trim Tree

E.W.O. 9346.14, 41, 42, 44, 45, 51, 52, 53, 54, 57B, 58

DATE	DESCRIPTION	CHECKED BY
10-6-06	REVISED MISC. NOTES	
12-20-06	SHEET NOS., QUANTITIES AS INDICATED	
2-13-07	SHEET NOS., PAYMENT ITEMS	

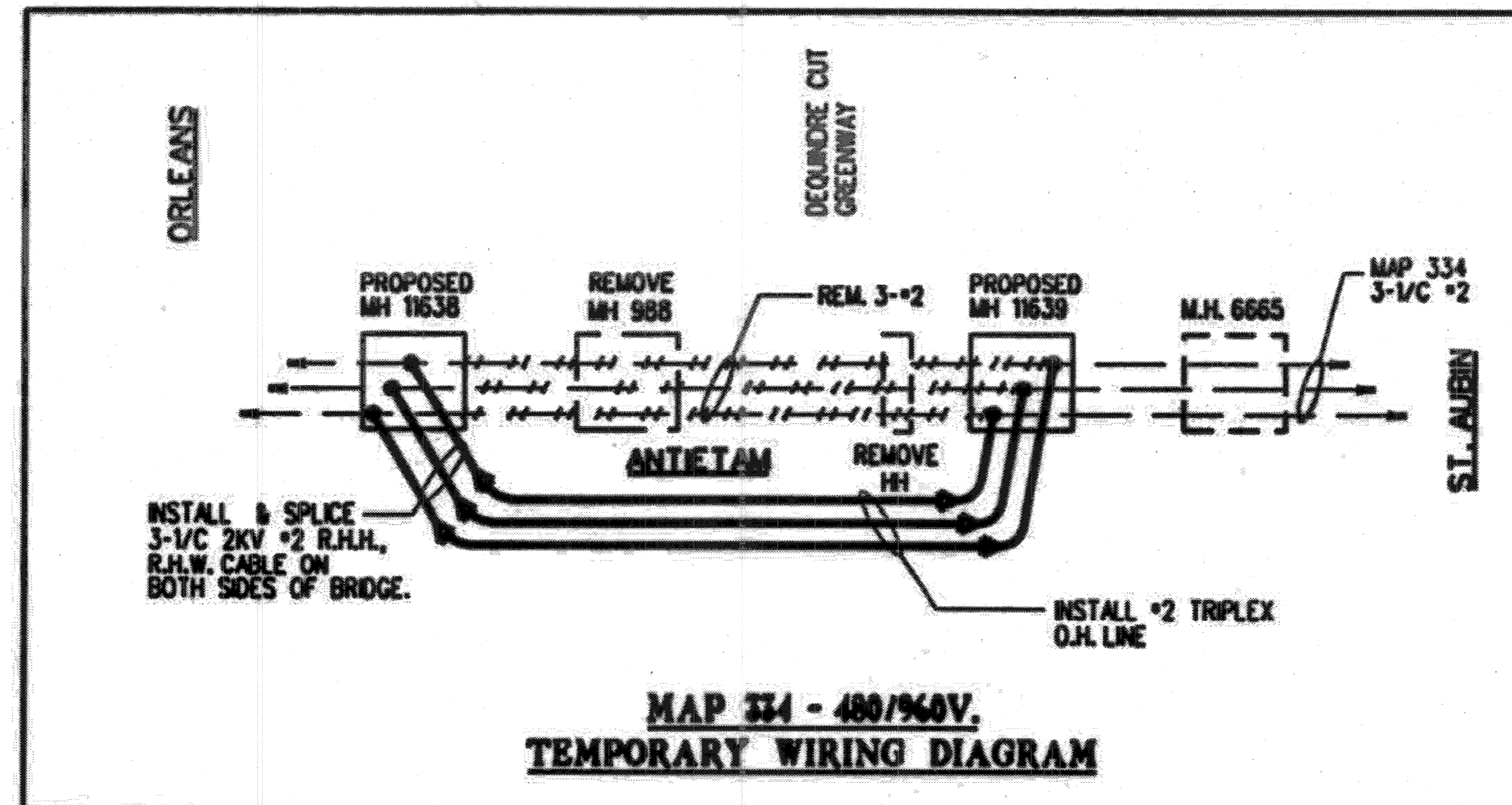
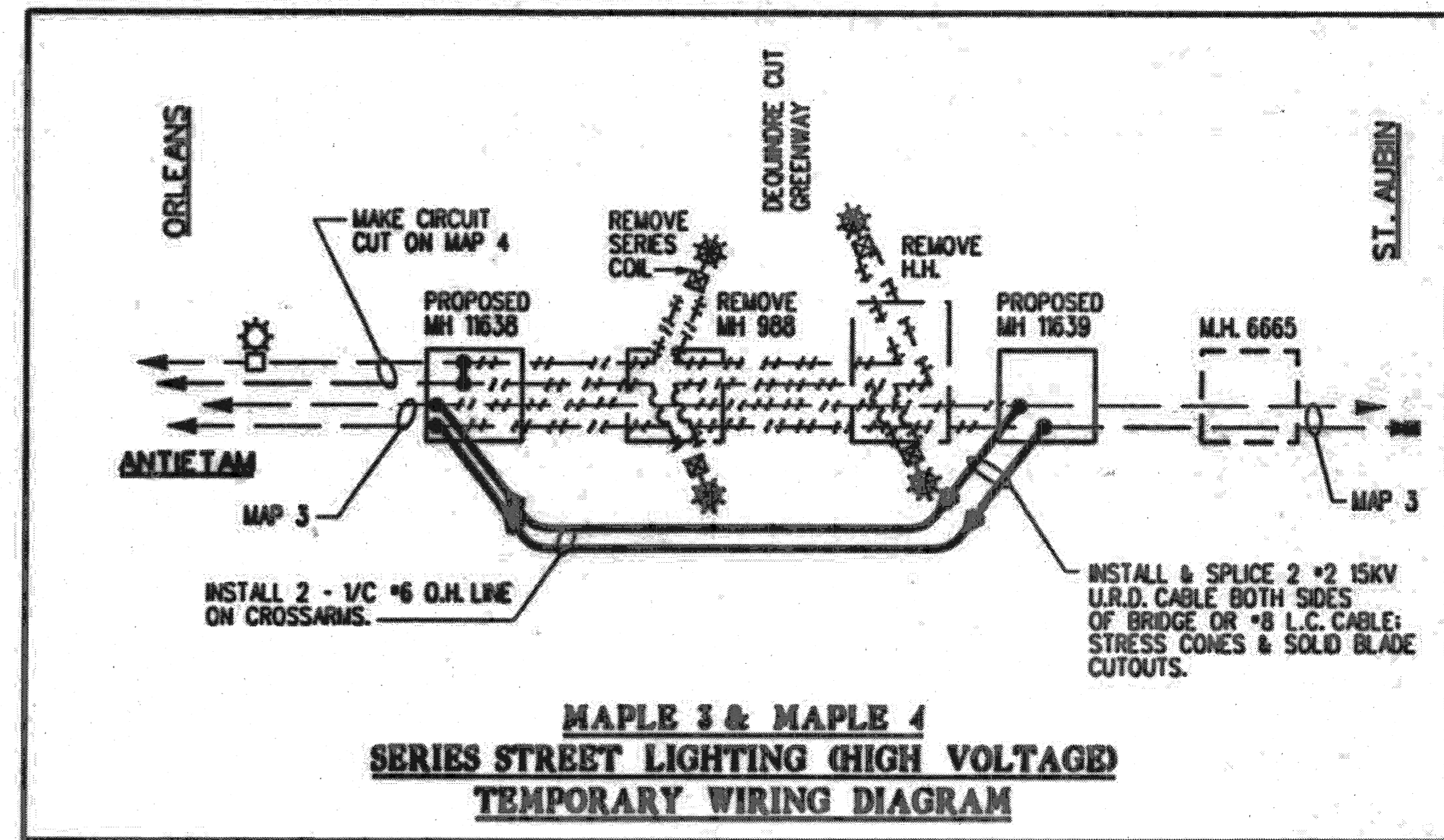
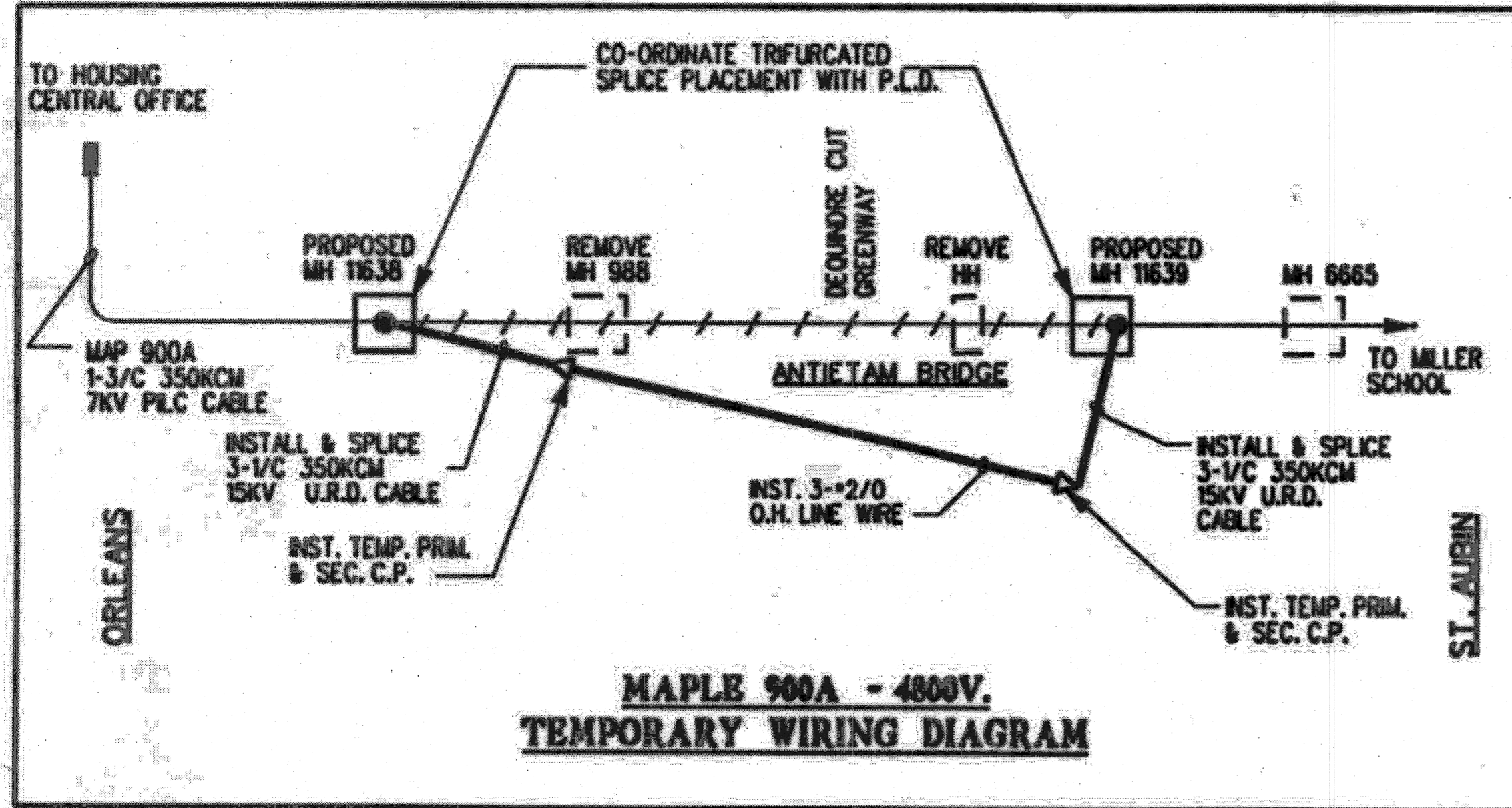
**RECONSTRUCTION OF ANTIETAM BRIDGE
 OVER DEQUINDRE CUT GREENWAY**
 DRAWING NOT TO SCALE

DRAWN BY
 C.L.E.W.B.
 CHECKED BY
 D.W.
 APPROVED BY
 M.L.



**PUBLIC LIGHTING
 DEPARTMENT
 CITY OF DETROIT**

FILE NO
 27-1122
 SHEET NO
 26
 DATE



CALL MISS DIG

F.W.O. 9346.14, 41, 42, 44, 45, 51, 52, 53, 54, 57B, 58

DATE	DESCRIPTION	CHECKED BY
10-30-06	REVISED MISC. NOTES	
2-13-07	SHEET NOS. - PAYMENT ITEMS	

**RECONSTRUCTION OF ANTIETAM BRIDGE
OVER DEQUINDRE CUT GREENWAY**
DRAWING NOT TO SCALE

DRAWN BY
C.L.E.W.B.
CHECKED BY
B.W.
APPROVED BY
M.L.

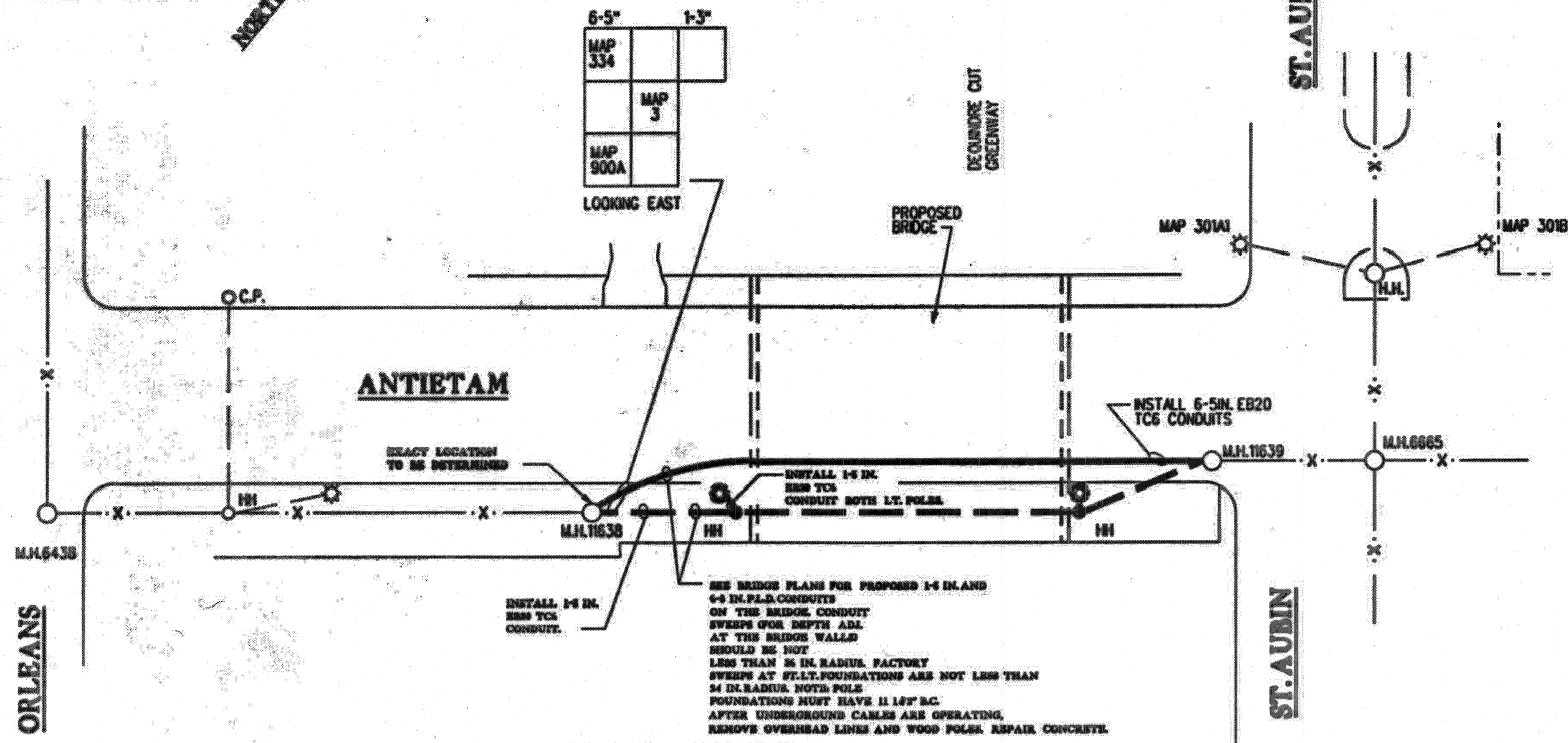


**PUBLIC LIGHTING
DEPARTMENT
CITY OF DETROIT**

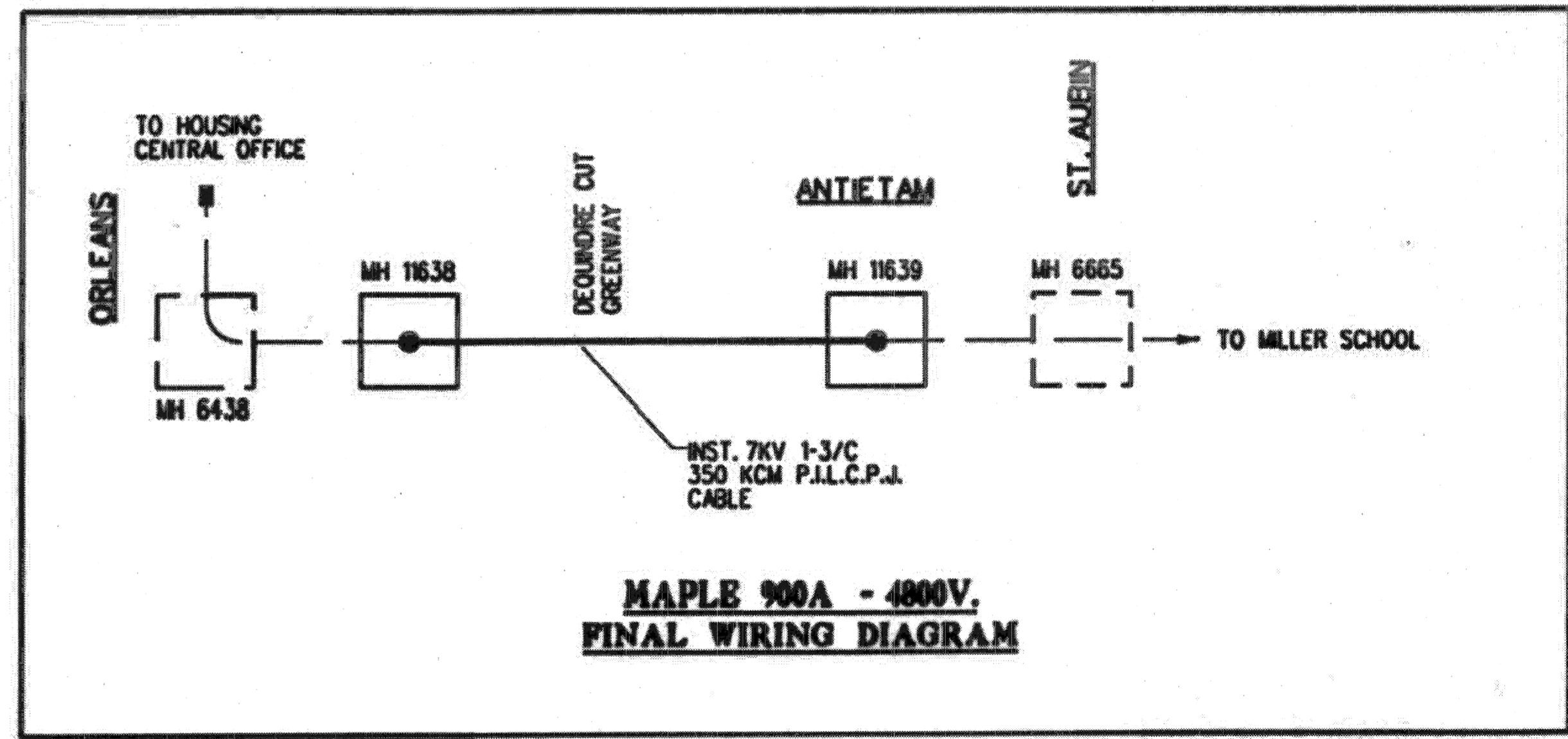
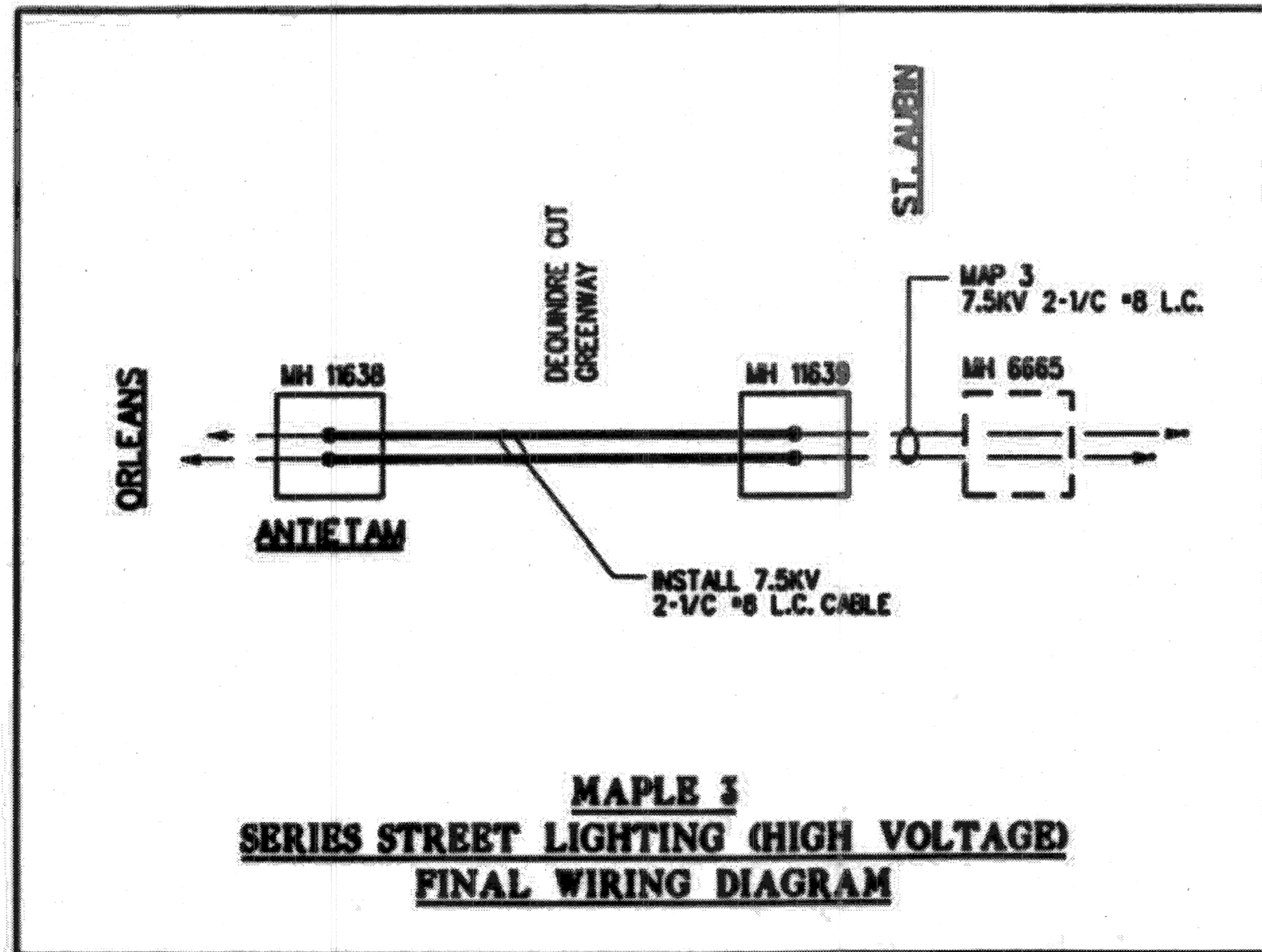
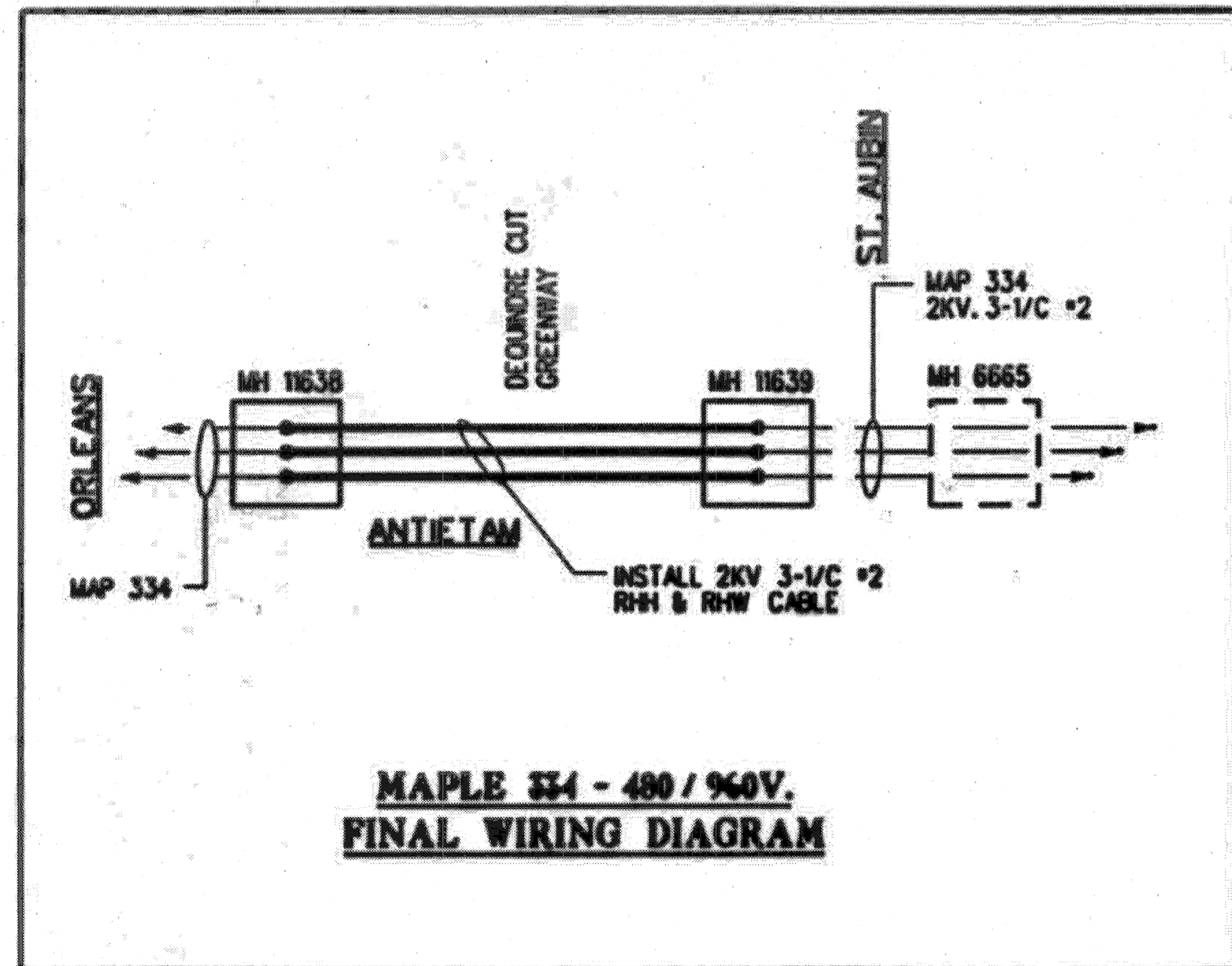
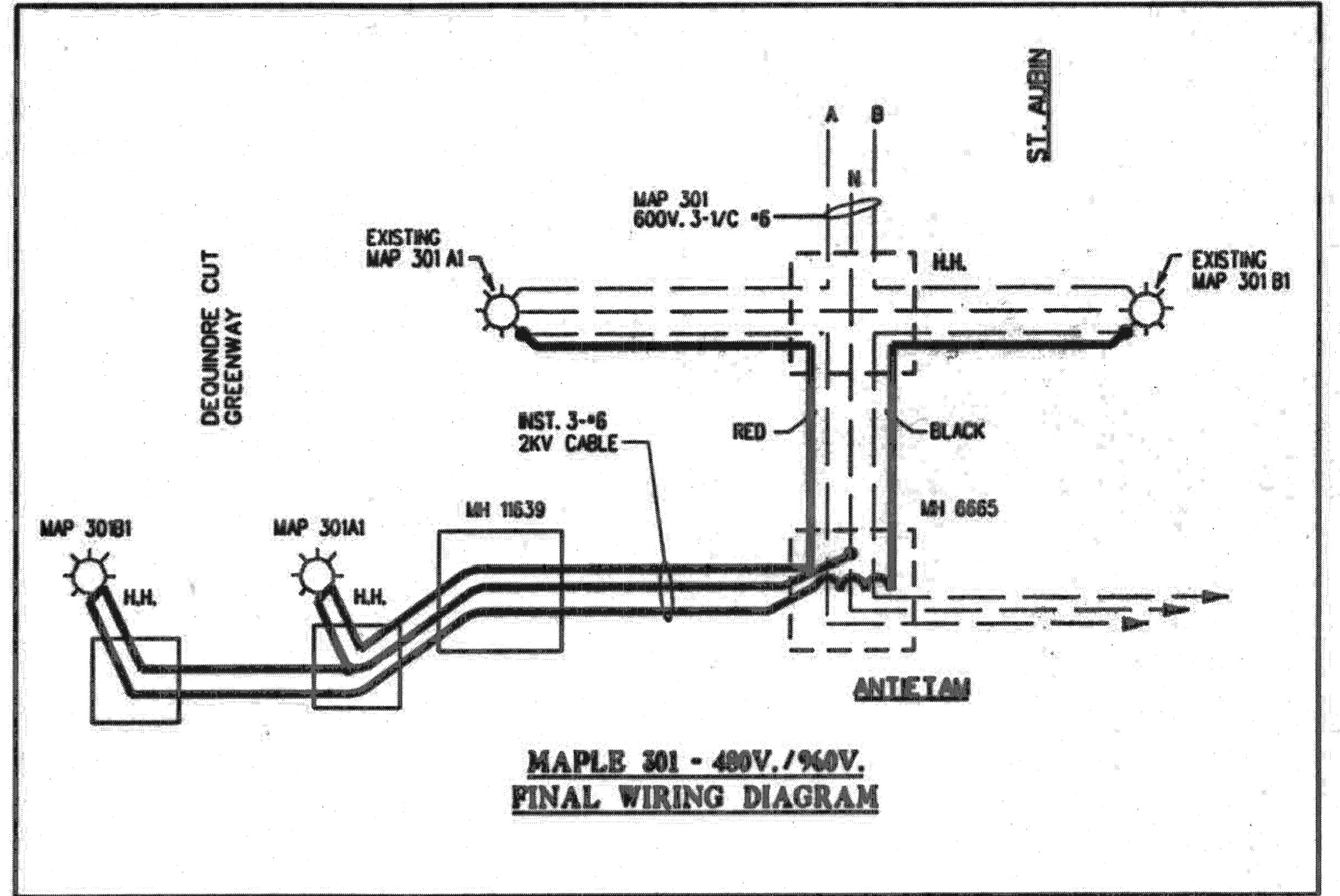
FILE NO
27-1122
SHEET NO
27
DATE

MAPLE 900A
4800 V.

T-39C
CRS 4



**P.L.D. FACILITIES
PROPOSED FINAL PLAN**



CALL MISS DIG

F.W.O. 9346.14. 41. 42. 44. 45. 51. 52. 53. 54. 57B. 58

DATE	DESCRIPTION	CHECKED BY
10-6-06	REVISED MISC. NOTES	
2-13-07	SHEET NOS. - PAYMENT ITEMS	

**RECONSTRUCTION OF ANTIETAM BRIDGE
OVER DEQUINDRE CUT GREENWAY**
DRAWING NOT TO SCALE

DRAWN BY G.L.S.W.B. CHECKED BY D.W. APPROVED BY M.L.		PUBLIC LIGHTING DEPARTMENT CITY OF DETROIT	FILE NO 27-1122 SHEET NO 28 DATE
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GENERAL INFORMATION

1. CALL MISS DIG (647-7344) 48HRS. PRIOR TO ANY EXCAVATION FOR THE LOCATIONS OF UNDERGROUND UTILITIES.
2. A MINIMUM CLEARANCE OF 3'-6" HORIZONTAL & 1'-0" VERTICAL MUST BE MAINTAINED BETWEEN PROPOSED P.L.D. FACILITIES & EXISTING U.G. WATER FACILITIES.
3. CONTRACTOR TO NOTIFY MICH. CONS. GAS CO. AT 491-6301 IF PROTECTIVE COATED GAS MAIN IS EXPOSED OR DAMAGED.
4. CONTRACTOR TO NOTIFY D.E.CO., MR. J. TYSON AT 237-9564 IF PROTECTIVE COATING OF ANY D.E.CO. HIGH VOLTAGE UNDERGROUND LINE IS EXPOSED OR DAMAGED.
5. ALL EXISTING P.L.D. LIGHTING, TRAFFIC SIGNAL, PRIMARY, TRANSMISSION ETC. CIRCUITS SHALL ALWAYS BE MAINTAINED IN AN OPERATIONAL CONDITION (EXCEPT WHERE OTHERWISE NOTED). NOTIFY P.L.D. SYSTEM OPERATOR AT 224-0500 48HRS. PRIOR TO BEGINNING WORK ON P.L.D. CIRCUITS & KEEP HIM INFORMED ON A DAILY BASIS.
6. EXISTING O.H. & T.S. FACILITIES ARE NOT NECESSARILY SHOWN ON PLANS.
7. CROSSARMS SHALL BE REMOVED AFTER ALL CONTACTS ARE REMOVED. (INCLUDED WITH THE REMOVAL OF OVERHEAD LINES).
8. ALL OVERHEAD WIRES & UNDERGROUND CABLES SHALL CONSIST OF COPPER CONDUCTORS AS PER SPECIFICATIONS.
9. ALL REMOVED WOOD POLES & CROSSARMS SHALL BE DELIVERED TO P.L.D. FOR DISPOSAL BY P.L.D.
10. ALL NEW ANCHOR GUYS SHALL BE INSTALLED ON A 1:1 RATIO OR AS NEARLY AS POSSIBLE (EXCEPT WHERE OTHERWISE NOTED). (STRUT GUYS ARE EXCEPTED).
11. ARM GUYS SHALL BE SIEMENS-MARTIN GRADE. ANCHOR AND POLE GUYS SHALL BE EXTRA HIGH STRENGTH GRADE.
12. INSTALL WOOD POLES SO AS NOT TO INTERFERE WITH TRAFFIC OR FUTURE CONSTRUCTION STAGES.
13. ALL SALVAGED WOOD POLES DIRECTED TO BE INSTALLED SHALL BE POLES PREVIOUSLY INSTALLED NEW ON THIS CONTRACT.
14. ALL TRANSFORMER POLES AND CABLE POLES SHALL BE FITTED UP WITH 120" ARMS. (EXCEPT WHERE OTHERWISE INDICATED).
15. INSTALLATION OF ARMS FOR EQUIPMENT, CUTOUTS, POTHEADS, TRANSFORMERS, ETC. NOT SHOWN ON NEW CABLE AND TRANSFORMER POLES SHALL BE INSTALLED AS PER THE DETAIL DRWG. REQUIREMENT AND SHALL BE INCLUDED IN THE FITTING-UP OF THE CABLE AND/OR TRANSFORMER POLE.
16. ALL POTHEADS ON PRIMARY DISTRIBUTION CABLE POLES SHALL BE FLAT DIVERGENT DISCONNECTING TYPE.
17. WHERE A P.L.D. WOOD POLE WITH OTHER UTILITY CONTACTS IS TO BE REMOVED THE P.L.D. INSPECTOR WILL INDICATE IF THE POLE IS IN FACT TO BE REMOVED.
18. ALL TRAFFIC STREET SIGNS SUCH AS "NO PARKING", "NO STANDING" ETC. SHALL BE TRANSFERRED FROM OLD STD. OR POLE TO NEW STD. OR POLE AT SAME LOCATION OR IN CLOSE PROXIMITY BY DEPT. OF TRANSPORTATION.
19. ALL TRAFFIC SIGNALS SHALL BE MOUNTED WITH NEW STANDARD TRAFFIC SIGNAL BRACKETS & FITTINGS.
20. ALL TRAFFIC SIGNAL ITEMS, AS CALLED FOR ON PLANS, SHALL INCLUDE AS INCIDENTAL TO THE TRAFFIC SIGNAL ALL CABLES FROM THE CONTROLLER TO THE TRAFFIC SIGNALS & FOUNDATIONS AS INDICATED.
21. WHEN ENTERING PROPOSED CONDUIT INTO EXISTING MANHOLES & HANDHOLES EXERCISE CAUTION NOT TO DISTURB EXISTING CABLES. WALLS SHALL BE CORE DRILLED ONLY FOR ENTRANCE OF CONDUITS. NEW CONDUITS SHALL NOT INTERFERE WITH RACKING AND / OR TRAINING OF CABLES.

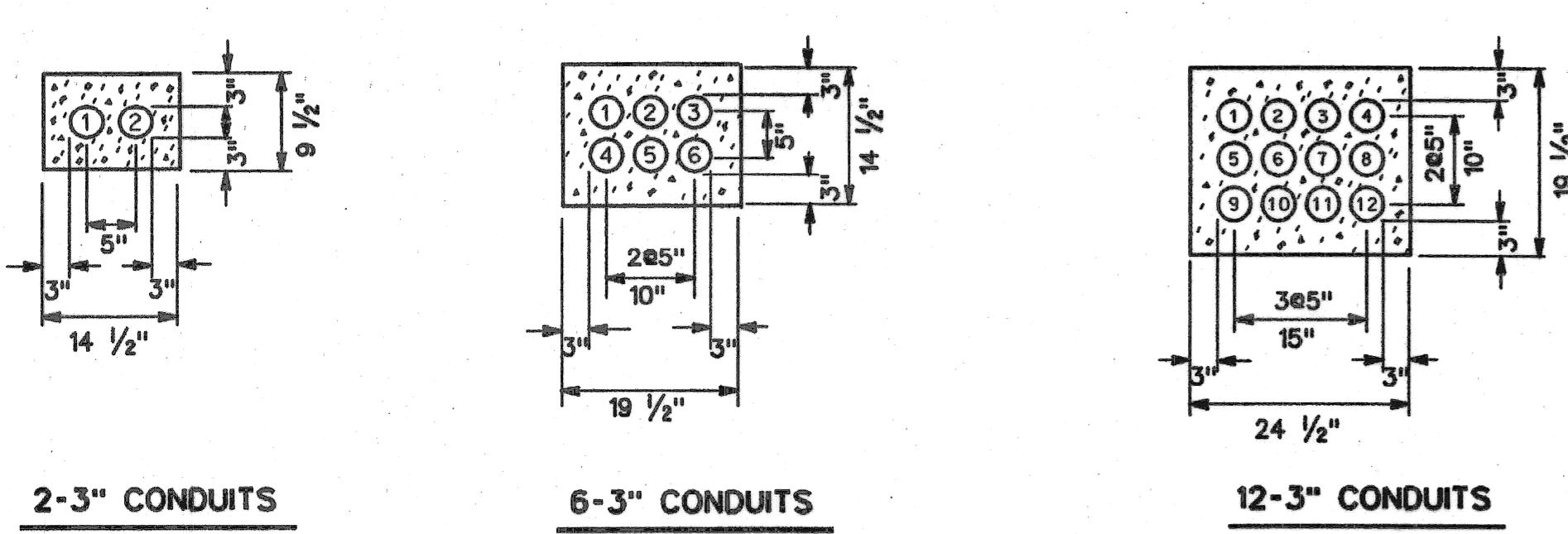
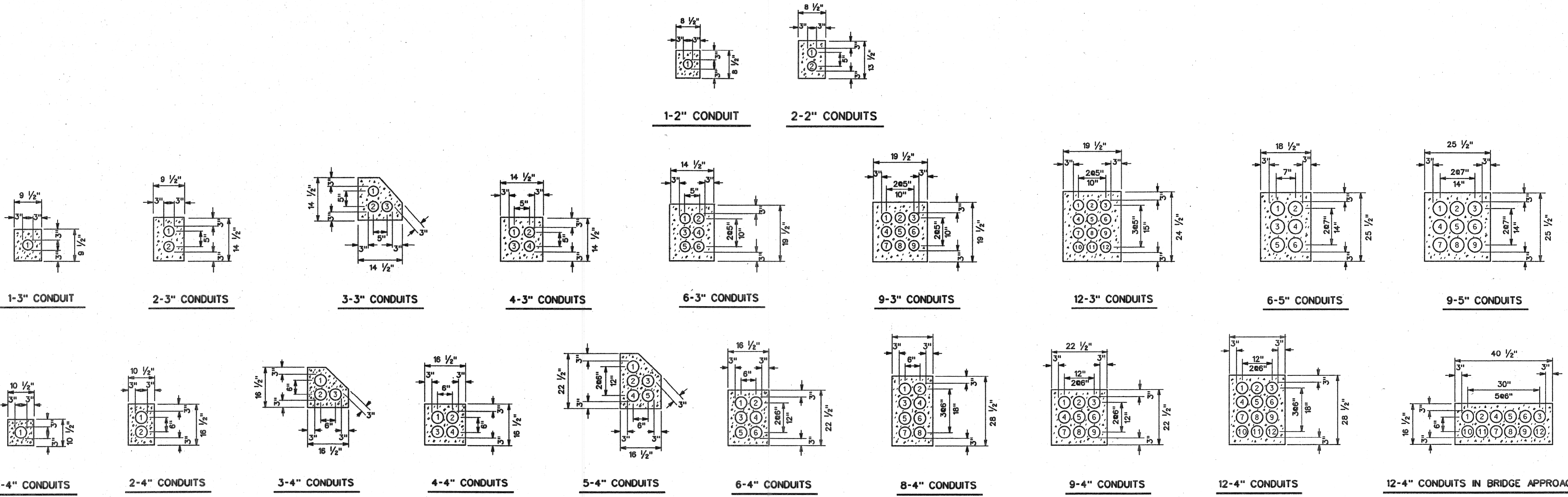
22. ALL SALVAGED TRAFFIC SIGNALS DIRECTED TO BE INSTALLED SHALL BE TRAFFIC SIGNALS PREVIOUSLY INSTALLED NEW ON THIS CONTRACT. (EXCEPT AS OTHERWISE INDICATED).
23. FOR TRAFFIC SIGNAL SPAN WIRE USE 3/8" SIEMENS-MARTIN GRADE AS PER SPECIFICATIONS.
24. SIDEWALK RAMPS OF THE TYPE & LOCATION AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER SHALL BE CONSTRUCTED.
25. SEAL-END OF CABLE WHERE COILING OF CABLE IS CALLED FOR ON PLANS. (CONTRACTOR SHALL RECEIVE PAYMENT FOR COILED-UP CABLES).
26. CONTRACTOR SHALL DELIVER WHERE REQUIRED TO THE PUBLIC LIGHTING DEPARTMENT THE T.S. CONTROLLER FOR TIMING. CONTRACTOR SHALL PICK-UP CONTROLLER FROM P.L.D. WHEN READY FOR INSTALLATION.
27. PROPOSED T.S. SHALL BE PUT INTO OPERATION AT TIME OF REMOVAL OF EXISTING T.S. FACILITIES. CONTRACTOR SHALL NOTIFY THE P.L.D. INSPECTOR IF HE IS UNABLE TO MAINTAIN T.S. IN AN OPERABLE CONDITION AT ALL TIMES.
28. THE CANDLEPOWER DISTRIBUTION FOR ALL MERCURY VAPOR & SODIUM VAPOR ST. LTG. LUMINAIRES SHALL BE SEMI-CUTOFF, MEDIUM DISTRIBUTION OF TYPE AS INDICATED ON THE PLANS.
29. ALL LUMINAIRES SHALL BE PROVIDED WITH 240V. INTERNAL BALLASTS AS CALLED FOR ON PLANS. (EXCEPT WHERE OTHERWISE INDICATED.)
30. WHERE REMOVAL OF LUMINAIRES IS CALLED FOR ON PLANS THE ASSOCIATED O.H. SERIES COIL SHALL BE REMOVED BY THE CONTRACTOR. (REMOVE O.H. COIL IS INCLUDED WITH THE REMOVAL OF LUMINAIRE).
31. WHERE INSTALLATION OF NEW MANHOLES OR HANDHOLES OVER EXISTING CONDUITS (TO ACCOMMODATE NEW & EXISTING CONDUITS) IS CALLED FOR ON PLANS, CONTRACTOR SHALL CAREFULLY & SO AS NOT TO DAMAGE EXIST. CABLES, REMOVE THE EXISTING CONDUITS & ENCASEMENT WITHIN HOLES. EXIST. CABLES SHALL BE EXTENDED & PROPERLY TRAINED, RACKED & SUPPORTED.
32. WHERE ABANDONING OF U.G. CABLES IS CALLED FOR ON PLANS OR DIAGRAMS, CONTRACTOR SHALL CUT & REMOVE CABLES WITHIN MANHOLES & HANDHOLES.
33. FOR LOCATIONS OF P.L.D. INSTALLATIONS ON STRUCTURES SUCH AS CONDUITS, HANDHOLES, CONDUIT SLEEVES, GALVANIZED STEEL CONDUITS & ST. LTG. STD. ANCHOR BOLTS SEE STRUCTURE PLANS.
34. PAVEMENT, SIDEWALK, CURB REMOVAL, REPLACEMENT AND EXCAVATION & BACKFILL SHALL BE DONE ACCORDING TO CITY OF DETROIT SPECIFICATIONS.
35. UNDERGROUND CABLE QUANTITIES ARE ITEMIZED ON GENERAL PLANS. ALL CABLES SHALL BE TAGGED IN ALL M.H.'S & H.H.'S. THIS INCLUDES EXIST. CABLES THAT ARE CONVERTED TO MULTIPLE, RECONNECTED TO OTHER CIRCUITS OR RENDERED DEAD.
36. ALL NEW, SALVAGED & CONVERTED STEEL ST. LTG. STD.'S SHALL BE PAINTED.
37. ALL ST. LTG. UNITS INSTALLED ON THIS CONTRACT AND EXIST. ST. LTG. UNITS CONVERTED OR RE-CONNECTED TO OTHER CIRCUITS SHALL BE STENCILLED OR RE-STENCILLED AS SHOWN ON PLANS. (INCLUDED TO ST. LTG. UNITS)
38. STENCILLING SHALL BE ON THE CURB SIDE OF THE POLE, LOCATED BETWEEN 4' AND 5' ABOVE GRADE. ALL LETTERS AND NUMBERS SHALL BE 2" IN HEIGHT. THE STENCILLING SHALL BE DONE WITH A WEATHER-RESISTANT ENAMEL: BLACK ON GRAY OR ALUMINUM POLES, AND YELLOW OR WHITE ON BLACK OR BRONZE COLORED POLES.

39. WHERE U.G. UTILITIES INTERFERE WITH THE INSTALLATION OF A NEW FOUNDATION, INSTALL THE SPECIAL FOUNDATION OF PARTICULAR DIMENSIONS AS INDICATED ON THE DETAIL DRWG. TO SUIT THE FIELD CONDITION. THERE WILL BE NO EXTRA PAYMENT FOR THE SPECIAL FOUNDATION. IT WILL BE PAID FOR AS A NORMAL FOUNDATION.
40. ALL NEW CONDUIT RUNS SHALL BE BUILT STRAIGHT AS POSSIBLE, BENDS SHALL HAVE NO LESS THAN 26 FT. RADIUS AND NO REVERSE OR "S" BENDS.
41. WHERE TRIMMING OF TREES ON CITY PROPERTY IS CALLED FOR ON PLANS THE CONTRACTOR SHALL OBTAIN A PERMIT FROM THE RECREATION DEPT. OF THE CITY OF DETROIT AND SHALL HAVE SUCH WORK DONE BY A LICENSED TREE SERVICE CONTRACTOR. CALL 931-3950.
42. ALL TREE TRIMMING REQUIRED TO CLEAR NEW OR SALVAGED ST. LTG. & TRAFFIC SIGNAL STD.'S AND O.H. ST. LTG. & TRAFFIC SIGNAL UNITS & O.H. WIRES SHALL BE INCLUDED WITH THE PAY-ITEM & NO EXTRA PAYMENT SHALL BE MADE.
43. WHERE IT IS SHOWN ON PLANS TO HAND DIG FOUNDATION, EXCAVATE BY HAND ENTIRE DEPTH OF FOUNDATION.
44. CONTRACTOR SHALL NOTIFY THE P.L.D. SYSTEM OPERATOR AT 224-0500 & THE D.D.O.T. AFTER COMPLETION OF WORK AT ANY TRAFFIC SIGNAL INTERSECTION.
45. ALL CABLES SHALL BE TRAINED & PROPERLY RACKED IN ALL EXISTING MANHOLES & HANDHOLES. RACKS ARE TO BE INSTALLED WHERE NECESSARY & ARE INCLUDED IN THE INSTALLATION OF U.G. CABLE.
46. ALL CONDUITS NOT TERMINATING IN STRUCTURES SUCH AS MANHOLES, HANDHOLES OR FOUNDATIONS SHALL EXTEND 3FT. BEYOND PAVEMENT LIMIT (EXCEPT AS OTHERWISE INDICATED). ALL UNOCCUPIED CONDUITS SHALL BE PLUGGED.
47. ALL NEW U.G.-FED ST. LTG. UNITS SHALL BE INSTALLED 2'-6" BACK OF FACE OF CURB UNLESS OTHERWISE INDICATED ON PLANS.
48. D.S.R. STREETCAR RAILS AND FOUNDATIONS (TRACKS) ARE SHOWN ON THE PLANS IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. EXACT LOCATIONS WITHIN THE STREETS & INTERSECTIONS ARE NOT KNOWN. SOME RAILS MAY BE REMOVED.

LIST OF MATERIAL	
ITEM	QUANTITIES
CONDUIT REPAIR-UNDER PAVEMENT	1 EACH
CONDUIT REPAIR-UNDER SIDEWALK OR DIRT	- EACH
REMOVING STREETCAR RAIL AND FOUNDATION	- LIN.FT.

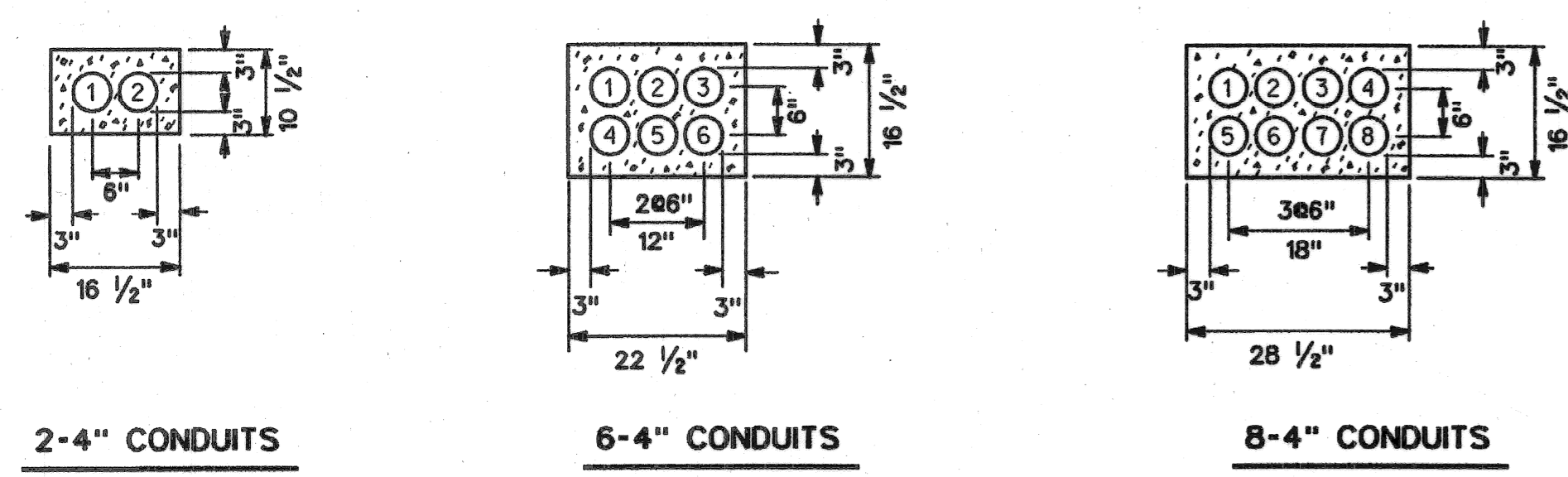
THE ITEMS AND QUANTITIES LISTED ABOVE SHALL APPLY TO ALL LOCATIONS AS DIRECTED BY THE ENGINEER.

REVISIONS	DATE	DESCRIPTION	CHKD. BY	GENERAL INFORMATION & AREA MAP	DRAWN	PLAN PREPARED BY	PUBLIC LIGHTING DEPARTMENT	FILE NO.		
					CEA	CONSULTING ENGINEERING ASSOCIATES INC.		CHECKED BY	SHEET NO.	
					APPROVED	16580 WYOMING		DETROIT, MICH. 48221	APPROVED BY	290F48
					DATE	DRWG. NO.		FILE NO.	DATE	
				JULY 90	2 OF 12	CEA 1202				



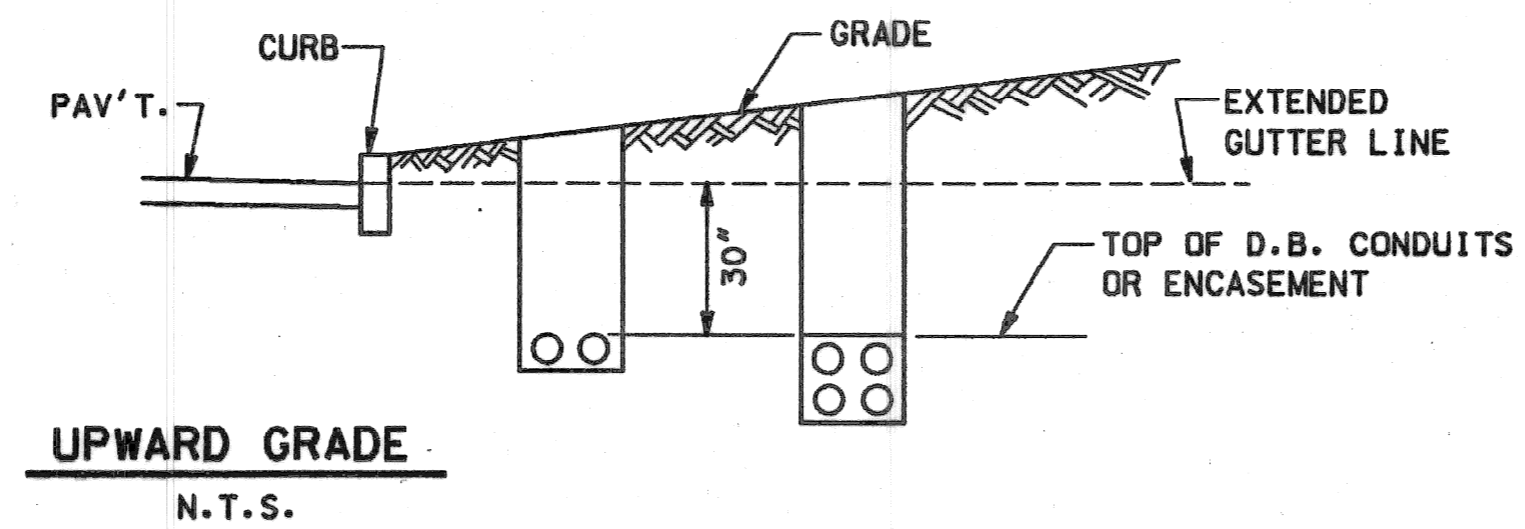
ALTERNATE ARRANGEMENT OF 3" CONDUIT

(TO SUIT FIELD CONDITIONS)
(TO BE APPROVED BY THE ENGINEER)

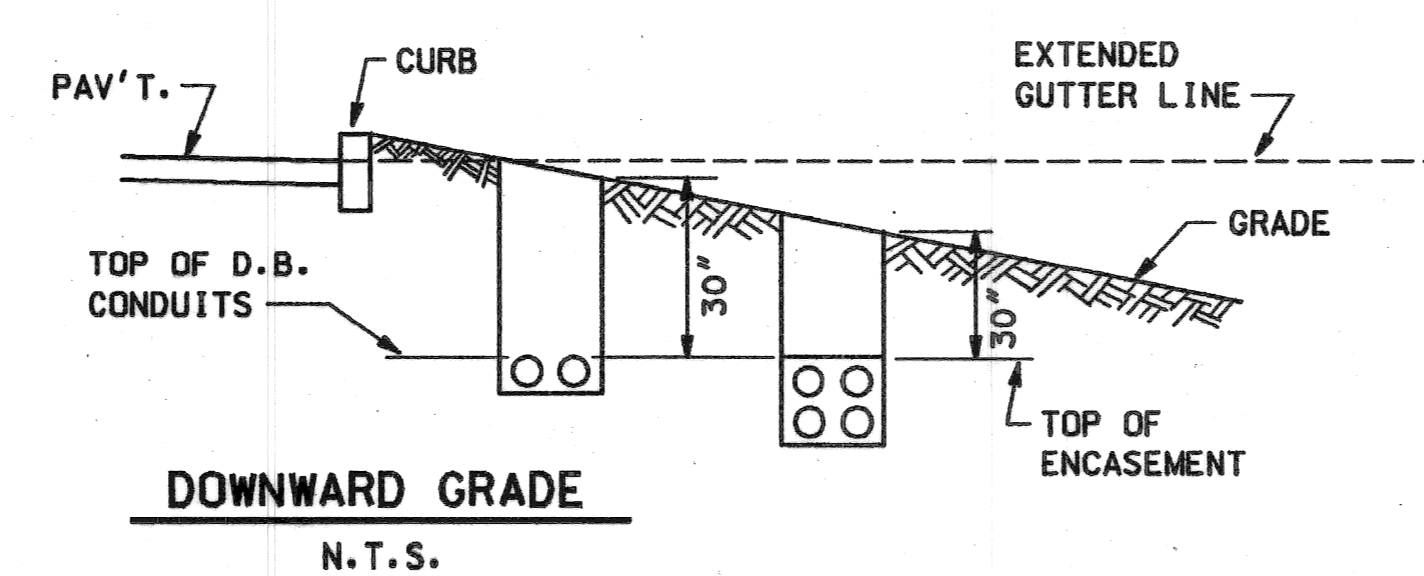


ALTERNATE ARRANGEMENT OF 4" CONDUIT

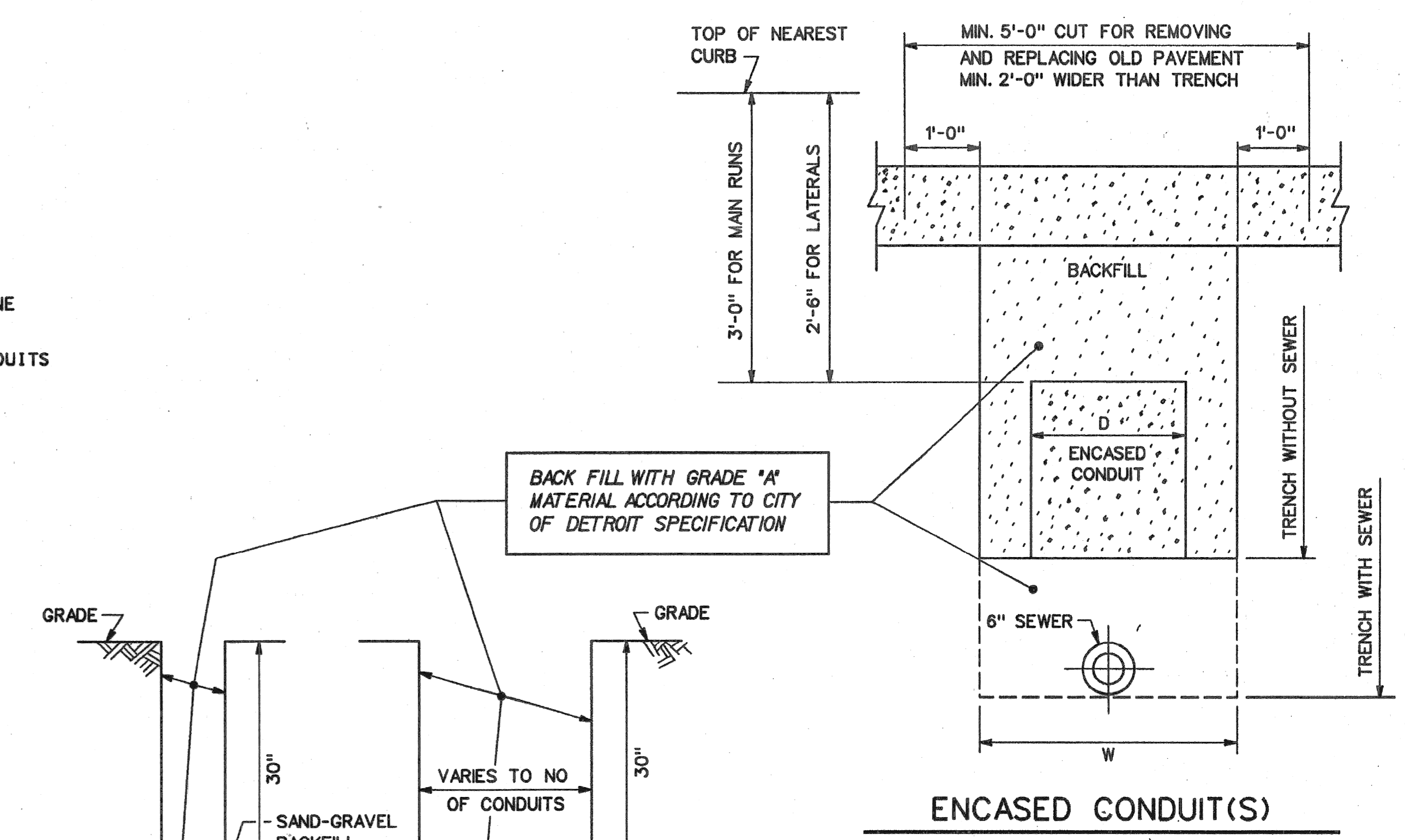
(TO SUIT FIELD CONDITIONS)
(TO BE APPROVED BY THE ENGINEER)



UPWARD GRADE
N.T.S.



DOWNWARD GRADE
N.T.S.



NOTE:
THE PREFERRED TRENCH WIDTH "W" IS THE WIDTH OF "D" OF CONDUIT ENCASUREMENT.

DIRECT BURIAL CONDUIT(S)

DISK FILE: PLD 101

10-01-96 101

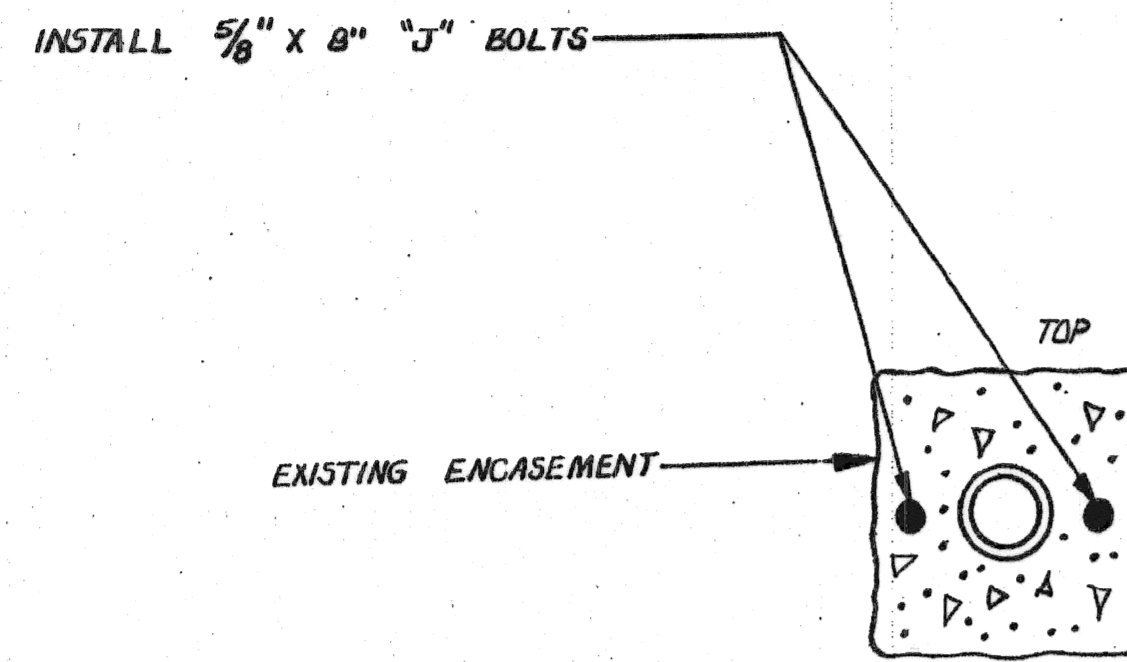
REVISIONS	Date	Description	Chkd. by

ENCASED CONDUIT		Drawn	CEA
		Checked	
		Approved	
		Date	

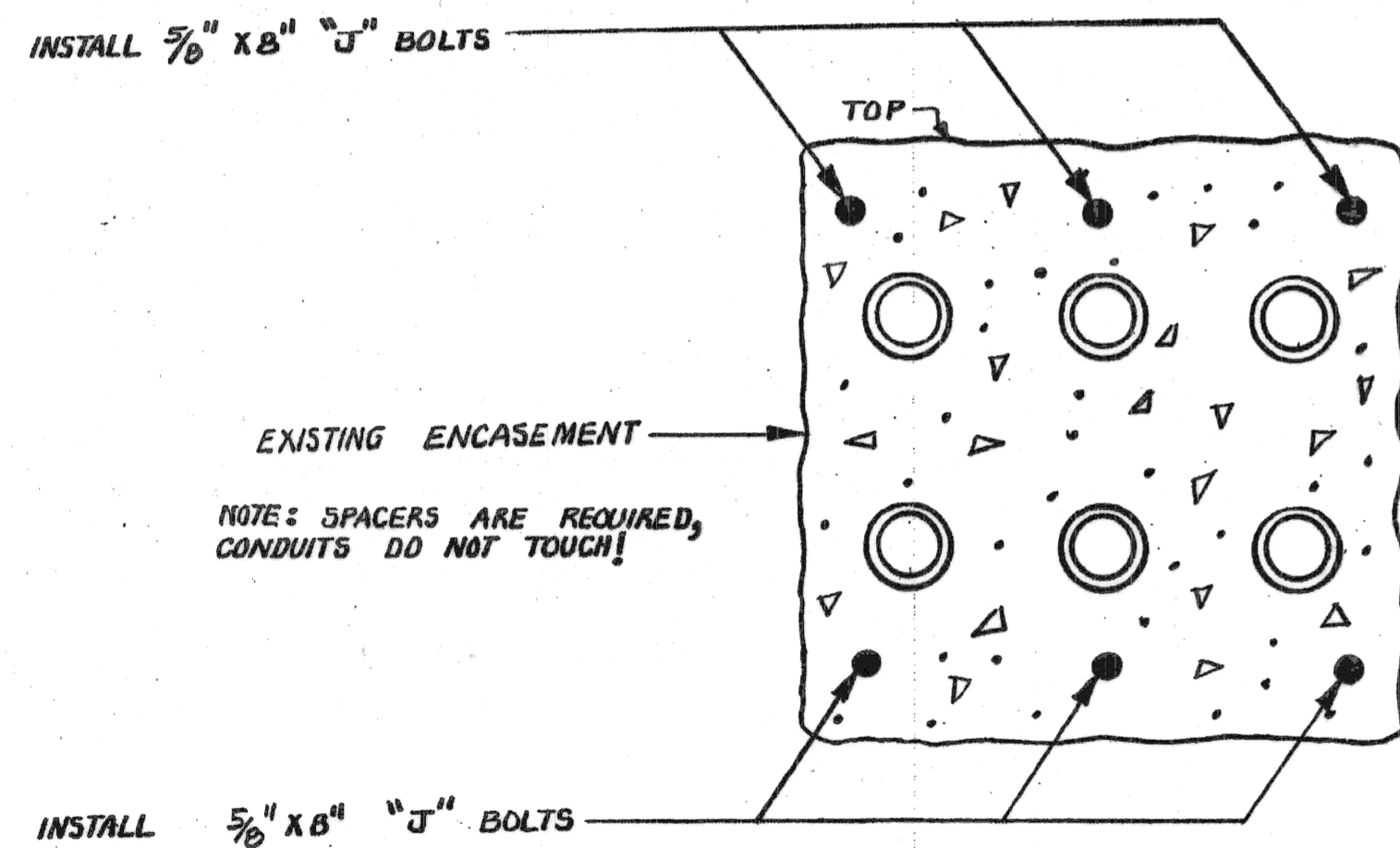
Consulting Engineering Associates, Inc.
16580 WYOMING AVE. DETROIT MICHIGAN 48221
TELEPHONE: (313) 341-5797 FAX: 341-0205

PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT

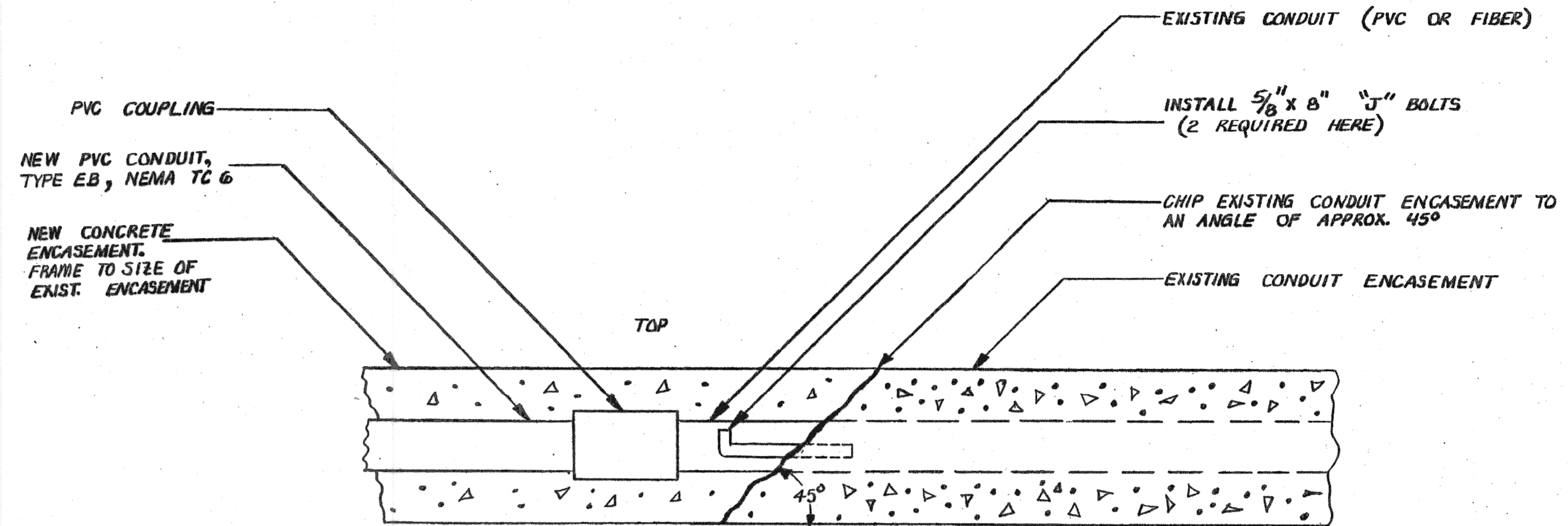
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Sheet No. 30 of 48
Date _____



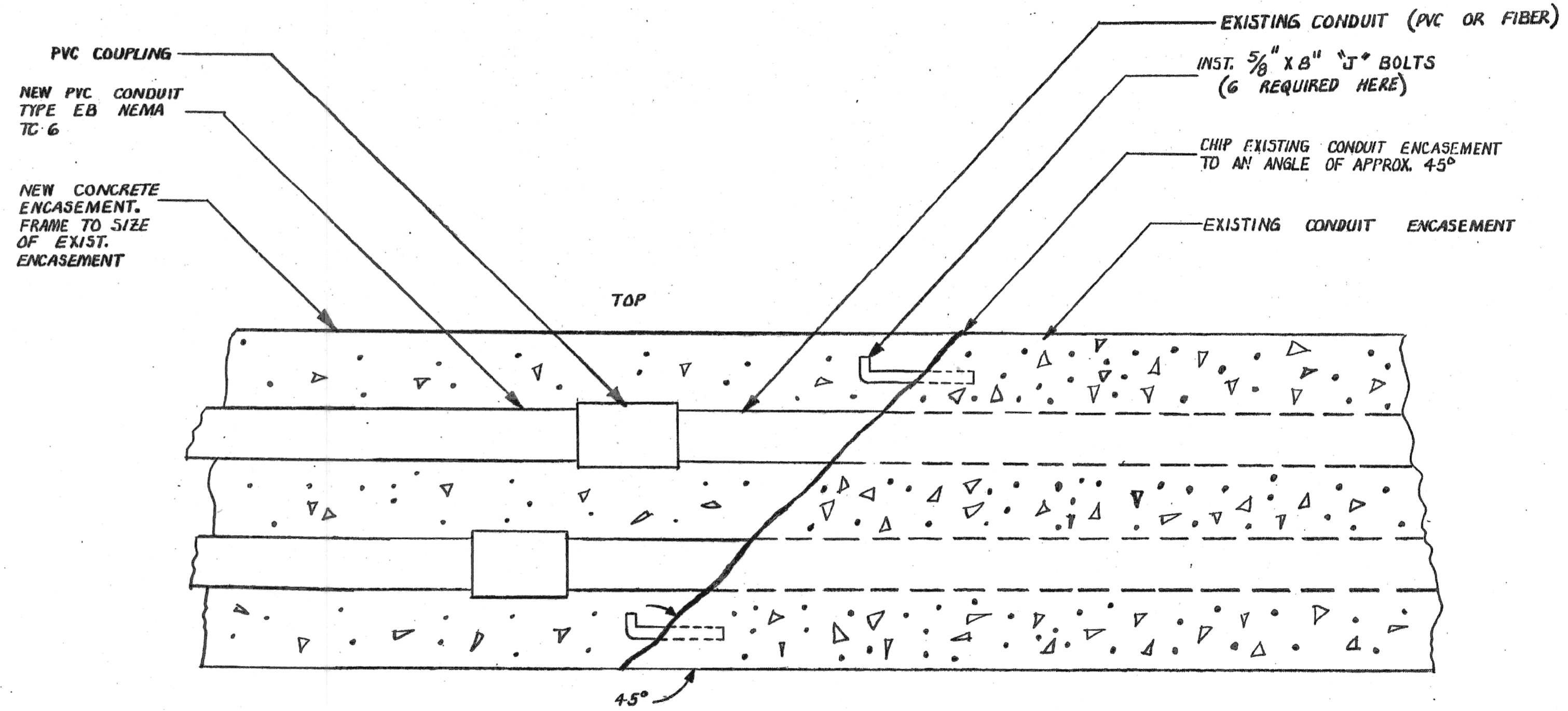
DETAIL A
(N.T.S.)
END VIEW OF CONDUIT ENCASEMENT
SHOWING APPROX. LOCATION OF "J" BOLTS



DETAIL B
(N.T.S.)
END VIEW OF CONDUIT ENCASEMENT
SHOWING APPROX. LOCATION OF "J" BOLTS
(6 REQUIRED)



DETAIL A
(N.T.S.)
SIDE VIEW OF A SINGLE CONDUIT
ENCASEMENT



DETAIL B
(N.T.S.)
SIDE VIEW OF A MULTIPLE
CONDUIT ENCASEMENT

NOTE: TO TERMINATE A NEW CONDUIT BANK
FOR FUTURE EXTENSION, REFERENCE
P.L.D. DRAWING #14-0308

DATE	DESCRIPTION	CHKD BY

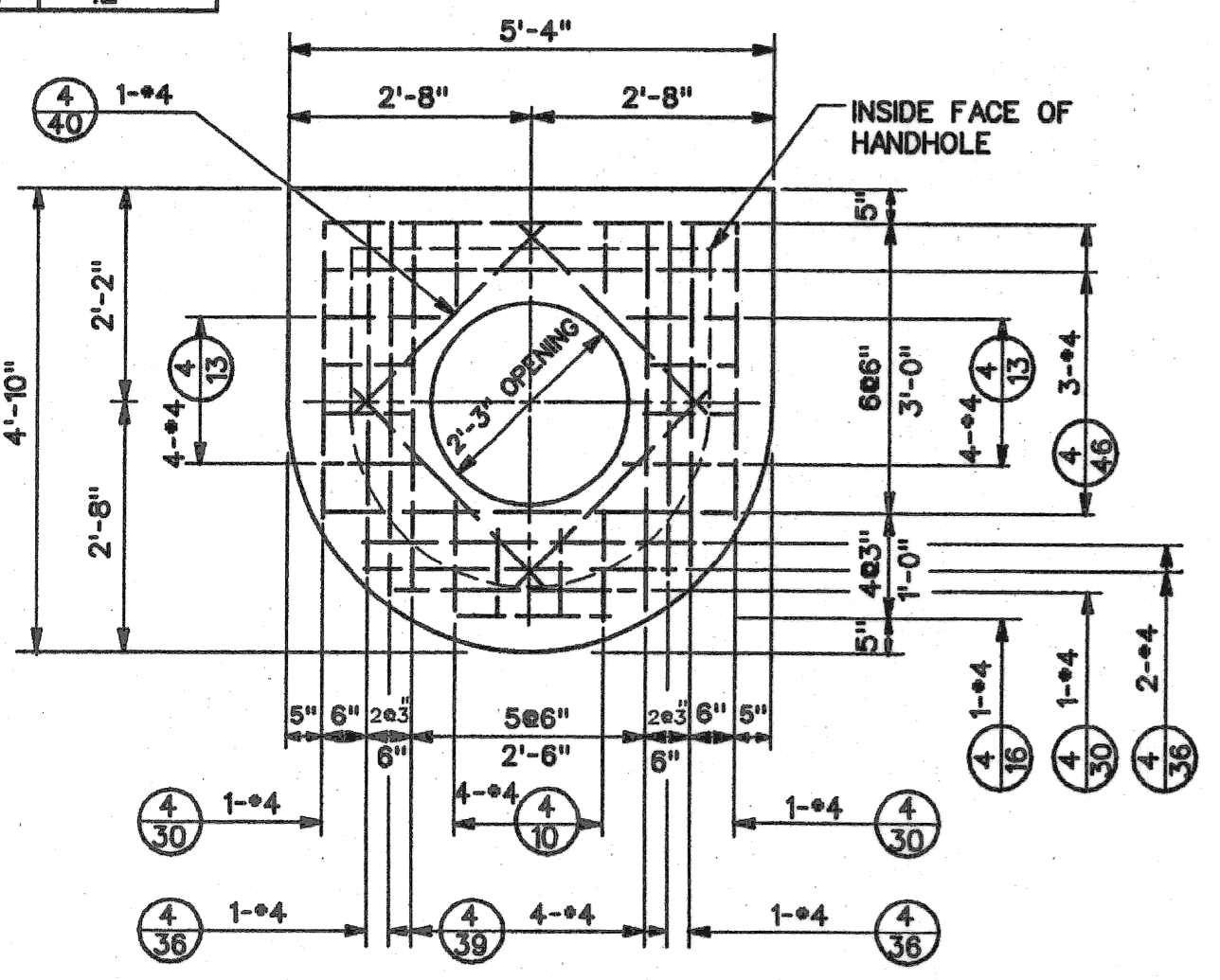
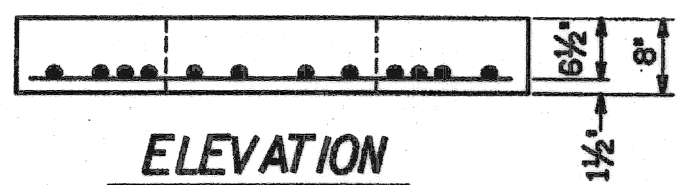
DETAIL FOR JOINING CONDUIT ENCASEMENTS

DRAWN BY
M. LASKOWSKI
CHECKED BY
M.L.
APPROVED BY
M.L.

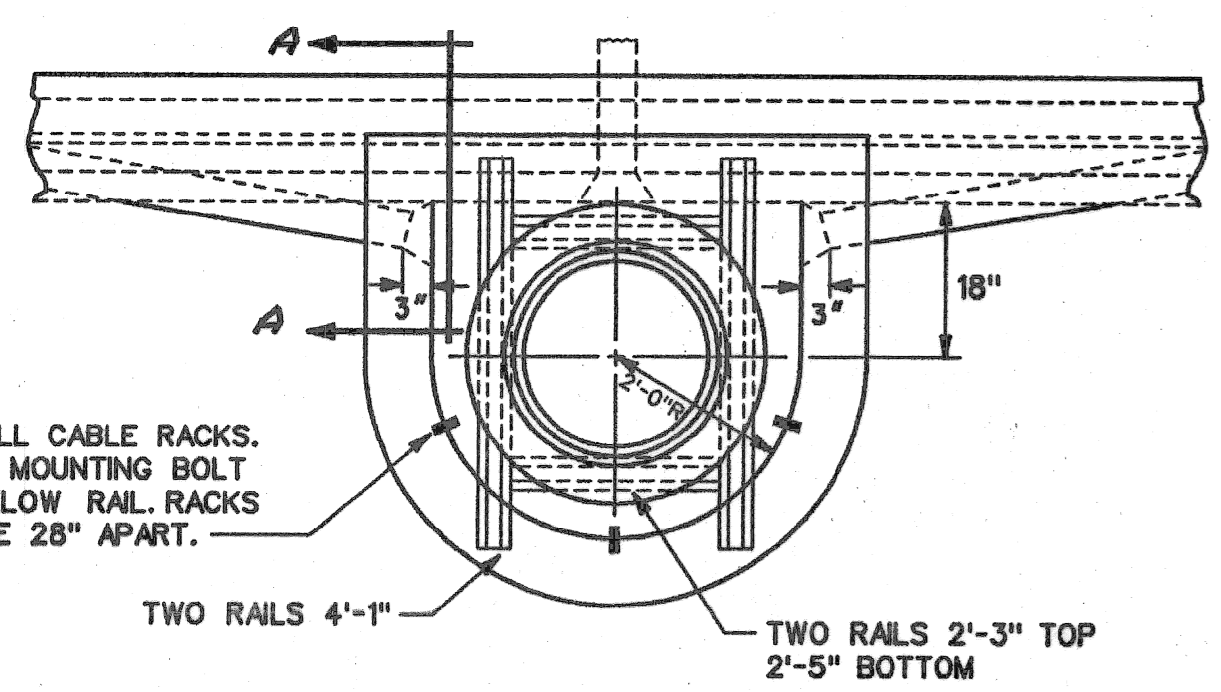
**PUBLIC LIGHTING
COMMISSION
CITY OF DETROIT**

FILE NO.
101 A
SHEET NO.
31 OF 48
DATE

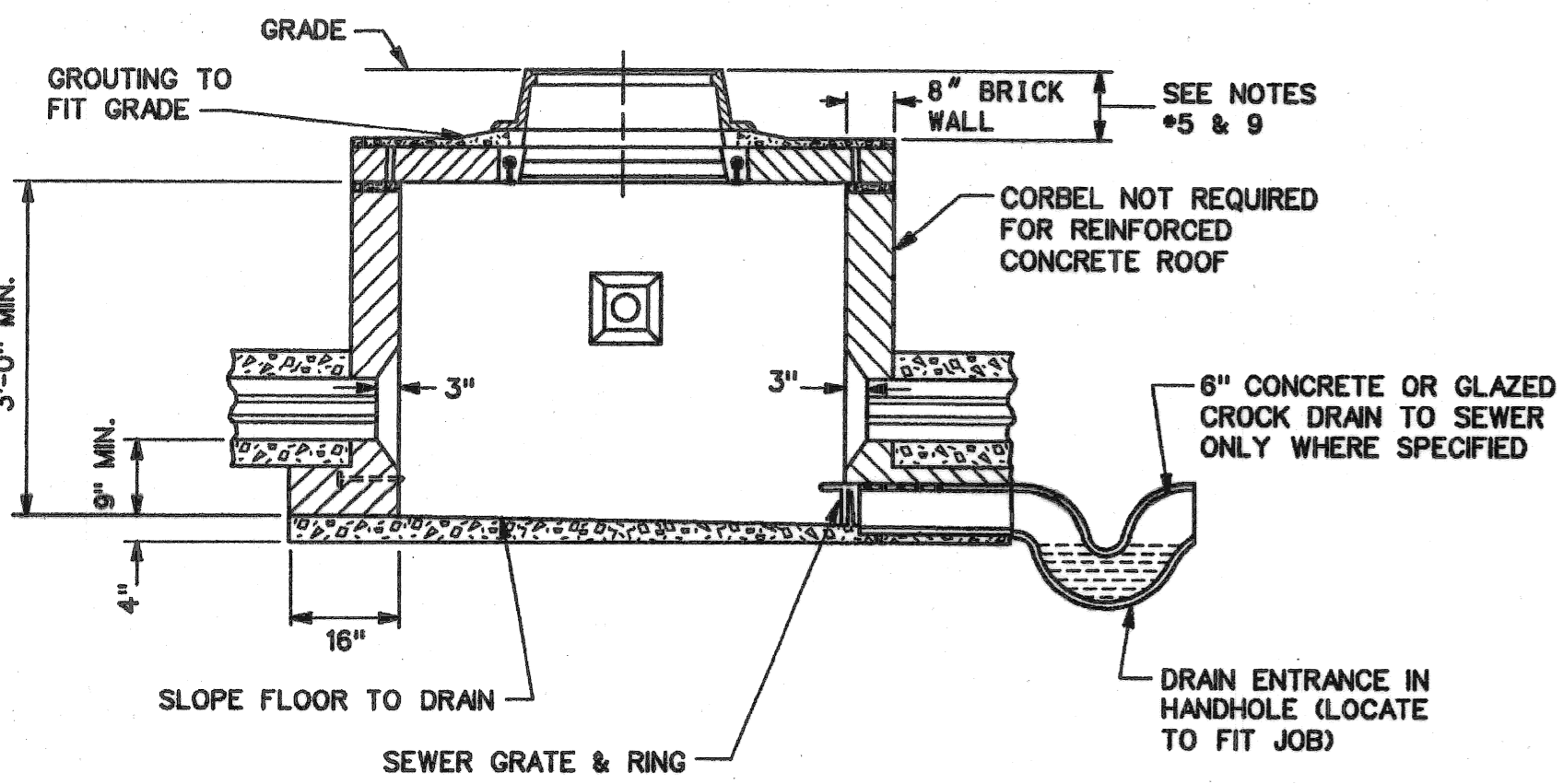
TYPE "D" HANDHOLE TABLE FOR #4 BARS		
MARK NO.	NO.	LENGTH
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4-40	4	4'-0"
4-39	4	3'-8"
4-36	4	3'-6"
4-30	3	3'-0"
4-16	1	18"
4-13	8	15"
4-10	4	12"



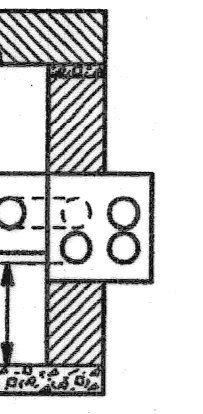
PLAN
ALTERNATE ROOF-TYPE "D" HANDHOLE
N.T.S.



PLAN

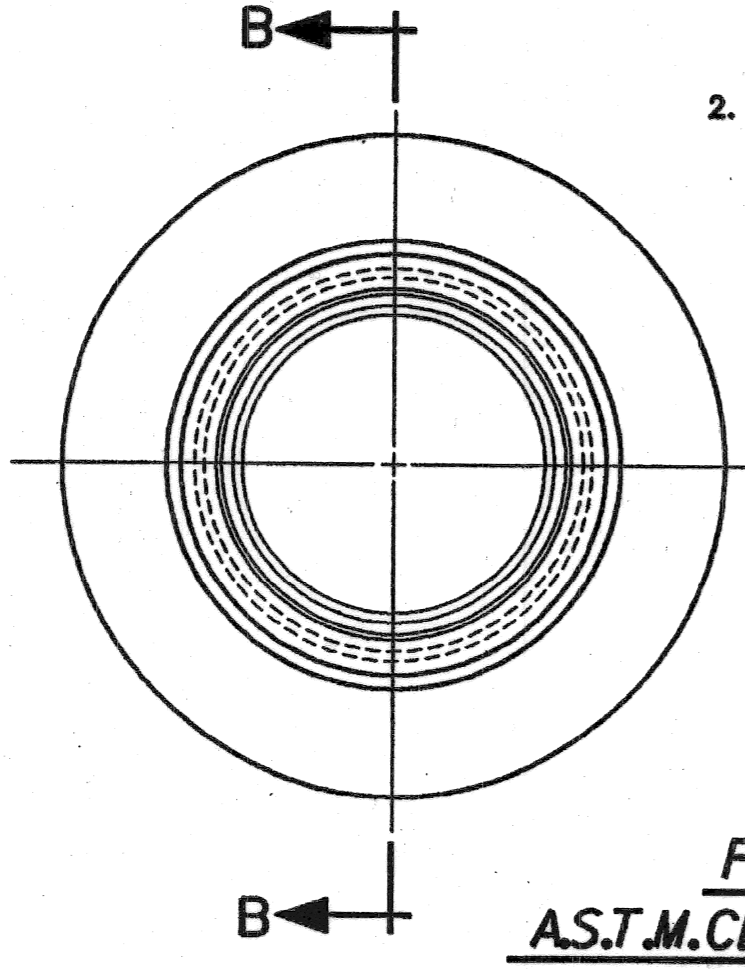


SECTION
TYPE "D" HANDHOLE
N.T.S.

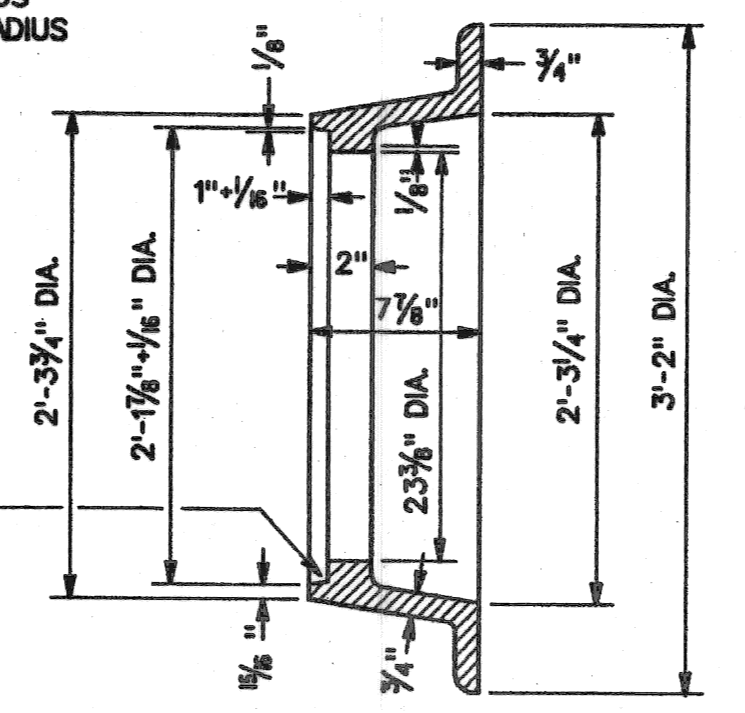


SECTION "A-A"

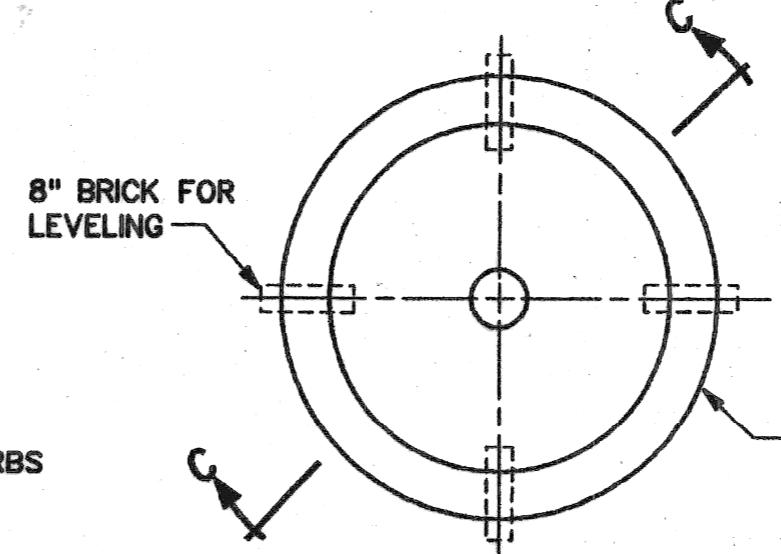
- NOTE:**
1. FRAMES MAY BE A.S.T.M. CLASS 30 GRAY IRON IF THE CONTRACTOR SO ELECTS.
 2. ALL FILLETS ARE 1/2" RADIUS & ALL ROUNDS ARE 1/4" RADIUS



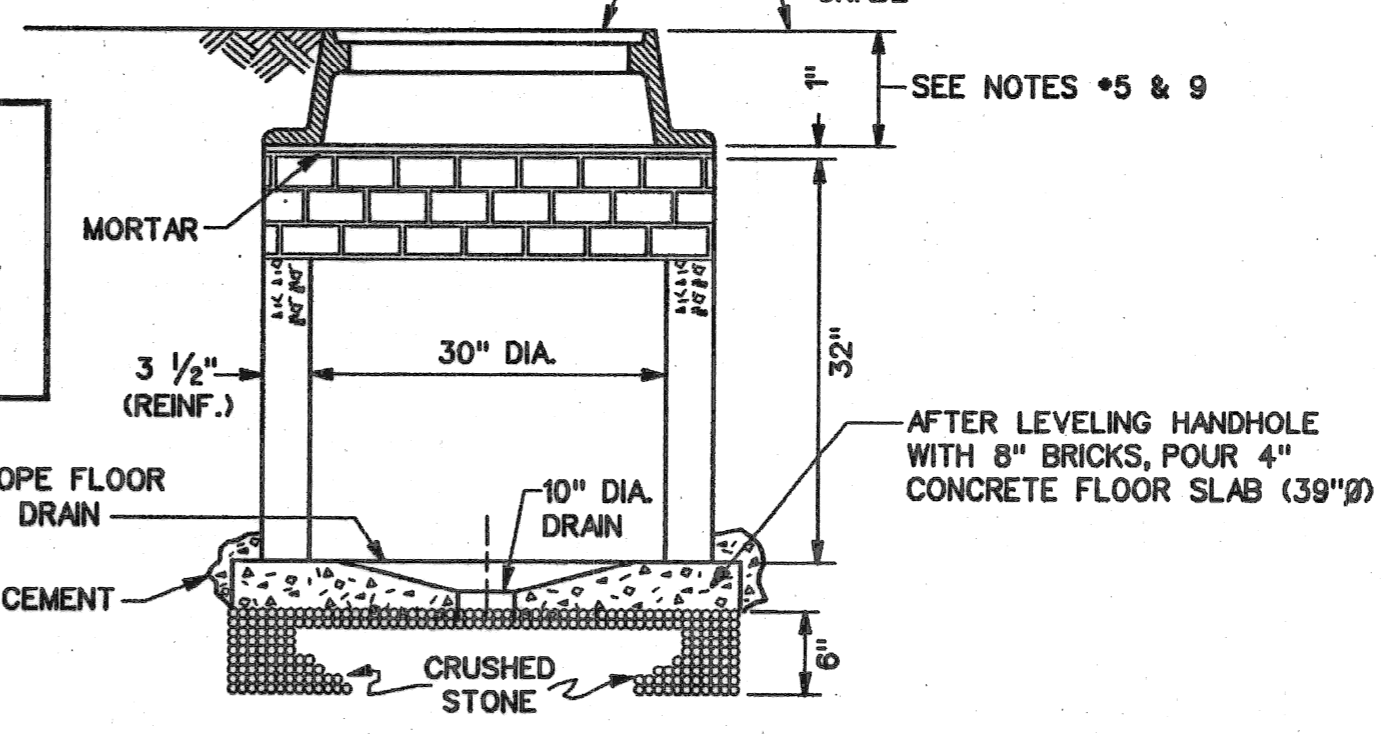
P.L.C. PATTERN NO. 1A
A.S.T.M. CLASS 20 OR 30 GRAY IRON
APPROX. 251 LBS.
HANDHOLE FRAME



SECTION "D-D"

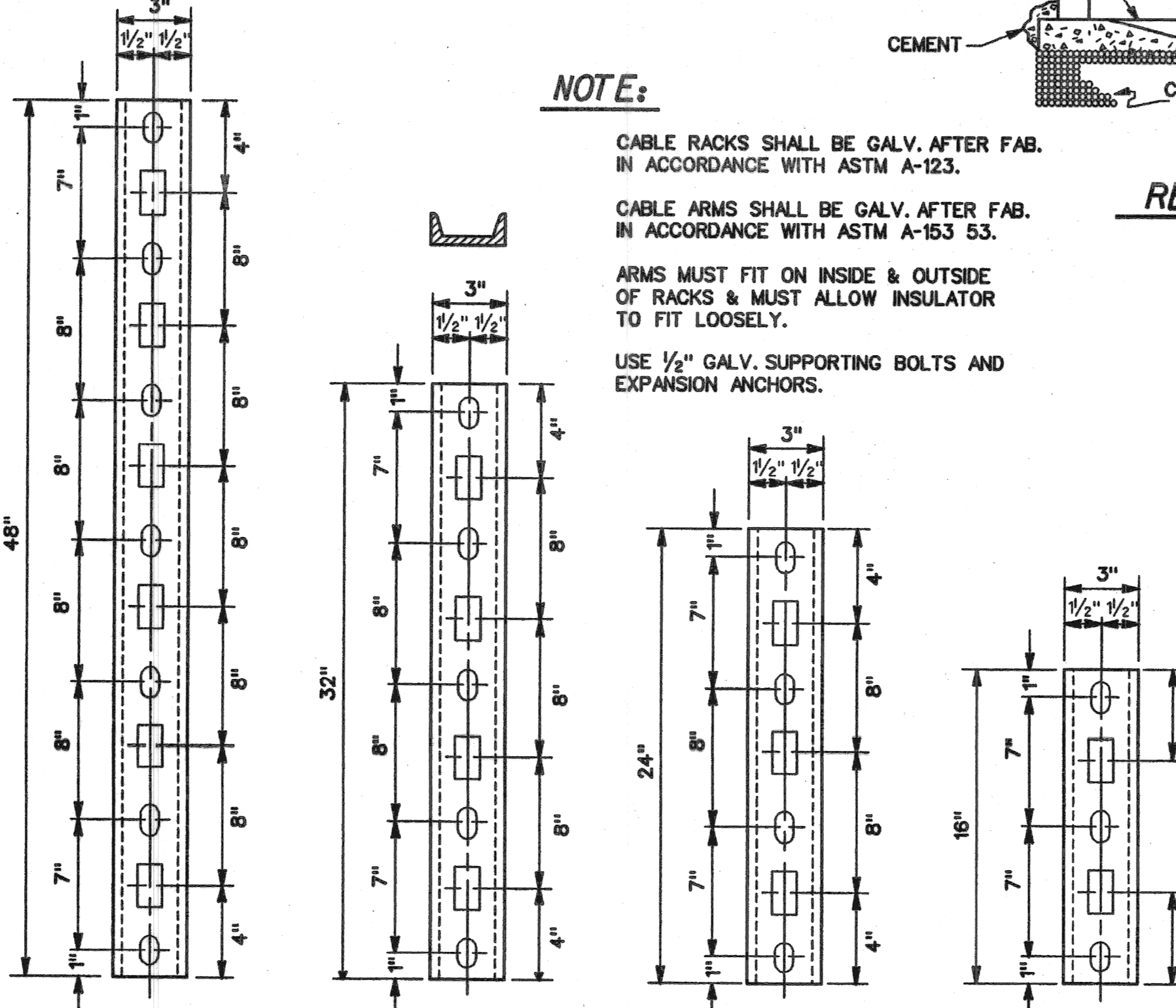


PLAN

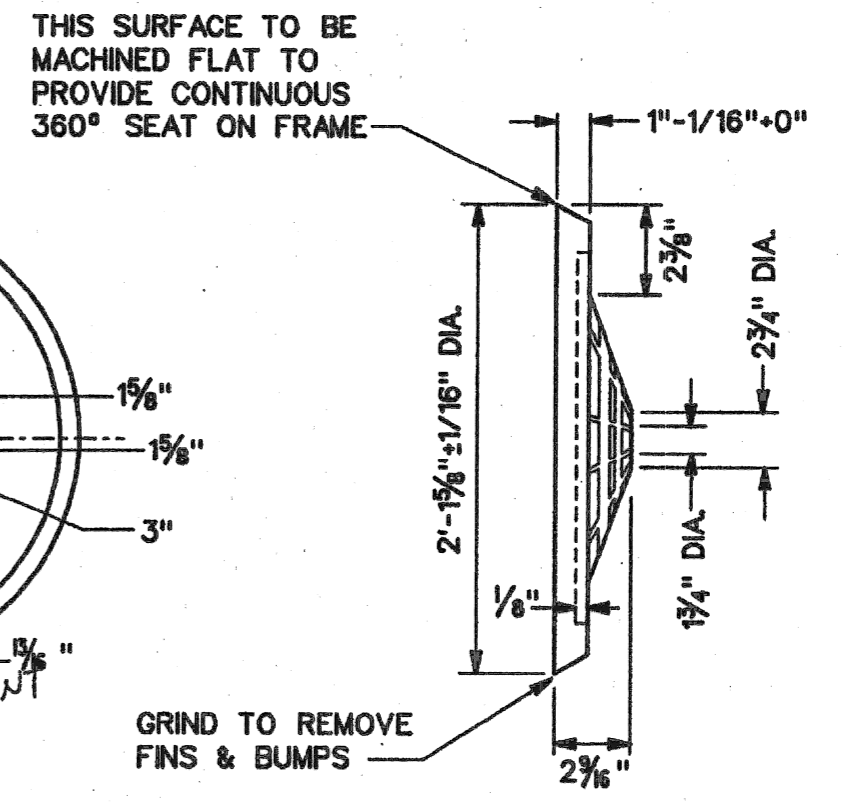


SECTION "C-C"
REINFORCED CONCRETE PIPE (CLASS III)
ROUND HANDHOLE

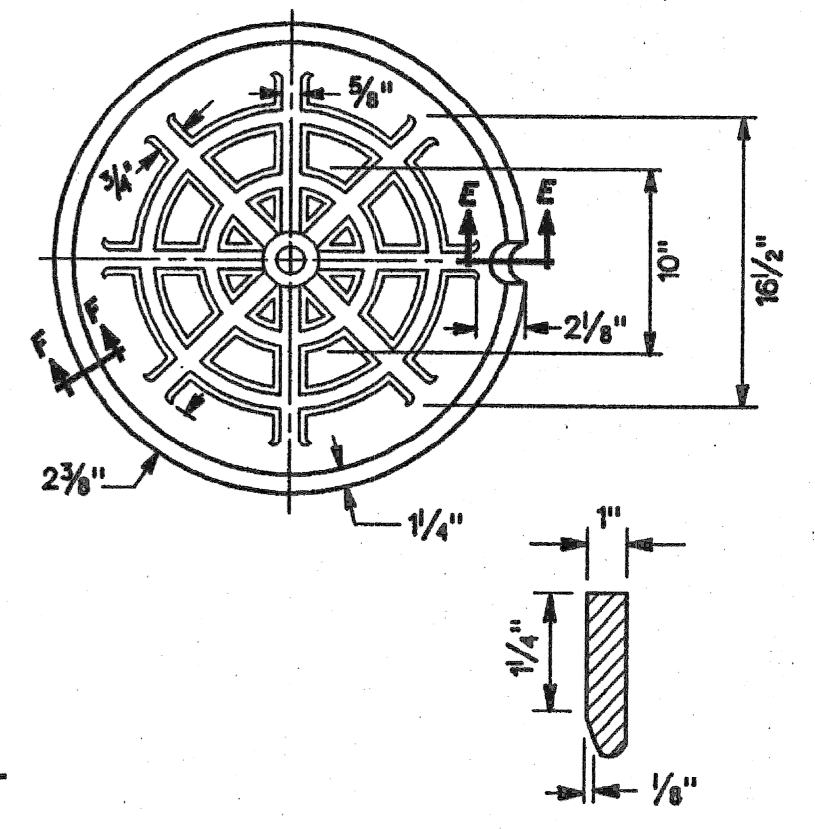
- NOTE:**
1. CABLE RACKS SHALL BE GALV. AFTER FAB. IN ACCORDANCE WITH ASTM A-123.
 2. CABLE ARMS SHALL BE GALV. AFTER FAB. IN ACCORDANCE WITH ASTM A-153 53.
 3. ARMS MUST FIT ON INSIDE & OUTSIDE OF RACKS & MUST ALLOW INSULATOR TO FIT LOOSELY.
 4. USE 1/2" GALV. SUPPORTING BOLTS AND EXPANSION ANCHORS.



CABLE RACKS
3" STD. 4.1# CHANNEL
N.T.S.

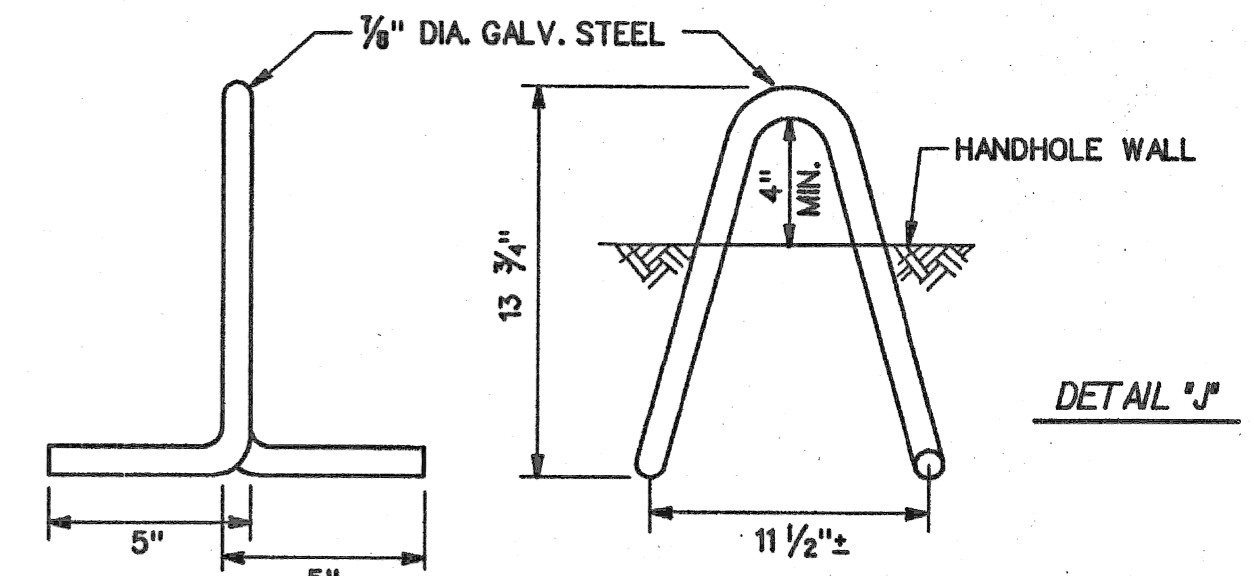


SECTION "E-E"

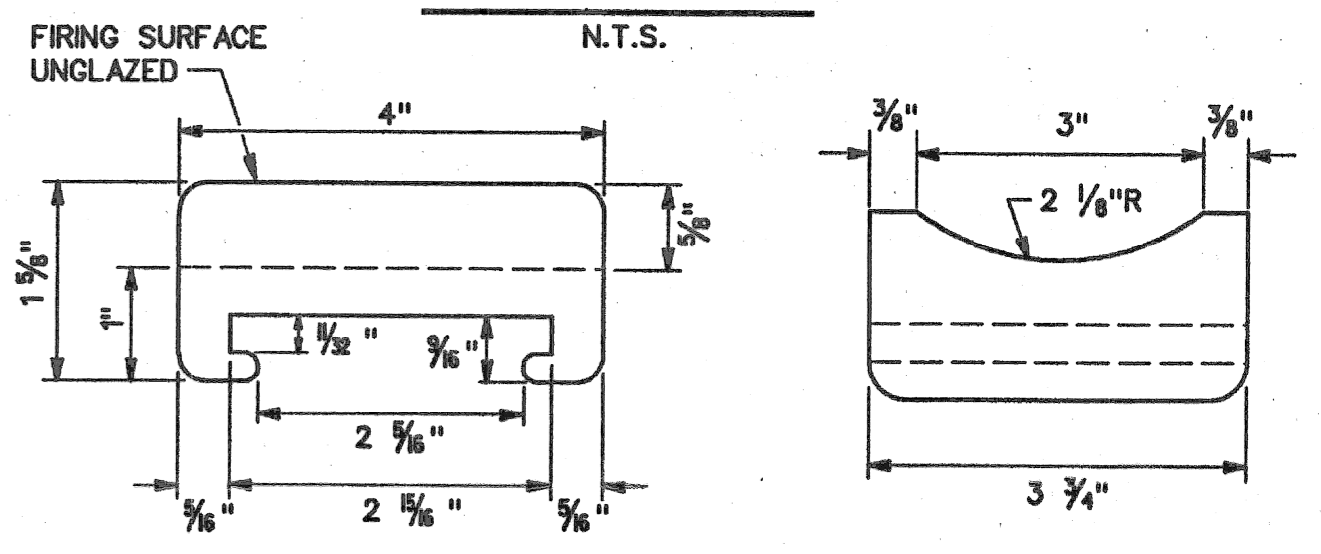


SECTION "F-F"

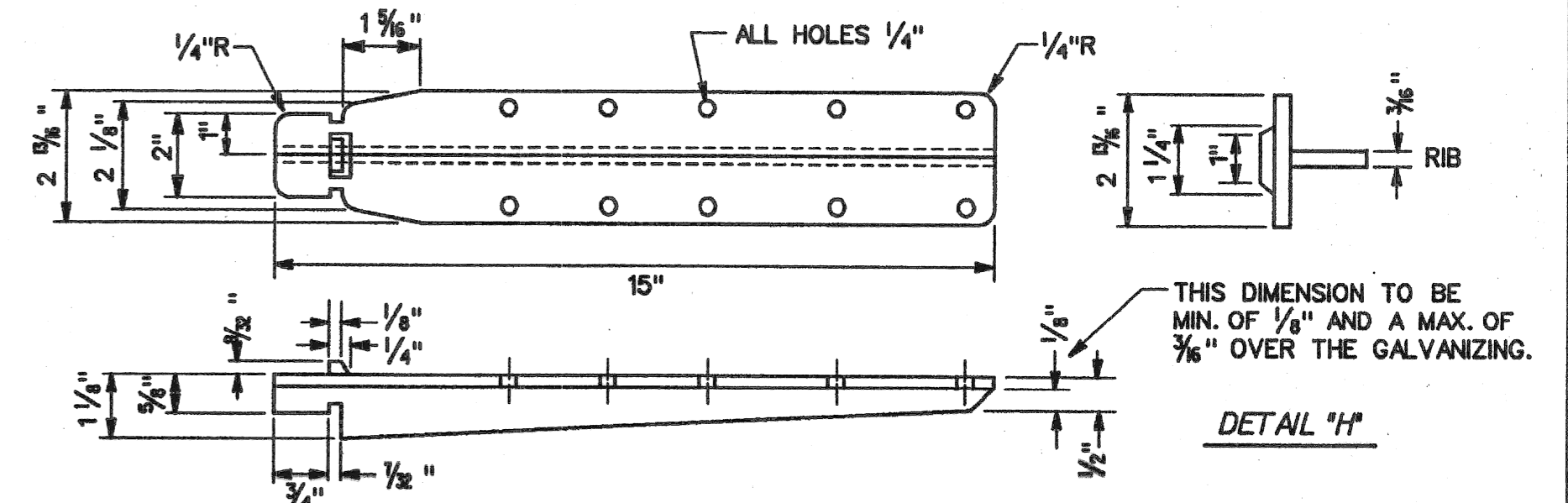
P.L.C. PATTERN NO. 2A
A.S.T.M. CLASS 30 GRAY IRON
APPROX. WT. 145 LBS.
STREET TYPE COVER
TO BE USED IN STREETS & DRIVES



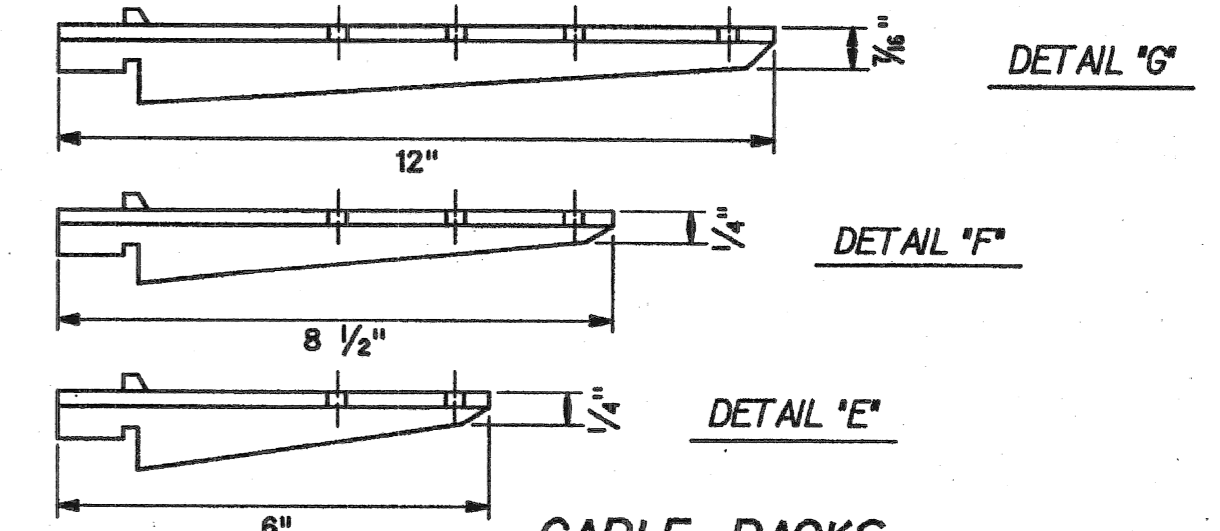
PULLING IRON
N.T.S.



CABLE ARM INSULATORS
WHITE GLAZED PORCELAIN DRY PROCESS
N.T.S.



DETAIL "H"



CABLE RACKS
MALLEABLE CAST IRON
N.T.S.

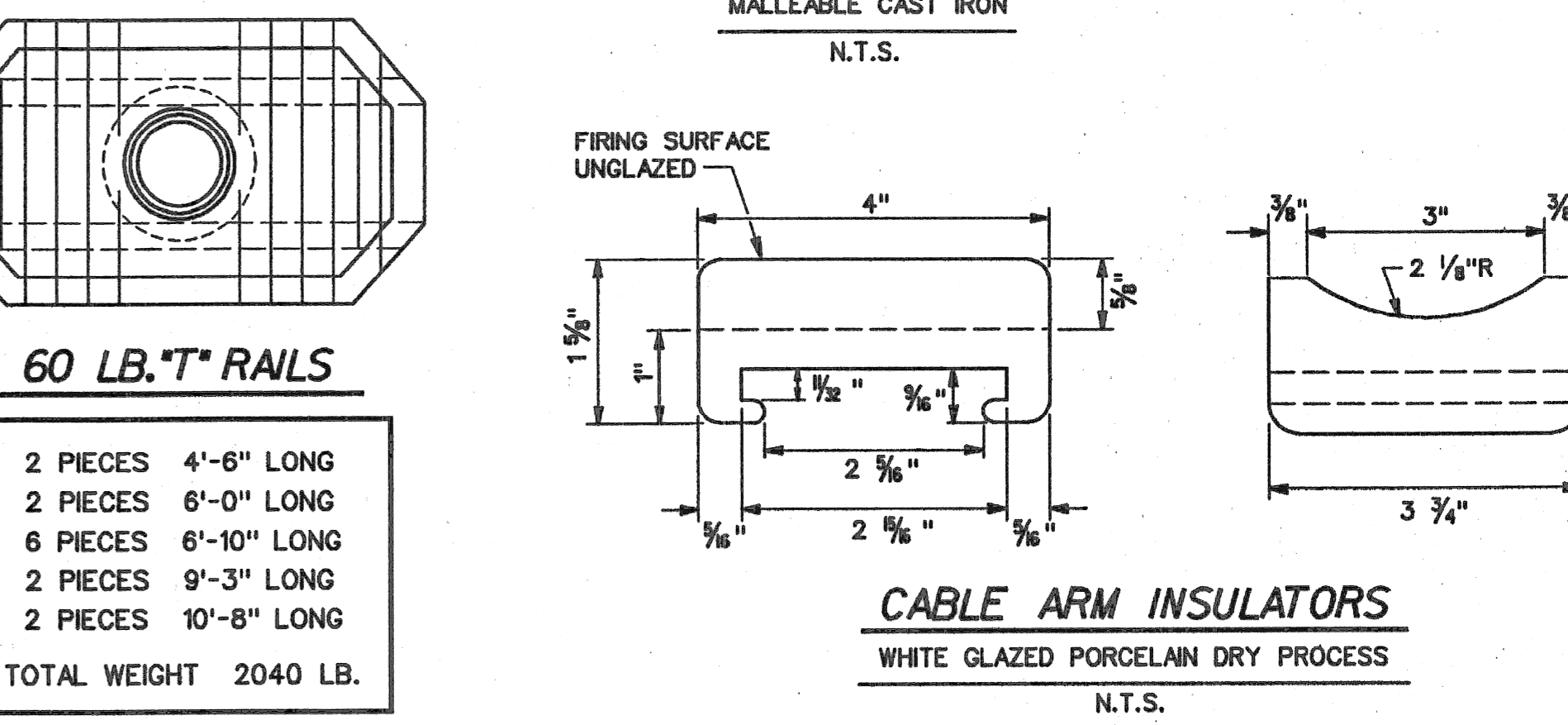
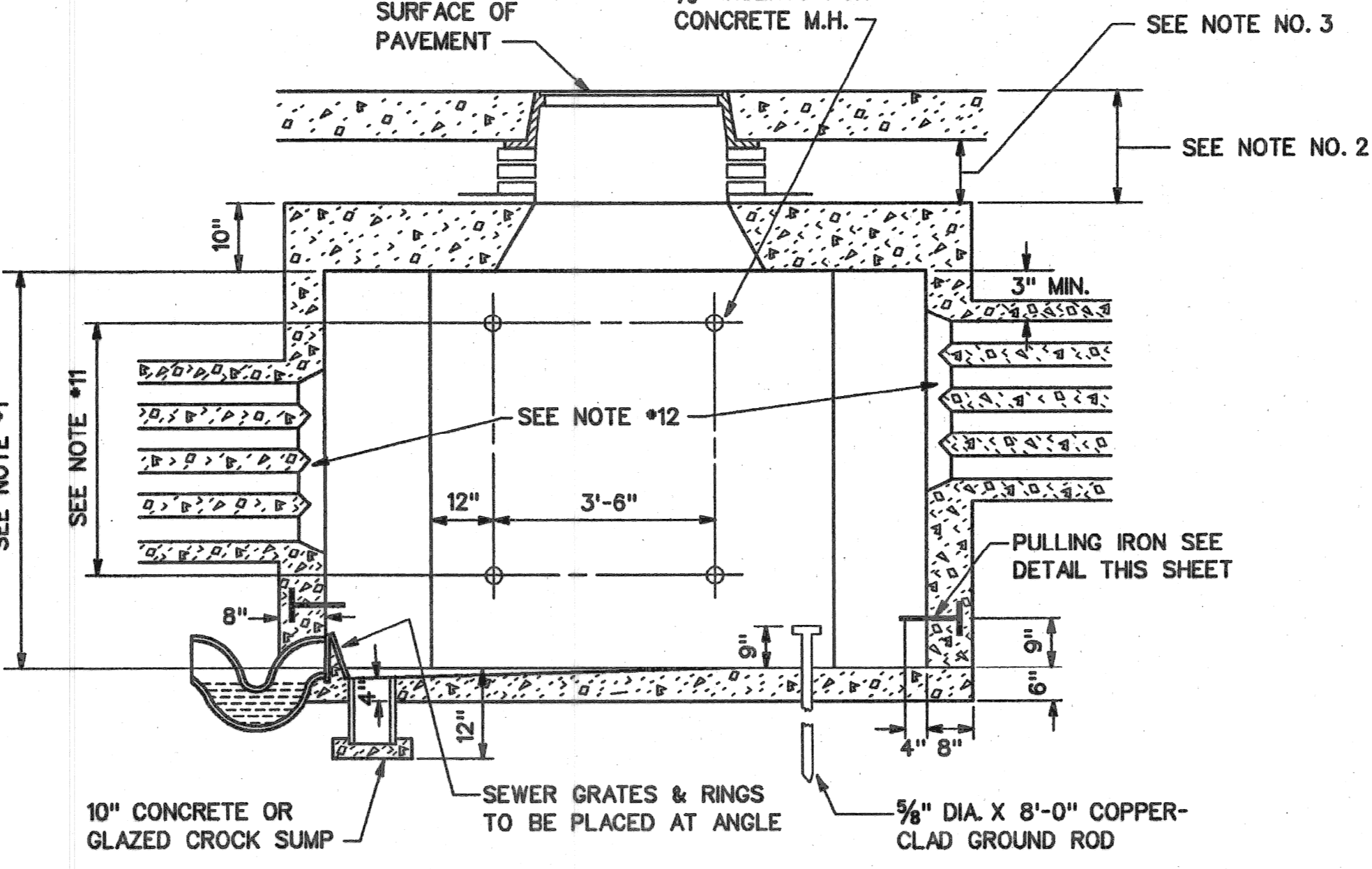
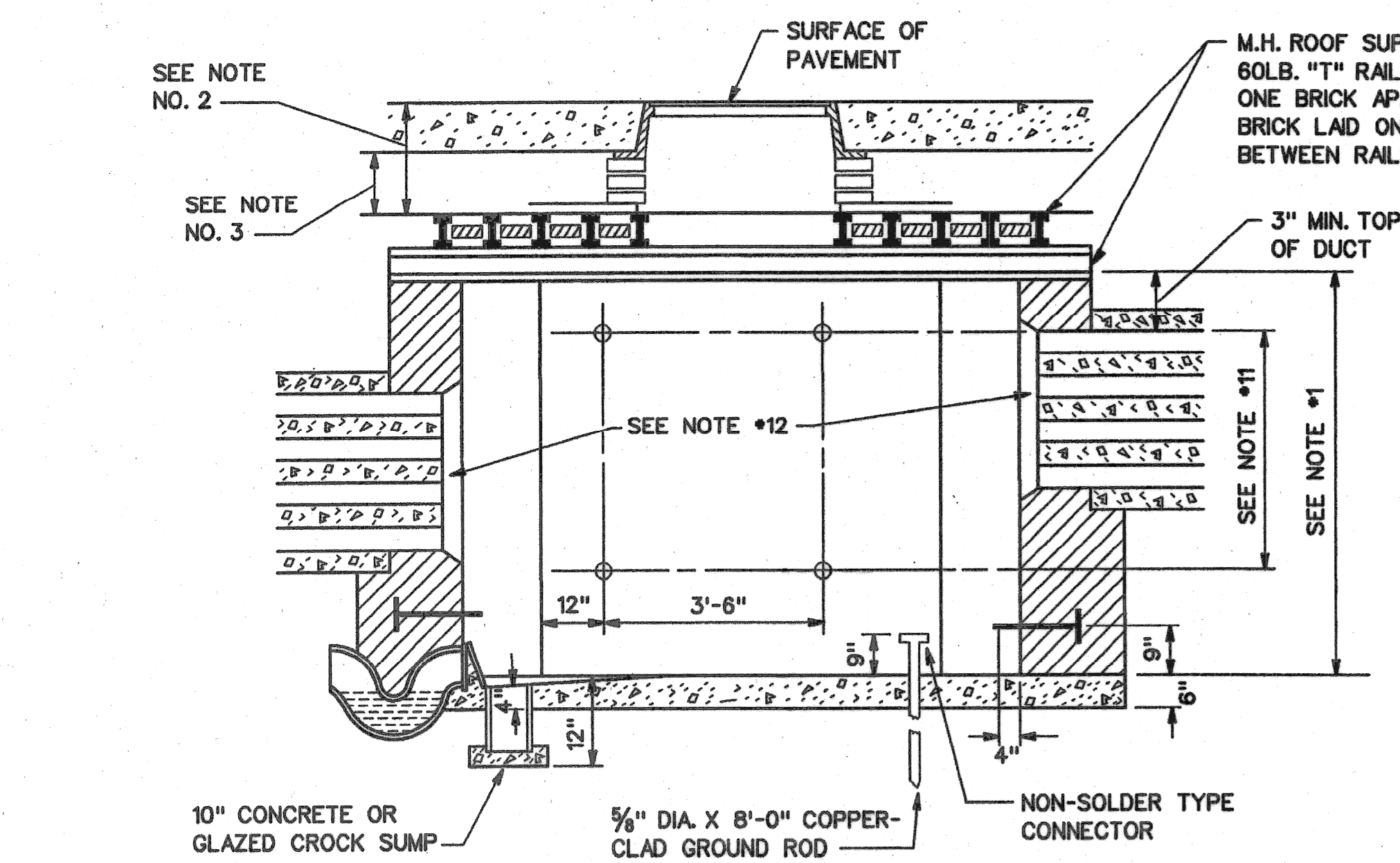
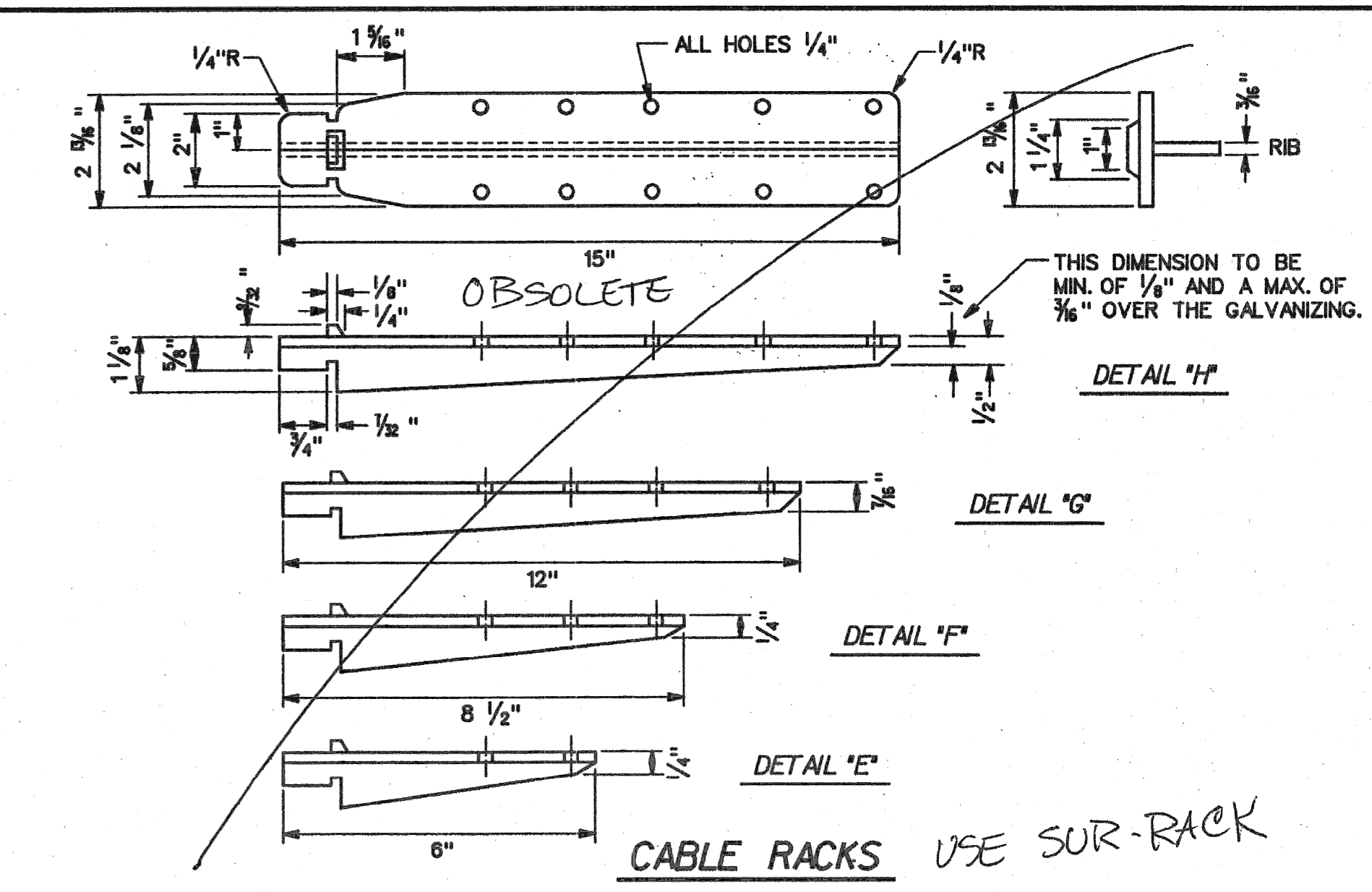
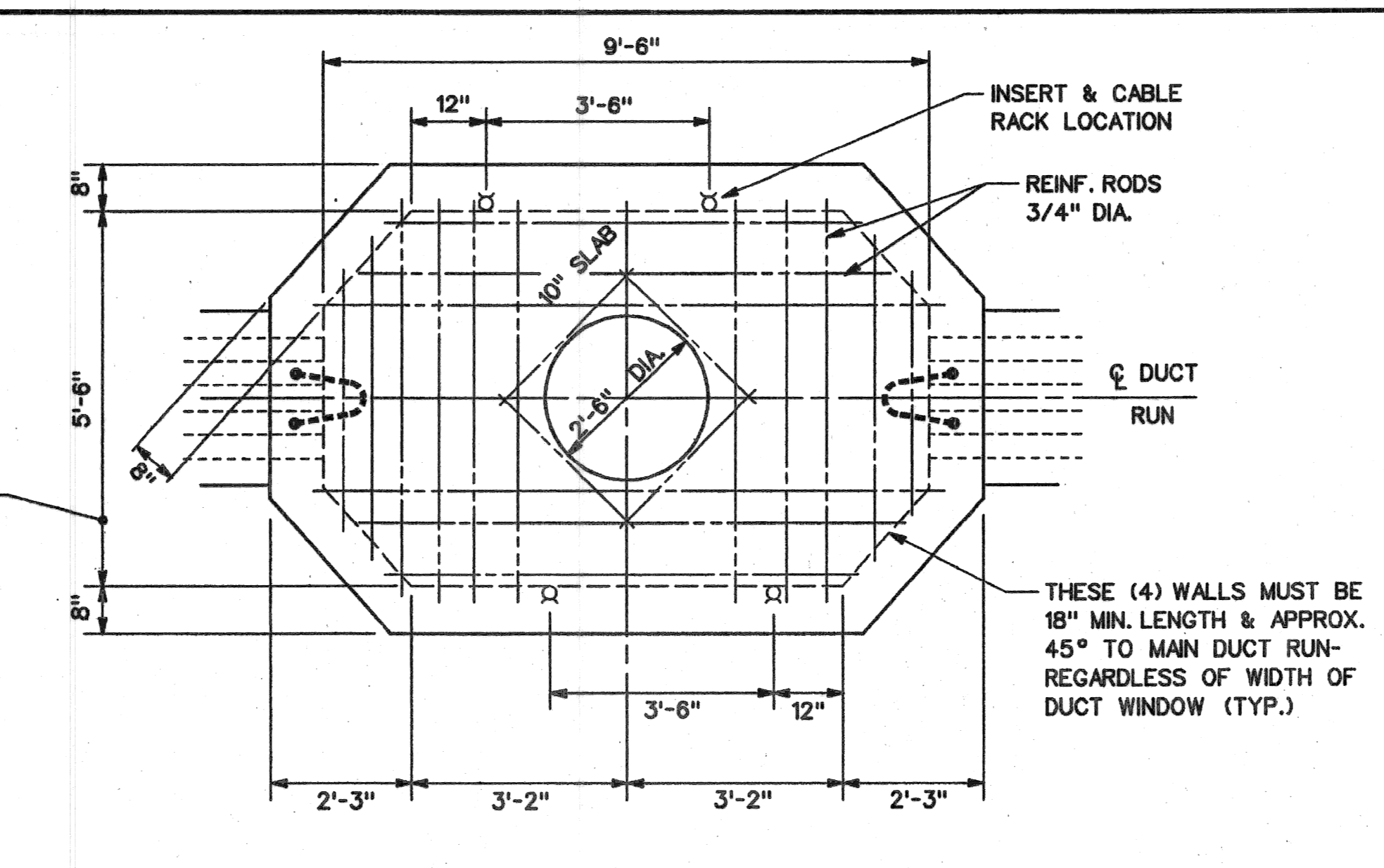
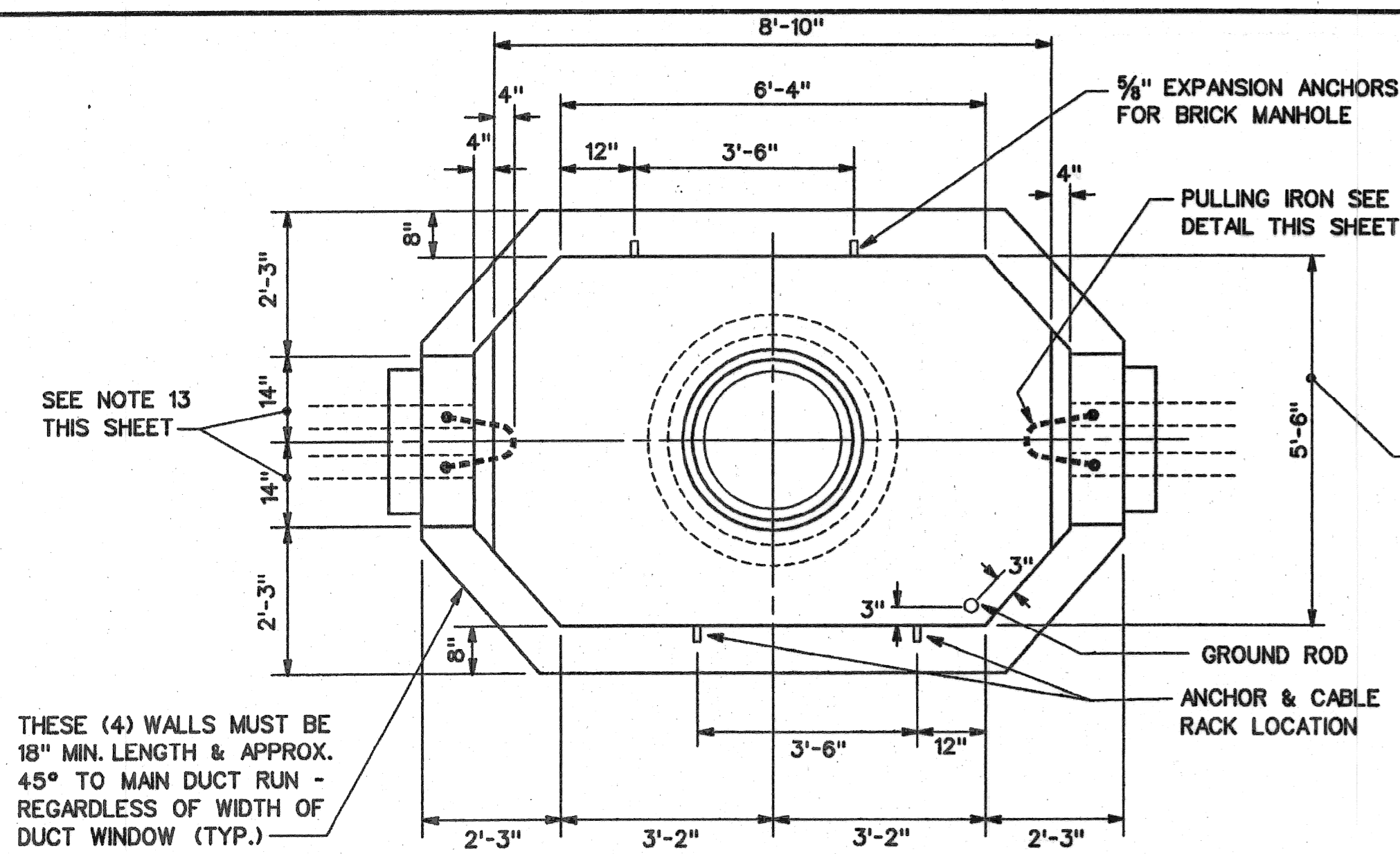
DISK FILE: DET103

REVISIONS	Date	Description	Chkd. by

HANDHOLE

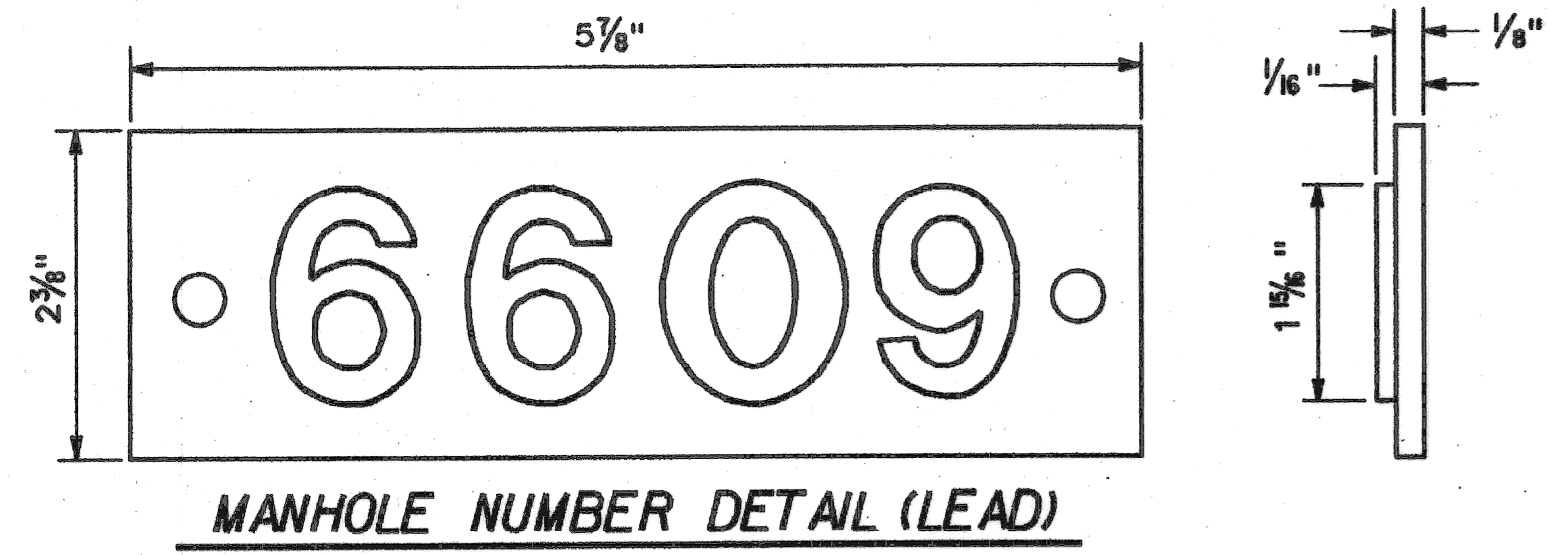
Drawn	CEA		Checked by		File No.
Checked					Sheet No.
Approved					32 of 48
Date					Date

10-01-96 103



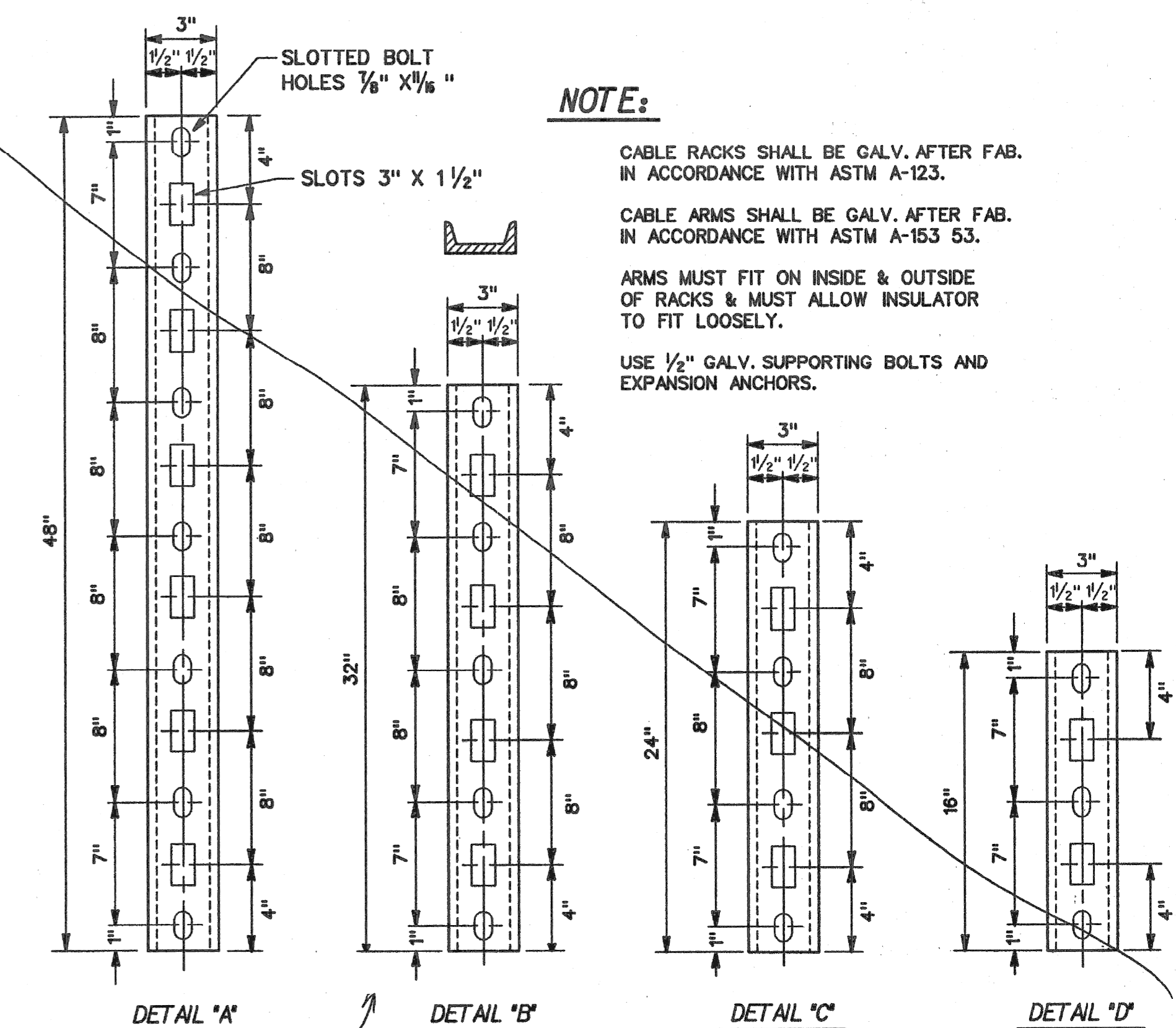
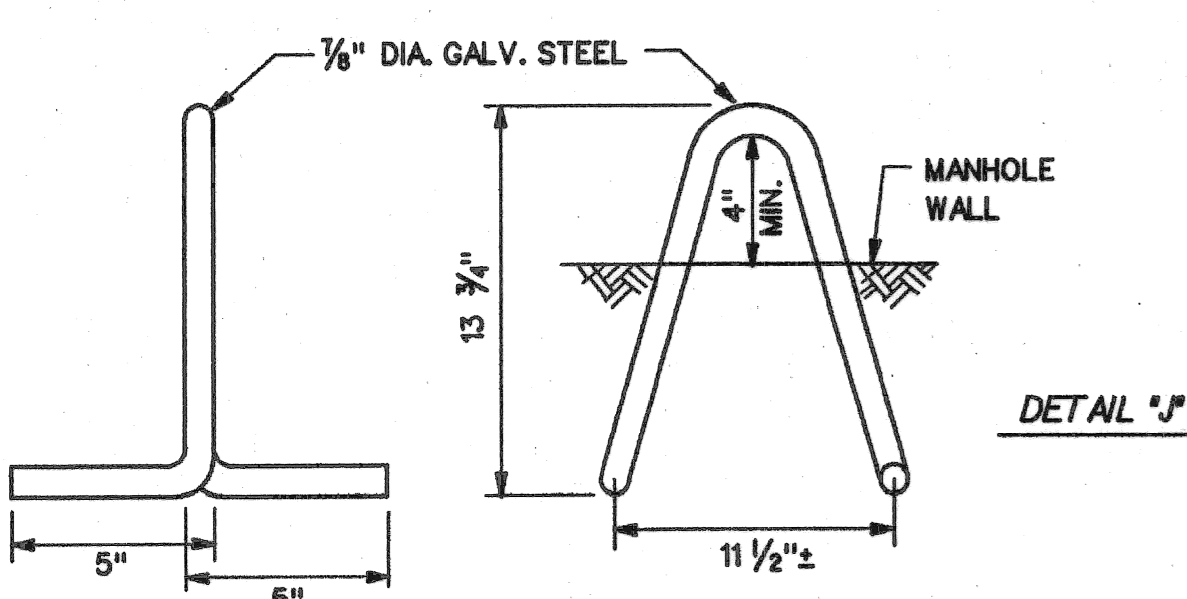
BRICK-TWO WAY MANHOLE
N.T.S.

CONCRETE-TWO WAY MANHOLE
N.T.S.



NOTE:

1. THIS DIMENSION NORMALLY 6'-6". SEE SPECIFICATIONS FOR UNUSUAL CONDITIONS.
2. WHERE M.H.'S ARE LOCATED BACK OF CURBS, TOP OF M.H. ROOF MUST BE BUILT 26" BELOW CURB GRADE TO PROVIDE FOR FUTURE PAVEMENT.
3. IN EXISTING PAVEMENT, PROVIDE AT LEAST 8" BETWEEN TOP OF ROOF AND BASE OF PAVEMENT
4. BOLTS, RACKS & PULLING IRONS TO BE HOT-DIP GALV.
5. C OF RAILS & UNDER M.H. FRAME FLANGE TO BE APPROX. 18" FROM C'S OF FRAMES.
6. M.H. NUMBER TO BE INSTALLED ON MANHOLE WALL IN CONSPICUOUS PLACE.
7. MOUNTING HEIGHT FOR LOWER BOLTS OF CABLE RACK SHALL BE THE AVERAGE HEIGHT OF THE BOTTOM OF THE LOWEST DUCTS IN MAIN CONDUITS. INSTALL MIN. (2) 48" LONG RACKS ON WALLS.
8. 8" THICK CHIMNEYS WHERE SPECIFIED SHALL BE INCIDENTAL TO APPLICABLE M.H. ITEM.
9. EXCAVATION LIMITS FOR PUBLIC LIGHTING DEPARTMENT MANHOLES SHALL BE ON VERTICAL PLANES ON THE FOOTING OUTLINE.
10. 1/2" PLASTER OUTSIDE WALLS OF BRICK MANHOLES.
11. SPACING OF INSERTS AS REQUIRED TO ACCOMMODATE CABLE RACK
12. BELL ENDS ARE REQUIRED ON EACH CONDUIT ENTERING MANHOLE. (TYPE AND SIZE SHALL BE IDENTICAL TO CONDUIT TYPE AND SIZE)
13. THIS IS A MINIMUM DIMENSION & IS EXPANDABLE TO ACCOMMODATE MAIN DUCT WINDOW.
14. FOUR HEAVY 48" CABLE RACKS, 8'-15" CABLE ARM INSULATORS REQUIRED PER MANHOLE, UNLESS SPECIFIED OTHERWISE.
15. CONTRACTOR IS TO INSTALL MANHOLE NO. TAG FURNISHED BY P.L.D. MANHOLE SHALL NOT BE CONSIDERED COMPLETE WITHOUT MANHOLE NO. TAG INSTALLED.



CABLE RACKS
N.T.S.

DISK FILE: PLD104

REV	Date	Description	Chkd. by

TWO-WAY MANHOLE

Drawn CEA
 Checked
 Approved
 Date

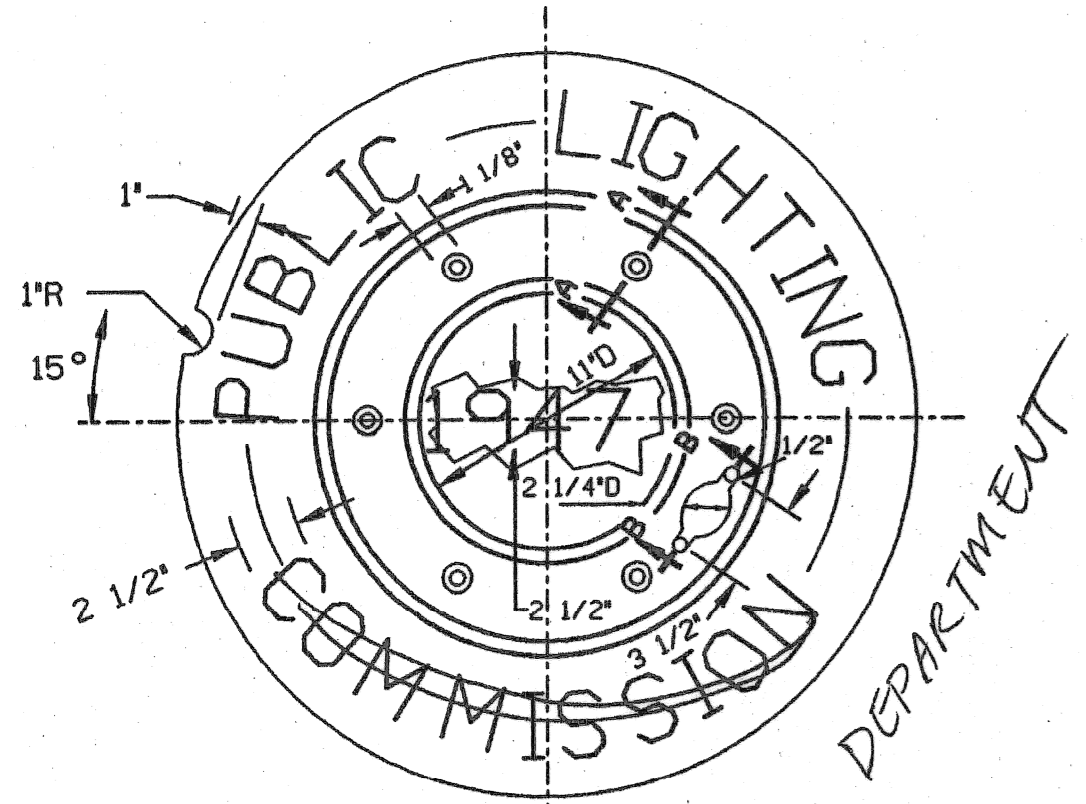
Consulting Engineering Associates, Inc.
 16580 WYOMING AVE. DETROIT MICHIGAN 48221
 TELEPHONE: (313) 341-5797 FAX: 341-0205

Drwg. No. OF CEA

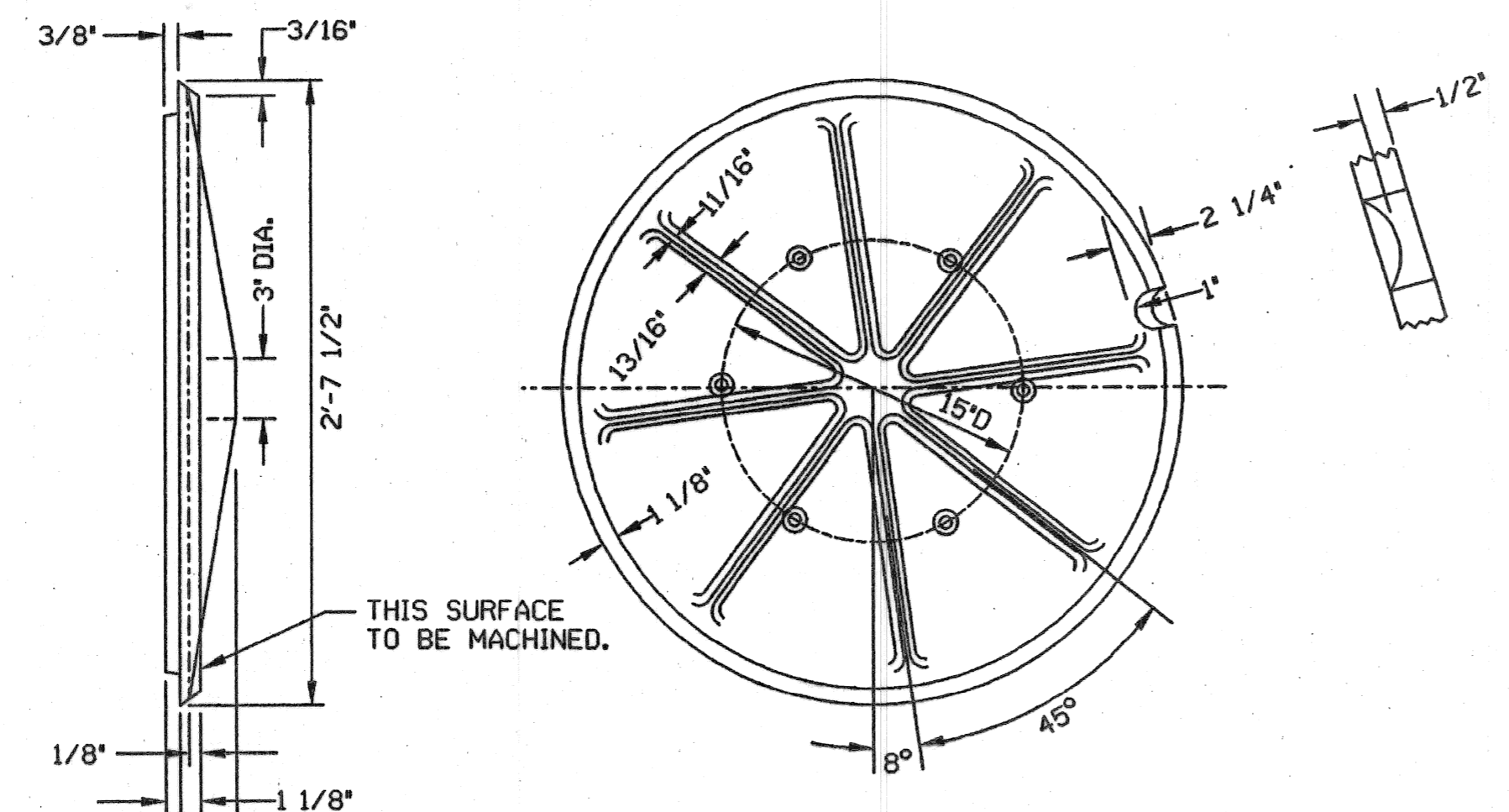
Checked by
 Approved by

PUBLIC LIGHTING DEPARTMENT
 CITY OF DETROIT

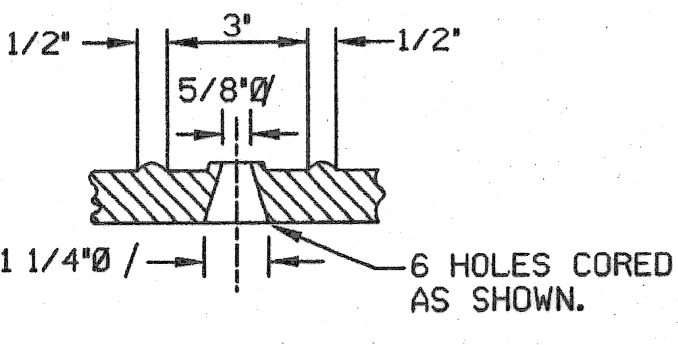
File No.
 Sheet No. 33 of 48
 Date



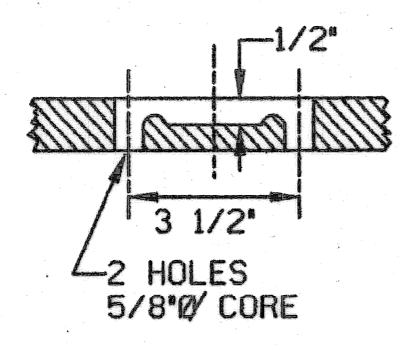
LETTERING & BEAD RAISED 3/8" ABOVE FACE.
YEAR ON COVER TO BE YEAR OF CASTING.
CONTRACTOR TO CHANGE PATTERN IF REQUIRED.



A.S.T.M. CLASS 30 GREY IRON
P.L.C. PATT. NO. 418
APPROX. WT. - 245*

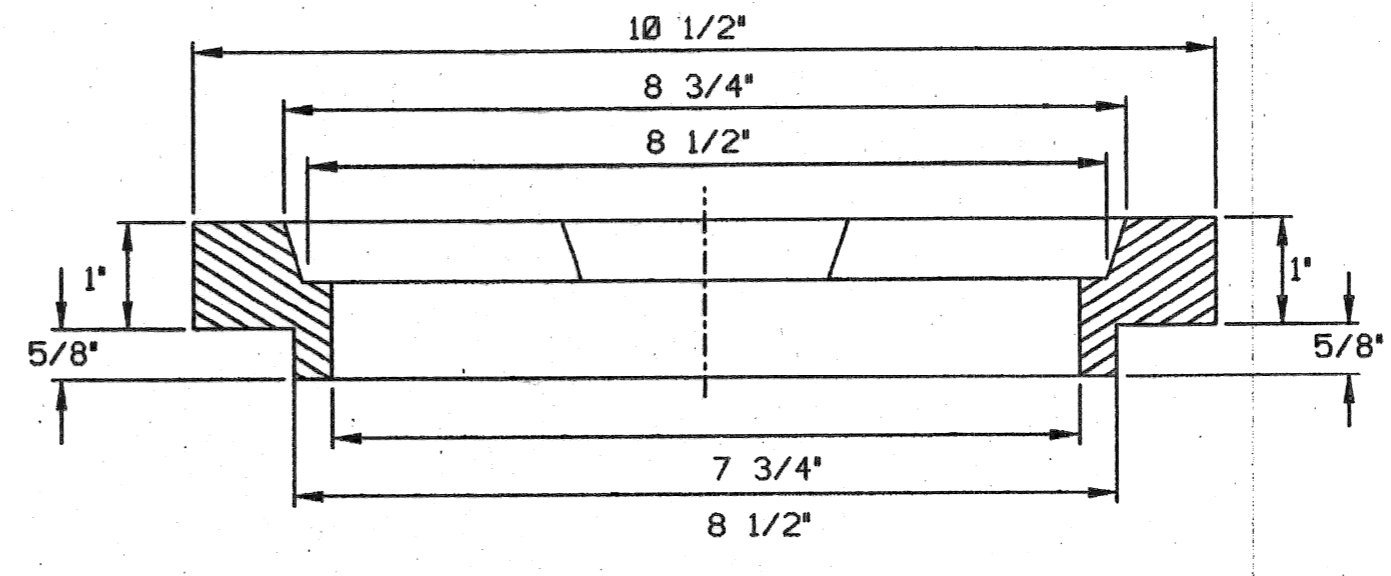


SECTION A-A
N.T.S.

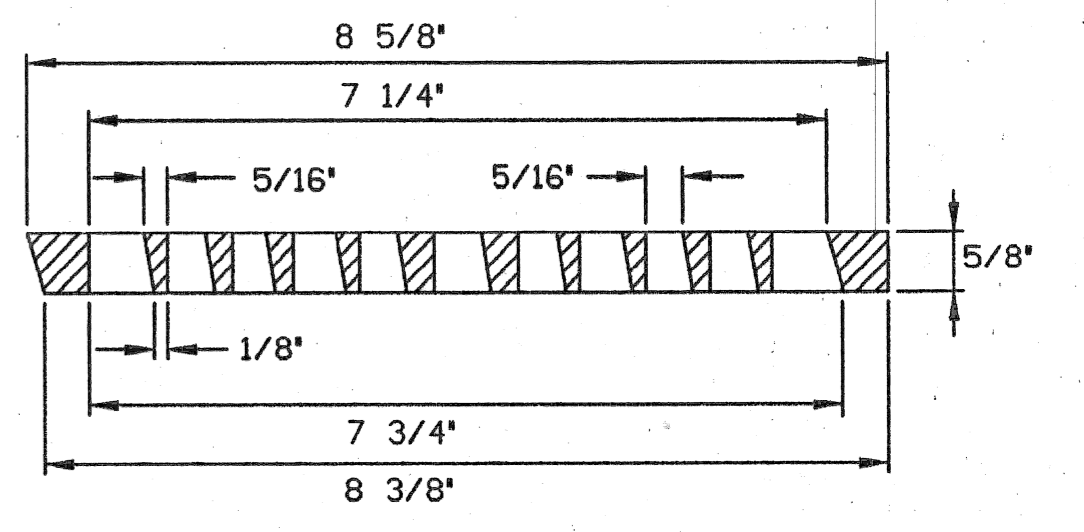


SECTION B-B
N.T.S.

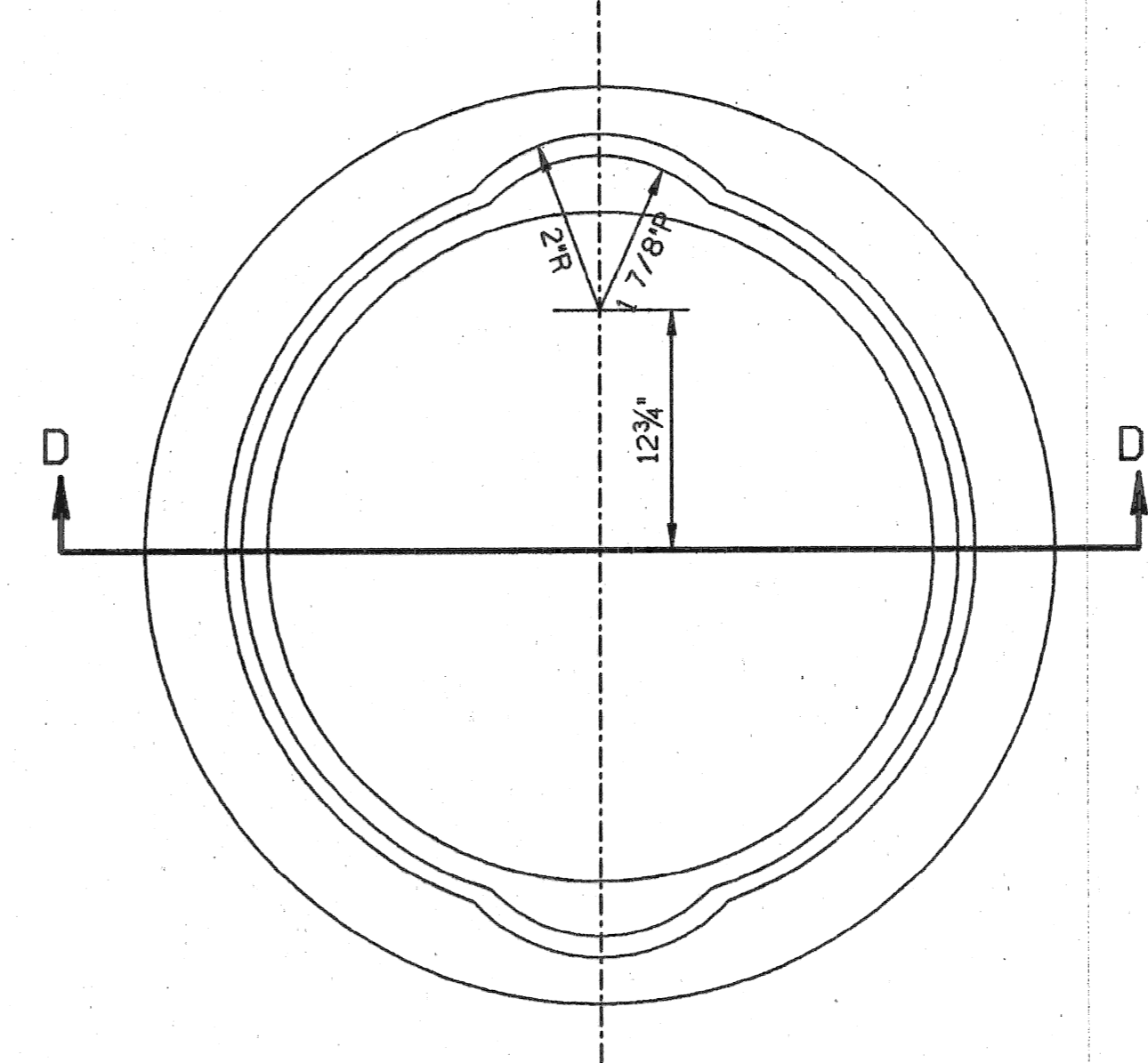
MANHOLE COVER
N.T.S.



SECTION D-D
N.T.S.

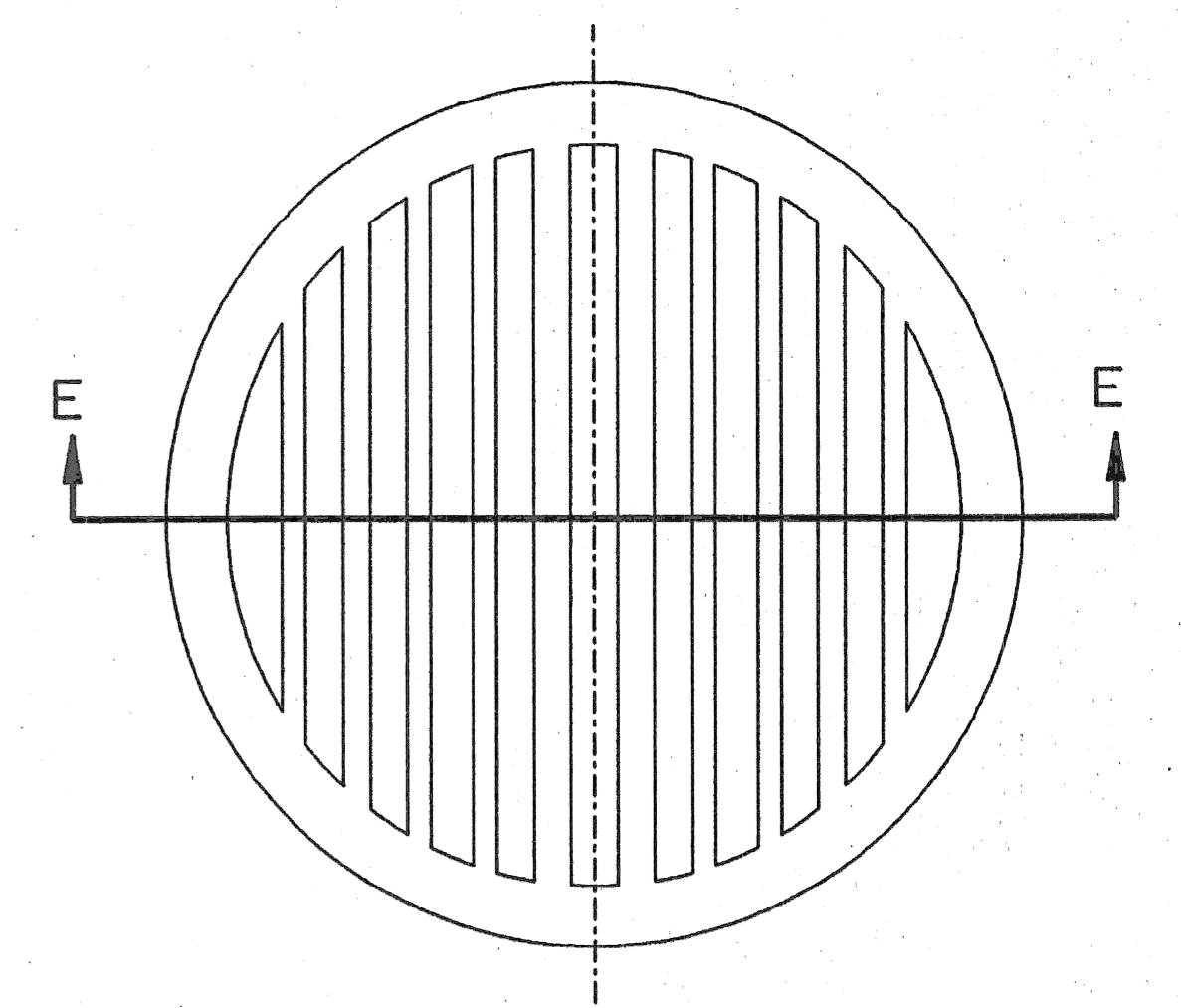


SECTION E-E
N.T.S.



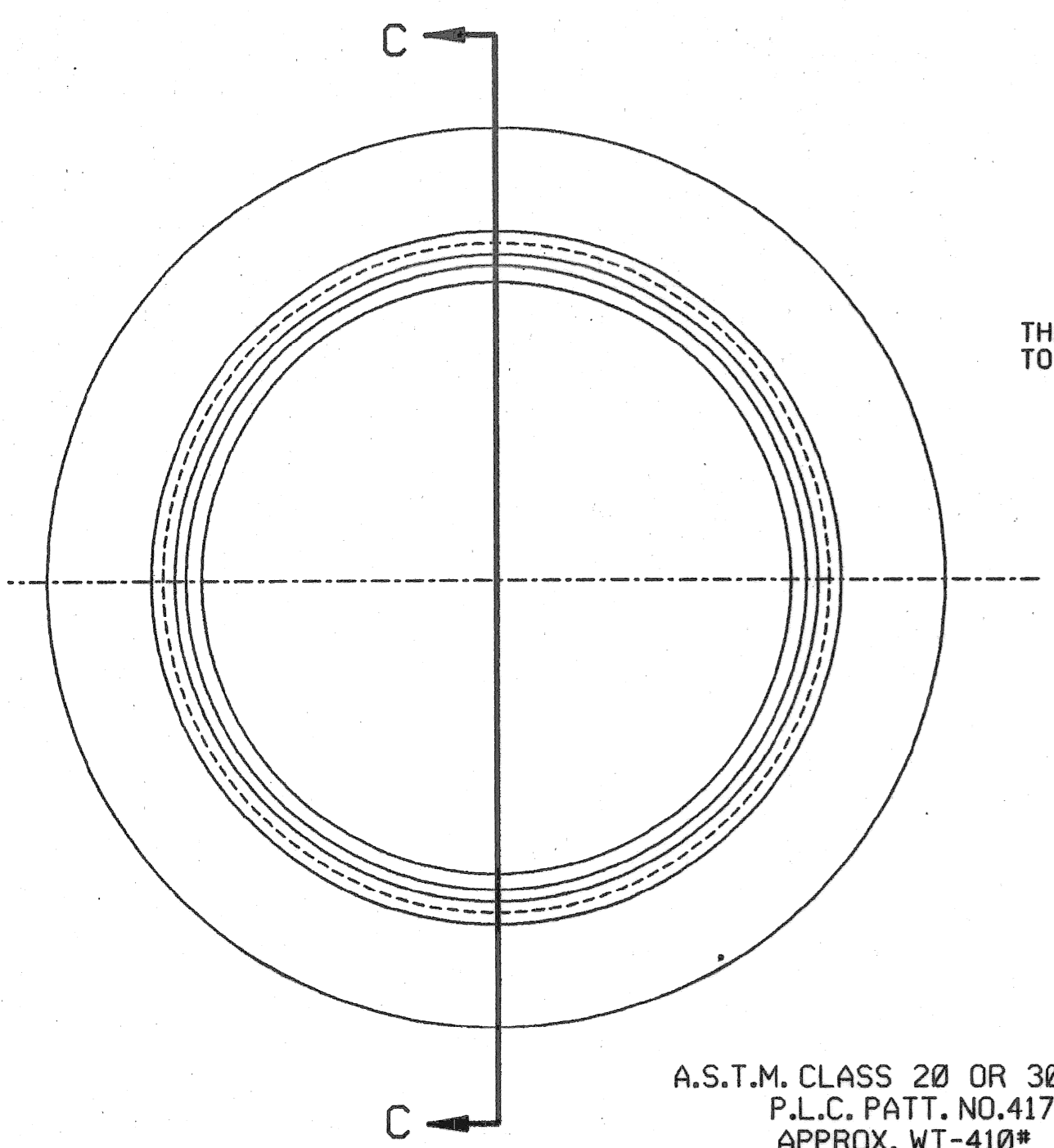
A.S.T.M. CLASS 20 OR 30 GREY IRON
P.L.C. PATT. NO. 318-A
APPROX. WT - 9*

SEWER RING
N.T.S.



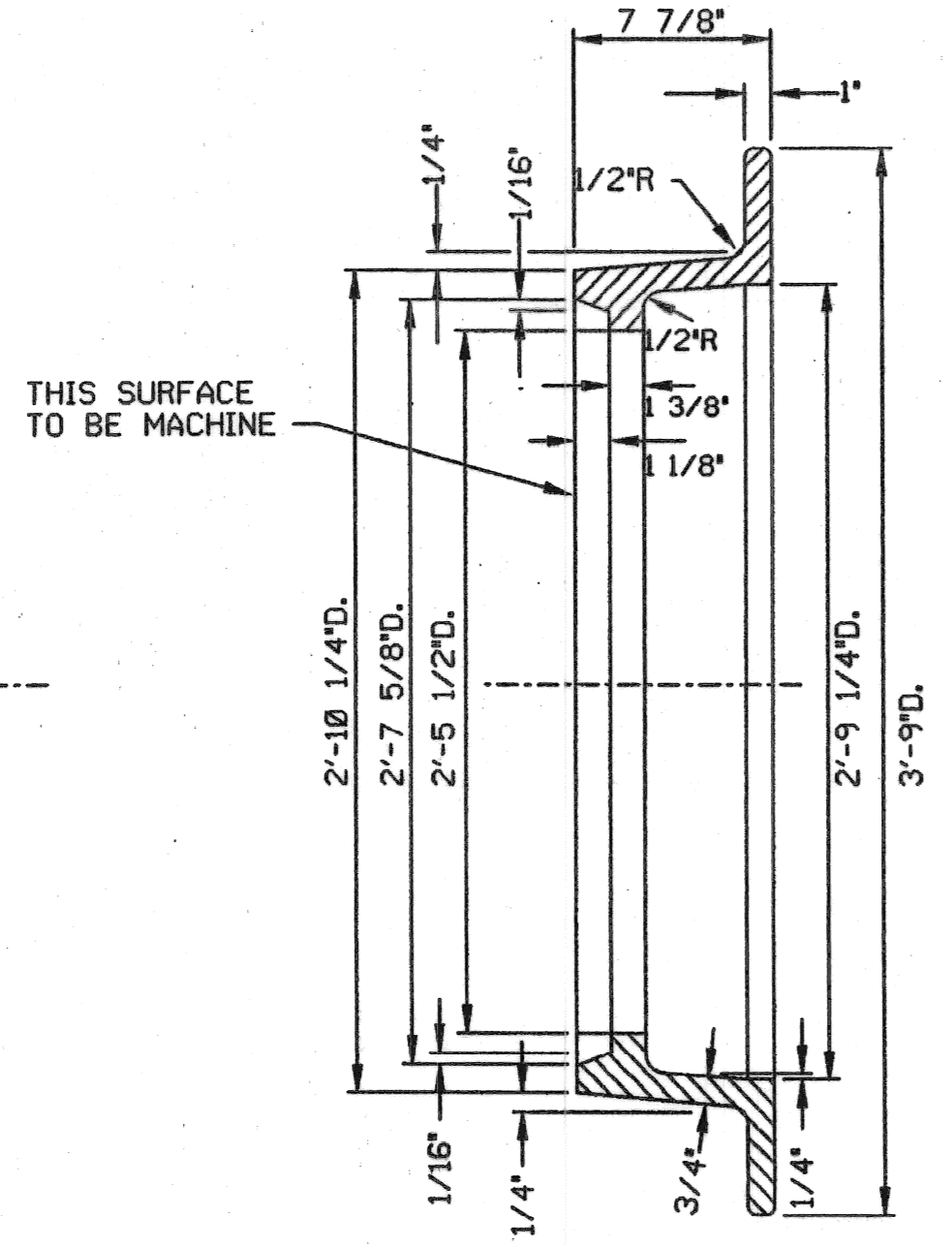
A.S.T.M. CLASS 20 OR 30 GREY IRON
P.L.C. PATT. NO. 318
APPROX. WT - 4.5*

SEWER GRATE
N.T.S.



A.S.T.M. CLASS 20 OR 30 GREY IRON
P.L.C. PATT. NO. 417
APPROX. WT - 410*

MANHOLE FRAME
N.T.S.



SECTION C-C
N.T.S.

MANHOLE FRAMES &
COVERS - SEWER GRATE & RING

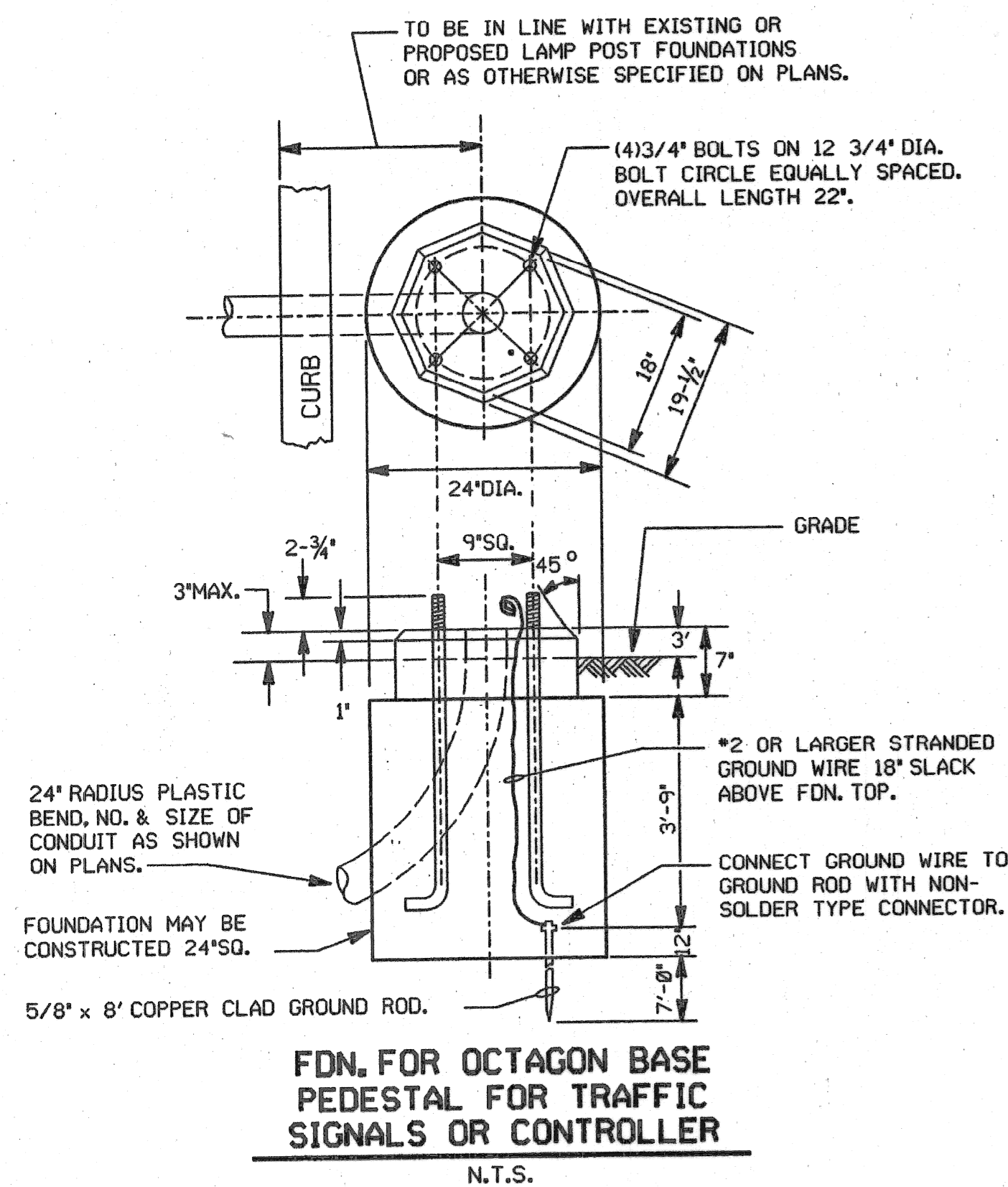
10-01-96 108

REV	Date	Description	Chkd. by

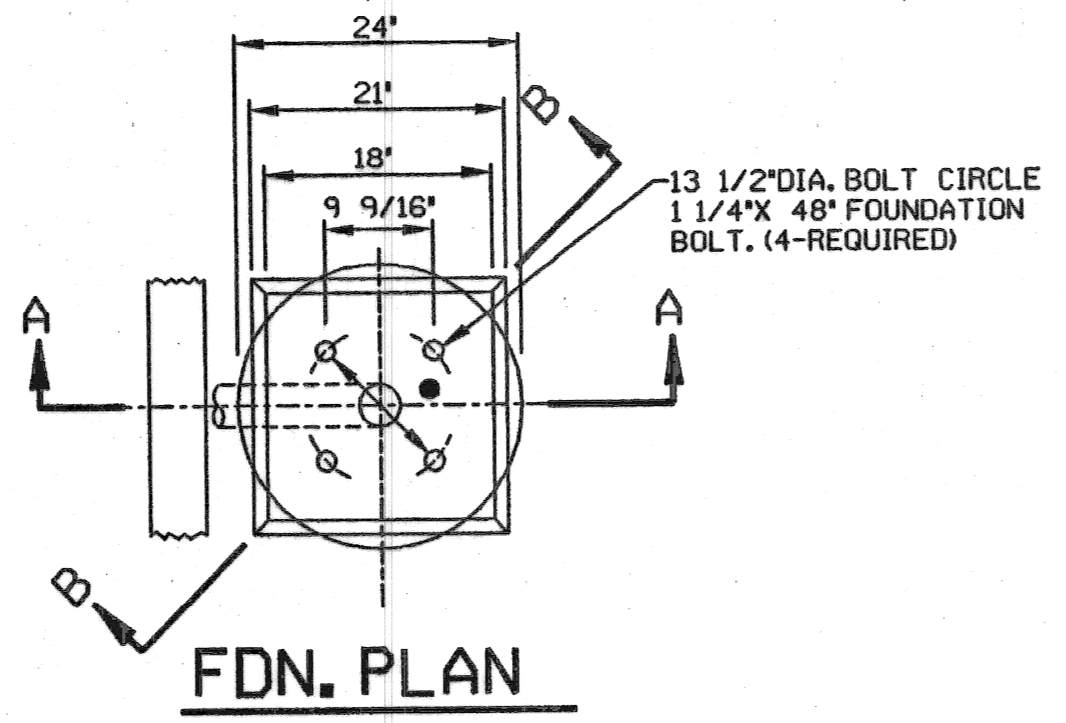
Drawn	CEA
Checked	
Approved	
Date	
Drwg. No.	
File No.	

 Consulting Engineers, Inc. 16880 WYOMING AVE. - DETROIT MICHIGAN 48221 TELEPHONE: (313) 341-5787 FAX: 341-0209	Checked by	PUBLIC LIGHTING DEPARTMENT CITY OF DETROIT	File No.
	Approved by		Sheet No.
			34 of 48
			Date

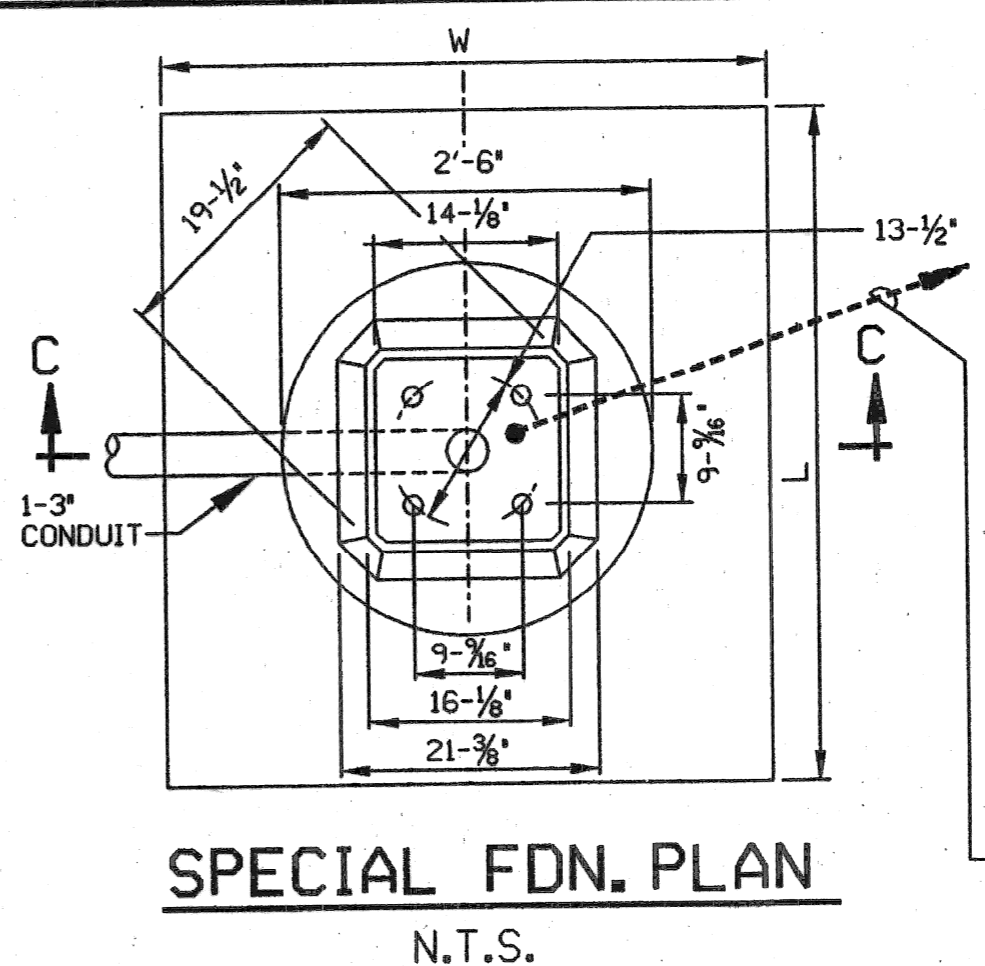
DISK FILE



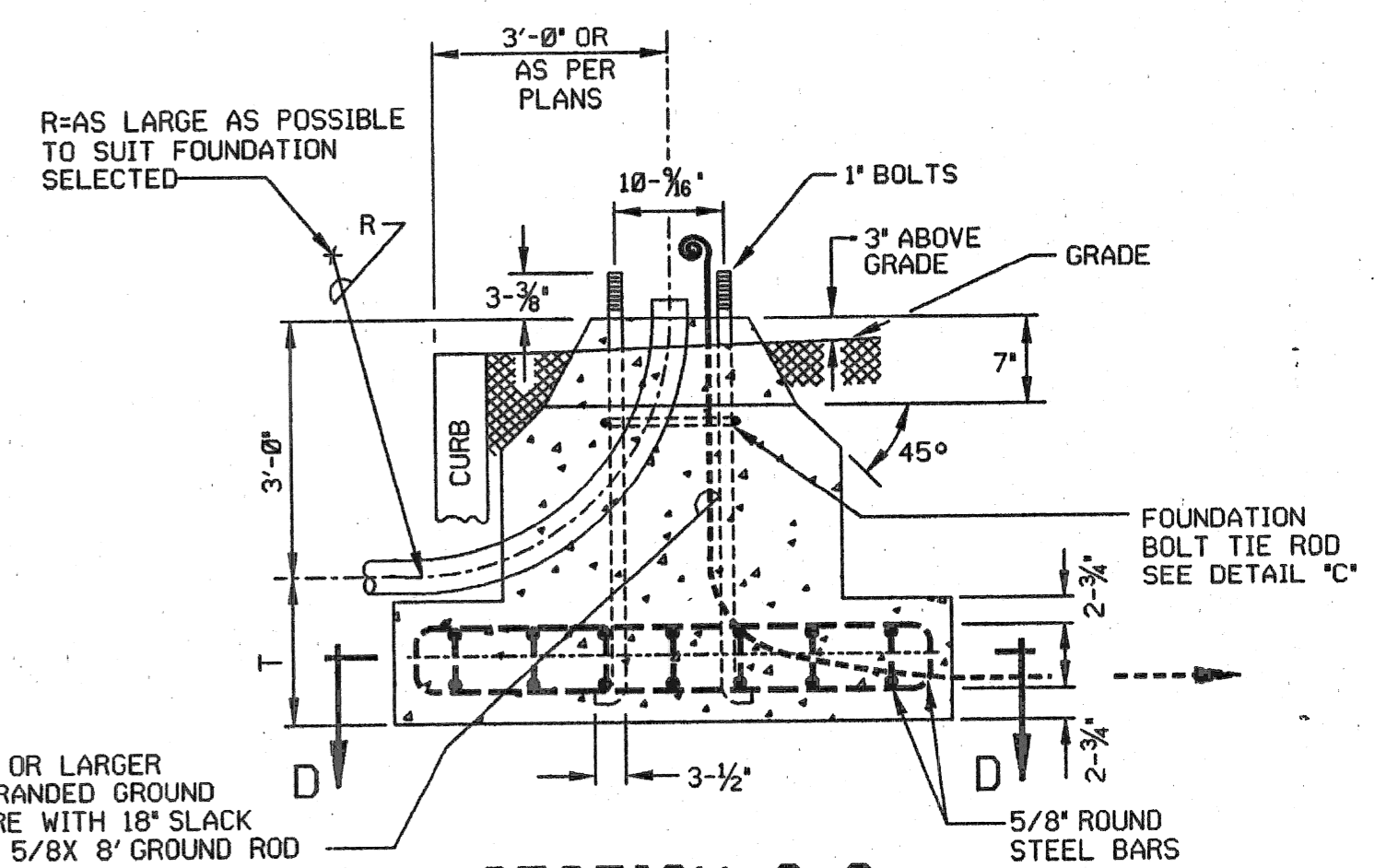
FDN. FOR OCTAGON BASE PEDESTAL FOR TRAFFIC SIGNALS OR CONTROLLER
N.T.S.



FDN. PLAN



SPECIAL FDN. PLAN
N.T.S.

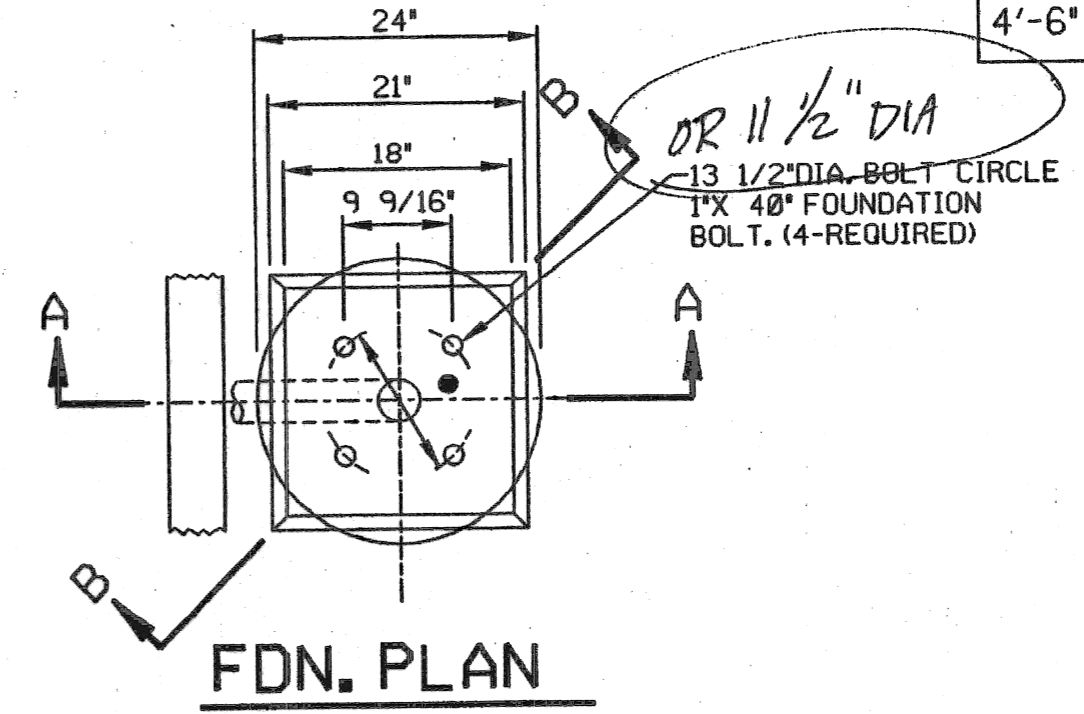


SECTION C-C
N.T.S.

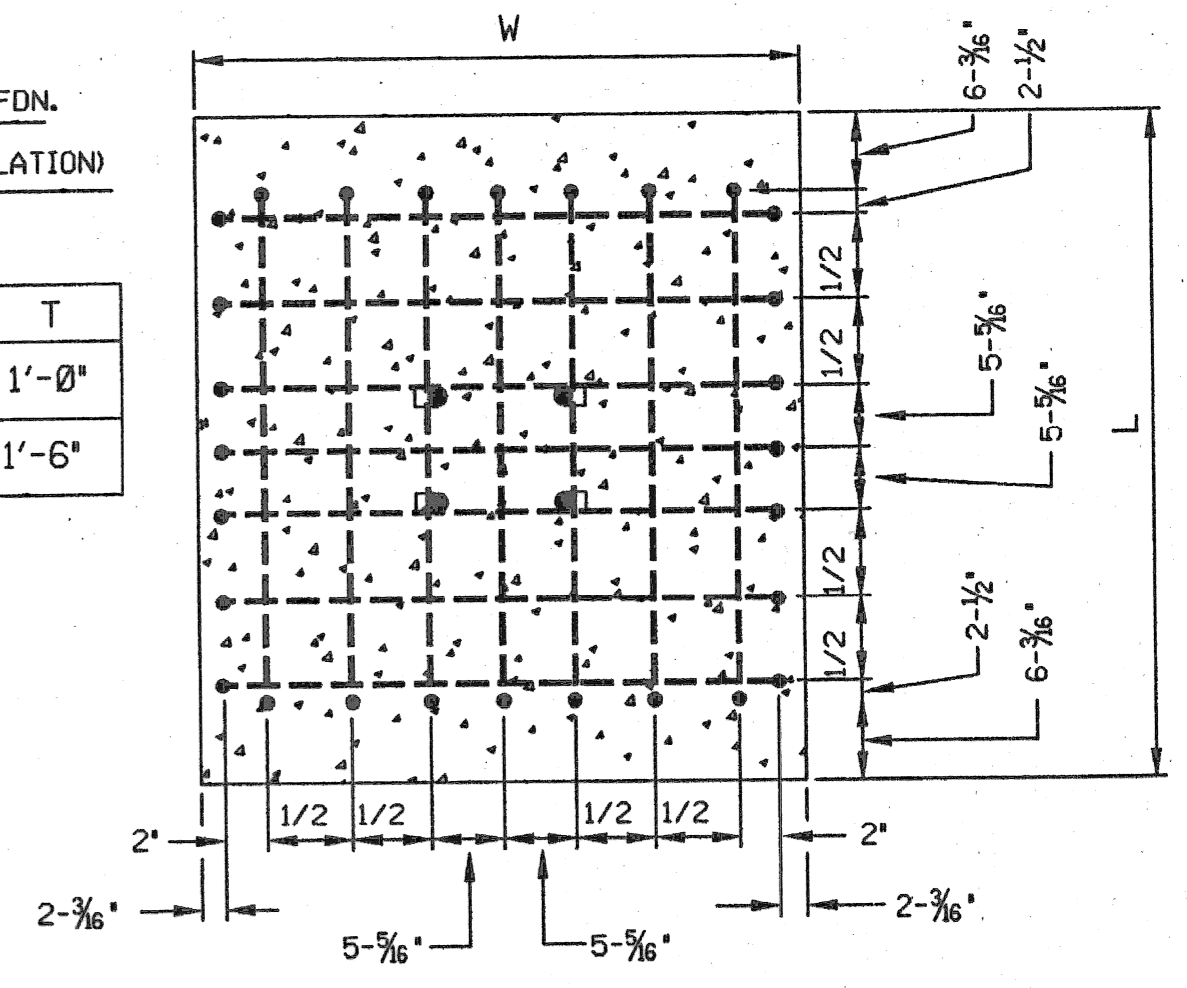
SPECIAL FOUNDATION

THERE SHALL BE NO EXTRA PAYMENT FOR SPECIAL FDN. (TO BE PAID FOR AS A NORMAL ST. LGT. STD. FDN. INSTALLATION)

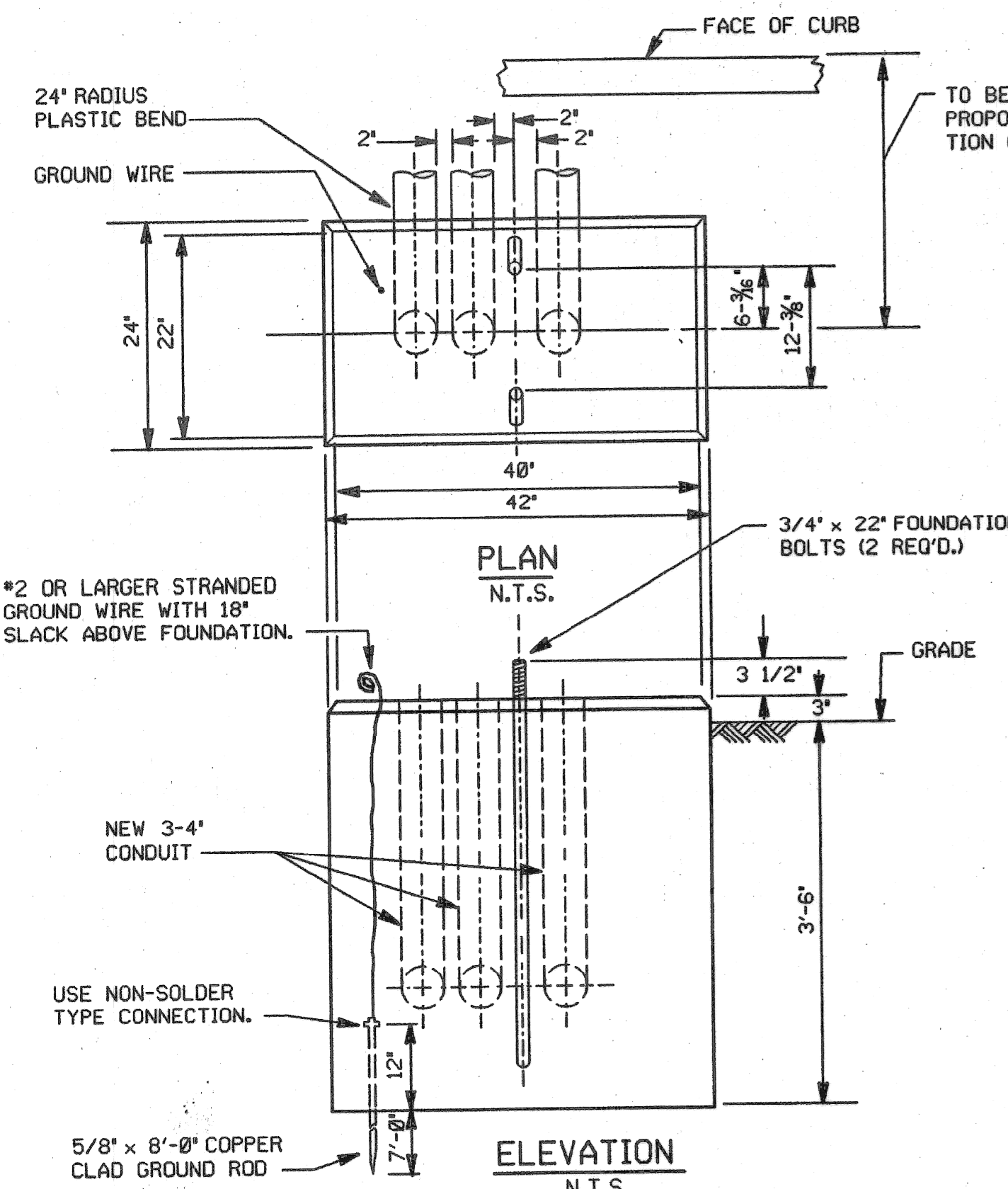
L	W	T
5'-0"	4'-3"	1'-0"
4'-6"	3'-6"	1'-6"



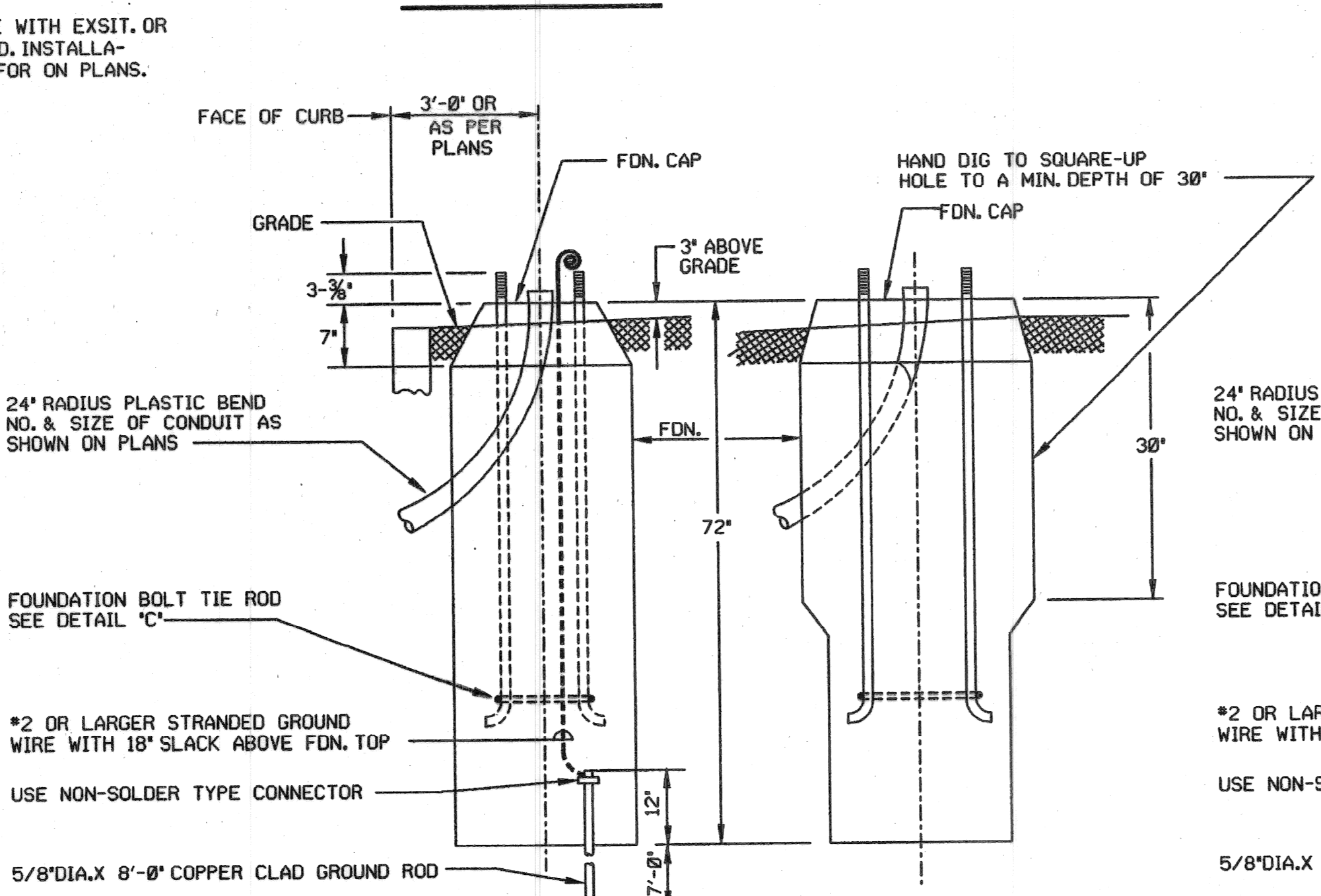
FDN. PLAN



SECTION D-D
N.T.S.



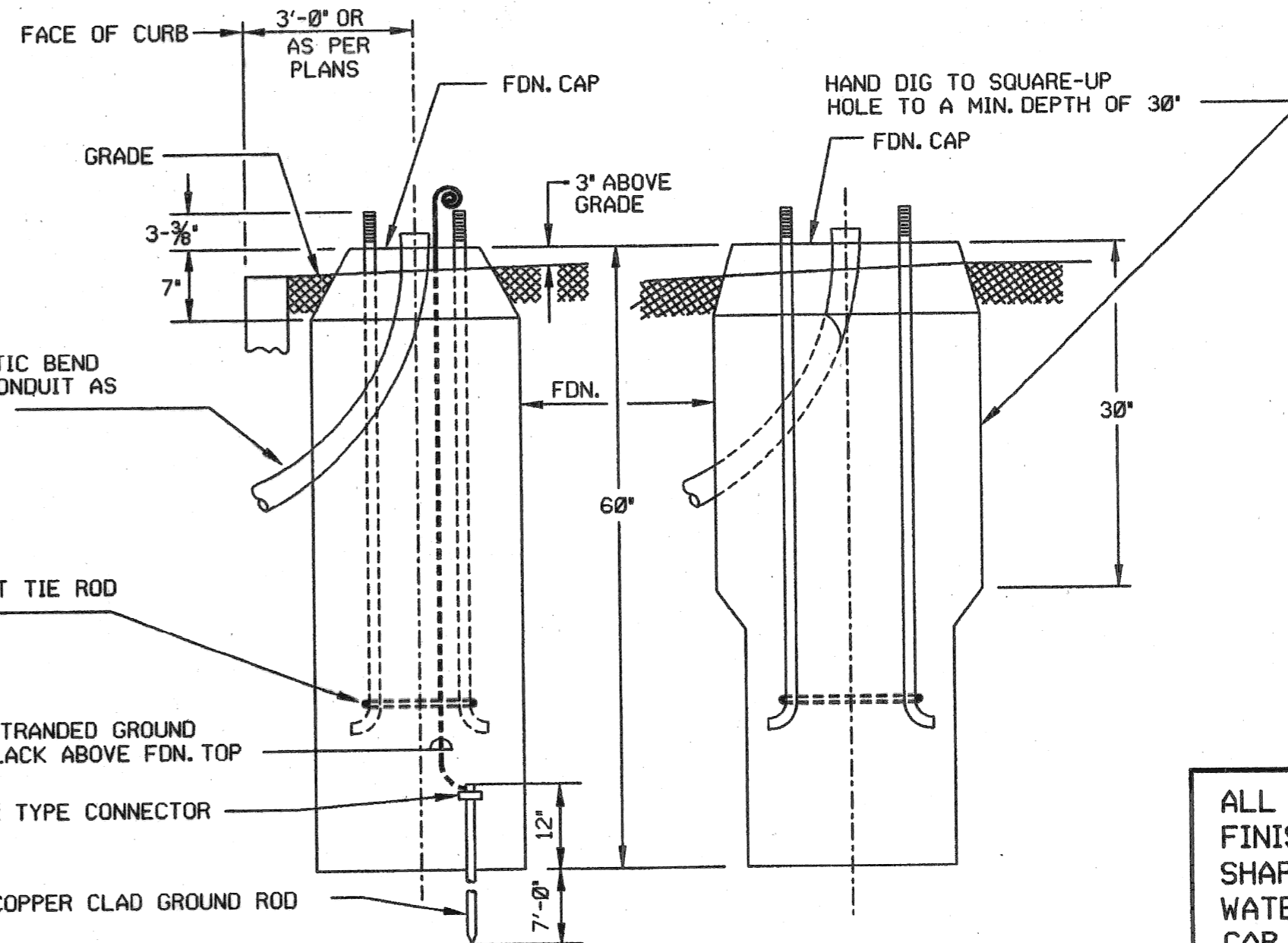
FOUNDATION FOR BASE MOUNTED T.S. CONTROLLER & CABINET (M-36)
N.T.S.



SECTION A-A
N.T.S.

SECTION B-B
N.T.S.

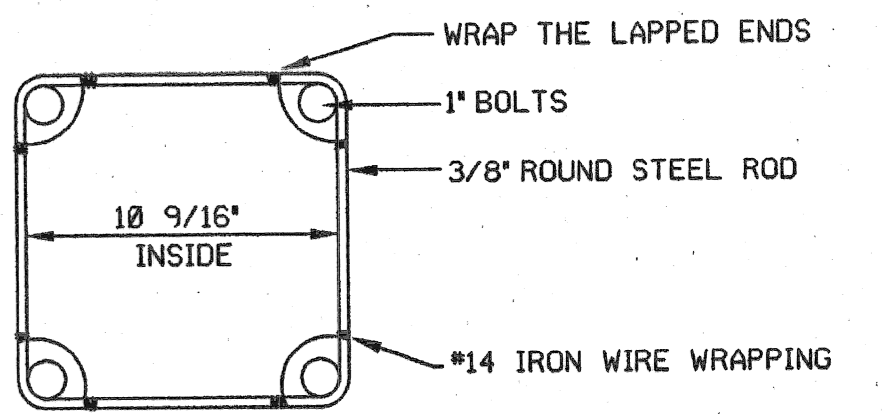
ANCHOR BASE STD. FOUNDATION
CODE 118-06,119-06,117-10-10



SECTION A-A
N.T.S.

SECTION B-B
N.T.S.

ANCHOR BASE STD. FOUNDATION
CODE 009-00,010-06,116-02



DETAIL 'C'

FDN. BOLT TIE ROD
N.T.S.

ALL FOUNDATION CAPS SHALL HAVE A SMOOTH FINISH WITH BEVELED EDGES & SHALL BE SHAPED TO ALLOW COMPLETE DRAINAGE OF WATER. ANCHOR BOLT PROJECTIONS ABOVE CAP SHALL BE CLEANED OF ALL CONCRETE & FULLY USABLE THEIR FULL LENGTH.

DISK FILE

R	Date	Description	Chkd. by

FOUNDATIONS

Drawn CEA
Checked
Approved
Date

Consulting Engineering Associates, Inc.
16580 WYOMING AVE. DETROIT MICHIGAN 48221
TELEPHONE: (313) 341-5797 FAX: 341-0205

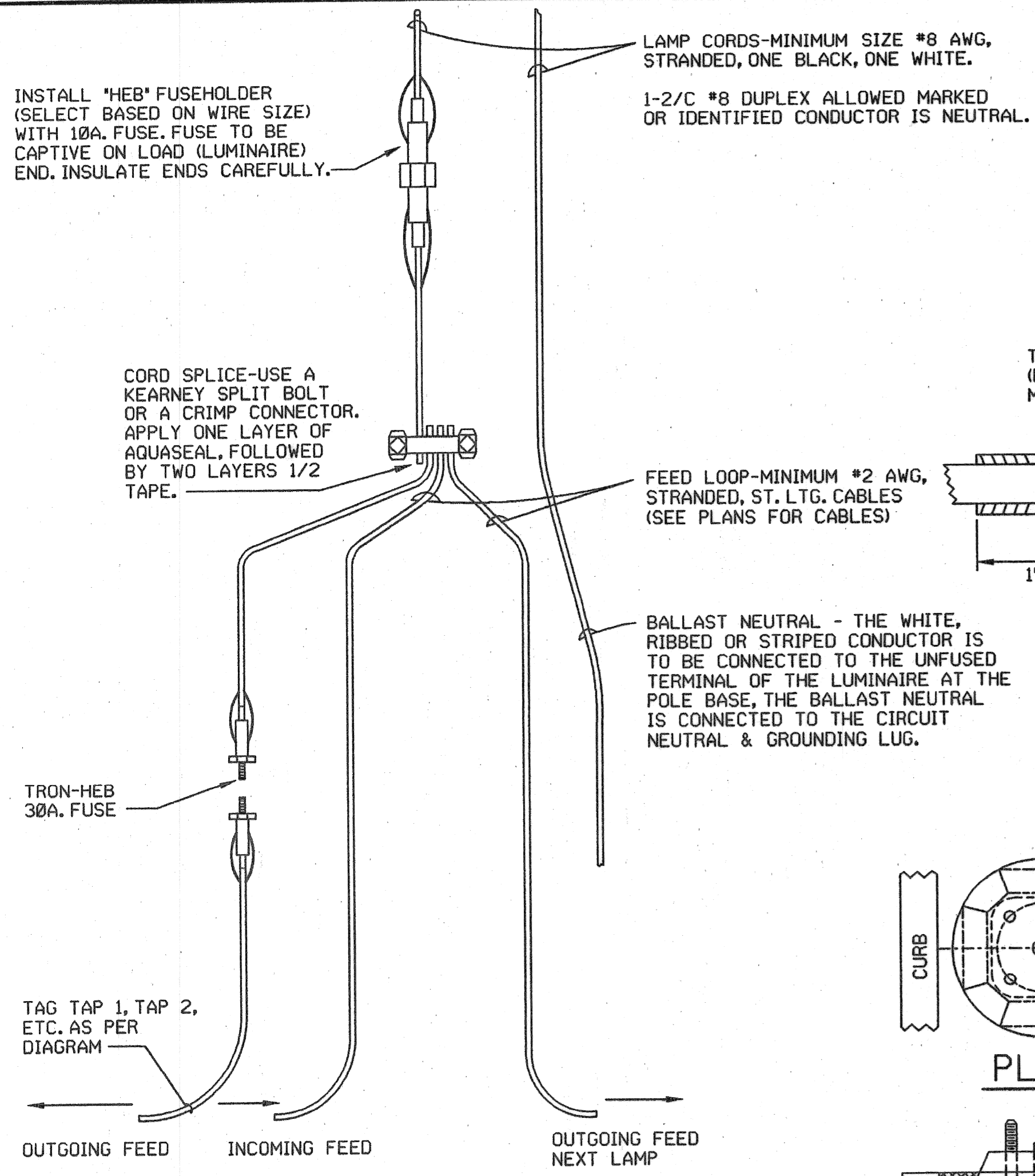
Drwg. No. OF CEA
File No.

Checked by
Approved by

PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT

File No. 109
Sheet No. 35 of 48
Date

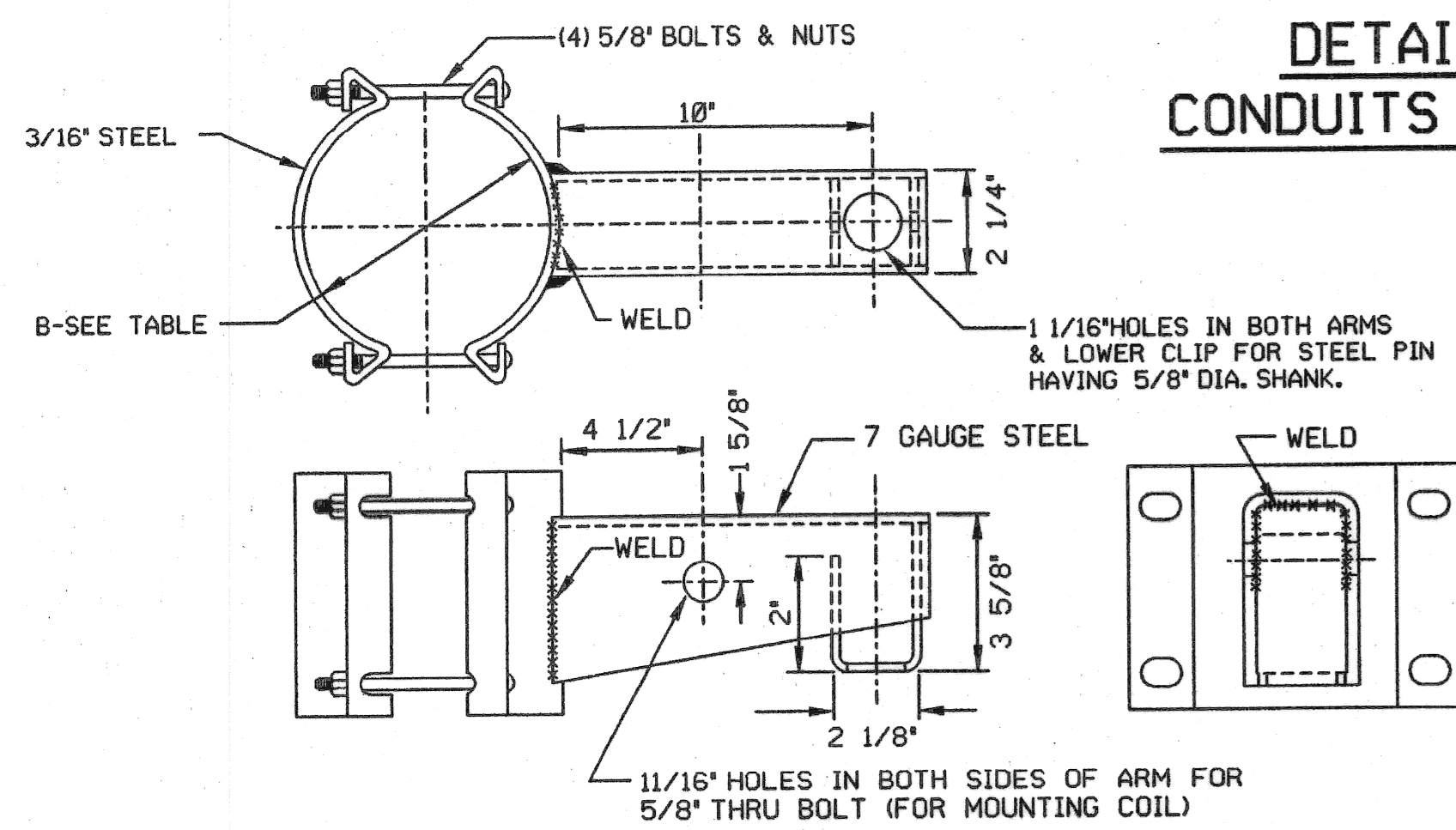
10-01-96 109



MULTIPLE STREET LIGHTING CONNECTION IN POLE BASE
N.T.S.

TYPE	POLE DIAMETER
A	3.6"-4-5"
B	6.1"-6.9"
C	7.5"-8.5"

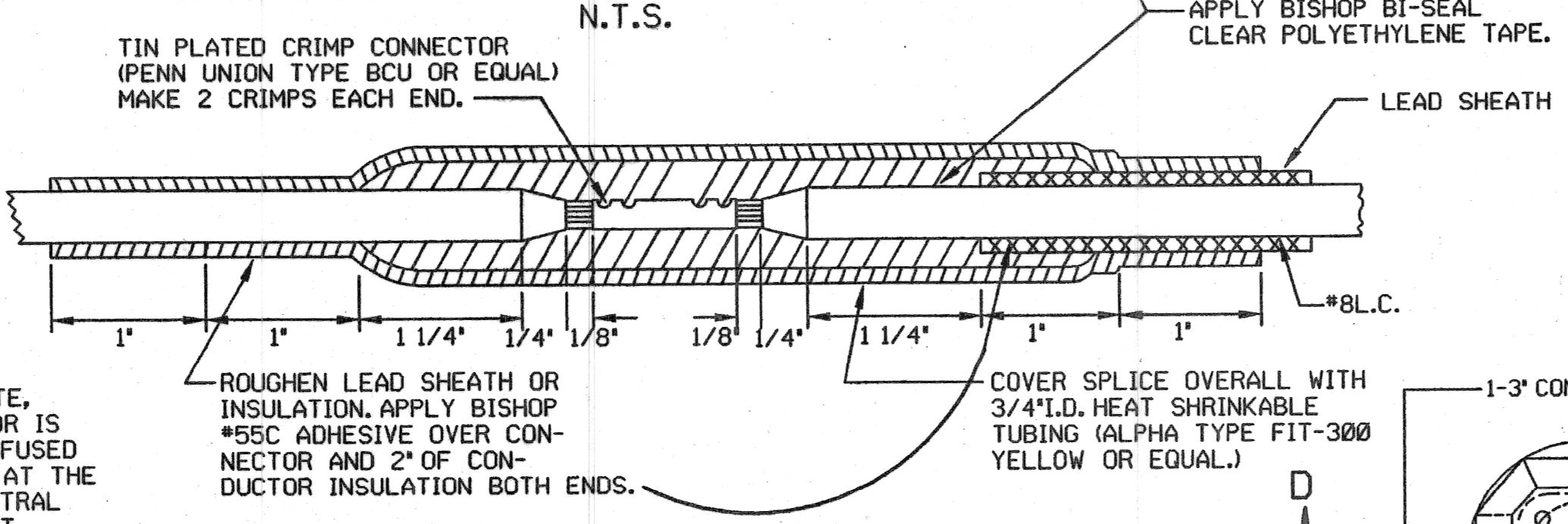
CLAMP SIZE TABLE



CLAMP FEEDER ARM
N.T.S.

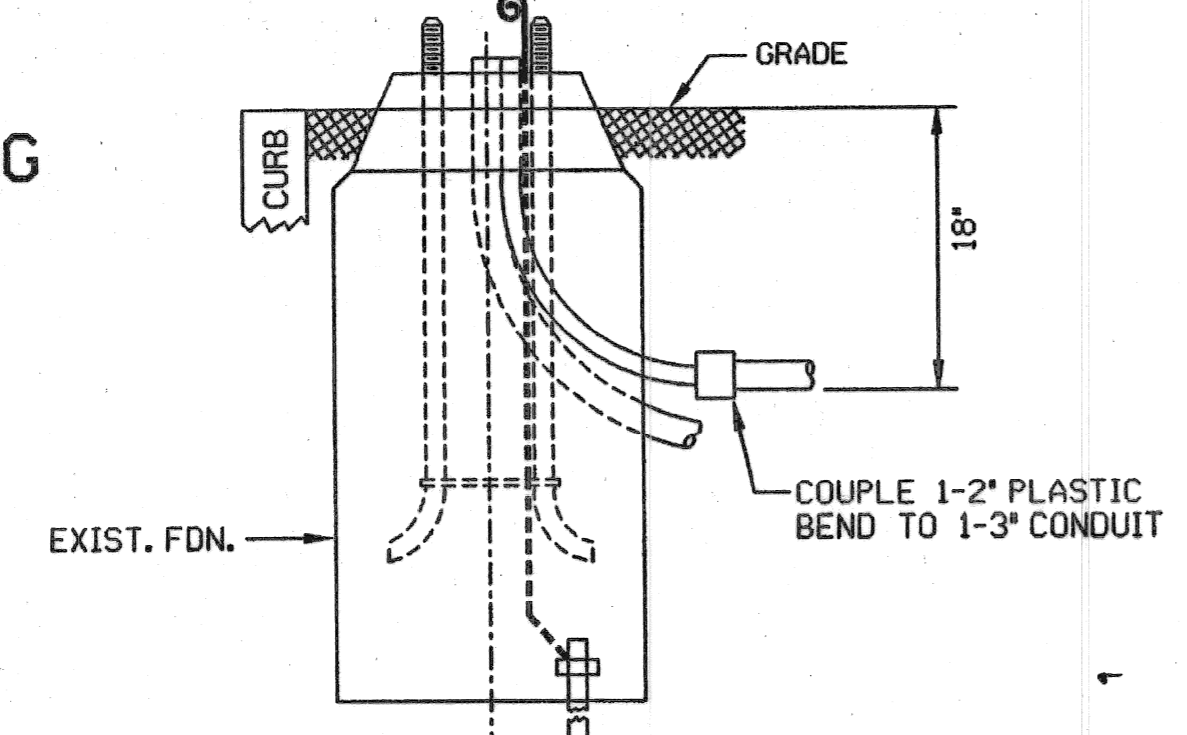
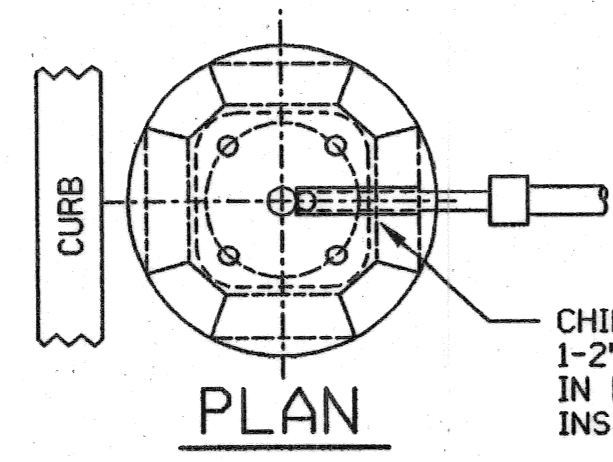
* FINISH SHALL BE HOT DIP GALVANIZED AFTER FABRICATION

MULTIPLE STREET LIGHTING CABLE DETAIL OF SEALING OF CABLE END
N.T.S.

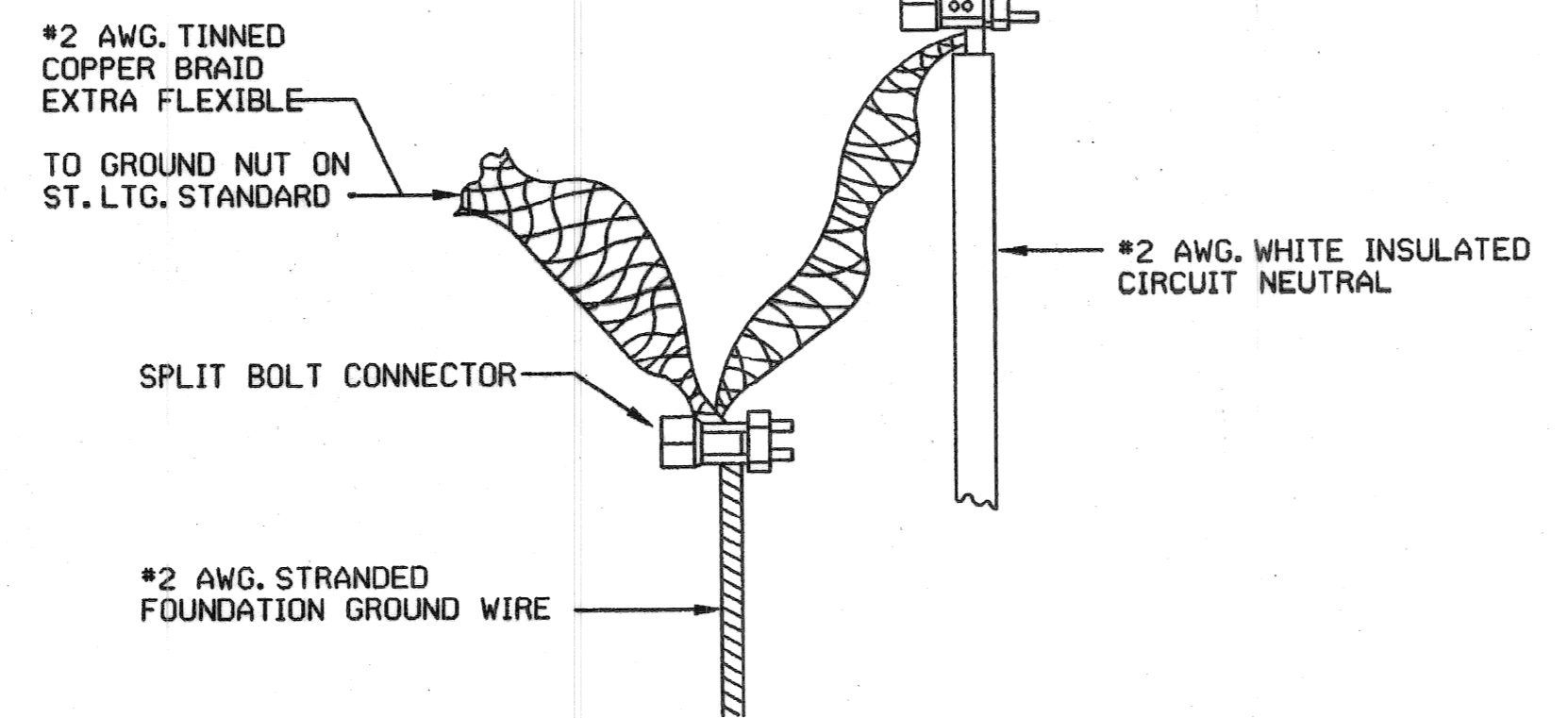


MULTIPLE STREET LIGHTING SPLICE DETAIL A
N.T.S.

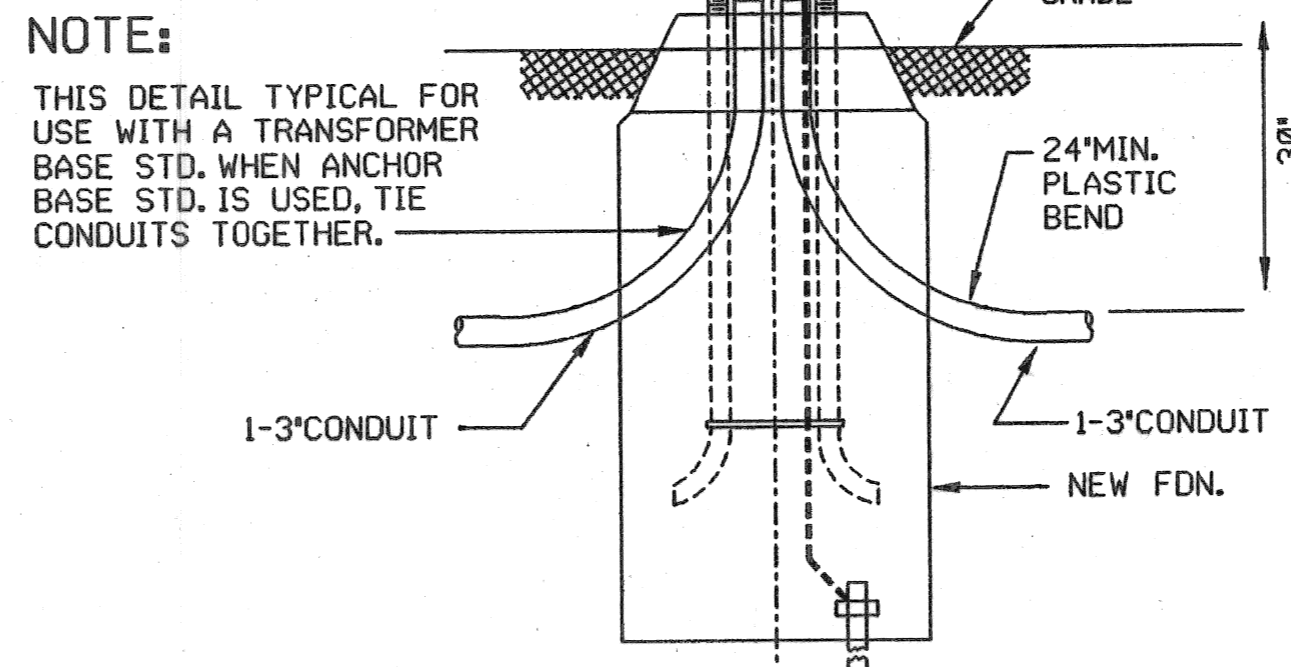
P.J. ST. LTG. TO #8 L.C. ST. LTG.
OR P.J. ST. LTG. TO P.J. ST. LTG.



DETAIL OF INSTALLING CONDUITS INTO EXISTING FDN.
N.T.S.



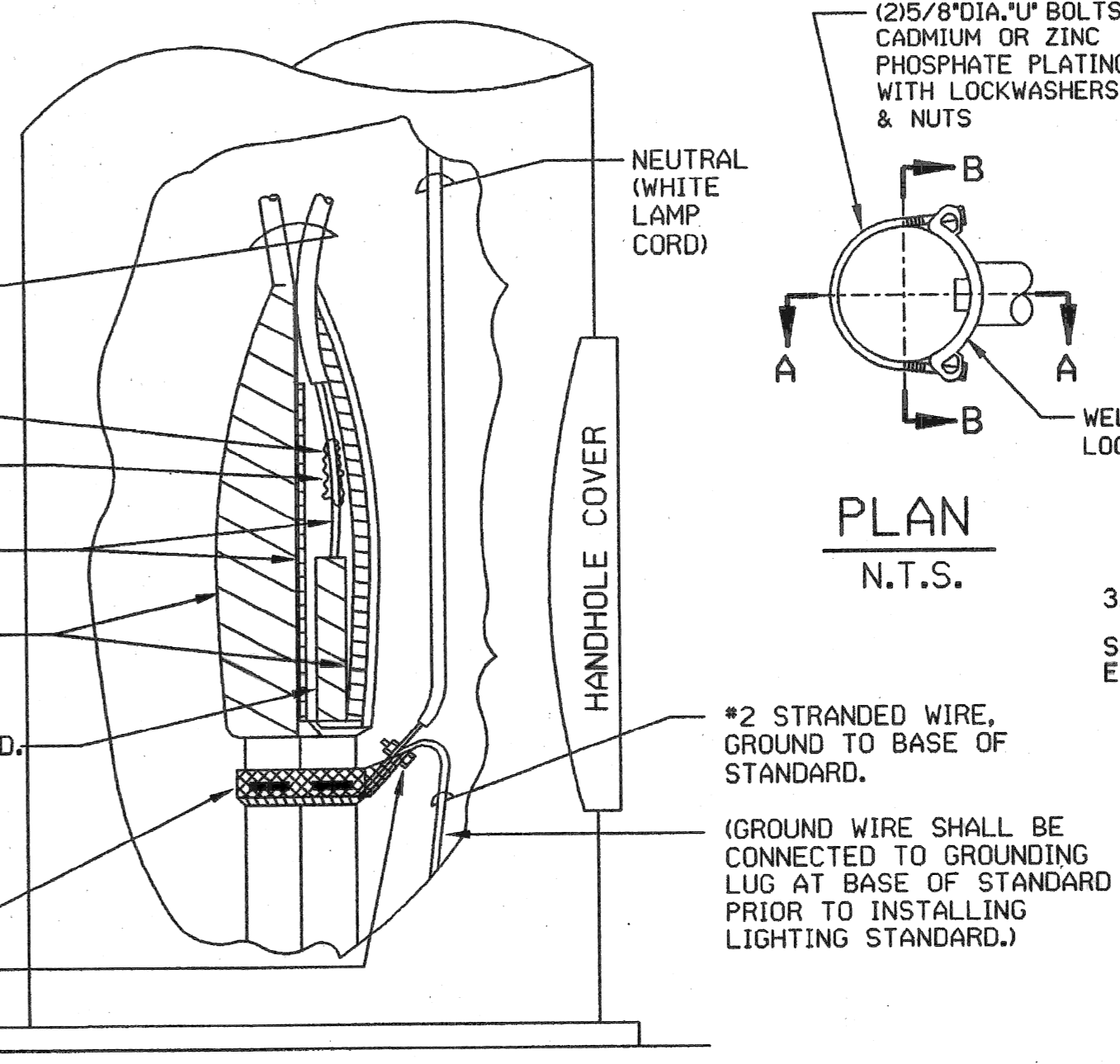
GROUND CONNECTION
N.T.S.



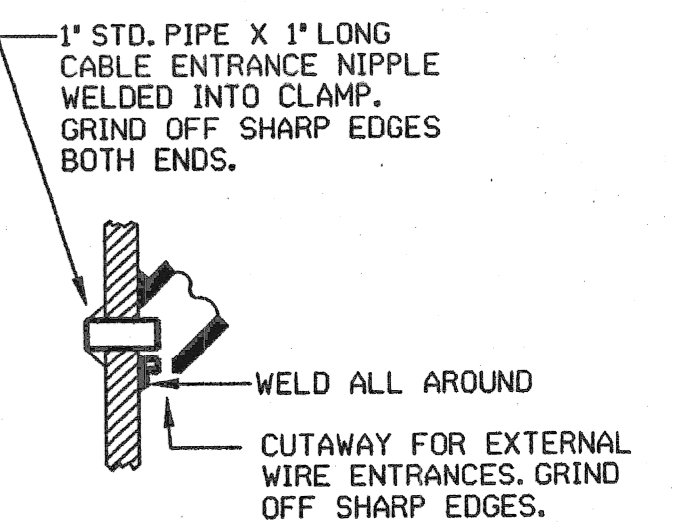
DETAIL OF INSTALLING CONDUITS IN & OUT OF NEW FDN.
N.T.S.

- FEED LOOP-MIN. #2AWG, STRANDED, BLACK TO SPLIT BOLT.
- CRIMP CONNECTORS 2- CRIMPS PER CONNECTOR.
- BISHOP BI-SEAL TAPE.
- BLACK PLASTIC TAPE 2 LAYERS, 1/2" LAP.
- BLACK PLASTIC TAPE OVER BOTH CABLES
- EXISTING SERIES CABLE, RUBBER, PAPER OR POLYETHYLENE INSULATED.
- WRAP #2 TINNED COPPER BRAID AROUND BOTH CABLES, 2 WRAPS, SWEAT-BOND TO BOTH LEAD SHEATHS.
- SPLIT BOLT CONNECTOR.

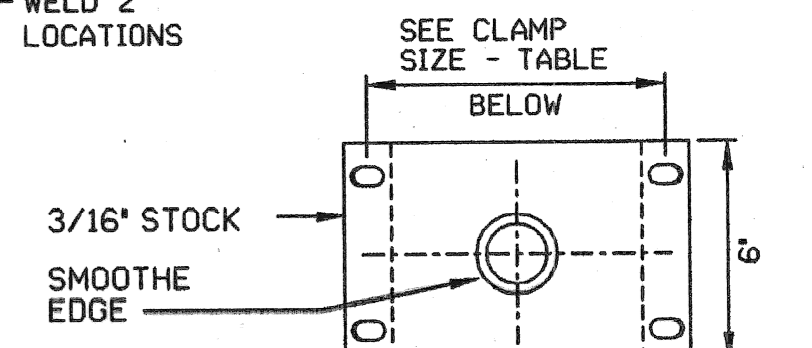
SERIES-TO-MULTIPLE LIGHTING CONVERSION POLE BASE CONNECTIONS
N.T.S.



PLAN
N.T.S.



SECTION A-A
N.T.S.

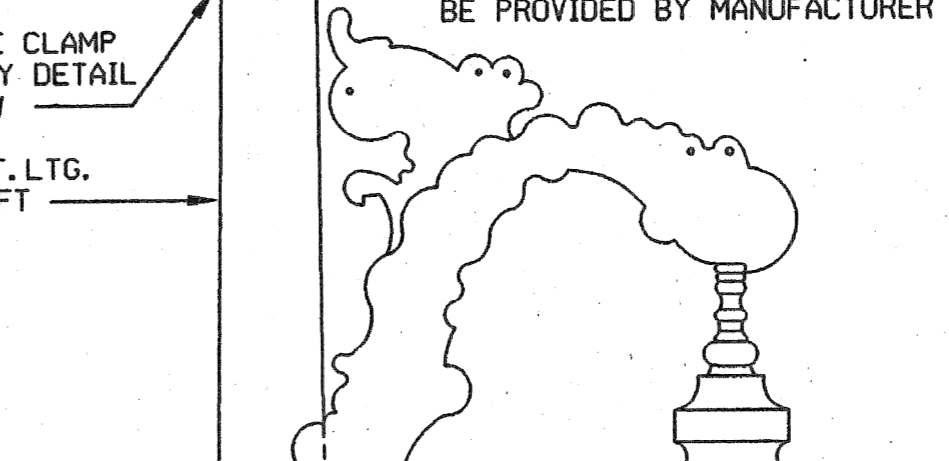


SECTION B-B
N.T.S.

CLAMP SIZE TABLE

TYPE	POLE DIAMETER
A	3.6"-4-5"
B	6.1"-6.9"
C	7.5"-8.5"

PIPE CLAMP DETAILS
N.T.S.



CLAMP ON BRACKET ARM ELEVATION
N.T.S.

NOTE: ENTIRE BRACKET ASSEMBLY, EXCEPT MOUNTING HARDWARE, TO BE HOT DIP GALVANIZED

Date	Description	Chkd. by

MULT. ST. LTG. CABLE CONNECTIONS,
CLAMP-ON ARM & MISC. DETAILS

Drawn CEA
Checked
Approved
Date

Drwg. No. OF CEA

File No.

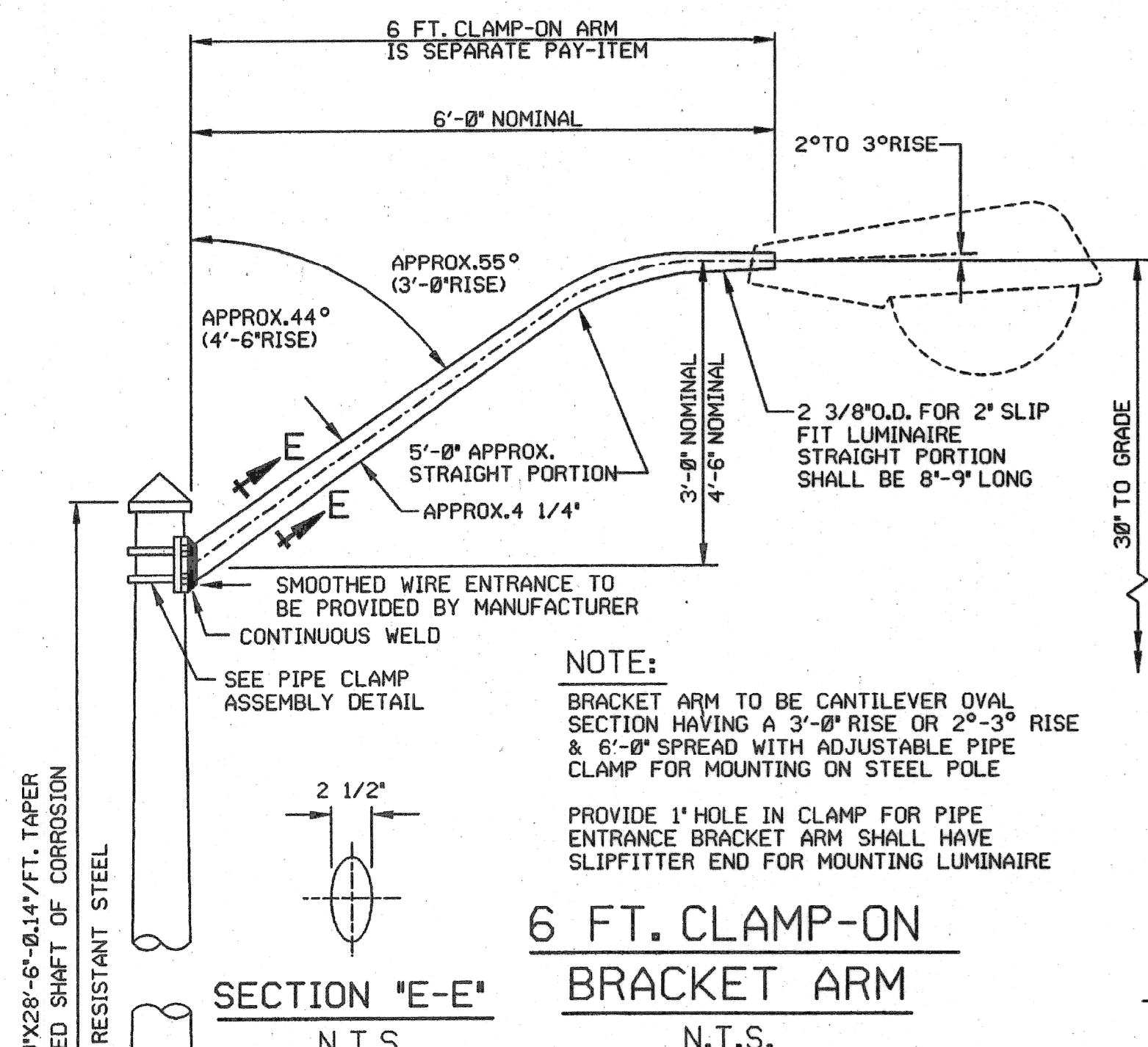
Consulting Engineering Associates, Inc.
16580 WYOMING AVE. DETROIT MICHIGAN 48221
TELEPHONE: (313) 341-5797 FAX: 341-0205

Checked by
Approved by

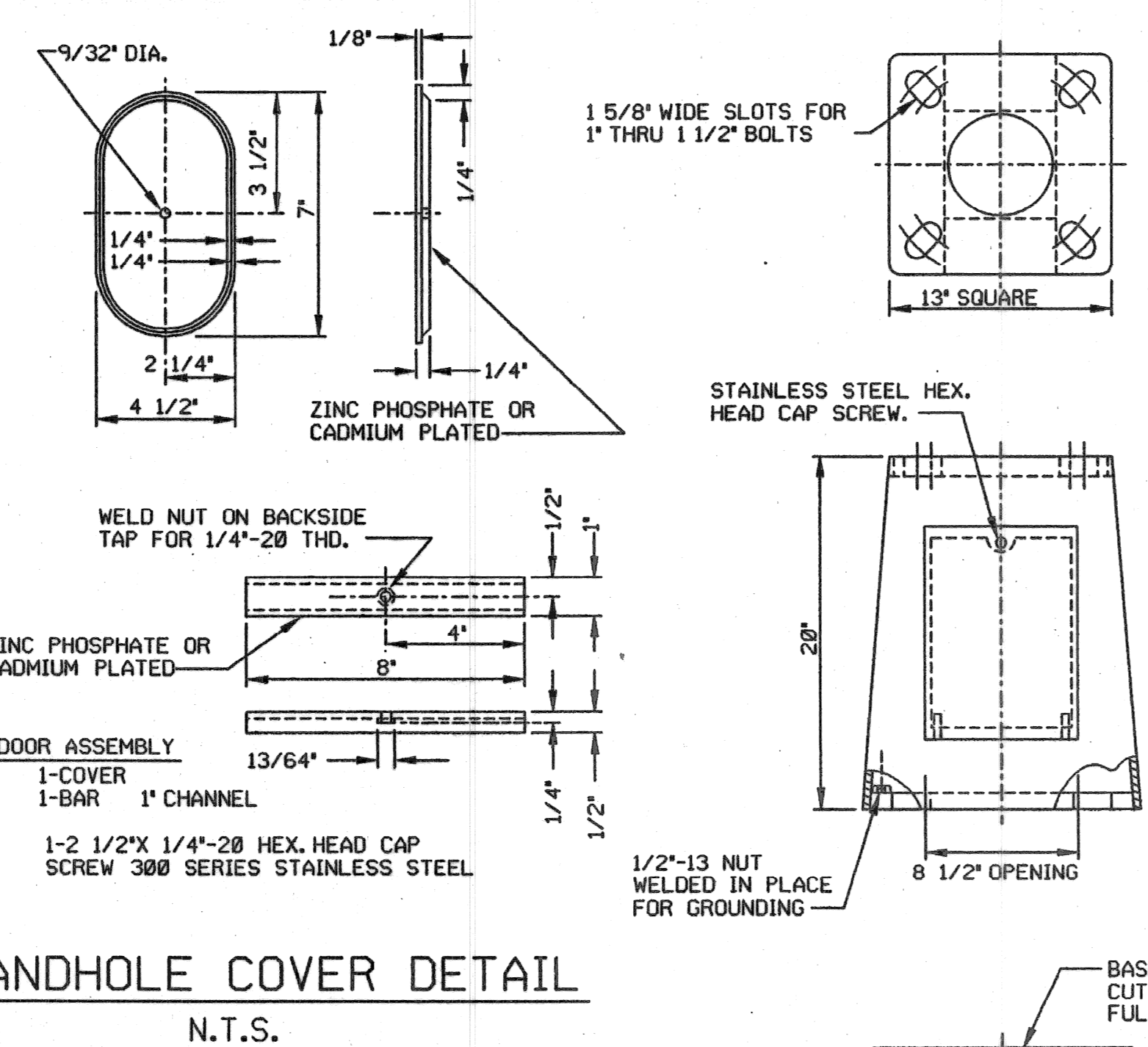
10-01-96 114

PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT

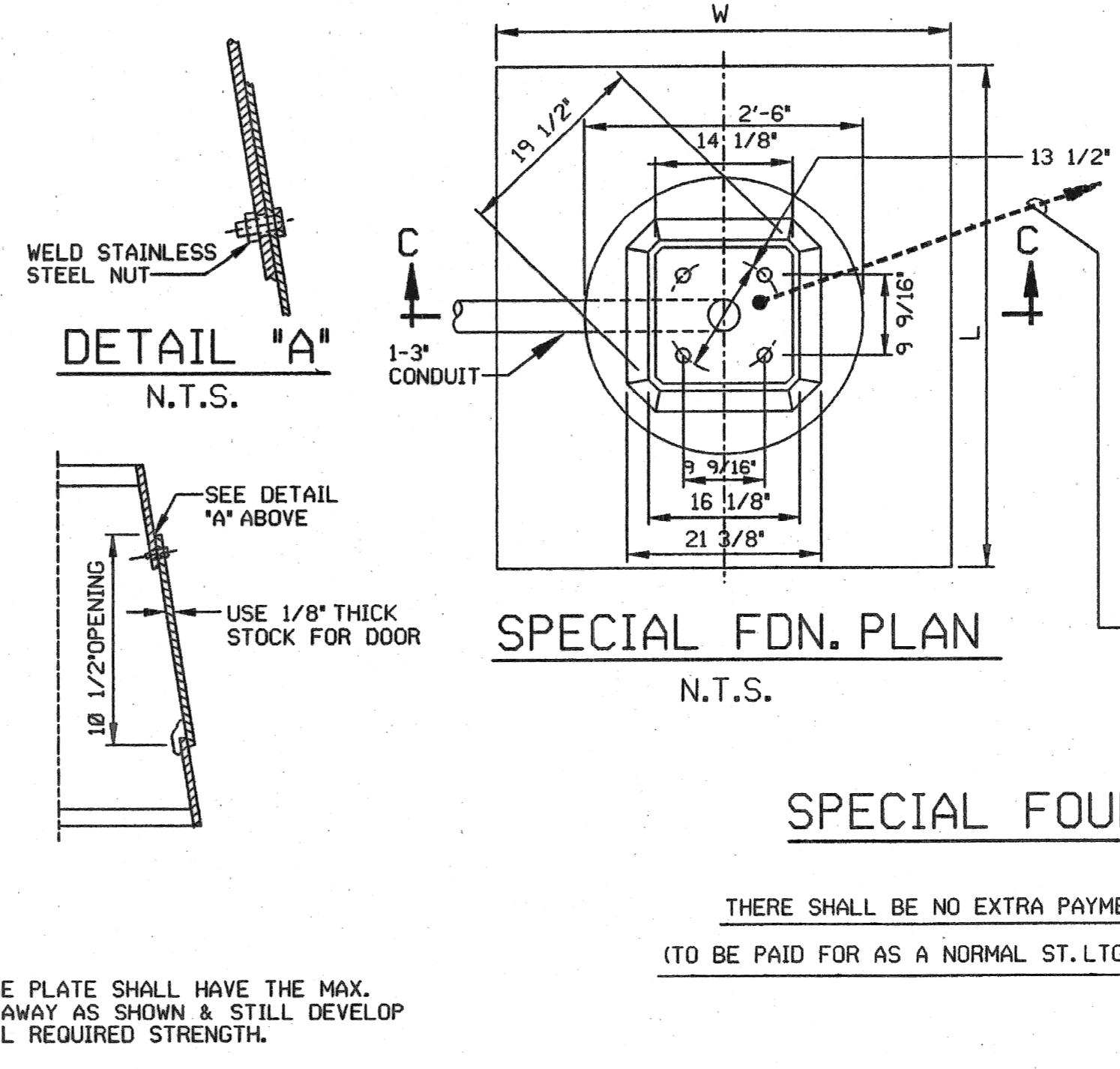
File No.
Sheet No. 36 of 48
Date



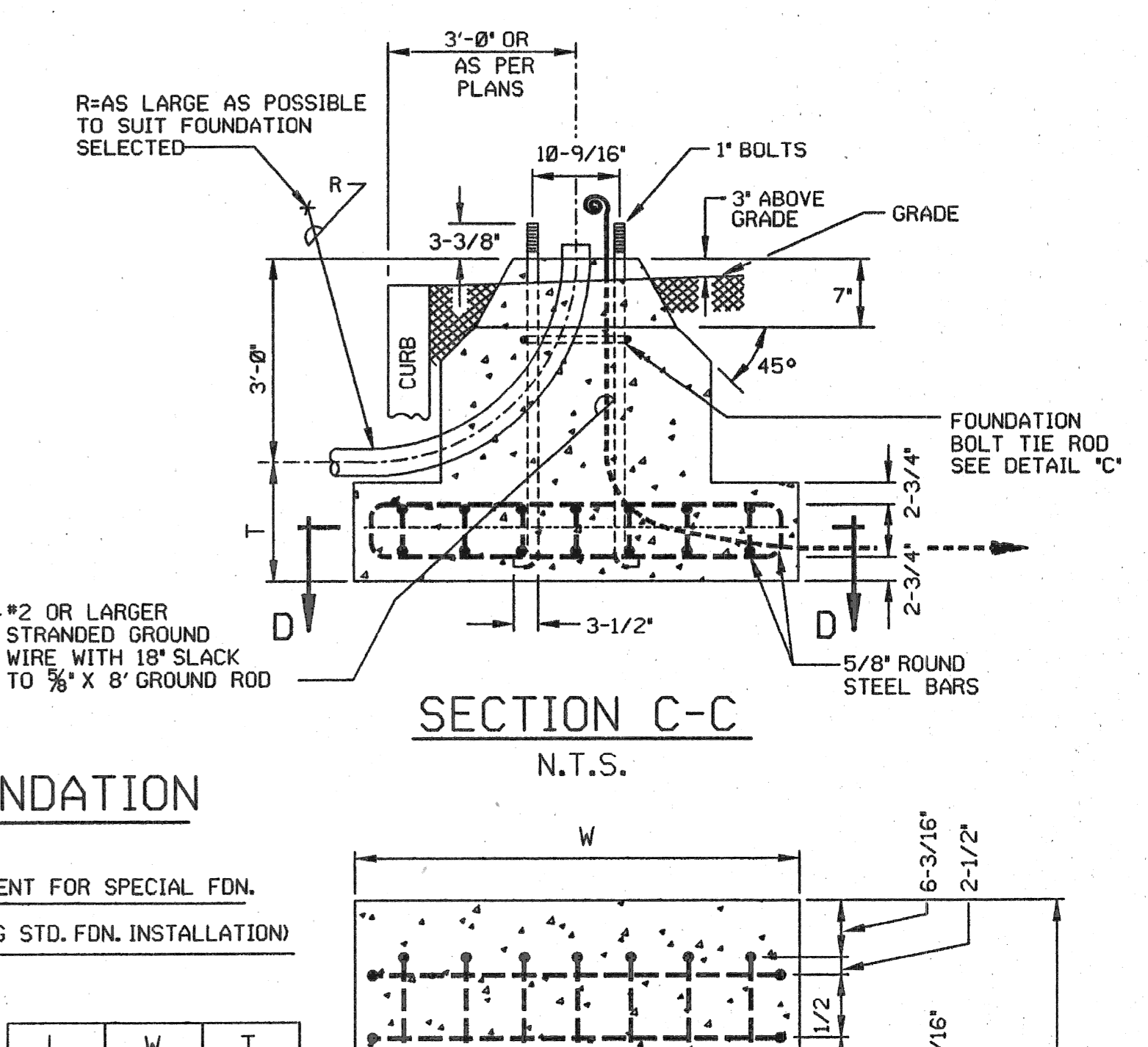
6 FT. CLAMP-ON BRACKET ARM
N.T.S.



HANDHOLE COVER DETAIL
N.T.S.

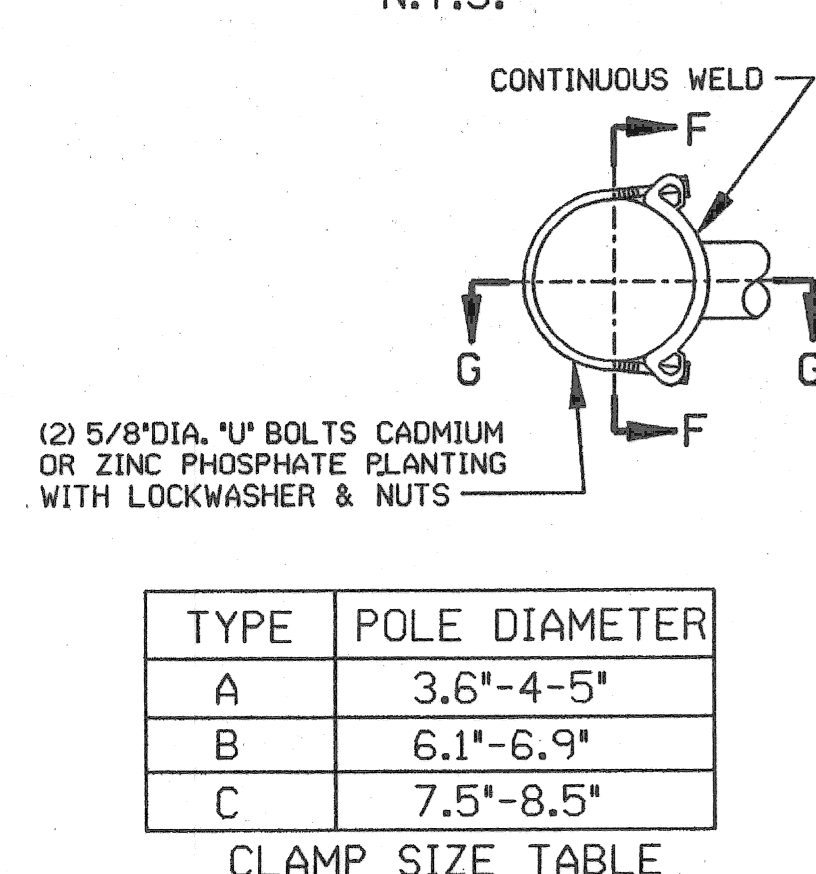


SPECIAL FDN. PLAN
N.T.S.

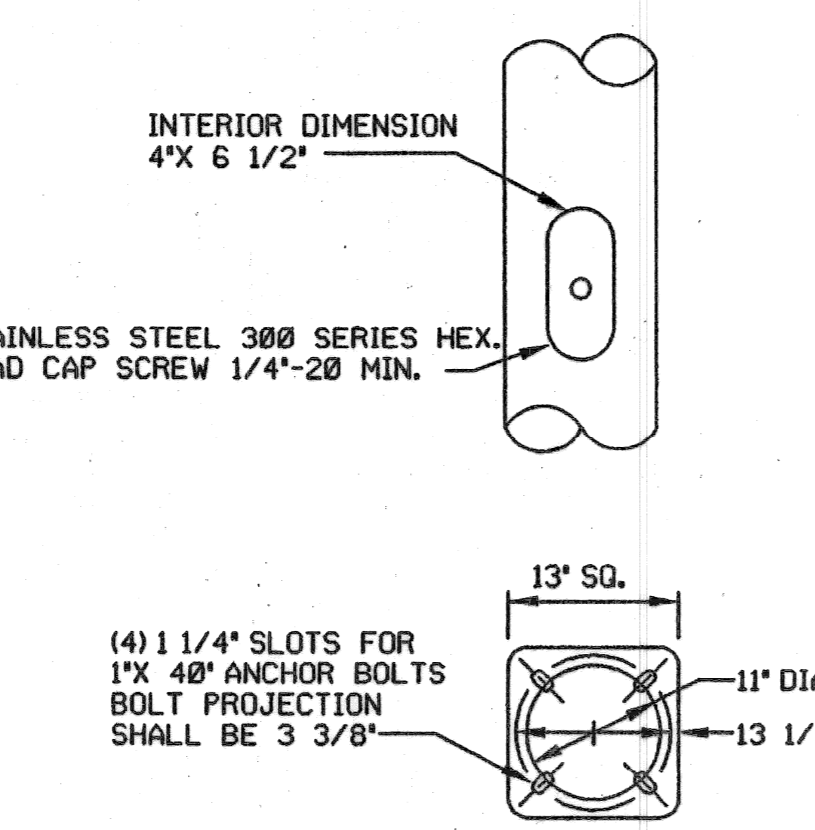


SECTION C-C
N.T.S.

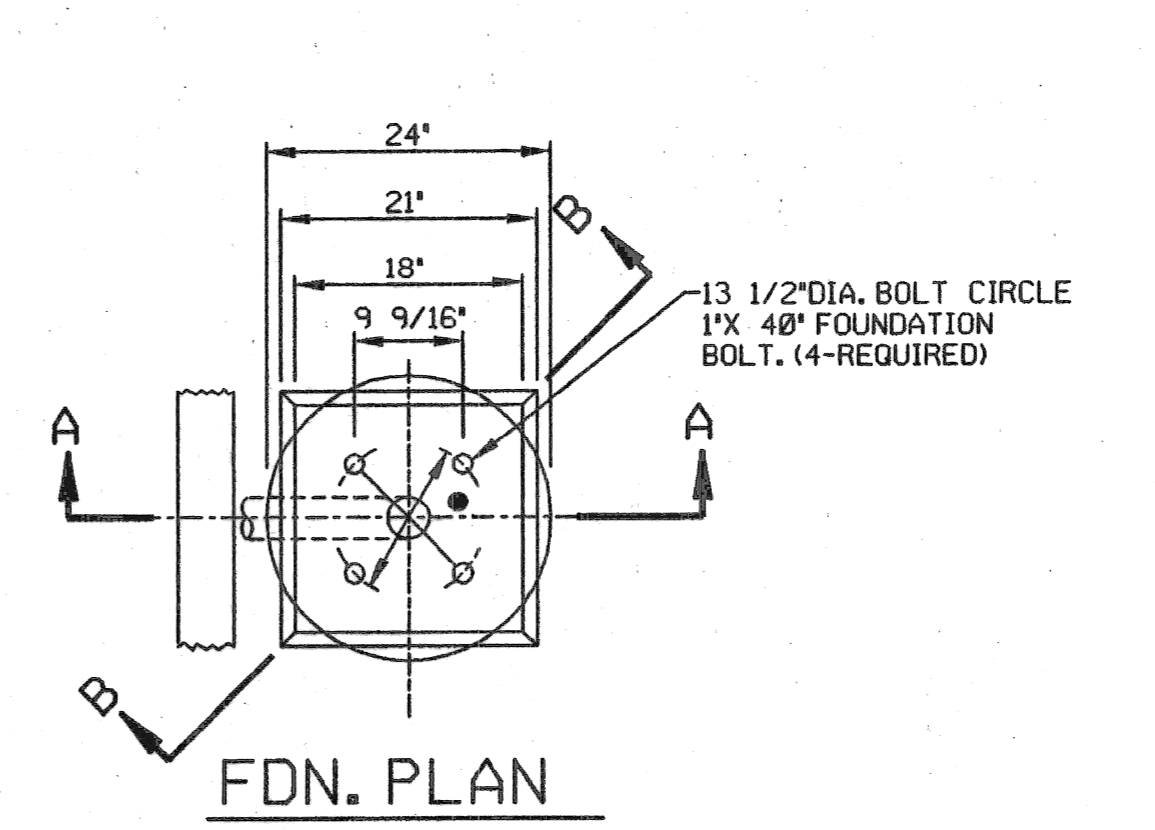
CODE 009-00
STREET LIGHTING STANDARD



SHAFT MODIFICATION
N.T.S.

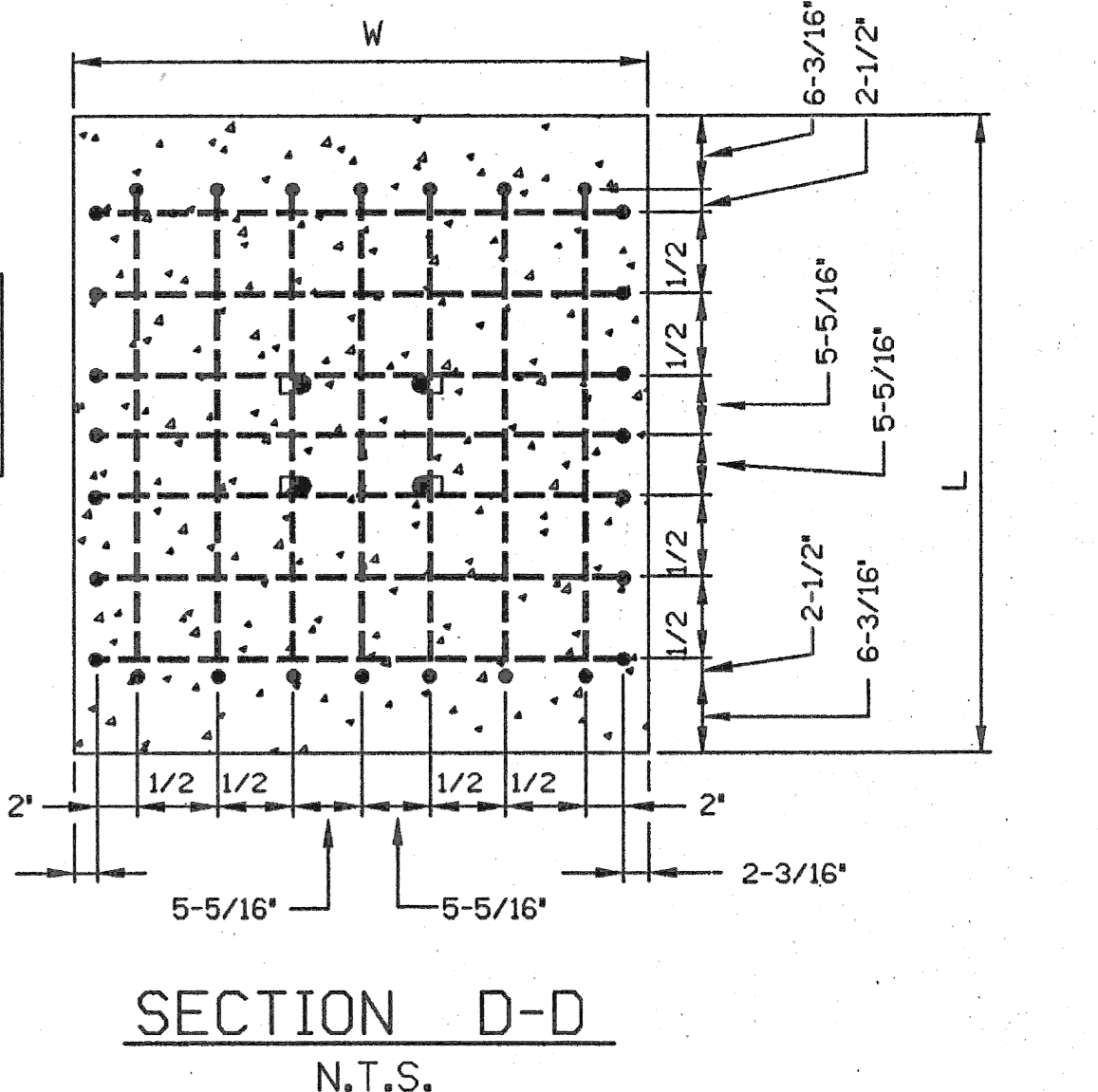


P.L.D. UNIVERSAL STEEL TRANSFORMER BASE
N.T.S.

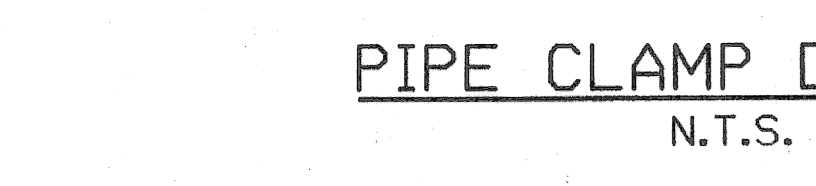


FDN. PLAN

L	W	T
5'-0"	4'-3"	1'-0"
4'-6"	3'-6"	1'-6"



SECTION D-D
N.T.S.



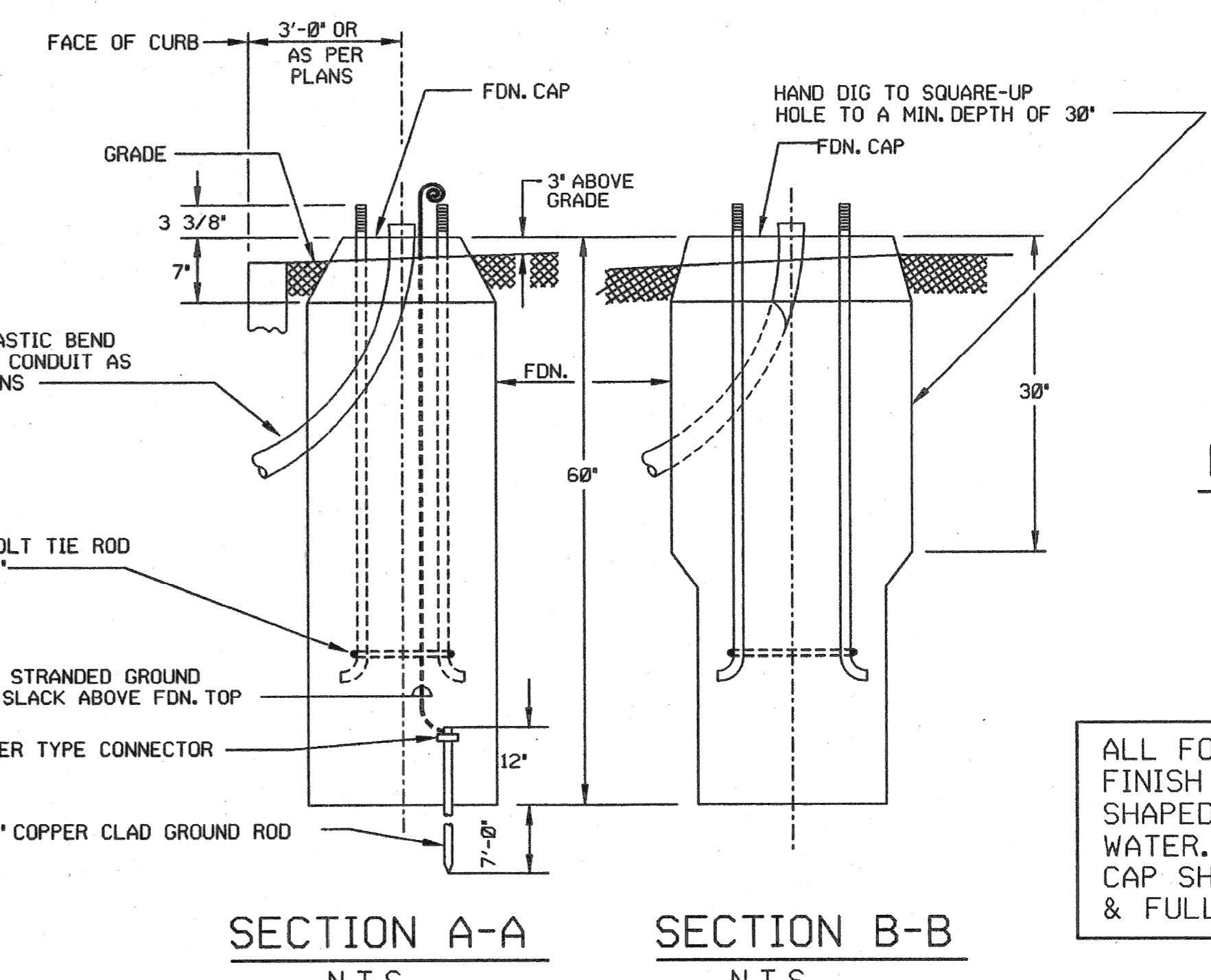
PIPE CLAMP DETAILS
N.T.S.

STD. CODE NO.	SHAFT LENGTH	SHAFT DEFLECTION *	MINIMUM LOAD **	ANCHOR BOLT CIRCLE Ø	ANCHOR BOLT Ø & Ø.A.	HANDHOLE	LUMINAIRE MOUNTING HEIGHT	BRACKET FITTERS REQ'D	BRACKET LENGTH
009-00	28'-6"	2.9'	880*	13 1/2"	1" X 40"	4" X 6 1/2"	30'	—	6'

* SHAFT DEFLECTION: SHAFT DEFLECTION MEASURED IN INCHES AT TOP, SHALL NOT BE GREATER THAN THAT SHOWN, FOR A HORIZONTAL LOAD OF 100 LBS. APPLIED 18 INCHES BELOW TOP OF SHAFT.

** SHAFT LOADING: SHAFTS SHALL WITHSTAND, AT THE GUARANTEED MINIMUM YIELD STRENGTH OF THE SHAFT MATERIAL, THE LOADS SHOWN IN THIS TABLE. THE LOAD SHALL BE APPLIED IN A SINGLE HORIZONTAL DIRECTION ANYWHERE AROUND THE CIRCUMFERENCE OF SHAFT 18 INCHES FROM THE TOP.

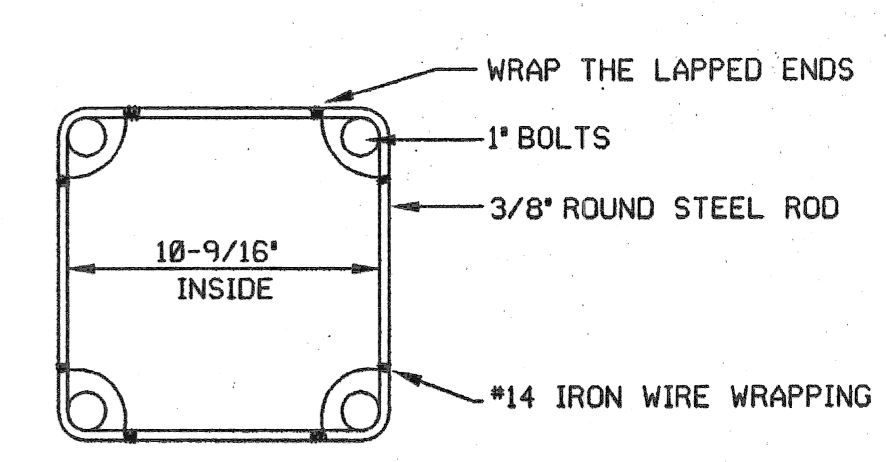
ANCHOR BASE ST.LTG.STD. (CODE 009-00)



SECTION A-A
N.T.S.

SECTION B-B
N.T.S.

ANCHOR BASE STD. FOUNDATION



DETAIL 'C'
FDN. BOLT TIE ROD
N.T.S.

ALL FOUNDATION CAPS SHALL HAVE A SMOOTH FINISH WITH BEVELED EDGES & SHALL BE SHAPED TO ALLOW COMPLETE DRAINAGE OF WATER. ANCHOR BOLT PROJECTIONS ABOVE CAP SHALL BE CLEANED OF ALL CONCRETE & FULLY USABLE THEIR FULL LENGTH.

DISK FILE

REVISIONS	Date	Description	Chkd. by

Drawn **CEA**
Checked
Approved
Date

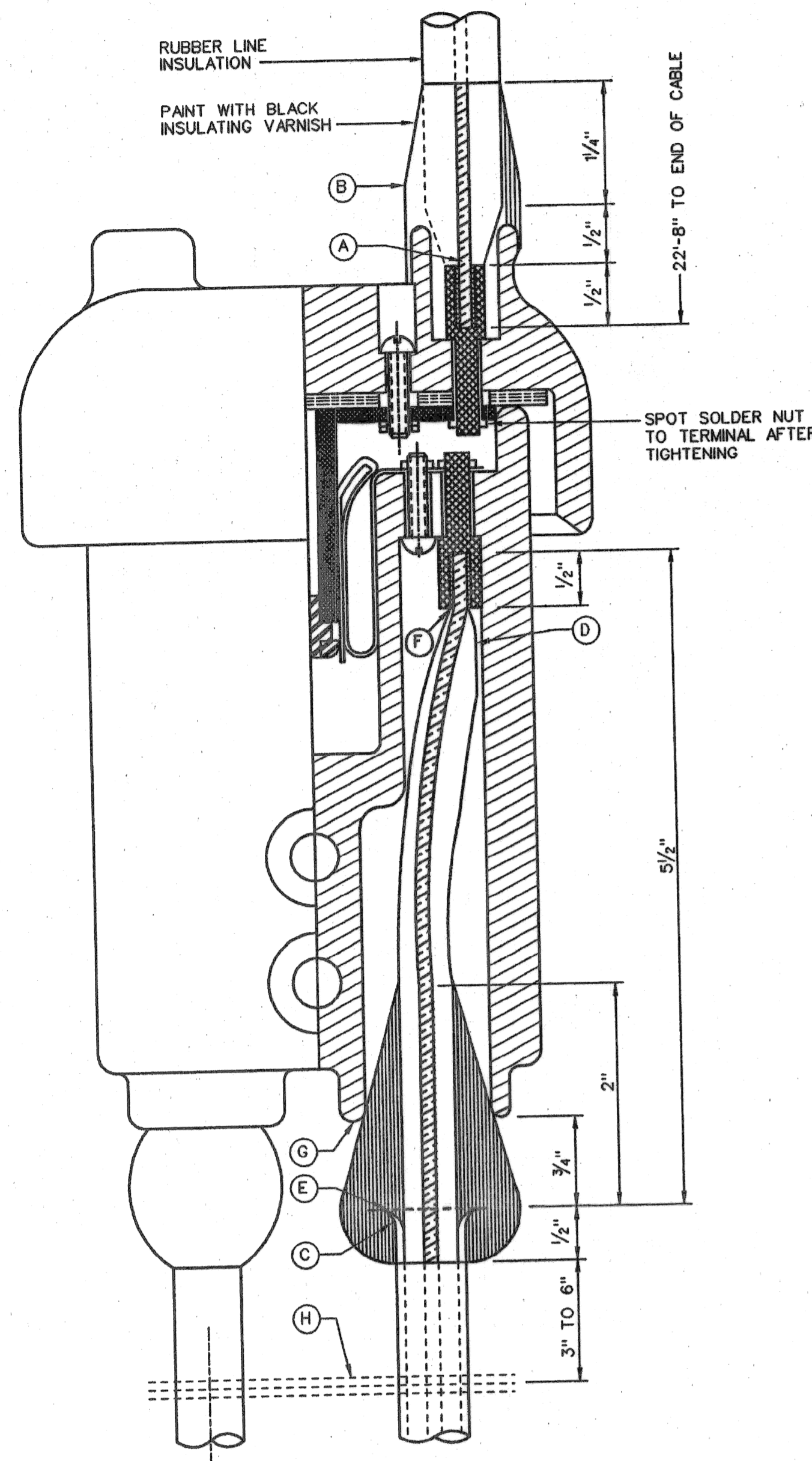
Consulting Engineering Associates, Inc.
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Drwg. No. OF CEA
File No.

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Approved by

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CITY OF DETROIT

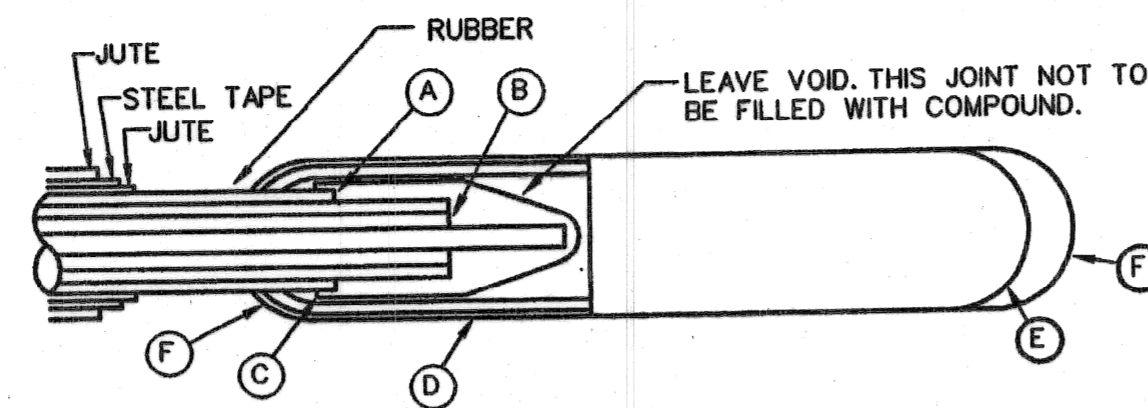
File No.
Sheet No. **37 of 48**
Date



CONNECTION FOR SERIES CUTOUT
N.T.S.

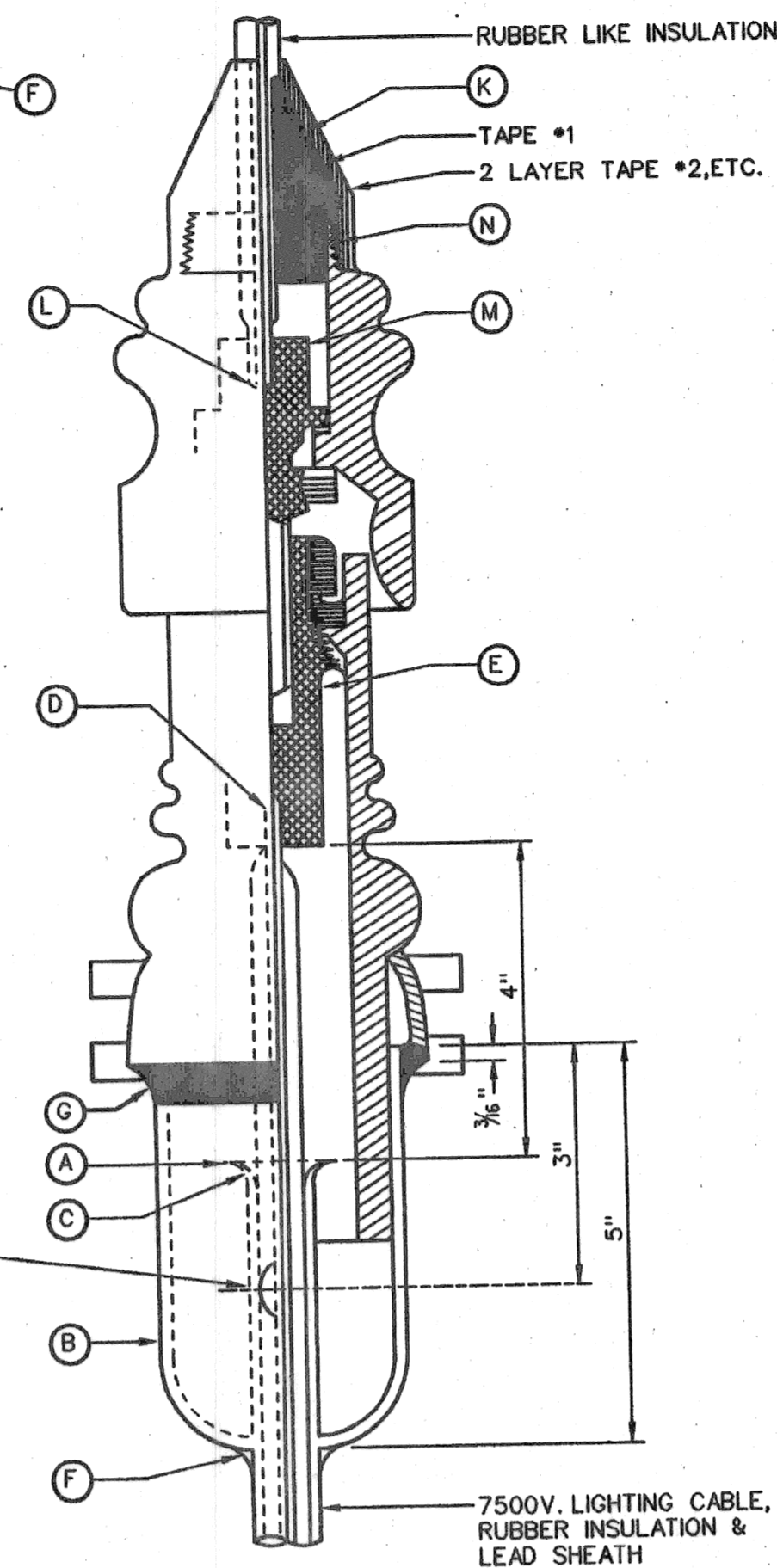
- A - SWEAT TERMINAL & PENCIL RUBBER INSULATION TO FIT SNUGLY IN PORCELAIN CAP OPENING SO THAT THE CONNECTOR NUT IS TIGHTENED, THE OPENING IS COMPLETELY & TIGHTLY FILLED.
- B - BUILD UP WITH #1 TAPE AS SHOWN, & COVER WITH 2 LAYERS, HALF LAP, WITH #2 TAPE. PAINT WITH ONE COAT OF BLACK INSULATING VARNISH.
- C - USE TUBE CUTTER TO SCORE LEAD SHEATH & CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING.
- D - CUT INSULATION & PENCIL SMOOTHLY FOR CONNECTION.
- E - BELL LEAD SHEATH, REMOVE TAPE COMPLETELY, INCLUDING AS MUCH AS CAN BE REMOVED INSIDE OF BELL. FILL SHEATH CAVITY WITH RUBBER CEMENT.
- F - SWEAT CONDUCTOR INTO TERMINAL.
- G - APPLY TAPE #1 OVER BELL AS SHOWN TO FORM A TIGHT FIT BETWEEN INSULATION AND PORCELAIN AT "G" WHEN NUT IS TIGHTENED. COVER TAPE #1 WITH 2 LAYERS OF TAPE #2 APPROX. 3/4" FROM END OF TAPE #1.
- H - #18 SERVICE WIRE OR BRAID #4 WRAPS BETWEEN CABLES & SWEATED TO LEAD SHEATH FOR BOND TIE TO GROUND WIRE.

NOTE:
1. FOR PARKWAY CABLE, STRIP JUTE & STEEL TAPE DOWNWARD TO DUCT ENTRANCE.
2. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A LIST OF ALL SPLICING MATERIALS HE PROPOSES TO USE WITH SUPPORTING DATA THAT THE MATERIAL IS SUITABLE FOR THE APPLICATION AS SHOWN ON THE DRAWINGS.

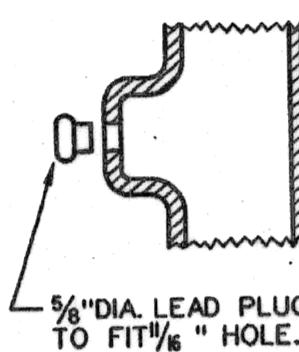


#8 LIGHTING CABLE DEAD END CAP

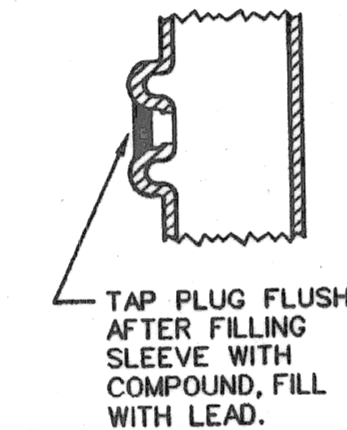
- A - SCORE LEAD SHEATH WITH TUBE CUTTER & CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING.
- B - CUT INSULATION TO EXPOSE 1" BARE COPPER.
- C - OVERLAP WITH TAPE #2 APPROXIMATELY 1/4" FROM END OF LEAD SHEATH, AT LEAST 2 LAYERS OF TAPE AT THIS POINT.
- D - 1 1/4" X 8" X 1/8" LEAD SLEEVE.
- E - SHAPE AND BEAT LEAD SLEEVE TO FORM A CLOSED END.
- F - CADMIUM ALLOY WIPING METAL. DO NOT POUR METAL FOR WIPE. USE TORCH AND FINGER WIPE MINIMUM OF HEAT.



EMBOSSE LEAD SLEEVE WITH 1/8" DIA. HOLE, CENTER AT 3" BELOW TOP OF SLEEVE SEE DETAIL BELOW



3/8" DIA. LEAD PLUG TO FIT 1/8" HOLE.



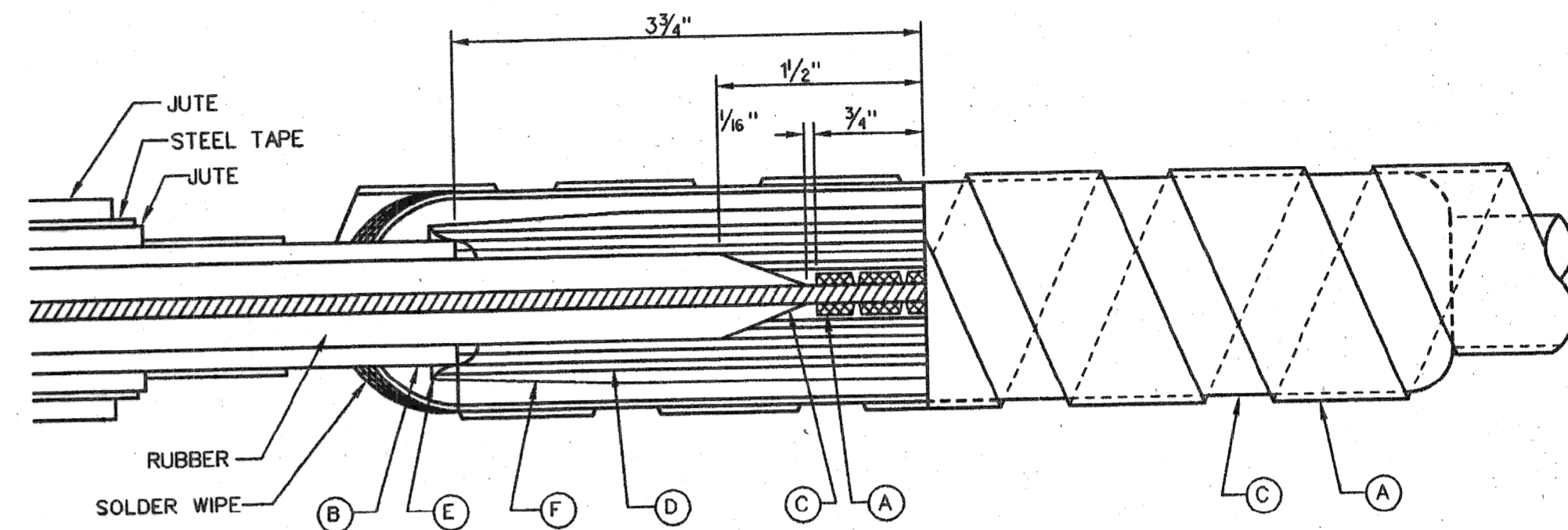
TAP PLUG FLUSH AFTER FILLING SLEEVE WITH COMPOUND, FILL WITH LEAD.

CONNECTIONS FOR 1/2 7500V. POTHEAD
N.T.S.

- A - USE TUBE CUTTER TO SCORE LEAD SHEATH AND CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING. 4" OF INSULATION TO REMAIN, NOT INCLUDING BARED CONDUCTOR.
- B - FORM BOTTOM OF EMBOSSED SLEEVE & SLIP OVER CABLE, HOLE IN FRONT.
- C - BELL LEAD SHEATH, REMOVE TAPE FROM INSULATION, INCLUDING AS MUCH AS POSSIBLE FROM WITHIN BELLED SHEATH.
- D - SWEAT CONDUCTOR INTO TERMINAL & PENCIL INSULATION SMOOTHLY FOR 3/4"
- E - MOUNT TERMINAL FIRMLY INTO PORCELAIN.
- F - PUSH SLEEVE INTO CAST IRON COLLAR AND WIPER SMOOTHLY TO LEAD SHEATH.
- G - INVERT & FILL JOINT BETWEEN IRON COLLAR AND SLEEVE WITH EPOXY RESIN.
- H - LAY POTHEAD HORIZONTAL & FILL COMPLETELY WITH APPROVED COMPOUND.
- I - INSERT LEAD PLUG INTO EMBOSSED HOLE, TAP FLUSH & FILL WITH LEAD.
- J - TRAIN CABLE & MOUNT POTHEAD ON CROSS ARM.
- K - SLIP THE CONE SHAPED RUBBER BUSHING ON THE RUBBER INSULATED CABLE RISER.
- L - SWEAT CONDUCTOR INTO TERMINAL FIRMLY INTO POTHEAD CAP.
- M - MOUNT THE TERMINAL FIRMLY INTO THE POTHEAD CAP.
- N - BUILD UP WITH TAPE #1 AND CARRY 2 LAYERS OVER THE CAP TO POINT "N" AS SHOWN. COVER WITH 2 LAYERS TAPE #2-HALF LAP. PAINT WITH APPROVED BLACK INSULATING VARNISH.

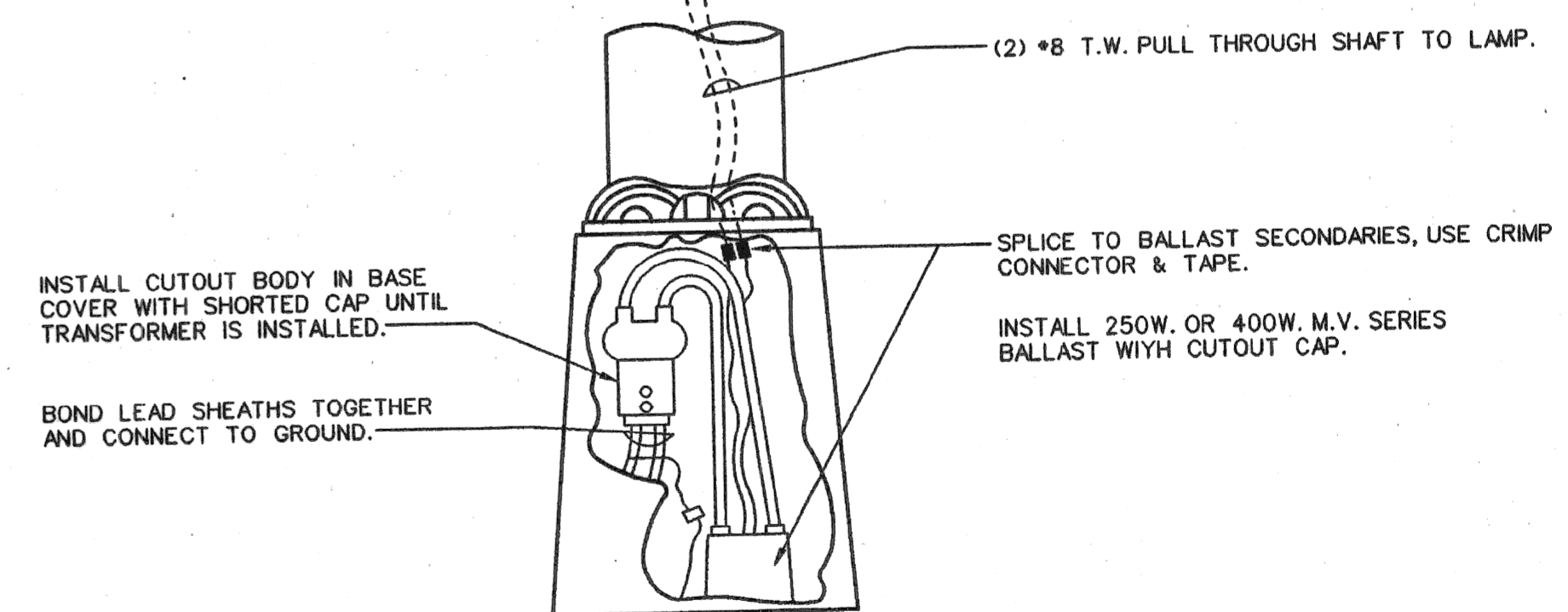
MATERIAL TYPES

- TAPE #1 - CORONA RESISTING HIGH VOLTAGE RUBBER TAPE ONLY.
- TAPE #2 - BLACK PLASTIC ELECTRICAL TAPE.



#8 LIGHTING CABLE JOINT
N.T.S.

- A - 1/2" #8 TINNED COPPER SLEEVE, 2 CIRCUMFERENTIAL CRIMPS ON EACH END.
- B - SCORE LEAD SHEATH WITH TUBE CUTTER & CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING.
- C - CUT INSULATION & PENCIL SMOOTHLY AS SHOWN, AFTER REMOVING TAPE.
- D - APPLY TAPE #1 APPROXIMATELY 1" DIAMETER OVERALL.
- E - OVERLAP WITH TAPE #1 APPROXIMATELY 1/4" FROM END OF LEAD SHEATH, AT LEAST 2 LAYERS OF TAPE AT THIS POINT.
- F - TWO LAYERS OF TAPE #2 APPLIED HALF LAP.
- G - 1/4" X 8" X 1/8" LEAD SLEEVE.
- H - TWO LAYERS OF TAPE #2 HALF LAP, ON ARMORED PARKWAY CABLE ONLY.



INCANDESCENT TO MERCURY CONVERSION
N.T.S.

DISK FILE: PLD 201

REV	Date	Description	Chkd. by

RUBBER INSULATED LEAD SHEATHED SPLICE & CONNECTIONS

Drawn CEA
Checked
Approved
Date

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16580 WYOMING AVE. DETROIT MICHIGAN 48221
TELEPHONE: (313) 341-5797 FAX: 341-0205

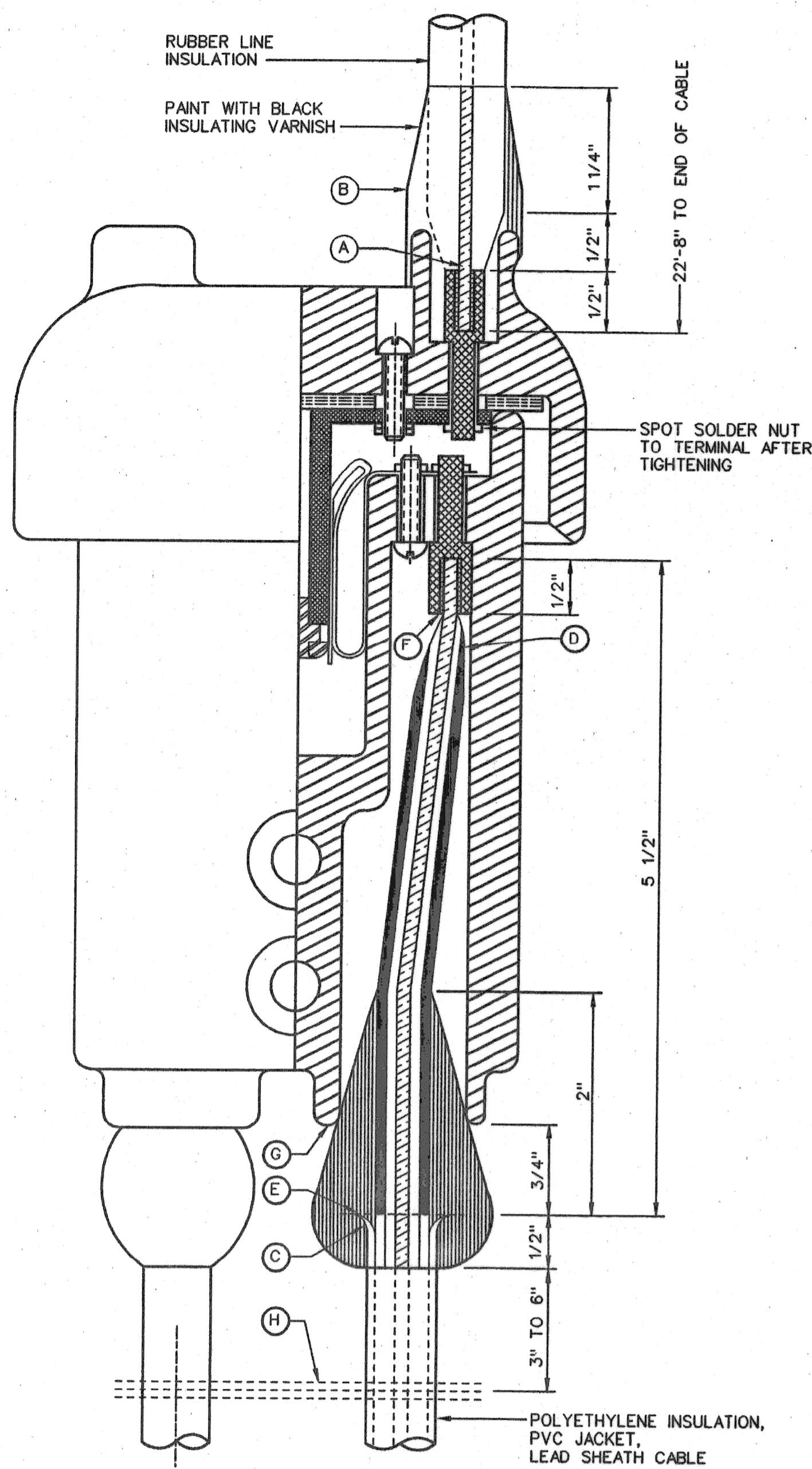
Drwg. No. OF CEA
File No.

Checked by
Approved by

PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT

10-01-96 201

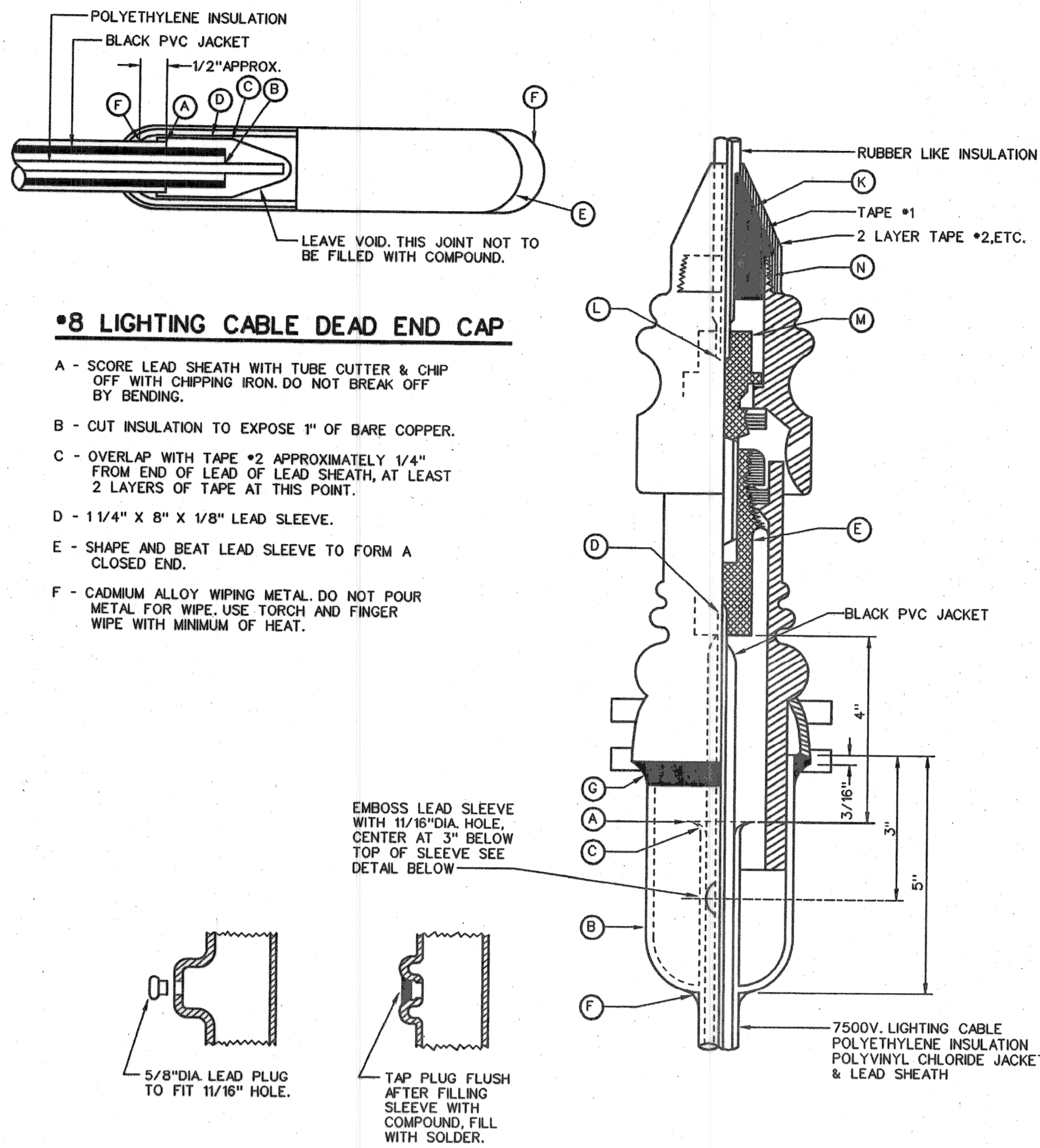
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Sheet No. 38 of 48
Date



CONNECTION FOR SERIES CUTOUT

N.T.S.

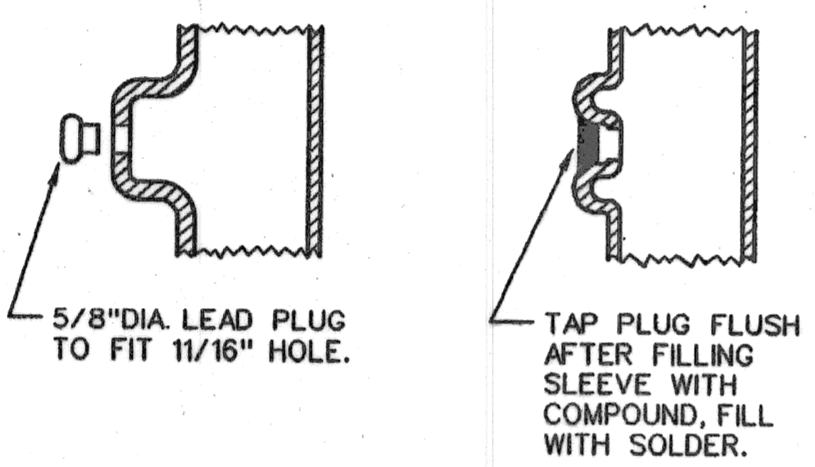
- A - SWEAT TERMINAL & PENCIL INSULATION TO FIT SNUGLY IN PORCELAIN OPENING SO THAT AS NUT IS DRAWN UP TIGHT THE OPENING IS COMPLETELY AND TIGHTLY FILLED.
- B - BUILD UP WITH *3 TAPE AS SHOWN, & COVER WITH 2 LAYERS, HALF LAP, WITH *2 TAPE AS NOTED.
- C - USE TUBE CUTTER TO SCORE LEAD SHEATH & CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING.
- D - CUT INSULATION & PENCIL SMOOTHLY FOR CONNECTION.
- E - BELL LEAD SHEATH AND FILL SHEATH CAVITY WITH APPROVED ADHESIVE.
- F - SWEAT CONDUCTOR INTO TERMINAL.
- G - APPLY TAPE #1 OVER BELL SUFFICIENTLY TO FORM A TIGHT FIT BETWEEN CABLE AND PORCELAIN AT "G" COVER TAPE #1 WITH 2 LAYERS OF TAPE #2 TO ABOUT 3/4" FROM END OF TAPE #1.
- H - *18 SERVICE WIRE OR BRAID 4 WRAPS BETWEEN CABLES & SWEATED TO LEAD SHEATH FOR BOND TIE TO GROUND WIRE.



#8 LIGHTING CABLE DEAD END CAP

- A - SCORE LEAD SHEATH WITH TUBE CUTTER & CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING.
- B - CUT INSULATION TO EXPOSE 1" OF BARE COPPER.
- C - OVERLAP WITH TAPE #2 APPROXIMATELY 1/4" FROM END OF LEAD OF LEAD SHEATH, AT LEAST 2 LAYERS OF TAPE AT THIS POINT.
- D - 1 1/4" X 8" X 1/8" LEAD SLEEVE.
- E - SHAPE AND BEAT LEAD SLEEVE TO FORM A CLOSED END.
- F - CADMIUM ALLOY WIPING METAL. DO NOT POUR METAL FOR WIPE. USE TORCH AND FINGER WIPE WITH MINIMUM OF HEAT.

EMBOSS LEAD SLEEVE WITH 11/16" DIA. HOLE, CENTER AT 3" BELOW TOP OF SLEEVE SEE DETAIL BELOW



CONNECTIONS FOR 1/C 7500V. POTHEAD

N.T.S.

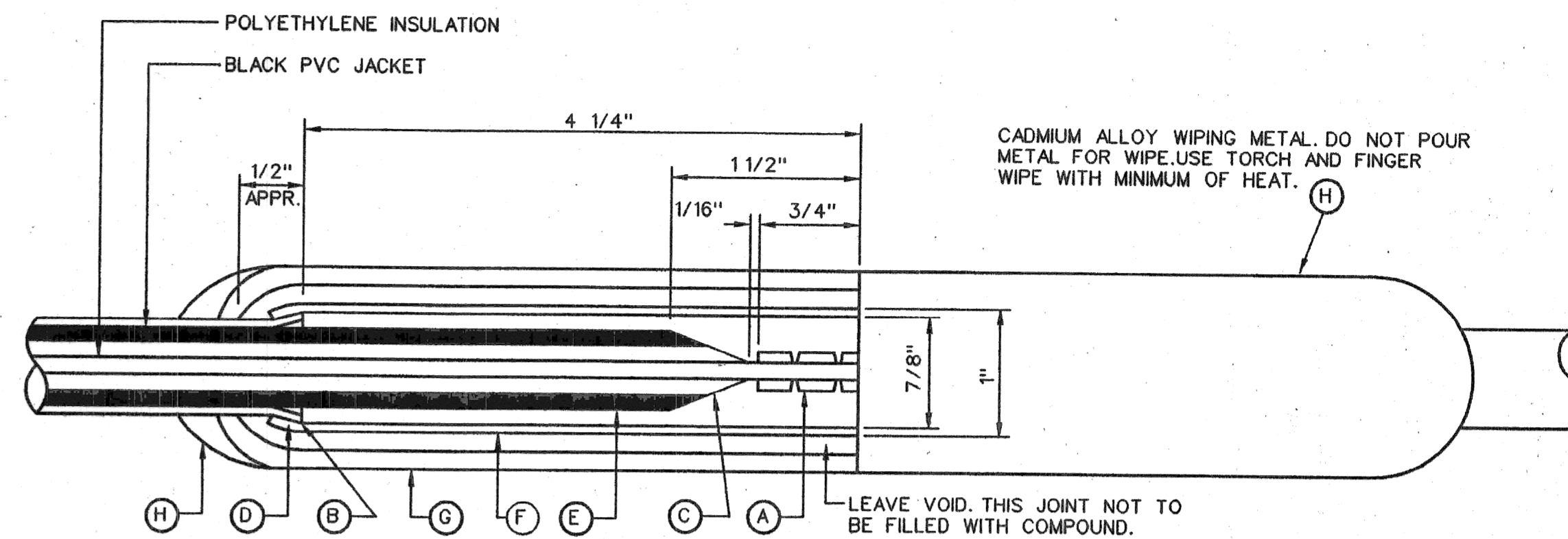
- A - USE TUBE CUTTER TO SCORE LEAD SHEATH AND CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING. 4" OF INSULATION TO REMAIN, NOT INCLUDING BARED CONDUCTOR.
- B - FORM BOTTOM OF EMBOSSED SLEEVE & SLIP OVER CABLE, HOLE IN FRONT.
- C - BELL LEAD SHEATH.
- D - SWEAT CONDUCTOR INTO TERMINAL & PENCIL INSULATION SMOOTHLY FOR 3/4"
- E - MOUNT TERMINAL FIRMLY INTO PORCELAIN HOUSING.
- F - PUSH SLEEVE INTO CAST IRON COLLAR AND FINGER WIPE TO CABLE SHEATH WITH LOW TEMPERATURE CADMIUM ALLOY. USE MINIMUM OF HEAT. DO NOT POUR METAL.
- G - INVERT & FILL JOINT BETWEEN IRON COLLAR AND LEAD SLEEVE WITH APPROVED EPOXY RESIN.
- H - LAY POTHEAD HORIZONTAL & FILL WITH APPROVED COMPOUND. DO NOT HEAT COMPOUND MORE THAN NECESSARY FOR POURING.
- I - INSERT 5/8" DIA. LEAD PLUG INTO SLEEVE HOLE, TAP FLUSH & FILL WITH SOLDER.
- J - TRAIN THE CABLE AND MOUNT POTHEAD ON CROSS ARM.
- K - SLIP THE CONE SHAPED RUBBER BUSHING ON THE RUBBER INSULATED CABLE RISER.
- L - SWEAT CONDUCTOR INTO TERMINAL "L" AND PENCIL INSULATION AS SHOWN.
- M - MOUNT THE TERMINAL FIRMLY INTO THE POTHEAD CAP.
- N - BUILD UP WITH TAPE #3 AND CARRY 2 LAYERS OVER END OF THE CAP TO POINT "N" AS SHOWN. COVER WITH 2 LAYERS TAPE #2-HALF LAP. PAINT WITH APPROVED BLACK INSULATING VARNISH.

MATERIAL & SPECIAL PRECAUTIONS

1. TAPE #1: CLEAR POLYETHYLENE TAPE, 0.02" THICK X 3/4" WIDE
TAPE #2: BLACK PVC PLASTIC ELECTRICAL TAPE.
TAPE #3: APPROVED A.S.T.M. RUBBER TAPE.
FILLING COMPOUND: APPROVED COMPOUND.
2. USE SMALL HAND TORCH FOR WIPING JOINTS, AT MINIMUM TEMPERATURE.
3. WHEN IT IS NECESSARY TO SPlice POLYETHYLENE INSULATED CABLE TO RUBBER CABLE, USE ABOVE MATERIALS.
4. APPLY ADHESIVE INSIDE BELLED SHEATH CAVITY ONLY. APPLY TAPE AFTER ADHESIVE HAS BECOME TACKY.

NOTE:

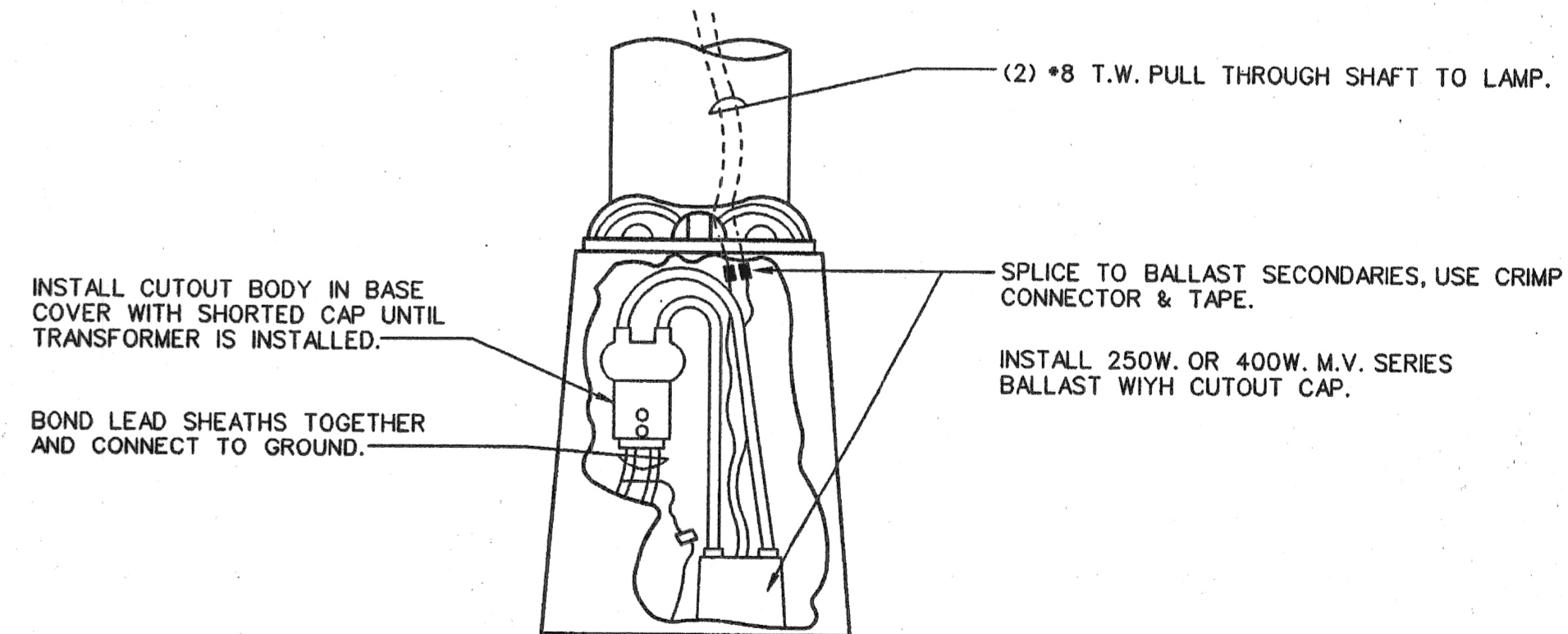
THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A LIST OF ALL SPlicing MATERIALS HE PROPOSES TO USE WITH SUPPORTING DATA THAT THE MATERIAL IS SUITABLE FOR APPLICATION AS SHOWN ON THE DRAWINGS.



#8 LIGHTING CABLE JOINT

N.T.S.

- A - 1 1/2" *8 TINNED COPPER SLEEVE, 2 CIRCUMFERENTIAL CRIMPS ON EACH END.
- B - SCORE LEAD SHEATH WITH TUBE CUTTER & CHIP OFF WITH CHIPPING IRON. DO NOT BREAK OFF BY BENDING.
- C - CUT INSULATION & PENCIL SMOOTHLY AS SHOWN.
- D - BELL LEAD SHEATH TO DIAMETER SHOWN AND FILL SHEATH CAVITY WITH APPROVED ADHESIVE.
- E - APPLY TAPE #1 OVER PVC JACKET AND BELLED SHEATH TO A DIA. OF 1". OVERLAP BELLED SHEATH WITH TAPE APPROX. 1/4"
- F - TWO LAYERS OF TAPE #2 APPLIED HALF LAP.
- G - LEAD SLEEVE 10" LONG, 1/8" WALL, 1 1/4" INSIDE DIAMETER.
- H - SPECIAL LOW TEMPERATURE CADMIUM ALLOY WIPING METAL.



INCANDESCENT TO MERCURY CONVERSION

N.T.S.

DISK FILE: PLD 202

REV.	Date	Description	Chkd. by

POLYETHYLENE INSUL., P.J. LEAD SHEATHED SPLICE & CONN.

Drawn CEA
Checked
Approved
Date

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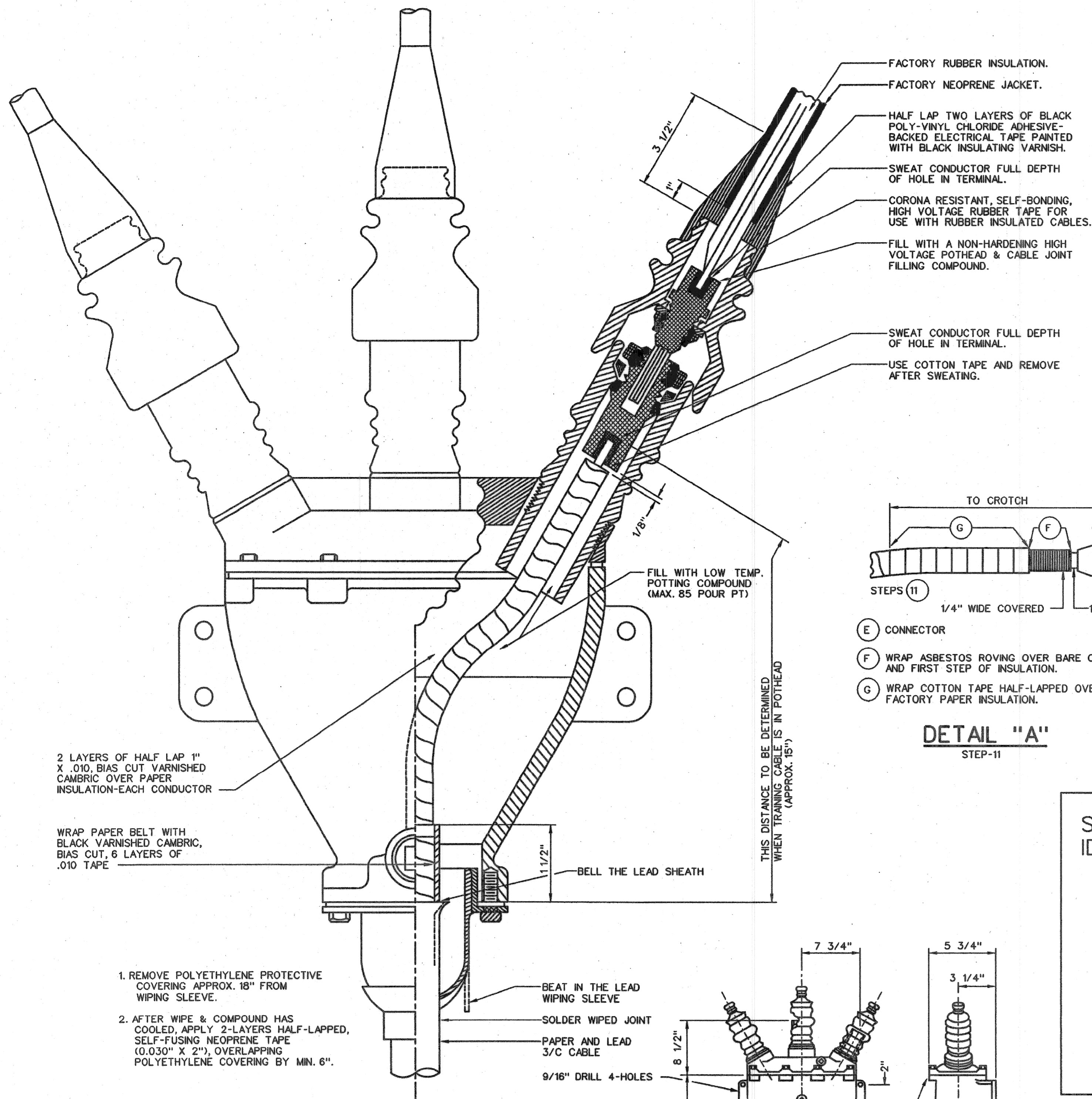
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Sheet No. 39 of 48
Date

10-01-96 202

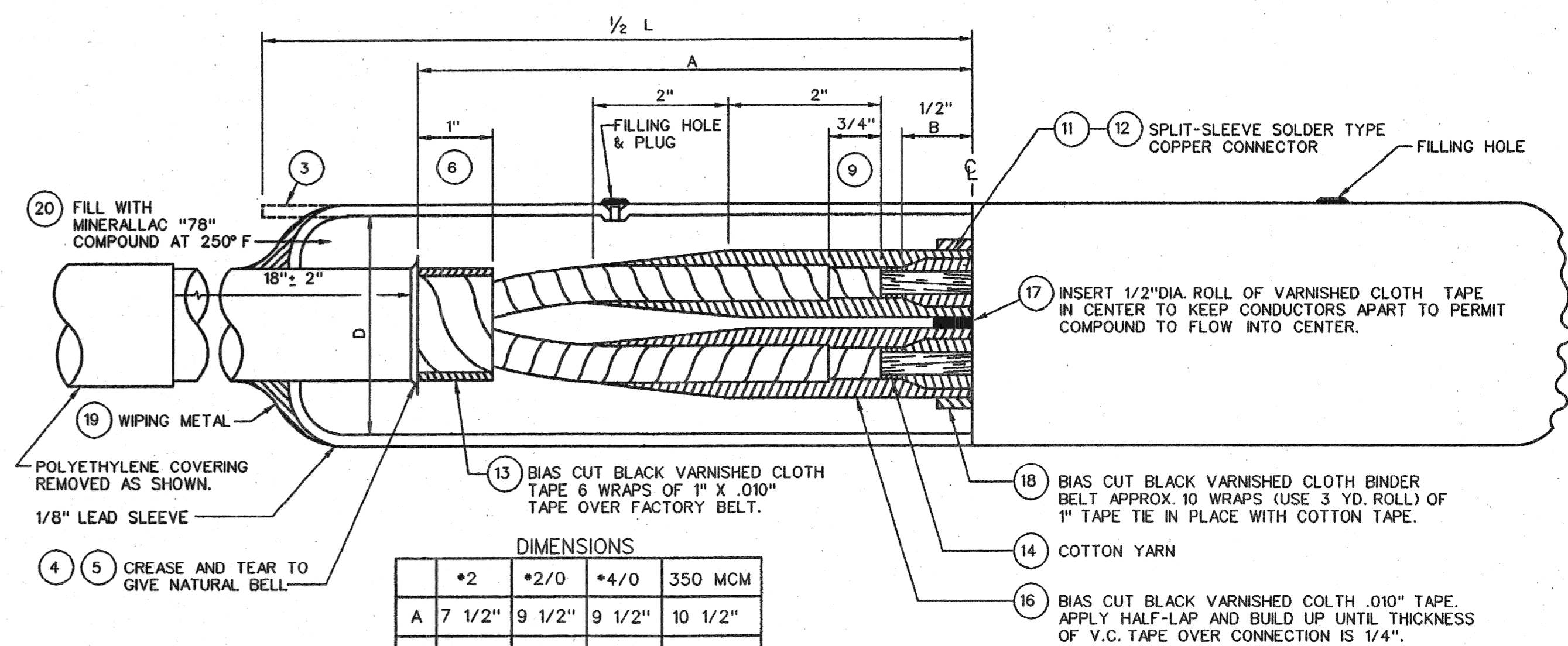


5000V. & 7500V. 3/C DISC. POTHEAD
N.T.S.

- NOTES:**
- SEE SPECIFICATIONS OR P.L.D., WHERE REQUIRED, FOR MATERIAL SPECIFICATIONS.
 - THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A LIST OF ALL SPLICING MATERIALS HE PROPOSES TO USE WITH SUPPORTING DATA THAT MATERIAL IS SUITABLE FOR APPLICATION AS SHOWN ON THE DRAWINGS.

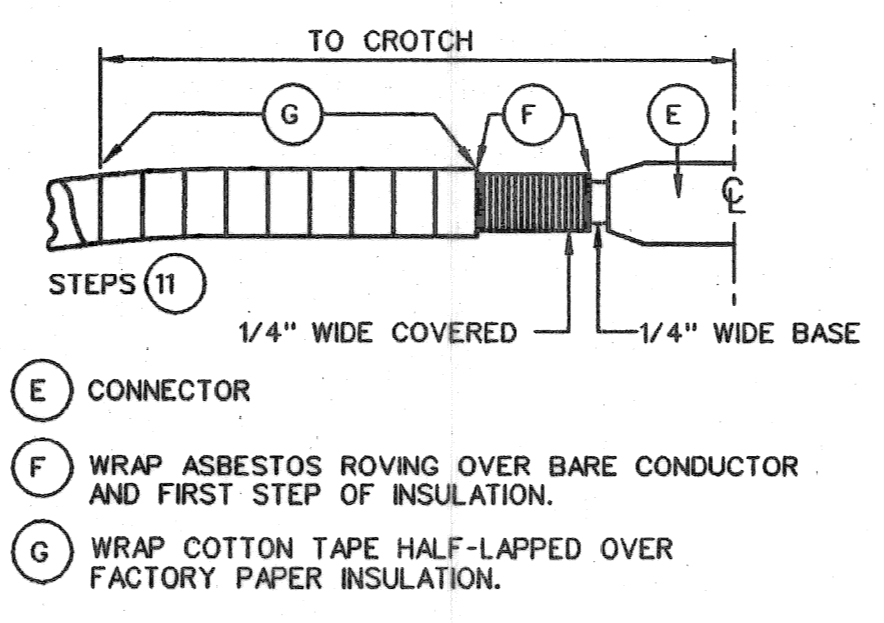
ASSEMBLED POTHEAD

NOTE:
DIMENSIONS APPLY TO BOTH 250A. & 500A. POTHEADS.
POTHEADS FURNISHED SHALL INCLUDE ENTRANCE SLEEVE & CAPS.

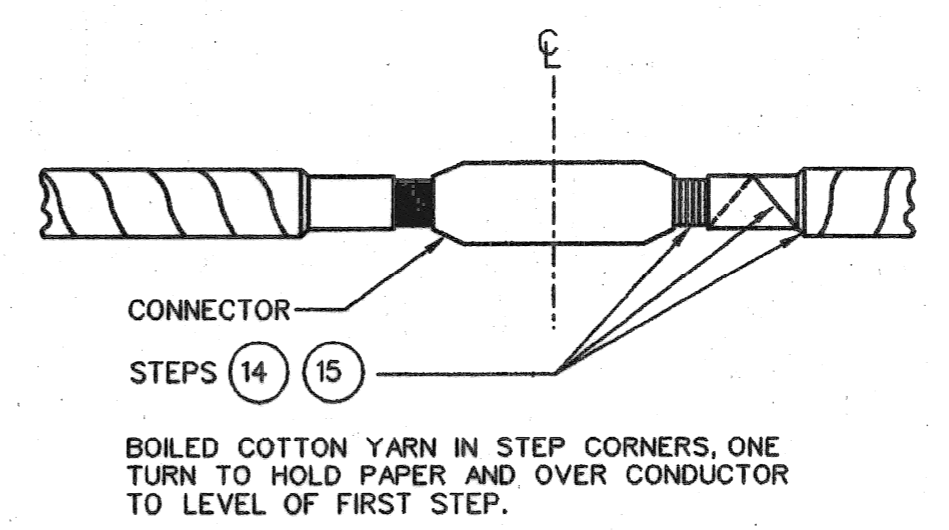


DIMENSIONS

	*2	*2/0	*4/0	350 MCM
A	7 1/2"	9 1/2"	9 1/2"	10 1/2"
B	1"	1"	1 1/4"	1 1/4"
D	3"	3 1/2"	3 1/2"	4"
L	18"	24"	24"	24"



DETAIL "A"
STEP-11



DETAIL "B"
STEP-15

SUBSTATION CIRCUIT ABBREVIATIONS ON IDENTIFICATION TAGS SHALL BE SPELLED AS FOLLOWS

BEL	KSG	POR
BUT	LAB	RVS
CAN	LEE	STA
COB	LOT	STO
CON	LUD	TOW
CUS	MAP	TRI
GRF	MCC	TUR
HUD	MON	WAL
JSC	PAL	WSU
JOY	PHI	JEF

NOTE:
ASBESTOS TAPE CAN ONLY BE USED WITH PERMISSION OF THE P.L.D.

INSTRUCTIONS FOR 3/C 5.0 & 7.0KV. P. & L. BELTED CABLE JOINTS

- TRAIN CABLE. DO NOT BEND TO RADIUS LESS THAN THE FOLLOWING SPECIFIED MINIMUM: *2 AND *2/0-18", *4/0-17", 350 MCM-20".
- ESTABLISH CENTERLINE OF JOINT. CUT CABLES THRU CENTERLINE.
- CLEAN AND CANDLE OUTSIDE OF SLEEVE FOR 2" AT BELL ENDS. SLIDE SLEEVE OVER CABLE.
- CREASE LEAD SHEATHS THE SPECIFIED DISTANCE FROM CABLE END (DIM.A). CLEAN AND PROTECT SURFACES OF SHEATH WITH STEARINE WHERE WIPES ARE TO BE MADE.
- REMOVE SHEATH TO CREASE, TEAR SO AS TO GIVE THE SHEATH A NATURAL BELL.
- REMOVE ALL BINDER TAPES TO 1" FROM END OF SHEATH.
- REMOVE FILLERS FROM CROTCH, CUTTING WITH KNIFE DIRECTED AWAY FROM INSULATION.
- TEST FILLER FOR MOISTURE (IN PARAFFIN AT 250 F).
- STEP INSULATION BY USE OF GILLING TWINE. FOR THE SINGLE STEP REMOVE HALF OF FACTORY INSULATION THICKNESS.
- REMOVE INSULATION FROM CONDUCTOR FOR THE CONNECTOR BY CUTTING SQUARE WITHOUT NICKING CONDUCTOR.
- PUT CONNECTORS IN PLACE WITH SPLIT OPENINGS TURNED UPWARD. COVER BARE CONDUCTOR AND FIRST STEPS WITH ASBESTOS ROVING COVER PAPER INSULATION WITH HALF-LAPPED COTTON TAPE. SEE DETAIL "A".
- SWEAT CONNECTORS IN PLACE. REMOVE ANY SHARP EDGES OF THE CONNECTOR OR SOLDER. REMOVE COTTON TAPE AND ASBESTOS ROVING BEING CAREFUL TO KEEP METAL PARTICLES OFF OF CONDUCTOR AND PAPER INSULATION.
- APPLY 6 WRAPS OF 1" BLACK V.C. TAPE OVER THE FACTORY BELT ON EACH END OF SPLICE.
- APPLY STRANDED COTTON YARN BOILED IN PETROLATUM TO FILL IN BETWEEN INSULATION AND CONNECTOR TO LEVEL OF FIRST STEP.
- ALSO APPLY BOILED COTTON YARN OVER STEPS TO HOLD PAPER TAPE IN PLACE WHILE APPLYING V.C. INSULATION. SEE DETAIL "B".
- APPLY V.C. TAPE HALF-LAPPED TO EACH CONDUCTOR, BUILDING UP TO A THICKNESS OF 1/4" OVER THE CONNECTOR, TAPERING ENDS AS SHOWN AND HAND WIPING THIN COATING OF PETROLATUM BETWEEN LAYERS OF V.C. TAPE.
- APPLY 1/2" DIA. SPACER ROLL OF 1" BLACK V.C. TAPE IN CENTER OF CONDUCTOR.
- INSTALL BINDER BELT OF 1" BLACK V.C. TAPE APPROX. 10 LAYERS (USE 3YD. ROLL) TIE IN PLACE WITH COTTON TAPE.
- PULL UP AND CENTER SLEEVE. WIPE SLEEVE TO CABLE SHEATHS. DO NOT USE STEARINE FOR COOLING AT THIS STAGE.
- FILL JOINT WITH COMPOUND AT 250° F. COOL FOR 45 MINUTES, REFILL, AND COOL FOR 15 MINUTES. REPEAT REFILLS TWICE IF NECESSARY.
- WHILE JOINT IS COOLING, ATTACH BONDING CONNECTION, FIREPROOF CABLE AND ATTACH CABLE TAGS.
- SEAL FILLING HOLES AND FINISH FIREPROOFING.
- APPLY 2" WIDE TAPE NEOPRENE COVERING OVER SLEEVE.

DISK FILE: PLD 203

Date	Description	Chkd. by

5000V. & 7000V. BELTED P. & L. CABLE JOINT & POTHEAD SPLICE

Drawn **CEA**
Checked
Approved
Date

Drwg. No. **OF** File No. **CEA**

Checked by
Approved by

Consulting Engineering Associates, Inc.
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PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT

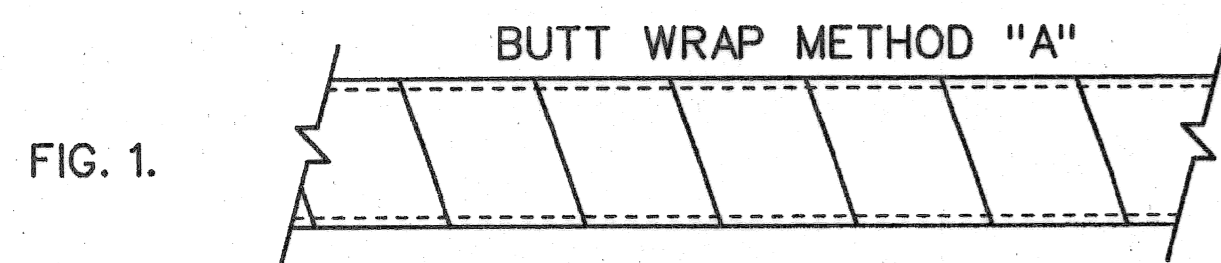


FIG. 1.

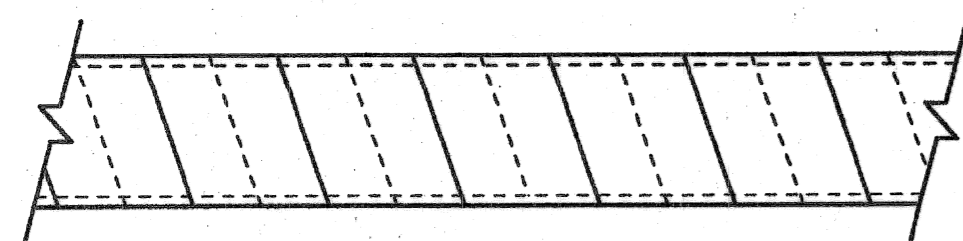


FIG. 2.

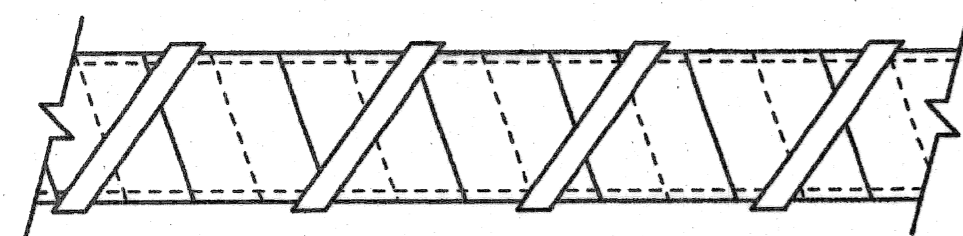


FIG. 3.

FIGURE 1.
FELTED ASBESTOS INITIAL WRAP BUTT WRAP.

FIGURE 2.
SECOND WRAP FLAME RETARDANT ELASTOMER
OFFSET BUTT WRAP.

FIGURE 3.
RANDOM WRAP OUTER LAYER WITH A PRESSURE
SENSITIVE FIBERGLASS ADHESIVE TAPE TO
PREVENT UNRAVELLING.

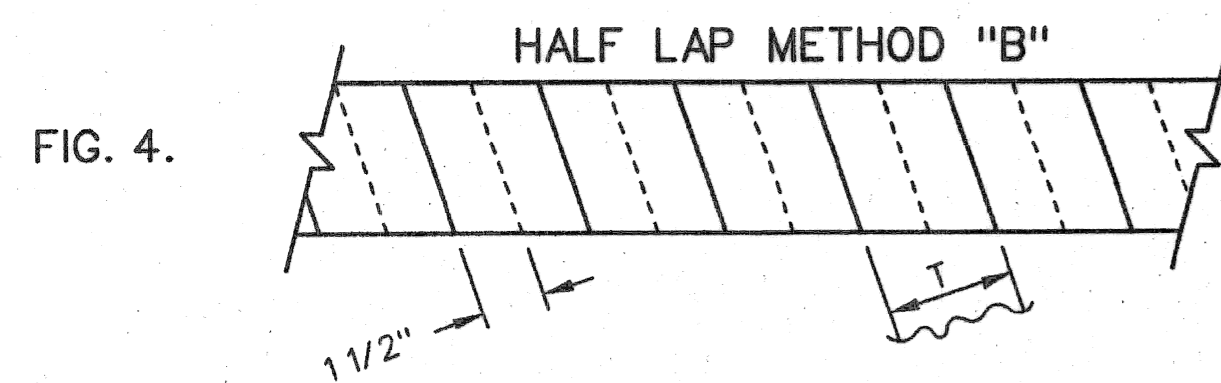


FIG. 4.

FIGURE 4.
ONE WRAP FLAME RETARDANT ELASTOMER 1/2
OVERLAPPED RANDOM WRAP WITH PRESSURE
SENSITIVE FIBERGLASS ADHESIVE TAPE.

NOTE: ELASTOMER TAPE TO BE APPLIED WITH SMOOTH SIDE
ON CABLE (ROUGH OR FABRIC SIDE OUT).

APPROXIMATE QUANTITIES REQUIRED PER MANHOLE

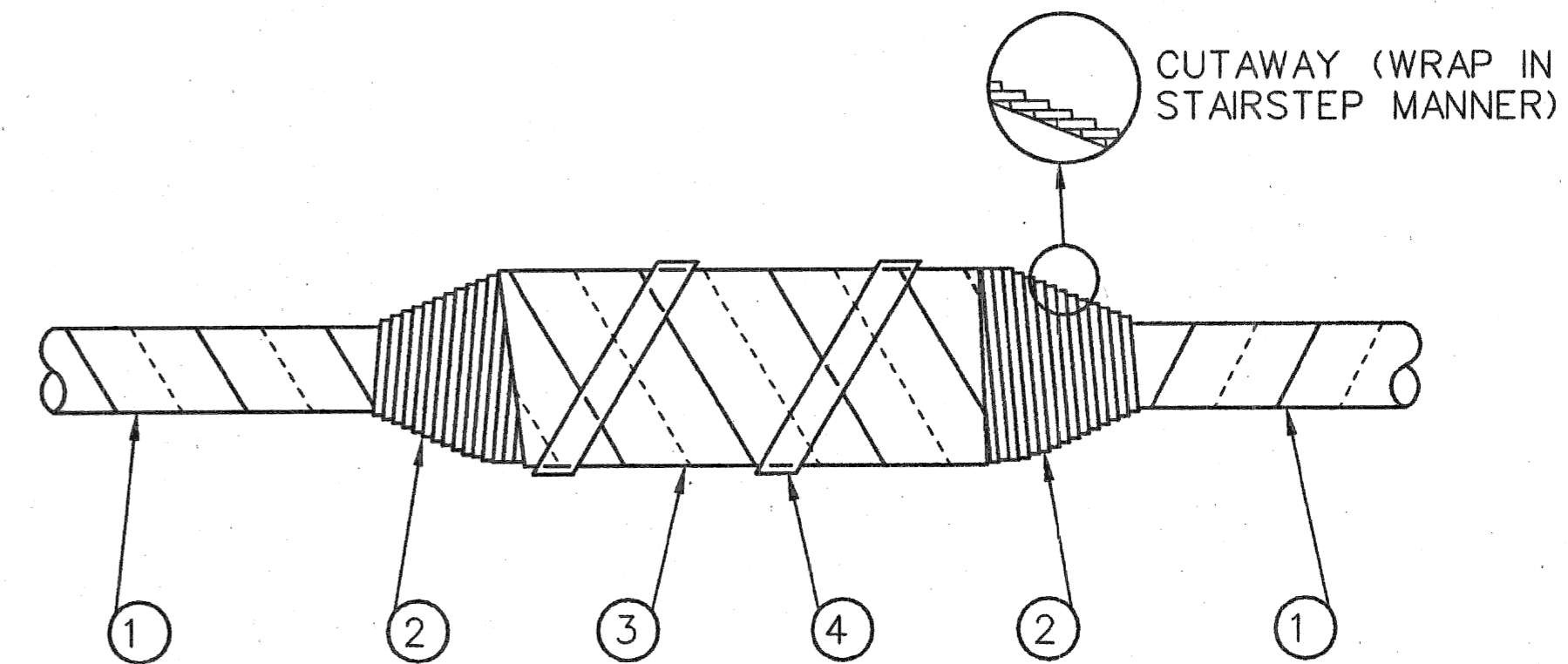
METHOD "A"

5 ROLLS 3"X 15'-0" FELTED ASBESTOS TAPE
4 ROLLS 3"X 20'-0" ELASTOMER TAPE
1 ROLL FIBERGLASS TAPE

METHOD "B"

8 ROLLS 3"X 20'-0" ELASTOMER TAPE (FLAME RETARDANT)
1 ROLL FIBERGLASS TAPE

METHOD "A" (ASBESTOS TAPE)
CAN ONLY BE USED WITH
PERMISSION OF THE P.L.D.



- ① WRAP CABLE WITH 3" WIDE TAPE METHOD "A" OR "B".
- ② WRAP WIPE WITH 1 1/2" WIDE ELASTOMER TAPE AS SHOWN (SPLIT 3" TAPE WITH SKINNING KNIFE FOR THIS STEP).
- ③ WRAP SPLICE SLEEVE WITH 3" WIDE TAPE THE SAME AS IN #1 ABOVE.
- ④ RANDOM WRAP FIBERGLASS TAPE TO HOLD IN PLACE.

NOTE: WRAP CABLE ON BOTH SIDES OF SPLICE FIRST.
NEXT WRAP BOTH WIPES AND THEN COVER THE
SLEEVE.

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CABLE FIREPROOFING

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CABLE & WIRE SPECIFICATIONS, DETAILS

COLOR CODED AS FOLLOWS:
 RED - A CIRCUIT
 BLACK - B CIRCUIT
 WHITE - NEUTRAL

ALL MULTIPLE STREET LIGHTING, TRAFFIC SIGNAL SECONDARY AND SPECIAL EVENT CABLES INSTALLED IN CONDUIT SHALL BE AS PER THE FOLLOWING: CONDUCTORS COATED, STRANDED COPPER CONDUCTOR PER ASTM B-8 AND B-189, INSULATION MEETS OR EXCEEDS ALL REQUIREMENTS OF LATEST EDITION OF ICEA S-68-516, NEMA WC 8 FOR ETHYLENE-PROPYLENE RUBBER INSULATION AND ASTM D2802-78 AND UL STANDARD 44. JACKET: MEETS OR EXCEEDS ALL REQUIREMENTS OF LATEST EDITION OF ICEA S-68-516, NEMA WC8 FOR HEAVY DUTY CHLOROSULFONATED-POLYETHYLENE. LISTED BY UNDERWRITER'S LABORATORIES INC. AS TYPE RHH OR RHW.

NOTE: PRIOR TO PLACING ORDER FOR PURCHASE OF THIS CABLE, A SAMPLE LENGTH OF CABLE MUST FIRST BE SUBMITTED TO P.L.D. FOR THEIR APPROVAL.

USE	VOLT RATING NO.	CONDUCTOR	SYNTHETIC RUBBER	IMPREG-NATED PAPER	POLYETHYLENE	POLYVINYL-CHLORIDE	SHIELD OVER INSULATED CONDUCTOR	TAPE OVER INSULATED CONDUCTORS	IMPREG-NATED PAPER BELT	JACKET	LEAD SHEATH	COVERING OVER LEAD	STEEL TAPE ARMOR	COVERING OVER STEEL TAPE	COVERING OVER CONDUCTOR
OVERHEAD LINE WIRE	1	*2-#6 AWG. H.D. UNCOATED SOLID COPPER A.S.T.M. B1													0.047 INCH BLACK NEOPRENE
	2	*4/#2-#2/0AWG. M.H.D. UNCOATED 7/STR. COPPER A.S.T.M. B1													0.063 INCH BLACK NEOPRENE
	3	*2-ANG. H.D. UNCOATED SOLID COPPER A.S.T.M. B1													0.032 INCH BLACK POLYETHYLENE
	4	*2-ANG. H.D. UNCOATED SOLID COPPER A.S.T.M. B1													0.047 INCH BLACK POLYETHYLENE
	5	*4/#2-#2/0AWG. M.H.D. UNCOATED 7/STR. COPPER A.S.T.M. B8													0.063 INCH BLACK POLYETHYLENE
SPECIAL EVENT FEEDER.	2000V.	#8 AWG. 1/C UNCOATED. SOFT 7/STR. COPPER A.S.T.M. B8				0.062 INCH 75°C BLACK, OR WHITE AS REQ'D. PIGMENTED NOT PRINTED									
MULTI-ST. LTG.	2000V.	2/C*8 AWG UNCOATED. SOFT 7/STR. COPPER A.S.T.M. B8				0.062 INCH 75°C BLACK, PIGMENTED FOR CONSTRUCTION									
TRAFFIC SIGNAL SECONDARY	2000V.	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
RECEPTACLE BRACKET & LAMP POST WIRE	600V.	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
2/C AERIAL SERVICE	600V.	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
DISTRIBUTION CABLES	5000V. BELTED	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
	5000V. BELTED	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
	5000V. BELTED	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
	7000V. BELTED	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
	7000V. BELTED	3/C*2AWG. UNCOATED. SOFT COPPER AEIC				0.085 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
SERIES ST. LTG. CABLE, IN DUCT	7500V.	1/C*8 AWG. SOLID, SOFT UNCOATED COPPER ASTM B3				0.188 INCH HIGH MOLE- CULAR WEIGHT URAL OVER CONDUCTOR									
	7500V.	1/C*8 AWG. SOLID, SOFT UNCOATED COPPER ASTM B3				0.188 INCH HIGH MOLE- CULAR WEIGHT URAL OVER CONDUCTOR									
TRANS-MISSION CABLES	24000V. SHIELDED	3/C 350 MCM UNCOATED COPPER * AEIC				0.230 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
	24000V. SHIELDED	3/C 350 MCM UNCOATED COPPER * AEIC				0.230 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
	24000V. SHIELDED	3/C 350 MCM UNCOATED COPPER * AEIC				0.230 INCH PER CONDUCTOR OIL VISCOSITY 1,000 SUS AT 100°C									
MULTI-CONDUCTOR SIGNAL CABLE, IN DUCT	—	#14 AWG. SOLID, SOFT UNCOATED COPPER, NO. OF CONDUCTOR AS RECD. ASTM B3				0.047 INCH HIGH MOLE- CULAR WEIGHT URAL OVER CONDUCTOR									
	—	#14 AWG. SOLID, SOFT UNCOATED COPPER, NO. OF CONDUCTOR AS RECD. ASTM B3				0.047 INCH HIGH MOLE- CULAR WEIGHT URAL OVER CONDUCTOR									
8/C SERIES ST. LTG. IN DUCT	7500V.	3/C*8 AWG. SOLID, SOFT TUNNED COPPER ASTM B33				0.094 INCH BELT OF OIL SATURATED PAPER OVERALL 0.115 INCH SATURATED PAPER OVER EACH CONDUCTOR									
OVERHEAD FLEXIBLE TRAINER WIRE (SHIELDED)	—	1/C*2 AWG. & LARGER, SOFT CLASS G OR H STANDING TINNED COPPER ASTM B173				SEMI-CONDUCTING COTTON TAPE OVER CONDUCTOR OVER CONDUCTOR RESISTING BUTYL									

ACCORDING TO SPECIFICATIONS

CONTINUED ON 207

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Date		Approved by		Date

* CARBON BLACK PAPER TAPE OVER CONDUCTOR
 ** BINDER TAPE OVER SHIELDED INSULATED CONDUCTOR AND FILLERS TO BE COPPER OR BRONZE TAPE INTERCALATED WITH PAPER TAPE OR OZONE METALLIZED PAPER TAPE

1. DISTRIBUTION AND TRANSMISSION CABLES

ALL TRANSMISSION CABLES, (24 KV, ITEMS 11-16 INCLUSIVE) ARE FOR CIRCUITS WITH GROUNDED NEUTRAL, AND SHALL CONFORM STRICTLY WITH THE LATEST REVISION OF THE A.E.I.C. SPECIFICATION FOR IMPREGNATED PAPER INSULATED, LEAD COVERED SOLID TYPE CABLE, 9TH EDITION, DATED APRIL, 1954, AND CONSTRUCTION OPTIONS AS NOTED IN SHEET 1. ALL DISTRIBUTION CABLES, (7 & 5 KV, ITEMS 19 & 21 INCLUSIVE) ARE FOR CIRCUITS WITH UNDERGROUND NEUTRAL AND SHALL ALSO CONFORM WITH THE ABOVE SPECIFICATION, WITH CONSTRUCTION OPTIONS AS NOTED IN TABLE 1.

2. OVERHEAD LINE WIRE

OVERHEAD LINE WIRE SHALL BE IN ACCORDANCE WITH LATEST REVISION OF ASA C8.34 (NEOPRENE COVERING) OR THE LATEST REVISION OF ASA C8.35 (POLYETHYLENE COVERING).

3. 8/C,*8AWG, STREET LIGHTING CABLE, 7500 V.

THIS IS A SPECIAL CONSTRUCTION AND SHALL BE MADE STRICTLY IN ACCORDANCE WITH THE DESCRIPTION IN TABLE 1. APPLICABLE REFERENCE SPECIFICATIONS SHOWN BELOW:

4. OTHER RUBBER OR THERMOPLASTIC INSULATED CABLES, LEADED & NON-LEADED

WIRE SIZE, INSULATION TYPE AND NORMAL THICKNESSES, OTHER CONSTRUCTION FEATURES SHALL BE AS SHOWN IN TABLE 1, AND APPLICABLE REFERENCE SPECIFICATIONS SHOWN BELOW:

INSULATIONS

THE MINIMUM INSULATION THICKNESS OF ANY OF THESE CABLES SHALL BE LESS THAN 90% OF THE NOMINAL THICKNESS SHOWN ON TABLE 1.

THE PHYSICAL AND AGING PROPERTIES OF THERMOPLASTIC AND RUBBER INSULATIONS SHALL BE AS FOLLOWS:

CONDUCTORS

ALL CONDUCTORS SHALL BE COPPER, COMPLYING WITH THE LATEST REVISIONS OF ASTM SPECIFICATIONS, AS FOLLOWS:

SOFT OR ANNEALED, BARE COPPER WIRE	ASTM B3
MEDIUM HARD DRAWN COPPER WIRE	ASTM B2
HARD DRAWN COPPER WIRE	ASTM B1
CONCENTRIC-LAY-STRANDED COPPER CONDUCTORS, HARD, MEDIUM HARD OR SOFT, COATED OR UNCOATED, AS REQUIRED.	ASTM B8
ROPE-LAY-STRANDED, SOFT, COPPER CONDUCTORS, COATED OR UNCOATED, AS REQUIRED.	ASTM B173
SOFT, SOLID COPPER CONDUCTORS, TINNED	ASTM B33
SOFT, SOLID COPPER CONDUCTORS, LEAD OR LEAD ALLOY COATED	ASTM B189

		POLYVINYL-CHLORIDE 60°C	POLYVINYL-CHLORIDE 75°C	HIGH MOLECULAR WEIGHT NATURAL POLYETHYLENE	SYNTHETIC RUBBER 75°C HEAT & MOISTURE RESISTANT	OZONE RESISTING BUTYL RUBBER
ORIGINAL	TENSILE STRENGTH PSI	2300, MIN.	2300, MIN.	1400, MIN.	700, MIN.	600, MIN.
	ELONGATION AT RUPTURE, PERCENT	250, MIN.	250, MIN.	250, MIN.	300, MIN. AND 1/2" SET, MAX.	350, MIN. AND 1/2" SET, MAX.
AIR OVEN TEST, TIME & TEMP, AS NOTED	TENSILE STRENGTH % OF ORIGINAL	65, MIN. 168 HRS., 100 ± 1 C°	120, MAX. 80, MIN. 168 HRS., 120 ± 1 C°	75, MIN. 48 HRS., 100 ± 1 C°	—	60, MIN. 168 HRS., 100 ± 1 C°
	ELONGATION % OF ORIGINAL	* 65, MIN. 168 HRS., 100 ± 1 C°	** 75, MIN. 168 HRS., 120 ± 1 C°	75, MIN. 48 HRS., 100 ± 1 C°	—	60, MIN. 168 HRS., 100 ± 1 C°
OXYGEN PRESSURE TEST	TENSILE STRENGTH % OF ORIGINAL	—	—	—	50, MIN. 168 HRS., 80 ± 1 C°	—
	ELONGATION % OF ORIGINAL	—	—	—	50, MIN. 168 HRS., 80 ± 1 C°	—
AIR PRESSURE HEAT TEST	TENSILE STRENGTH % OF ORIGINAL	—	—	—	50, MIN. 20 HRS., 127 ± 1 C°	50, MIN. 40 HRS., 127 ± 1 C°
	ELONGATION % OF ORIGINAL	—	—	—	50, MIN. 20 HRS., 127 ± 1 C°	50, MIN. 40 HRS., 127 ± 1 C°
HEAT DISTORTION 121 ± 1 C°	% OF ORIGINAL	50, MAX.	25, MAX.	—	—	—
OIL IMMERSION 4 HRS., 70 ± 1 C°	TENSILE STRENGTH % OF ORIGINAL	* 85, MIN.	** 85, MIN.	—	—	—
	ELONGATION % OF ORIGINAL	* 85, MIN.	** 85, MIN.	—	—	—
HEAT SHOCK 121 ± 1 C°	—	NO CRACKS	NO CRACKS	—	—	—
COLD BEND	—	NO CRACKS -30 ± 1 C°	NO CRACKS -30 ± 1 C°	NO CRACKS -55 ± 1 C°	—	—
INSULATION RESISTANCE CONSTANT AT 15.6°C	—	1,000 MIN.	2,000 MIN.	50,000 MIN.	4,000 MIN.	20,000 MIN.
FLAME RESISTANCE PROPERTIES	—	SECT. 6.5 IPCEA S-61-402	SECT. 6.5 IPCEA S-61-402	—	—	—
ACCELERATED WATER ABSORPTION REQUIREMENT	ELECTRIC METHOD	DIELECTRIC CONSTANT, 1 DAY	10, MAX.	10, MAX.	—	5, MAX.
		% CAPACITANCE INCREASE	1-14 DAYS-10, MAX. 7-14 DAYS-5, MAX.	1-14 DAYS-4.0, MAX. 7-14 DAYS-2.0, MAX.	—	1-14 DAYS-10.0, MAX. 7-14 DAYS-4.0, MAX.
	OR GRAVIMETRIC METHOD	TEMP.	50 ± 1 C°	75 ± 1 C°	—	75 ± 1 C°
TEST IN ACCORDANCE WITH LATEST REVISION OF:		IPCEA S-61-402 (EXCEPTIONS ARE NOTED ABOVE)		IPCEA S-61-402	IPCEA S-19-81 (EXCEPTIONS ARE NOTED ABOVE)	IPCEA S-19-81

FOR #6 AWG AND LARGER, USING BUFFED DIE-CUT SPECIMENS, THE FOLLOWING VALUES SHALL APPLY:

- * ELONGATION AFTER AIR OVEN TEST 45% MIN.
- ** ELONGATION AFTER AIR OVEN TEST 50% MIN.
- OR •• TENSILE STRENGTH AFTER OIL IMMERSION 80% MIN.
- OR •• ELONGATION AFTER OIL IMMERSION 60% MIN.

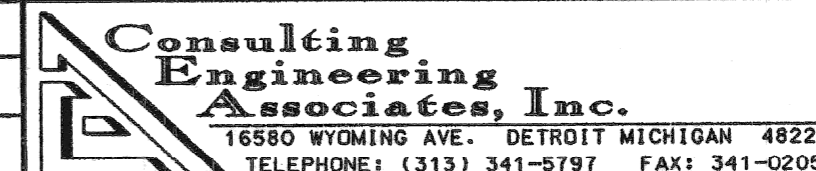
JACKETS
THE MINIMUM JACKET THICKNESS SHALL NOT BE LESS THAN 80% OF THE NOMINAL THICKNESS SHOWN ON TABLE 1.

		NEOPRENE BLACK, HEAVY DUTY	NEOPRENE BLACK GENERAL PURPOSE	POLYVINYL-CHLORIDE, BLACK	HEAT & LIGHT STABILIZED BLACK POLYETHYLENE COVER'G OVER LEAD SHEATH
ORIGINAL	TENSILE STRENGTH PSI	1800, MIN.	1500, MIN.	1500, MIN.	1400, MIN.
	ELONGATION AT RUPTURE, %	300, MIN. & 3/8" MAX. SET	250, MIN. & 3/8" MAX. SET	100, MIN.	350, MIN.
AIR OVEN TEST, TIME & TEMP, AS NOTED	TENSILE STRENGTH % OF ORIGINAL	—	—	75, MIN. 120 HRS., 121 ± 1 C°	75, MIN.
	ELONGATION % OF ORIGINAL	—	—	60, MIN. 120 HRS., 121 ± 1 C°	75, MIN.
OXYGEN PRESSURE TEST 168 HRS. 80 ± 1 C°	TENSILE STRENGTH % OF ORIGINAL	50, MIN.	50, MIN.	—	—
	ELONGATION % OF ORIGINAL	50, MIN.	50, MIN.	—	—
AIR PRESSURE HEAT TEST 20 HRS. 127 ± 1 C°	TENSILE STRENGTH % OF ORIGINAL	50, MIN.	50, MIN.	—	—
	ELONGATION % OF ORIGINAL	50, MIN.	50, MIN.	—	—
OIL IMMERSION TEST, TIME & TEMP, AS NOTED	TENSILE STRENGTH % OF ORIGINAL	60, MIN. 18 HRS., 121 ± 1 C°	60, MIN. 18 HRS., 121 ± 1 C°	60, MIN. 4 HRS., 70 ± 1 C°	—
	ELONGATION % OF ORIGINAL	60, MIN. 18 HRS., 121 ± 1 C°	60, MIN. 18 HRS., 121 ± 1 C°	60, MIN. 4 HRS., 70 ± 1 C°	—
HEAT DISTORTION PERCENT OF UNAGED VALUE	—	—	—	50, MAX. 90 ± 1 C°	25, MAX. 90 ± 1 C°
HEAT SHOCK 121 ± 1 C°	—	—	—	NO CRACKS	—
COLD BEND TEST -35 ± 1 C°	—	—	—	NO CRACKS	NO CRACKS
ENVIRONMENTAL CRACKING	—	—	—	—	NO CRACKS
LIGHT ABSORPTIVITY	—	—	—	—	24,000, MIN.
TEST IN ACCORDANCE WITH LATEST REVISION OF:		IPCEA S-19-82		IPCEA S-61-402	IPCEA INTERIM REVISION #1 PUB. S-54-401 SEPT. 1959

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CABLE & WIRE SPECIFICATIONS

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CERTIFIED TEST REPORTS

SHIPMENTS OF WIRE AND CABLE SHALL NOT BE CONSIDERED COMPLETE UNTIL CERTIFIED TEST REPORTS ARE RECEIVED AND APPROVED. TEST REPORTS FOR VARIOUS ITEMS OF WIRE AND CABLE SHOWN ON SHEET 1 SHALL CONTAIN THE FOLLOWING TEST RESULTS:

ITEMS 1 - 5 INCLUSIVE - OVERHEAD LINE WIRE

- 1. CONDUCTOR CONTINUITY, RESISTANCE, TENSILE STRENGTH AND ELONGATION TESTS.
2. COVERING THICKNESS, PHYSICAL AND AGING TESTS.
3. WEIGHT OF FINISHED WIRE.

ALL TESTS IN ACCORDANCE WITH THE LATEST REVISION OF ASA 8.34 (NEOPRENE COVERING) OR ASA 8.35 (POLYETHYLENE COVERING).

ITEMS 6 - 10 INCLUSIVE

- 1. CONDUCTOR CONTINUITY, RESISTANCE, TENSILE STRENGTH AND ELONGATION TESTS IN ACCORDANCE WITH THE LATEST REVISIONS OF ASTM B8, B33 OR B189.
2. THE PHYSICAL AND OTHER TESTS FOR THE SPECIFIED INSULATION SHOWN ON SHEET 2.
3. INSULATION THICKNESS MEASUREMENTS.
4. THE ALTERNATING-CURRENT VOLTAGE TEST IN ACCORDANCE WITH THE LATEST REVISION OF IPCEA S-61-402.
5. INSULATION RESISTANCE TEST. INSULATION RESISTANCE CONSTANT AS SHOWN ON SHEET 2.
6. (CABLE ITEM 8 ONLY) MINIMUM, MAXIMUM AND AVERAGE LEAD THICKNESS MEASUREMENTS SHALL ALSO BE INCLUDED.
7. (CABLE ITEM 10 ONLY) A RIP TEST SHALL ALSO BE INCLUDED AS FOLLOWS:

A SIX-FOOT SAMPLE OF THE COMPLETED 2 CONDUCTOR WIRE WITH CLEANLY CUT ENDS SHALL BE SUBJECTED TO A TEMPERATURE OF -100° F. FOR ONE HOUR, WHILE STILL COLD, THE TWO INSULATED CONDUCTORS SHALL BE SEPARATED AT ONE END FOR A DISTANCE OF APPROXIMATELY 3 INCHES AND THEN SHALL BE TORN APART WITH STEADY PULL AT A RATE OF 33 INCHES IN ONE SECOND OR LESS. THERE SHALL BE NO DAMAGE TO THE INSULATION.

ITEMS 11 - 16 INCLUSIVE - DISTRIBUTION CABLES UNDER 10KV. RATING

- 1. CONDUCTOR RESISTANCE.
2. SHEATH THICKNESS MEASUREMENTS.
3. HIGH VOLTAGE TEST.
4. MECHANICAL INTEGRITY TEST.
5. BENDING TEST.
6. SPARK TEST ON COVERING OVER LEAD SHEATH ON EACH LENGTH IF COVERING IS SPECIFIED.

ALL TESTS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF "SOLID TYPE IMPREGNATED-PAPER-INSULATED LEAD-COVERED CABLE SPECIFICATION" PUBLISHED BY THE ASSOCIATION OF EDISON ILLUMINATING COMPANIES.

ITEMS 17 - 18 INCLUSIVE - SERIES STREET LIGHTING CABLE

- 1. CONDUCTOR RESISTANCE AND CONTINUITY, IN ACCORDANCE WITH THE LATEST REVISION OF ASTM B-3.
2. THE PHYSICAL AND OTHER TESTS FOR HIGH MOLECULAR WEIGHT POLYETHYLENE INSULATION AS SHOWN ON SHEET 2.
3. THE PHYSICAL AND OTHER TESTS FOR 60° C POLYVINYL-CHLORIDE INSULATION AS SHOWN ON SHEET 2.
4. THE FOLLOWING TESTS SHALL ALSO BE MADE AND REPORTED:

HIGH VOLTAGE TEST-AFTER NOT LESS THAN SIX(6)HOURS IMMERSION IN WATER AT 60° F. AND WHILE STILL IMMERSED, EACH REEL OF INSULATION CABLE WITHOUT LEAD, SHALL WITHSTAND A 60 CYCLE POTENTIAL OF 30,000 VOLTS FOR A PERIOD OF FIVE (5) MINUTES.

INSULATION RESISTANCE TEST-THE INSULATION RESISTANCE SHALL NOT BE LESS THAN 26,500 MEGOHMS PER THOUSAND FEET AT 60° F. THIS TEST SHALL BE CONDUCTED UPON COMPLETION OF THE HIGH VOLTAGE TEST.

SHORT-TIME DIELECTRIC STRENGTH TEST - A TEN(10)FT. SAMPLE OF THE FINISHED CABLE WITH ONLY THE LEAD REMOVED, AFTER TWELVE (2) HOURS SUBMERSION IN WATER AND WHILE STILL IMMERSED, SHALL WITHSTAND A VOLTAGE TEST OF 60,000 VOLTS 60 CYCLE A.C. FOR FIVE (5) MINUTES. ON COMPLETION OF THIS TEST, THE VOLTAGE WILL BE GRADUALLY RAISED IN ACCORDANCE WITH I.P.C.E.A. SPECIFICATIONS, UNTIL THE INSULATION IS PUNCTURED. THIS VOLTAGE SHALL BE RECORDED AND SHALL BE NOT LESS THAN 72,000 VOLTS.

EXTERNAL CORONA TEST-THIS TEST SHALL BE CONDUCTED ON ONE(1)SAMPLE PER 10,000 FT. OF COMPLETED CABLE EIGHTEEN(18)INCHES LONG WITH ONLY THE LEAD SHEATH REMOVED, AFTER WHICH SHALL BE WIPE WITH A CLEAN DRY CLOTH. THESE SAMPLES SHALL BE BENT AND MAINTAINED IN A "U-SHAPE" HAVING A BENDING DIAMETER EQUAL TO FIVE TIMES THE INSULATED CABLE DIAMETER. THE BENT SAMPLES SHALL THEN BE PLACED IN A VERTICAL POSITION ON A FLAT METALLIC GROUNDED PLATE AND 60 CYCLE A.C. VOLTAGE SHALL BE GRADUALLY APPLIED WITH A CORONA-LEVEL TEST APPARATUS OF THE FILTER-CIRCUIT TYPE, MAINTAINING SUFFICIENT AMPLIFICATION TO INDICATE THE EXISTENCE OF CORONA DISCHARGE. THIS VOLTAGE SHALL BE RAISED UNTIL CORONA IS INDICATED, AND SHALL NOT BE LESS THAN 8,200 VOLTS RMS.

THE VOLTAGE SHALL THEN BE RAISED TO 25,000 VOLTS AND MAINTAINED FOR SIX(6) HOURS WITHOUT FAILURE OF THE INSULATION. THE VOLTAGE SHALL NOT BE RAISED IN 10% STEPS AT TEN(10) MINUTE INTERVALS UNTIL FAILURE OF THE INSULATION OR FLASHOVER OCCURS.

THESE VOLTAGES SHALL BE RECORDED AND REPORTED.

INTERNAL-CORONA-LEVEL-EACH LENGTH OF COMPLETED CABLE SHALL BE TESTED IN ACCORDANCE WITH SECTION 6.13 OF THE LATEST REVISION OF I.P.C.E.A. STANDARD S-61-402, EXCEPT THAT THE MINIMUM CORONA LEVEL SHALL BE 8,200 VOLTS.

ITEMS 19 - 21 INCLUSIVE - TRANSMISSION CABLES.

- 1. CONDUCTOR RESISTANCE
2. SHEATH THICKNESS MEASUREMENT
3. HIGH VOLTAGE TEST
4. MECHANICAL INTEGRITY TEST
5. BENDING TEST
6. IONIZATION TEST
7. HIGH VOLTAGE-TIME TEST) ONE TEST PER ORDER OR
8. DIELECTRIC POWER TEST) THERE IS A QUANTITY LIMITATION OF
9. POWER FACTOR TEST) 25,000 FT. ON THESE TESTS PER AEIC
10. SPARK TEST ON COVERING OVERHEAD SHEATH ON EACH LENGTH

ALL TESTS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF "SOLID-TYPE IMPREGNATED-PAPER-INSULATED LEAD-COVERED CABLE SPECIFICATION," PUBLISHED BY THE ASSOCIATION OF EDISON ILLUMINATING COMPANIES.

ITEMS 22 -23 INCLUSIVE - MULTI-CONDUCTOR TRAFFIC SIGNAL CABLE

- 1. INDIVIDUAL CONDUCTOR RESISTANCE IN ACCORDANCE WITH THE LATEST REVISION OF ASTM B3.
2. INSULATION THICKNESS MEASUREMENTS.
3. INSULATION PHYSICAL AND OTHER TESTS FOR 60° C POLYVINYL CHLORIDE IS SHOWN ON SHEET 2.
4. ALTERNATING CURRENT VOLTAGE TEST.
5. INSULATION RESISTANCE TEST INSULATION RESISTANCE CONSTANT AS SHOWN ON SHEET 2.
6. (CABLE ITEM 23 ONLY)
a. POLYVINYL CHLORIDE JACKET PHYSICAL AND OTHER TESTS SHOWN ON SHEET 2.
b. JACKET THICKNESS MEASUREMENTS.
7. (CABLE ITEM 22 ONLY), LEAD SHEATH THICKNESS MEASUREMENTS.

TESTS NO. 4-7, INCLUSIVE, SHALL BE MADE IN ACCORDANCE WITH THE LATEST REVISION OF I.P.C.E.A. S-61-402, EXCEPT THAT THE INSULATION RESISTANCE CONSTANT SHALL BE 1000 AT 15.0° C.

ITEM 24 - 8/C SERIES STREET LIGHTING CABLE

- 1. CONDUCTOR CONTINUITY AND RESISTANCE IN ACCORDANCE WITH THE LATEST REVISION OF ASTM B-33.
2. LEAD SHEATH THICKNESS MEASUREMENTS.
3. A HIGH VOLTAGE TEST CONSISTING OF 22,500 VOLTS, 60 CYCLES A.C. FOR A DURATION OF 5 MINUTES, BETWEEN CONDUCTORS AND FROM EACH CONDUCTOR TO THE LEAD SHEATH.

ITEM 25 - FLEXIBLE OVERHEAD TRAINER WIRE

- 1. CONDUCTOR RESISTANCE, TENSILE STRENGTH AND ELONGATION IN ACCORDANCE WITH THE LATEST REVISION OF ASTM B-173.
2. INSULATION PHYSICAL AND OTHER TESTS SHOWN ON SHEET-2.
3. ADDITIONAL INSULATION TESTS IN ACCORDANCE WITH THE LATEST REVISION OF I.P.C.E.A. S-19-81 AS FOLLOWS:
a. ALTERNATING-CURRENT VOLTAGE TEST.
b. INSULATION RESISTANCE TEST.
c. DIRECT-CURRENT VOLTAGE TEST.
d. CORONA LEVEL TEST.
e. SHORT-TIME DIELECTRIC STRENGTH TEST.
f. COLD-BENDING AND LONG-TIME DIELECTRIC STRENGTH TEST.
g. CAPACITY AND POWER FACTOR TEST.
h. OZONE RESISTANCE TEST.
4. PHYSICAL AND OTHER TESTS ON THE NEOPRENE JACKET (GENERAL PURPOSE OR HEAVY DUTY), AS SHOWN ON SHEET 2.
5. JACKET THICKNESS MEASUREMENTS

ITEM 26 - SUPERVISORY CONTROL CABLE (MULTI-CONDUCTOR)

- 1. CONDUCTOR RESISTANCE, TENSILE STRENGTH AND ELONGATION, IN ACCORDANCE WITH THE LATEST REVISION OF ASTM B-3.
2. INSULATION PHYSICAL FOR 60° C PVC INSULATION AND OTHER TESTS SHOWN ON SHEET 2.
3. INSULATION RESISTANCE TESTS.
4. VOLTAGE TESTS PER IPCEA S-61-402.
5. INSULATION THICKNESS.
6. LEAD SHEATH THICKNESS.
7. THICKNESS OF COVERING OVER LEAD SHEATH.
8. SPARK TEST ON COVER LEAD SHEATH ON EACH LENGTH.

ITEM 27 - INTEGRAL MESSENGER COMMUNICATIONS CABLE (MULTI-PAIR)

ITEM 28 - COMMUNICATIONS CABLE

ITEM 29 - COMMUNICATIONS CABLE, LEAD SHEATH

ITEM 30 - COMMUNICATIONS CABLE, LEAD SHEATH, DIRECT BURIAL

MULTI-PAIR COMMUNICATION CABLES (Maximum Mutual Capacities = 90 nf per mile) (ALSO FOR TRAFFIC SIGNAL CHRONOPLAN) AND SUPERVISORY

Table with columns: ITEM NO., USE AND RATING, CONDUCTOR, INSULATION, TAPE OVER INSULATION CONDUCTORS, INNER BELT, SHIELD OVER TAPE OR BELT, JACKET OR SHEATH, COVERING OVER SHEATH. Rows include items 27, 28, 29, and 30 with detailed specifications for conductors, insulation, and jackets.

TEST REPORTS

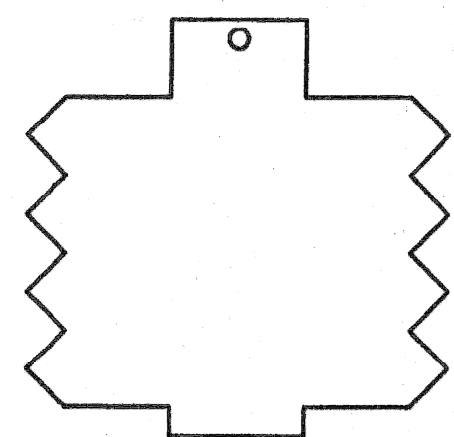
SHIPMENTS OF WIRE AND CABLE SHALL NOT BE CONSIDERED COMPLETE UNTIL CERTIFIED TEST REPORTS ARE RECEIVED AND APPROVED. TEST REPORTS FOR THE VARIOUS ITEMS ABOVE SHALL SHOW COMPLIANCE WITH CITED SPECIFICATIONS, LISTING TEST RESULTS, AS WELL AS THE FOLLOWING TESTS:

- 1. CONDUCTOR RESISTANCE OF EACH LENGTH OF EACH CONDUCTOR IN OHMS PER 1000 FT.
2. CERTIFICATION OF MUTUAL CAPACITANCE OF ALL CABLES AND OF NON-INJURIOUS EFFECT OF FLOODING COMPOUND ON ITEM 27.
(a) "FIGURE 8" CONSTRUCTION, MESSENGER SHALL BE 7 STRAND EHS GALVANIZED, CLASS A, 1/4-IN. NORMAL DIAM. (ASTM A 475) AND SHALL BE FULL FLOODED.
(b) COLOR CODED PER FEDERAL SPECIFICATION J-C-111.
(c) NOMINAL THICKNESS, INCHES.

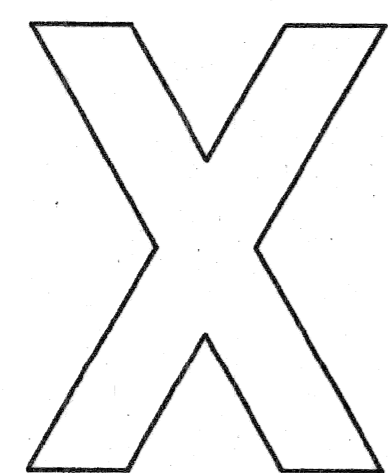
REVISIONS table with columns: Date, Description, Chkd. by. Multiple empty rows for tracking changes.

CABLE & WIRE SPECIFICATIONS

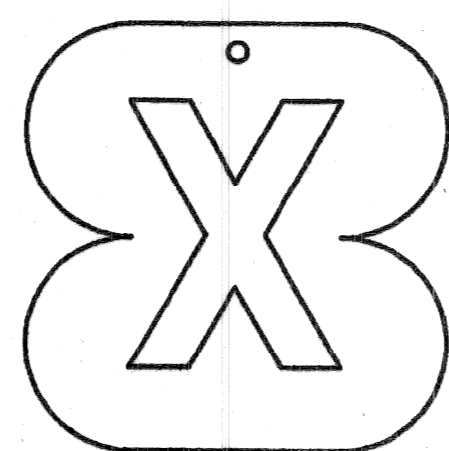
Engineering drawing footer containing: Drawn (CEA), Checked, Approved, Date, Drwg. No., File No., and logos for Consulting Engineering Associates, Inc. and PUBLIC LIGHTING DEPARTMENT CITY OF DETROIT. Includes file number 10-01-96 207 and sheet number 44 of 48.



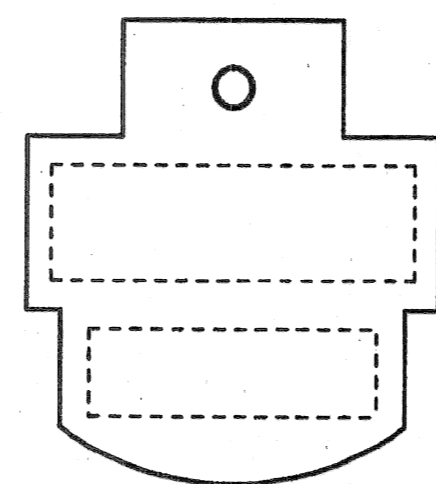
24,000 VOLT TRUNK LINE



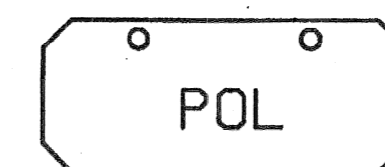
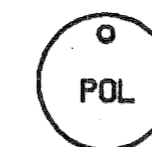
O.H. LINE PHASE TAG



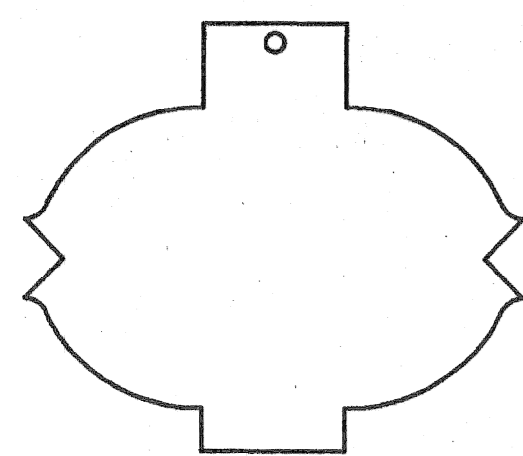
O.H. LINE OR POTHEAD PHASE TAG



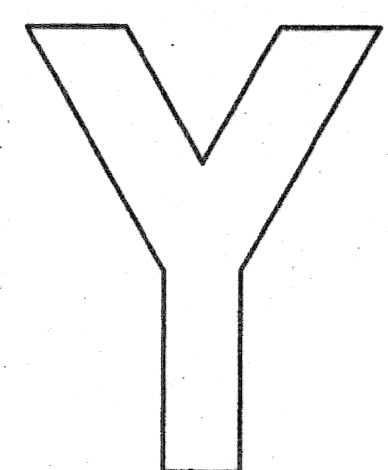
MULTIPLE STREET LIGHTING
ALL VOLTAGES



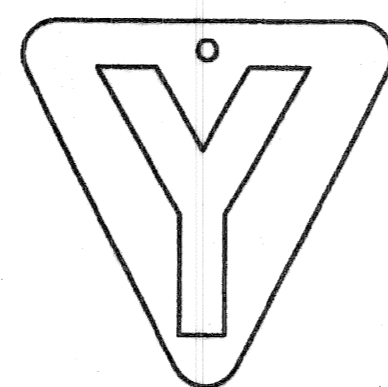
COMMUNICATION



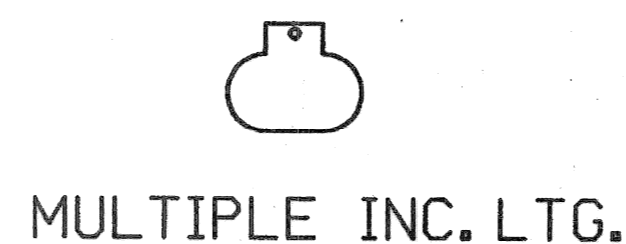
24,000 VOLT FEEDER



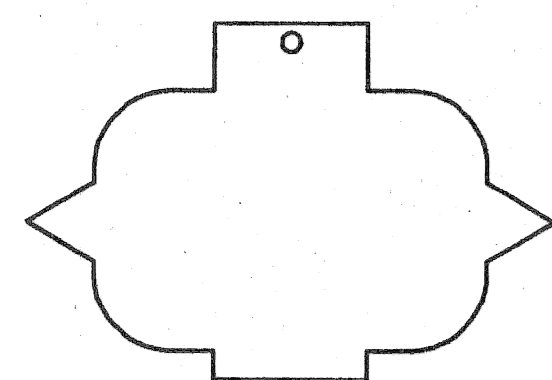
O.H. LINE PHASE TAG



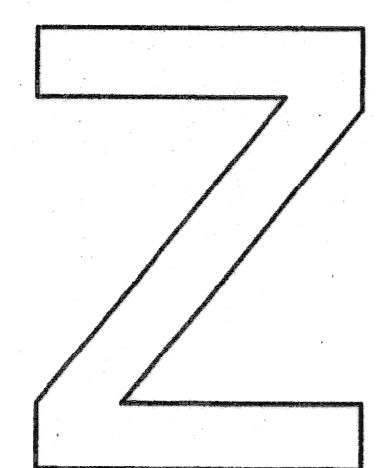
O.H. LINE OR POTHEAD PHASE TAG



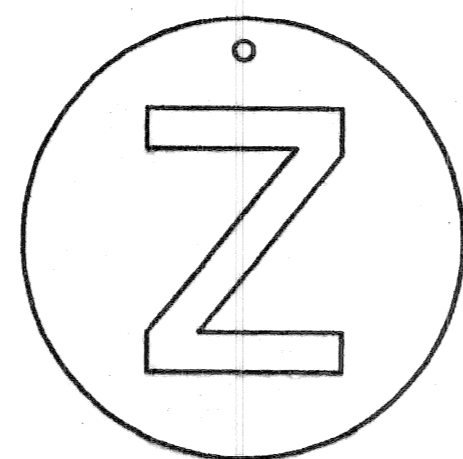
MULTIPLE INC. LTG.



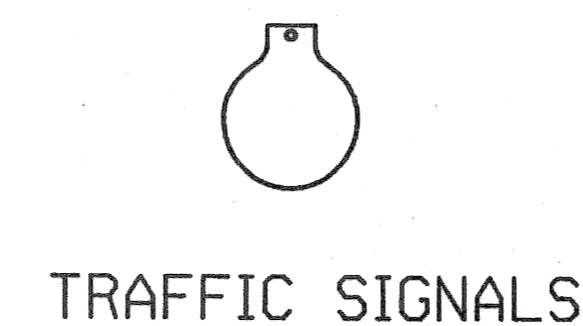
13200 VOLT FEEDER



O.H. LINE PHASE TAG



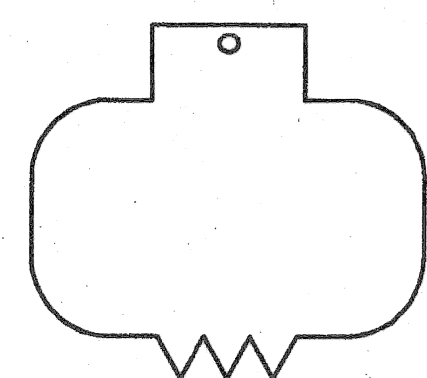
O.H. LINE OR POTHEAD PHASE TAG



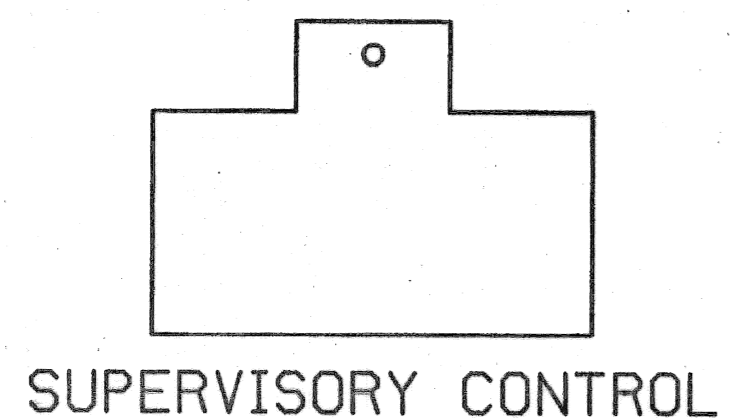
TRAFFIC SIGNALS

SUBSTATION & CIRCUIT ABBREVIATIONS ON IDENTIFICATION TAGS SHALL BE SPELLED AS FOLLOWS

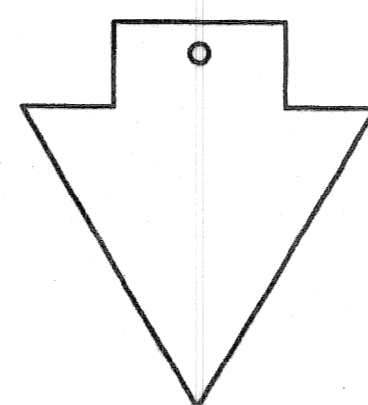
BEL.	KSG.	POR.
BUT.	LAB.	RUS.
CAN.	LEE.	STA.
COB.	LOT.	STO.
CON.	LUD.	TOW.
CUS.	MAP.	TRI.
GRF.	MCC.	TUR.
HUD.	MON.	WAL.
JSC.	PAL.	WSU.
JOY.	PHI.	JEF.



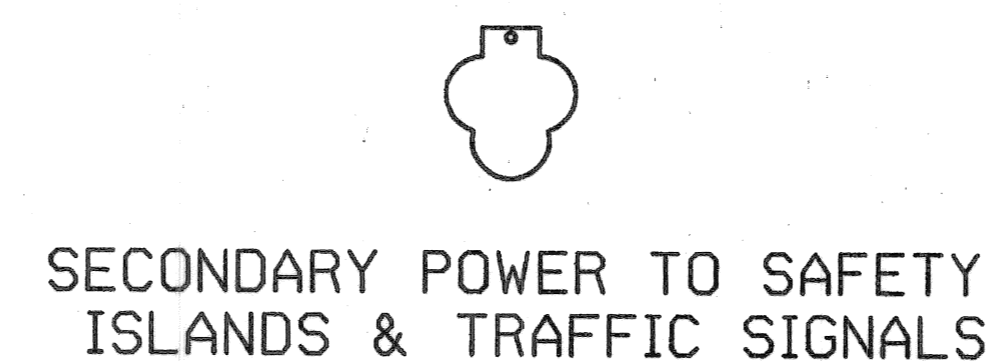
7200 VOLT FEEDER



SUPERVISORY CONTROL



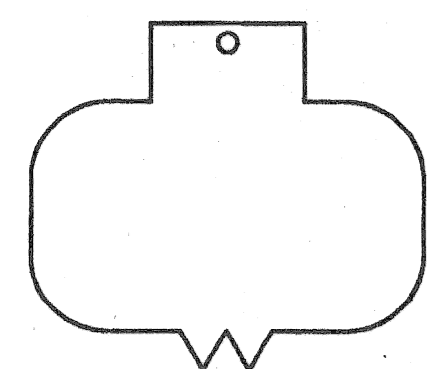
DEAD CABLE



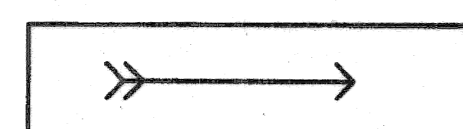
SECONDARY POWER TO SAFETY
ISLANDS & TRAFFIC SIGNALS

NOTE:

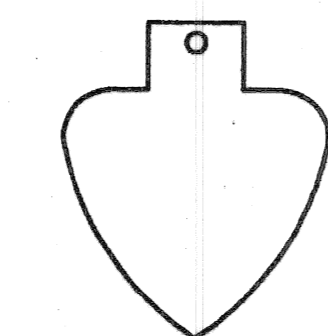
LEAD CABLE IDENTIFICATION TAGS WILL BE FURNISHED TO CONTRACTOR BY P.L.D. CABLE TAG MARKINGS SUCH AS SUBSTATION OR CABLE MARKINGS WILL BE AS SHOWN ON PLANS OR WILL BE FURNISHED BY P.L.D.



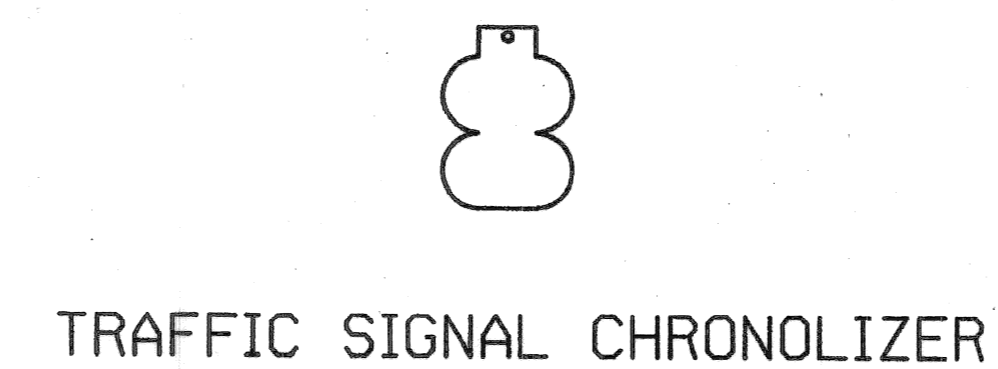
4800 & 5500 VOLT FEEDER



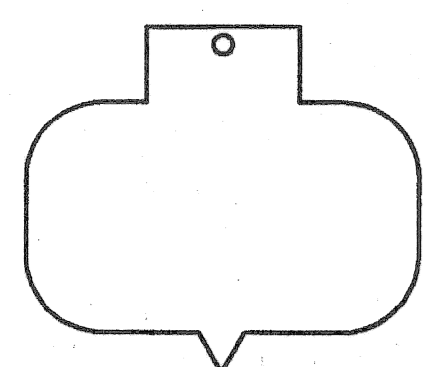
CIRCUIT DIRECTION



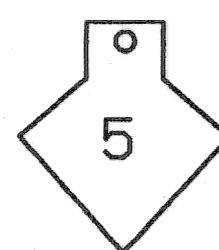
8/C COND. CABLE



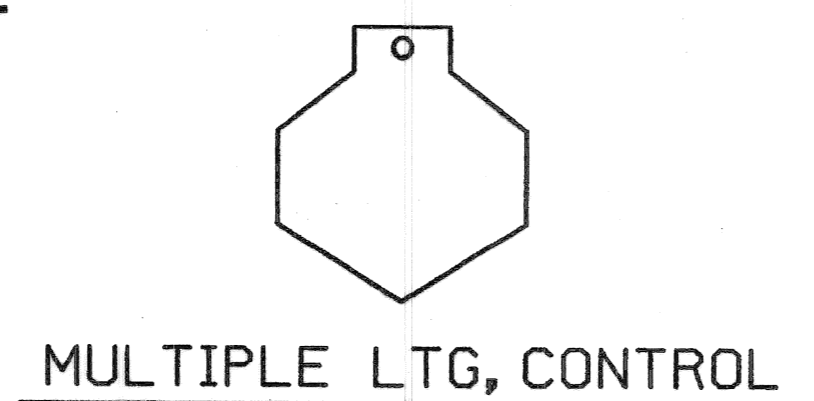
TRAFFIC SIGNAL CHRONOLIZER



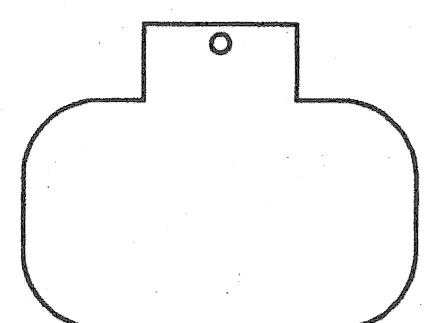
2400 VOLT FEEDER



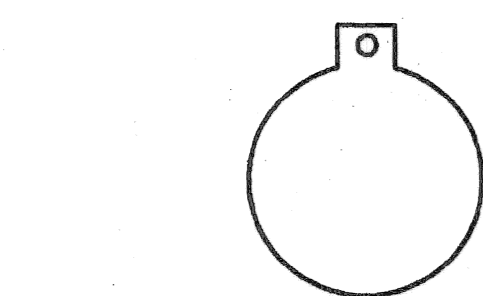
ST. LTG. COND. NO.(FROM 8/C CABLE)



MULTIPLE LTG, CONTROL



MISCELLANEOUS



ST. LTG. CIRC. NUMBER

IDENTIFICATION TAGS

MATERIAL : LEAD

10-01-96 208

REVISIONS	Date	Description	Chkd. by

CABLE TAGS DETAILS

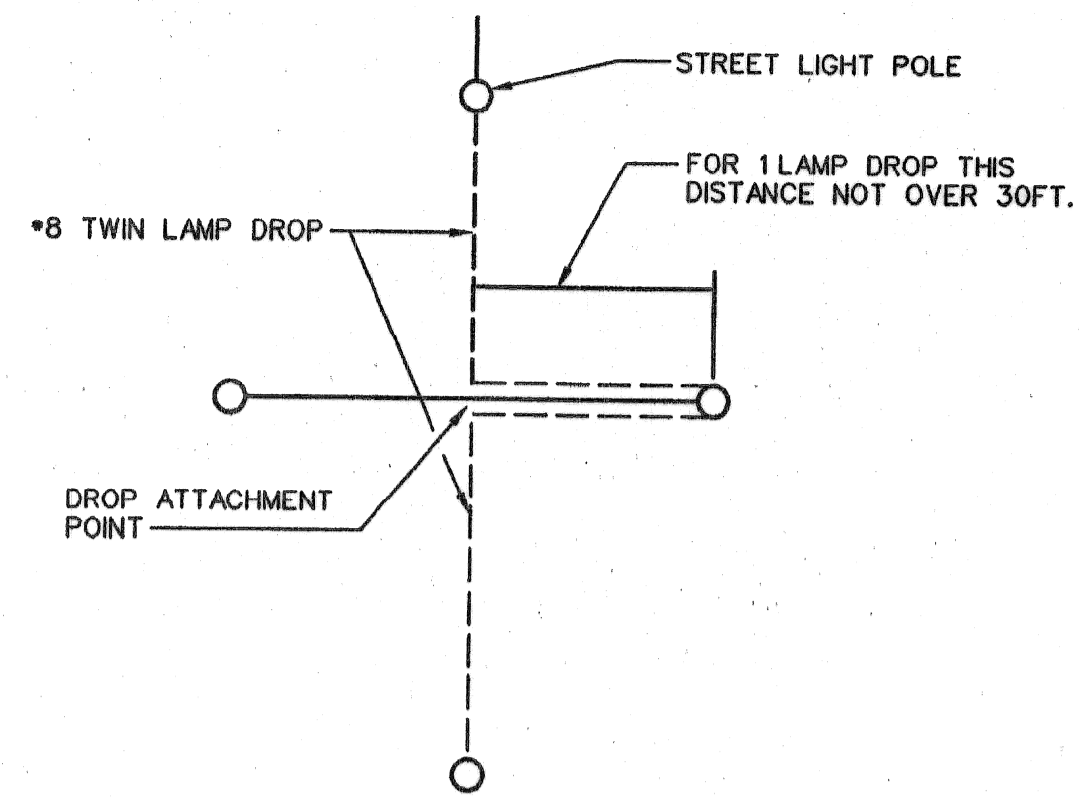
Drawn	CEA
Checked	
Approved	
Date	

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 16580 WYOMING AVE. DETROIT MICHIGAN 48221
 TELEPHONE: (313) 341-9797 FAX: 341-0205

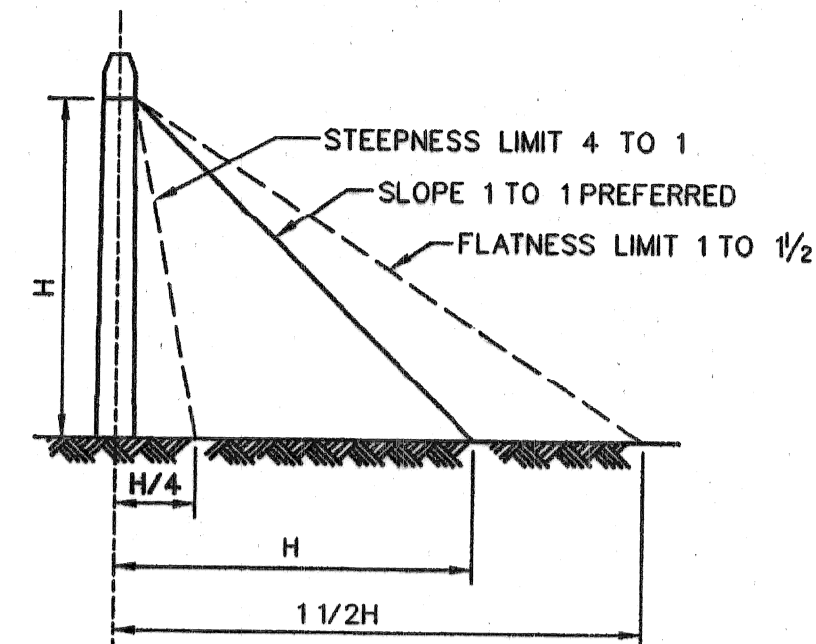
Checked by	
Approved by	

PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT

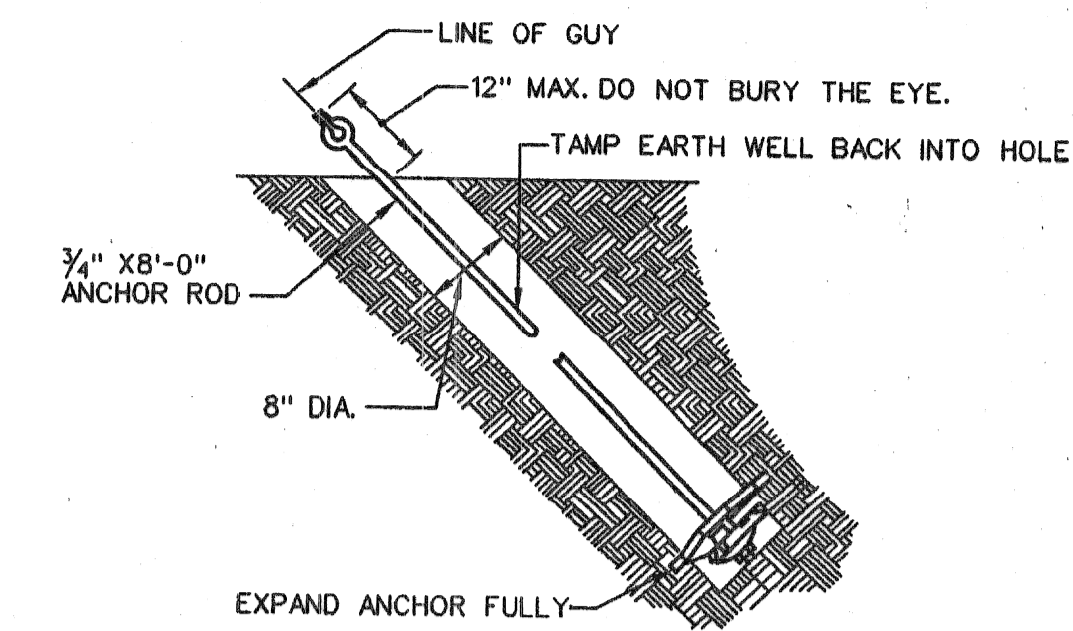
File No.	
Sheet No.	45 of 48
Date	



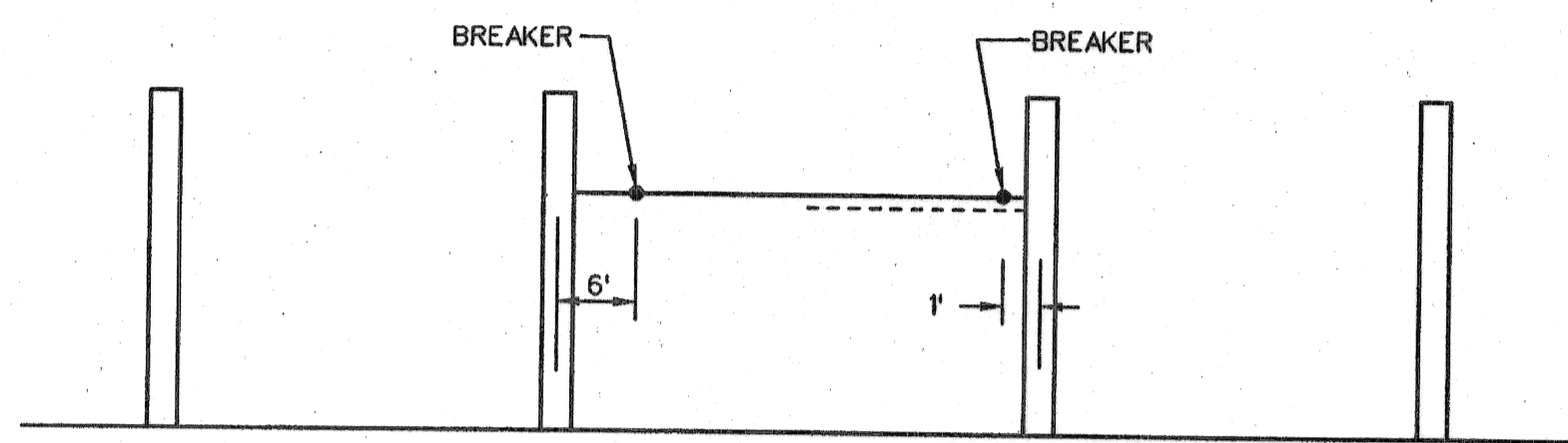
PLAN
N.T.S.



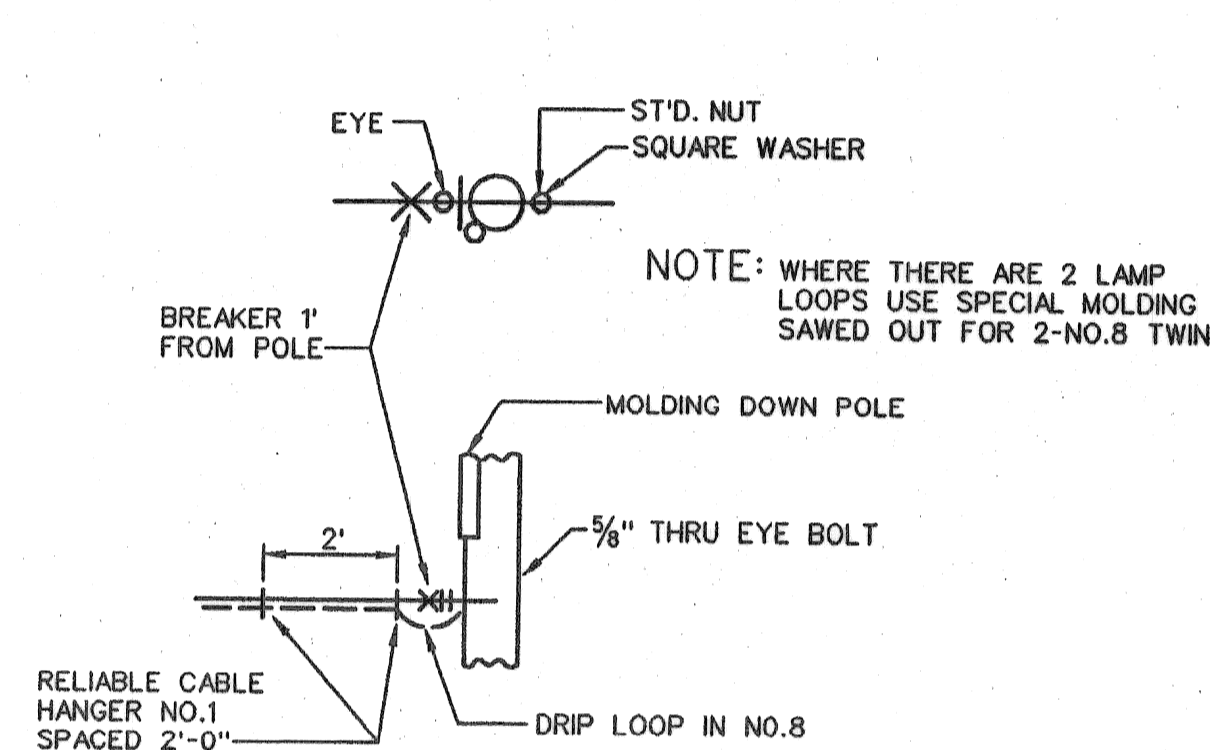
SLOPE LIMITS FOR ANCHOR GUYS



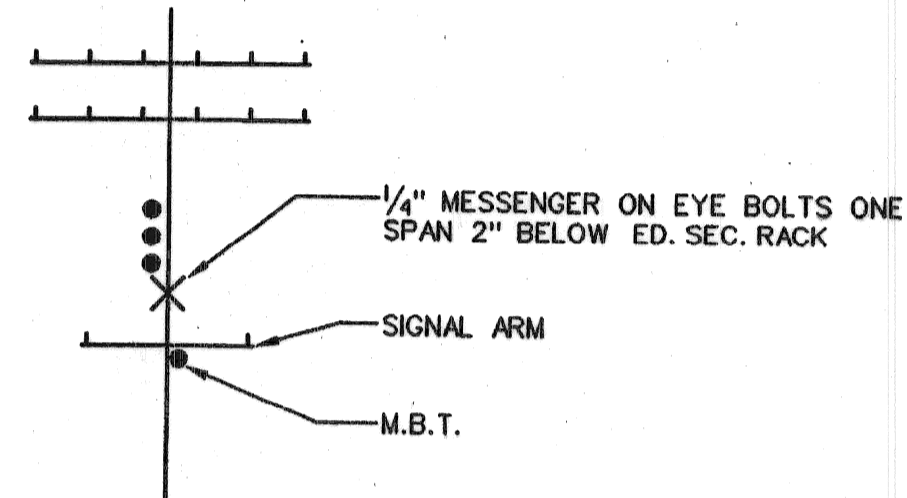
EXPANDING ANCHOR



ELEVATION
N.T.S.

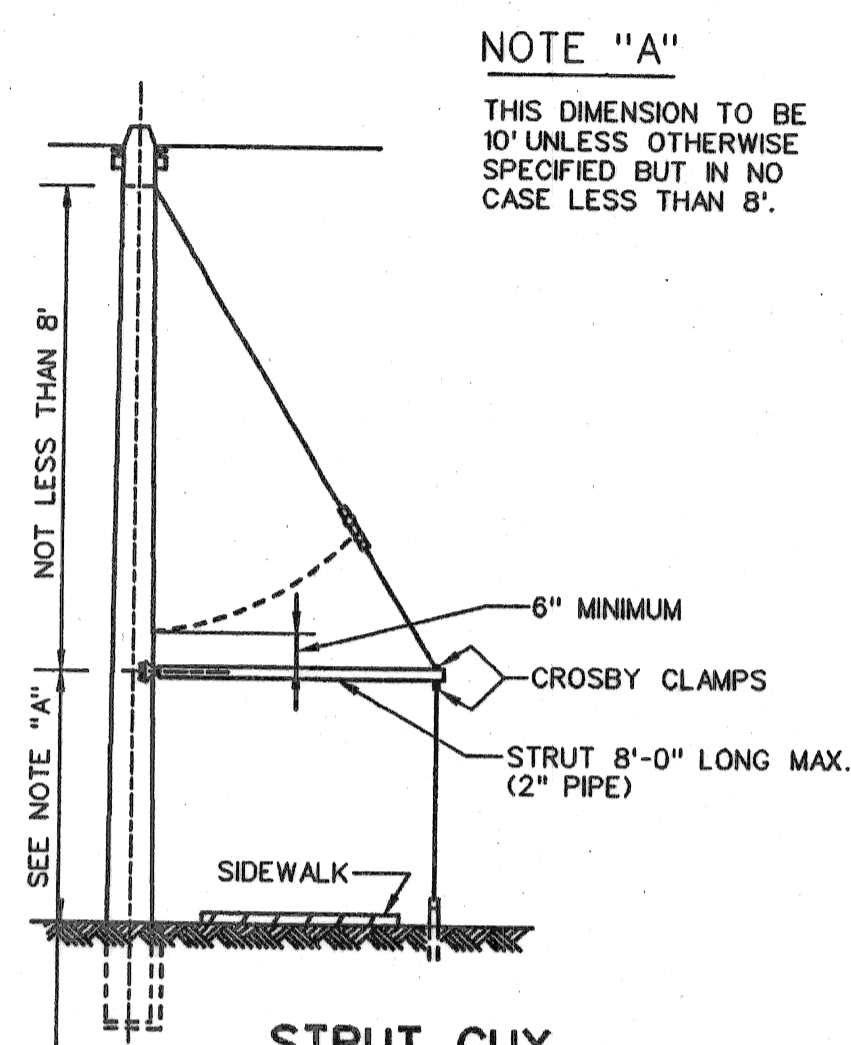


(POLE DETAIL)
N.T.S.



NOTE: INSTALL 1/4" MESSENGER SPAN FIRST WITH SAME SAG AS EDISON SEC. THEN INSTALL NO.8 TWIN DROPS. IN THE CASES WHERE THERE IS A SINGLE DROP AND THE ATTACHMENT POINT IS PULLED OUT AND UP READJUST SAG AT EYE BOLT.

MESSENGER WIRE LAMP DROP SUPPORT: STANDARD INSTALLATION METHOD

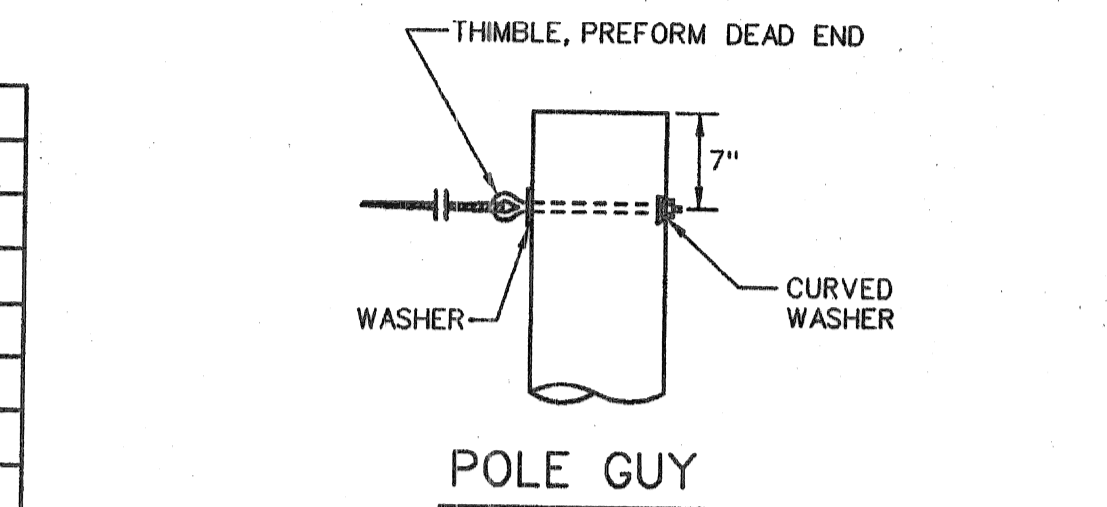


STRUT GUY

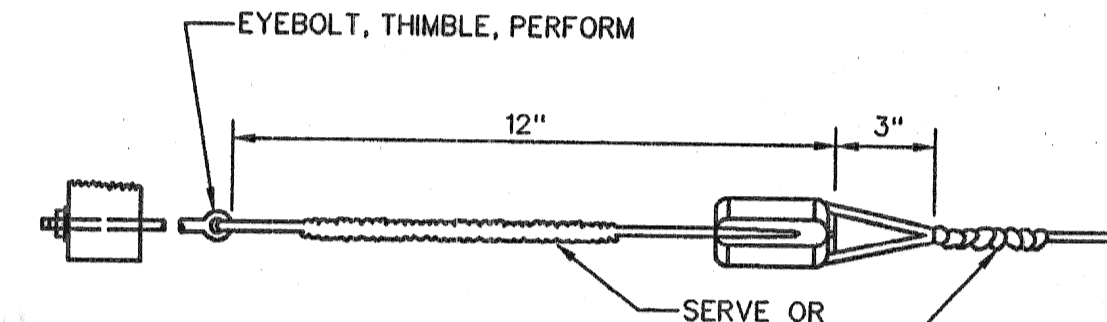
NOTE "A"
THIS DIMENSION TO BE 10' UNLESS OTHERWISE SPECIFIED BUT IN NO CASE LESS THAN 8'.

POLE HEIGHT	SETTING DEPTH
30'	6.0'
35'	6.0'
40'	6.0'
45'	6.5'
50'	7.0'
55'	7.5'
60'	8.0'

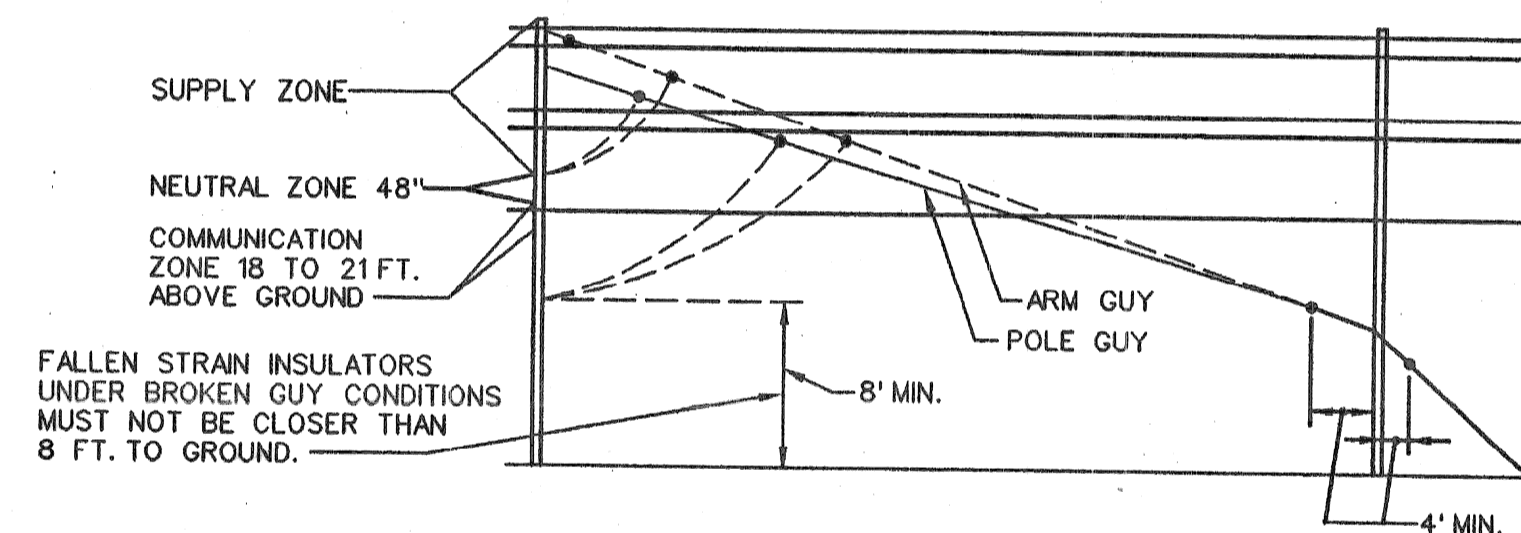
TYPICAL POLE SETTING DEPTH



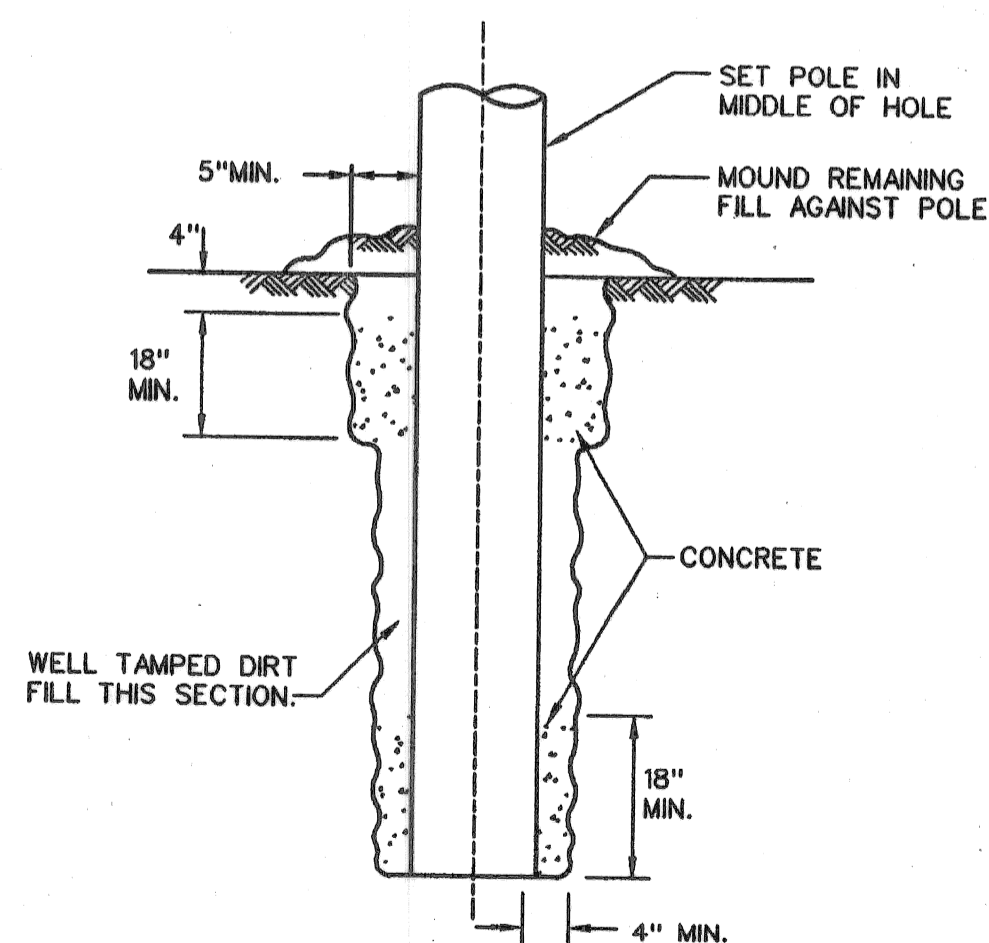
POLE GUY



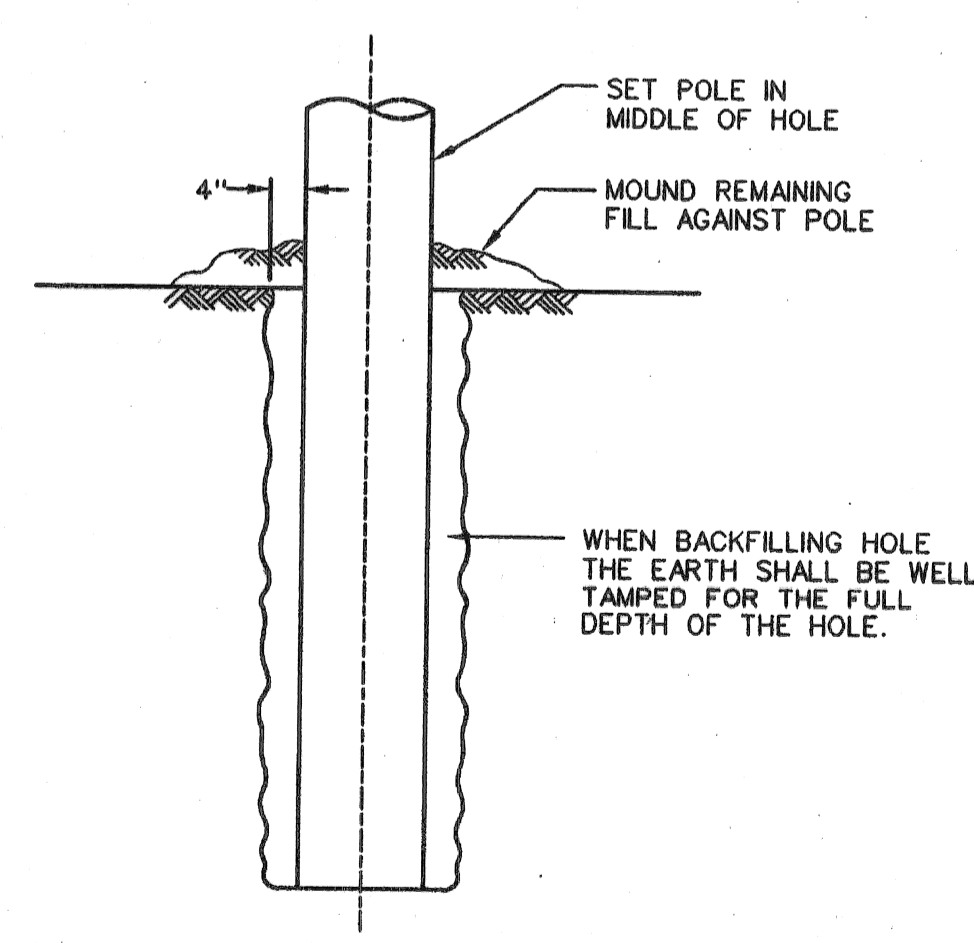
ARM GUY DETAILS



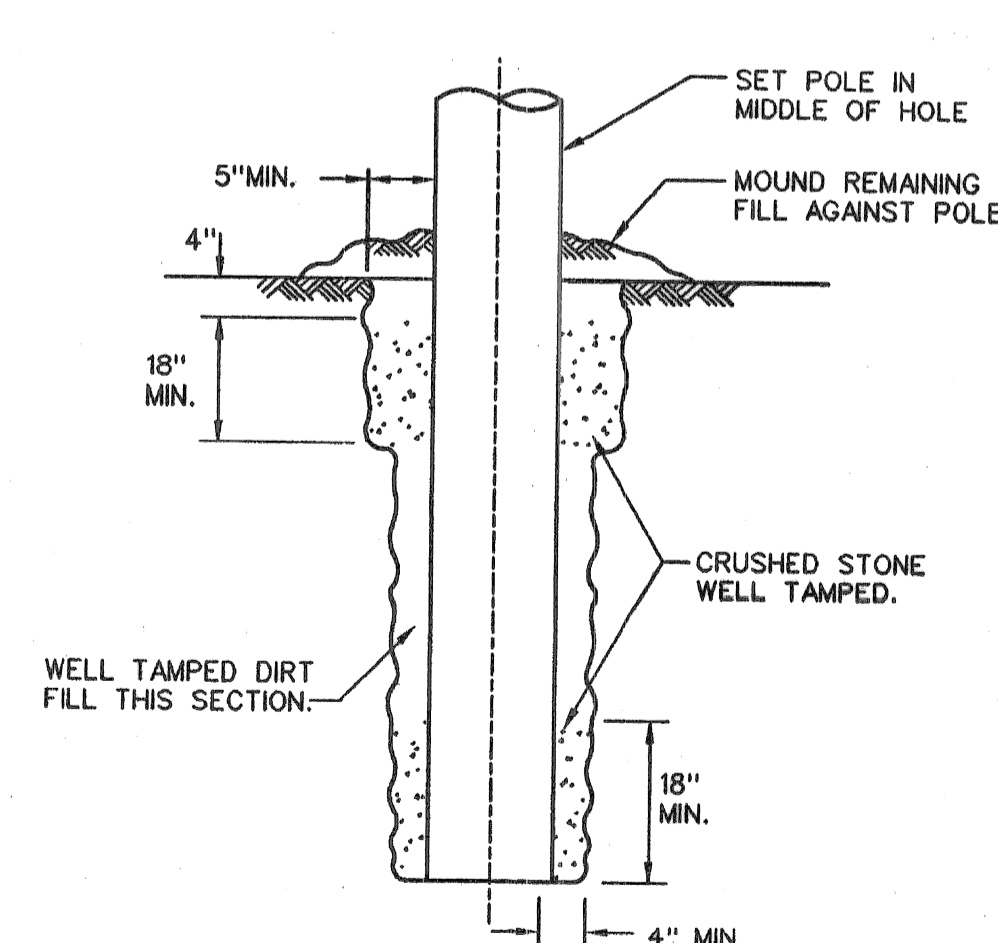
STRAIN INSULATOR POSITION IN GUY WIRES



WOOD POLE IN CONCRETE
N.T.S.



WOOD POLE INSTALLATION
N.T.S.



M.S.S.
SELF-SUPPORTING WOOD POLE IN CRUSHED STONE

DISK FILE: PLD 302

Date	Description	Chkd. by

MESSENGER WIRE INSTALLATION & MISC.

Drawn **CEA**
Checked
Approved
Date

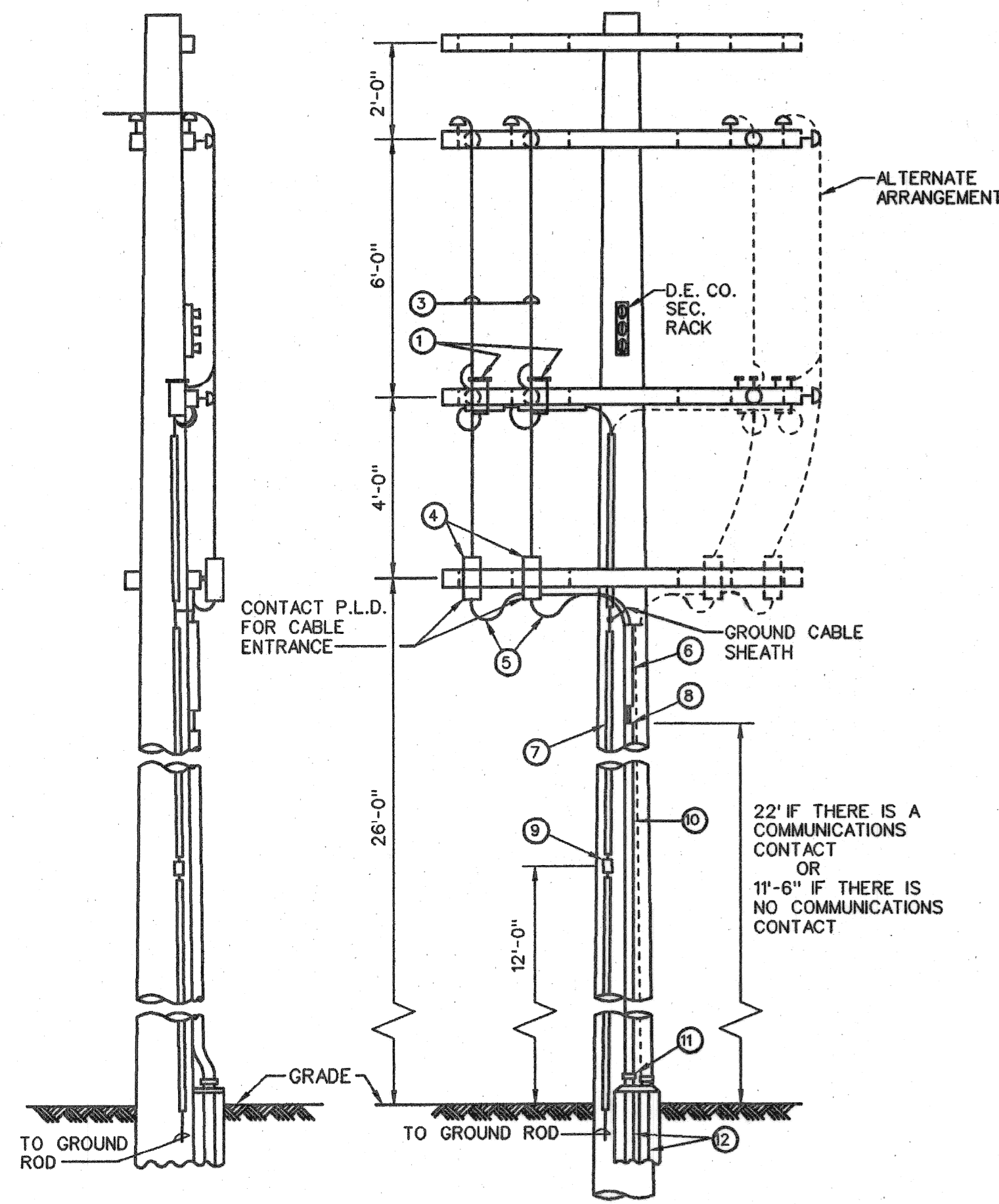
Consulting Engineering Associates, Inc.
16580 WYOMING AVE. DETROIT MICHIGAN 48221
TELEPHONE: (313) 341-5797 FAX: 341-0205

Drwg. No. **CEA**
File No.

Checked by
Approved by

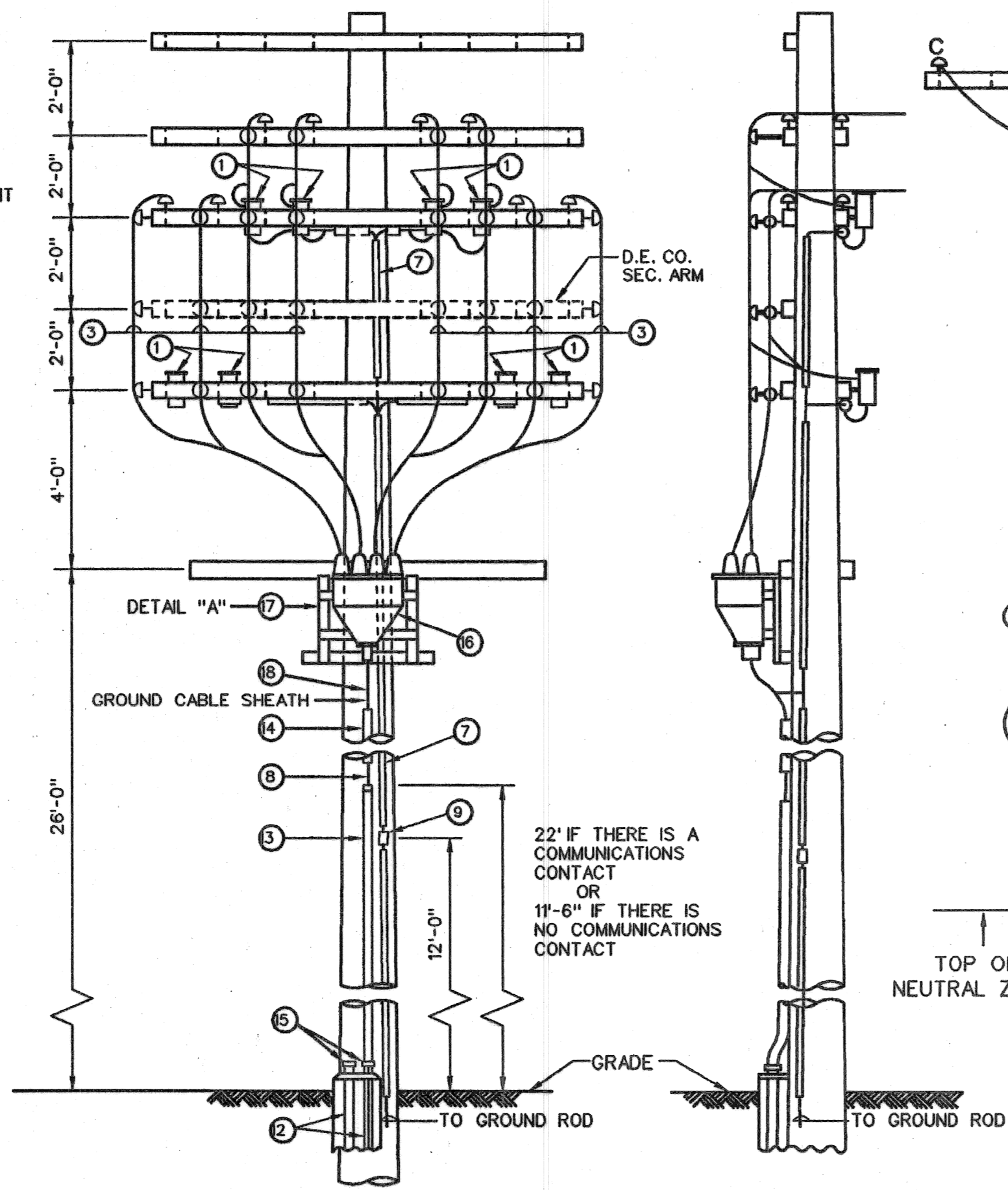
PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT

File No. **302**
Sheet No. **46 of 48**
Date



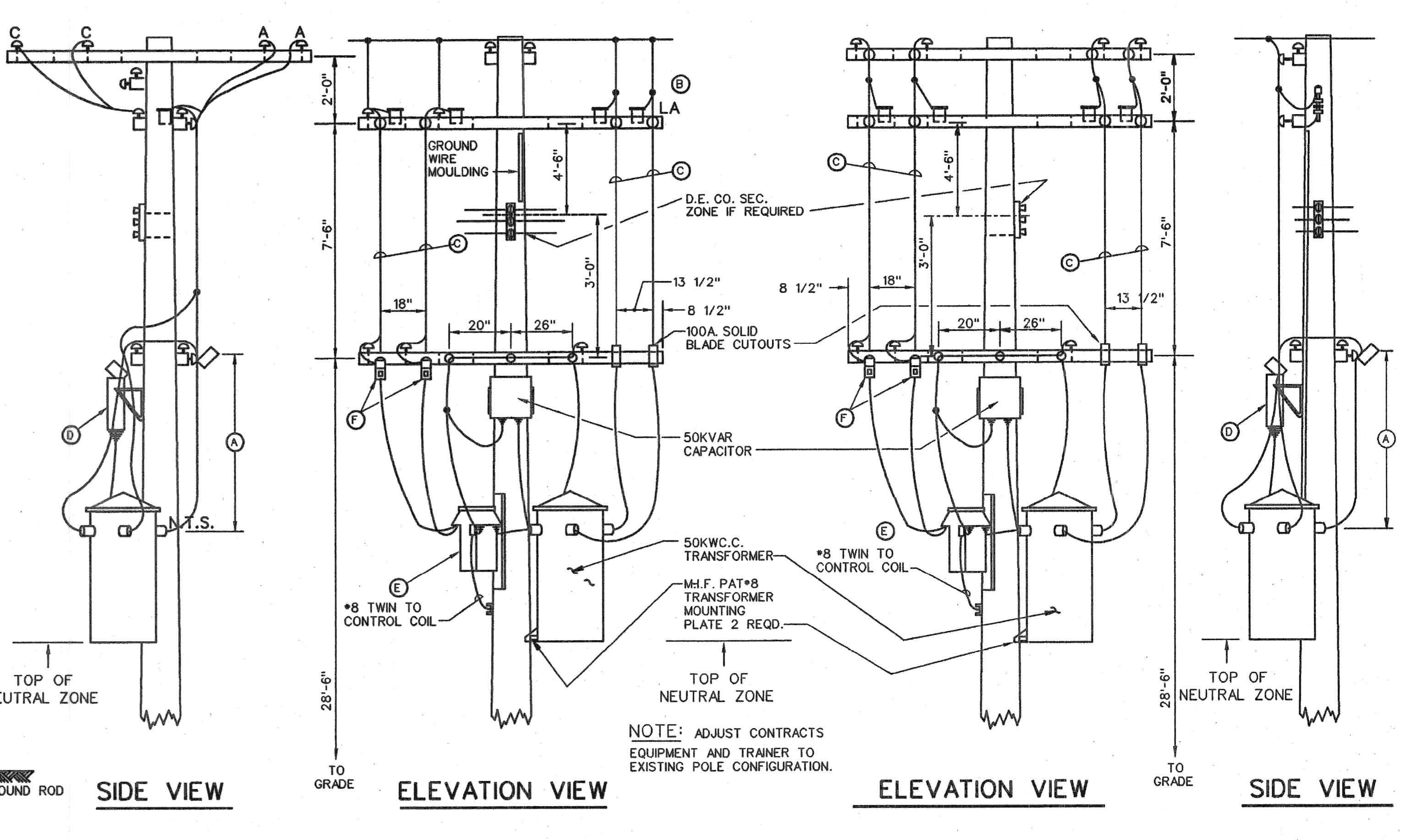
SIDE VIEW ELEVATION VIEW
SERIES STREET LIGHTING CABLE POLE

N.T.S.



ELEVATION VIEW SIDE VIEW
TYPICAL 8/C STREET LIGHTING CABLE POLE

N.T.S.



SIDE VIEW ELEVATION VIEW ELEVATION VIEW SIDE VIEW
CONSTANT CURRENT ST.LTG. REGULATOR POLE
BUCK ARM INSTALLATION
CONSTANT CURRENT ST.LTG. REGULATOR POLE
LINE ARM INSTALLATION

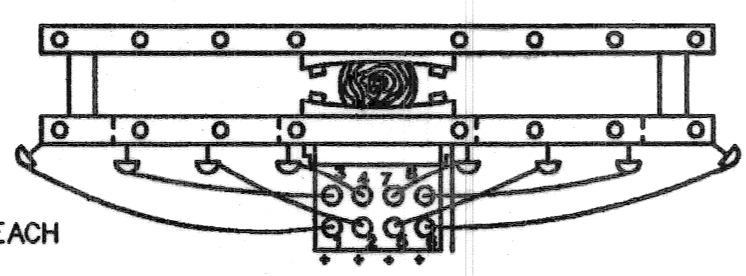
NOTE: ADJUST CONTRACTS EQUIPMENT AND TRAINER TO EXISTING POLE CONFIGURATION.

DETAIL ITEMS	
(1)	LIGHTNING ARRESTER
(2)	*6 OVERHEAD TRAINING WIRE (NEOPRENE COVERED WEATHERPROOF)
(3)	*8 OVERHEAD FLEXIBLE TRAINING WIRE
(4)	100A. SOLID BLADE CUTOUT
(5)	1/2" x 8 L.C. CABLE
(6)	3" SPLIT-DUCT ABOVE GIP TO 8" BELOW CROSSARM
(7)	*2 GROUND WIRE UNDER MOULDING
(8)	LEAD WEATHERCAP & GALV. BUSHING
(9)	FOUR SCREW CONNECTOR
(10)	2 1/2" G.I.P. RISER
(11)	2 1/2" x 4" REDUCER ADAPTER
(12)	36" RADIUS PLASTIC BEND, NO. & SIZE OF CONDUIT AS SHOWN ON PLANS
(13)	3" G.I.P. RISER
(14)	4" SPLIT DUCT
(15)	3" x 4" REDUCER ADAPTER
(16)	8/C POTHEAD
(17)	*8/C POTHEAD MOUNTING BRACKET (SEE DETAIL "A")
(18)	8/C L.C. CABLE

NOTES:

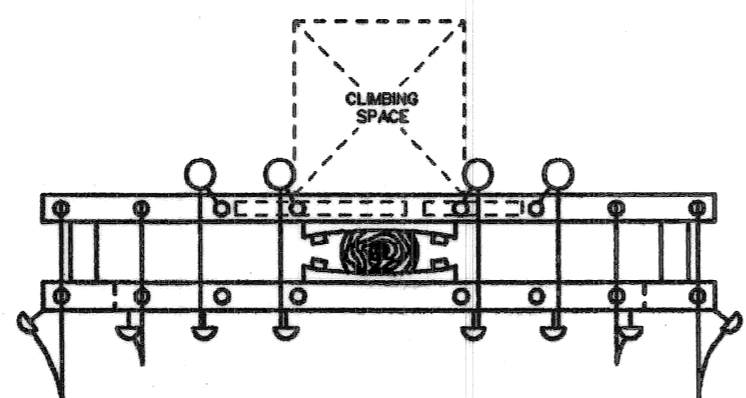
- SEE P.L.D. DETAILS FOR GROUND ROD AND CONDUIT INSTALLATION.
- INSTALL STEPS ON POLE FROM 8'-0" ABOVE GROUND TO 48" BELOW POTHEAD ARM.
- INSTALL BRASS TAG ON EACH P.H. CAP & P.H. BODY. TAGS TO BE STAMPED WITH THE FOLLOW INFORMATION: STREET LIGHTING CIRCUIT NUMBER & "PLUS" TO INDICATE POSITIVE LEAD.
- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A LIST OF ALL SPLICING MATERIALS HE PROPOSES TO USE WITH SUPPORTING DATA THAT THE MATERIAL IS SUITABLE FOR THE APPLICATION AS SHOWN ON THE DRAWINGS.

THE PAIRS FOR EACH CIRCUIT ARE
1 & 3, 2 & 4,
5 & 7, 6 & 8,
1, 2, 5, 6 ARE
POSITIVE



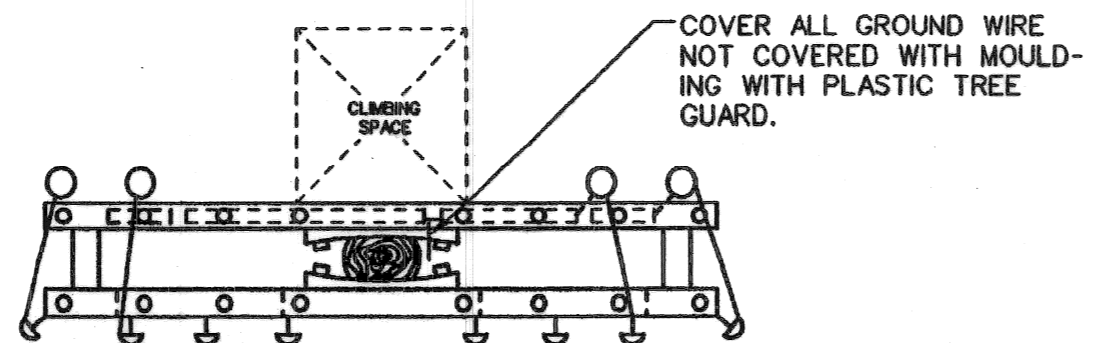
PLAN AT FIFTH GAIN
INCLUDING 8/C POTHEAD

N.T.S.



PLAN AT THIRD GAIN

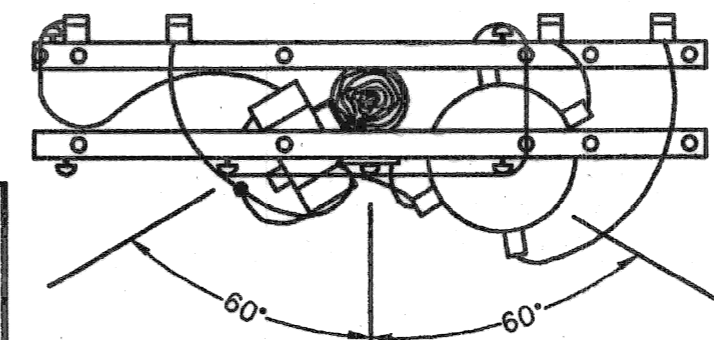
N.T.S.



PLAN AT FIFTH GAIN

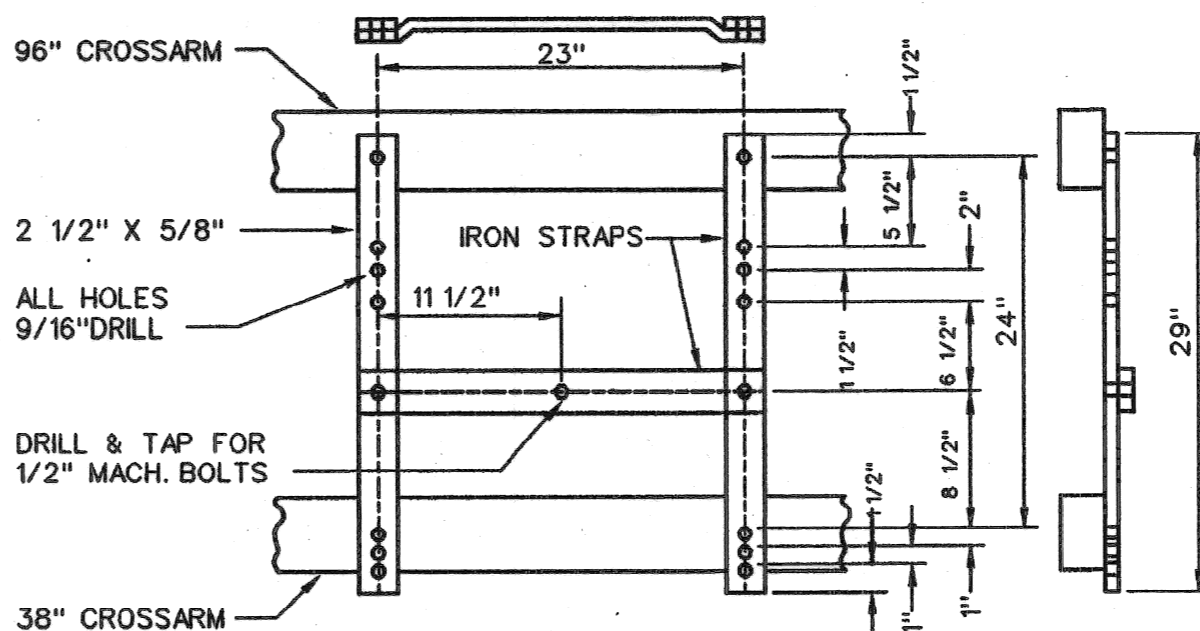
N.T.S.

NOTE:
ALL CROSSARMS SHALL
BE 120"

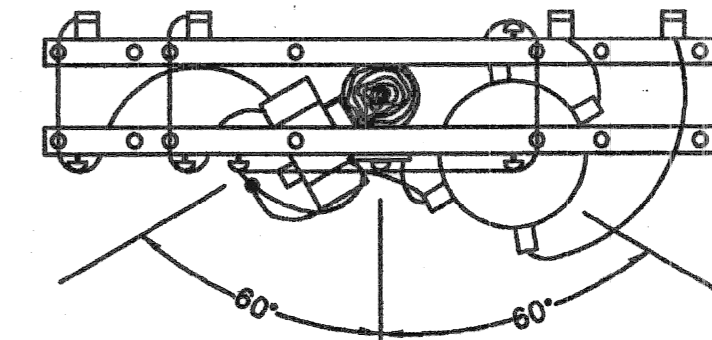


PLAN
N.T.S.

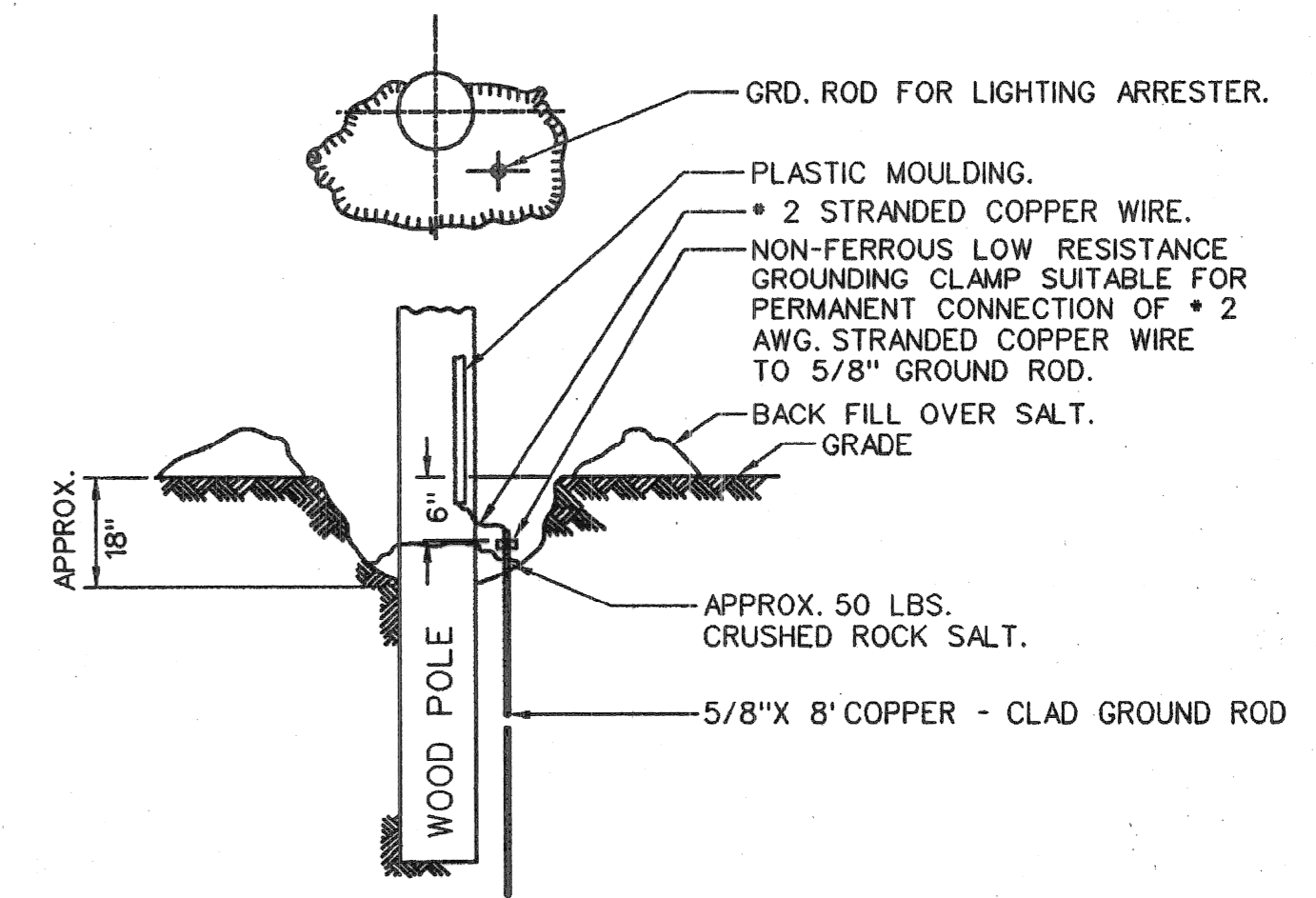
DETAIL ITEMS	
(A)	TOP THRU BOLT, 5'-0" TO ARM (5'-6" FOR TOP BUSHED TRANSFORMER)
(B)	*8 OVERHEAD TRAINING WIRE (NEOPRENE COVERED WEATHERPROOF)
(C)	ALL TRAINERS *6 W.P. EXCEPT AS NOTED
(D)	CAPACITOR CASE CONNECT TO PRI. L.A. GRD. WIRE
(E)	SOUTH BEND OIL SWITCH TO AMP. CONTROL
(F)	100 AMP. ENCLOSED CUTOUTS. FUSE AS SPECIFIED



BRACKET FOR 8/C POLE TYPE POTHEAD
DETAIL "A"



PLAN
N.T.S.



GROUND ROD INSTALLATION

N.T.S.

Drawn CEA
Checked
Approved
Date

Consulting Engineering Associates, Inc.
15590 WYOMING AVE. DETROIT MICHIGAN 48221
TELEPHONE (313) 341-5797 FAX 341-0205

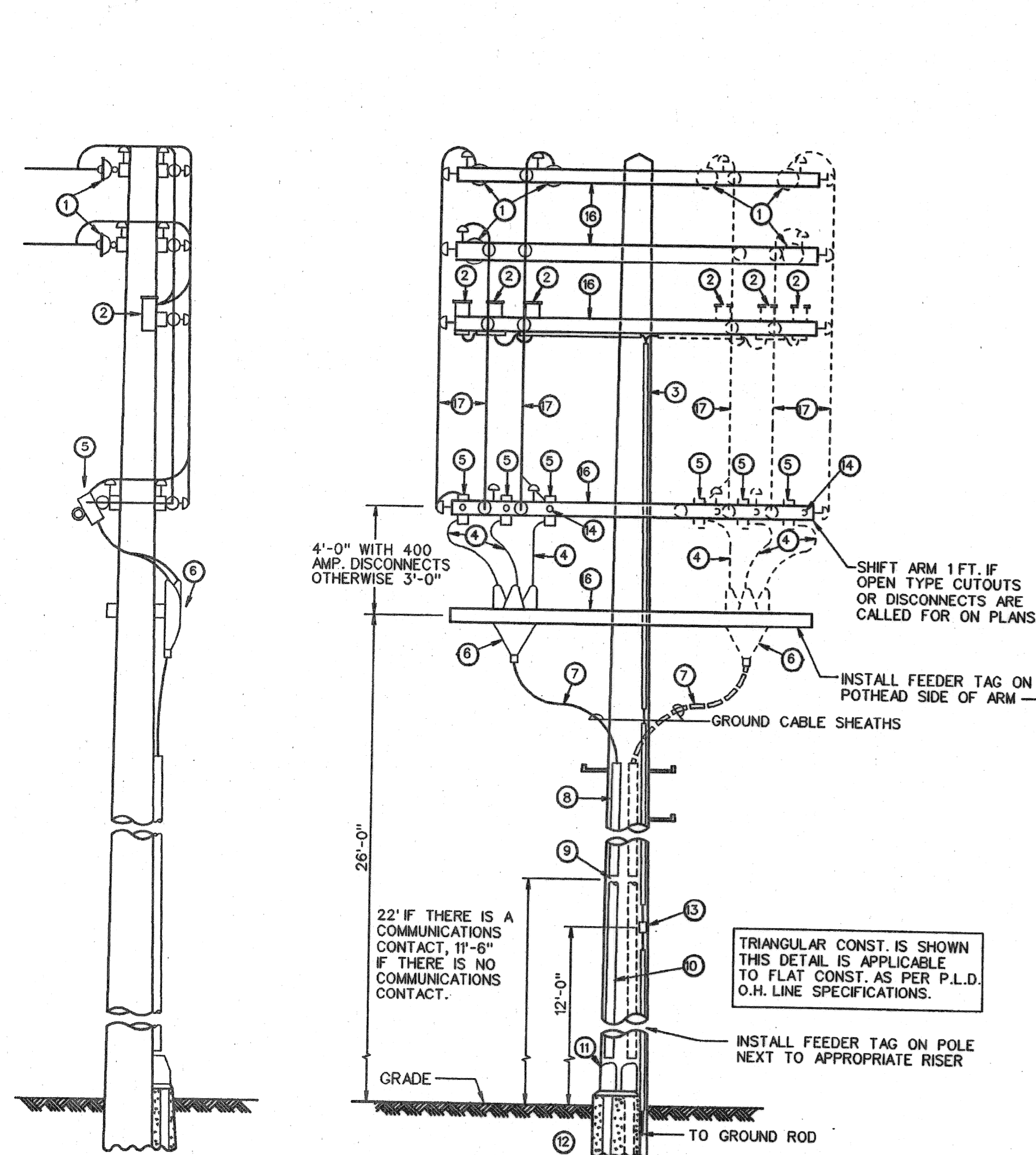
Drwg. No. OF CEA
File No.

Checked by
Approved by

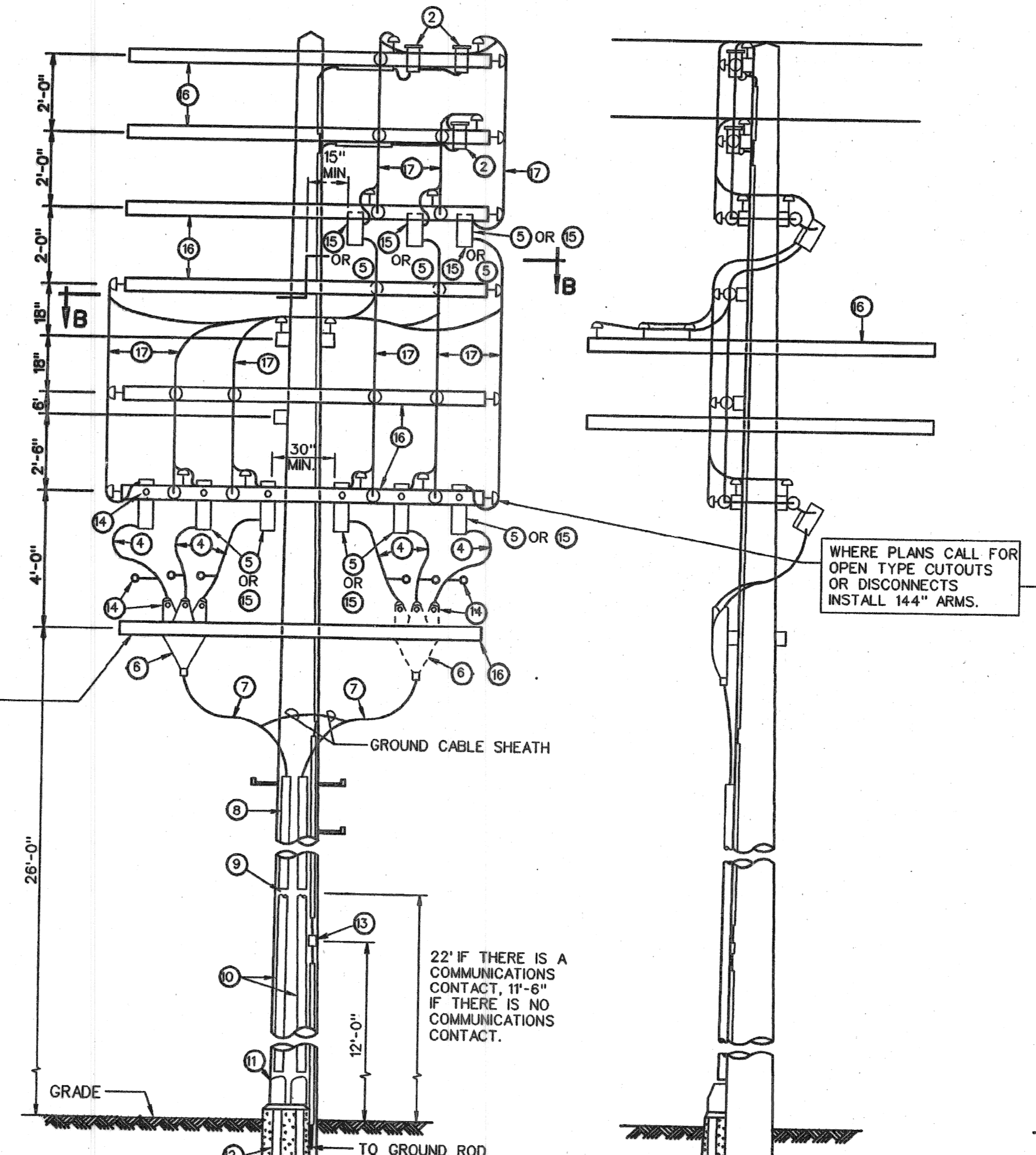
File No.
Sheet No. 47 of 48
Date

SUBSTATION CIRCUIT ABBREVIATIONS ON IDENTIFICATION TAGS SHALL BE SPELLED AS FOLLOWS

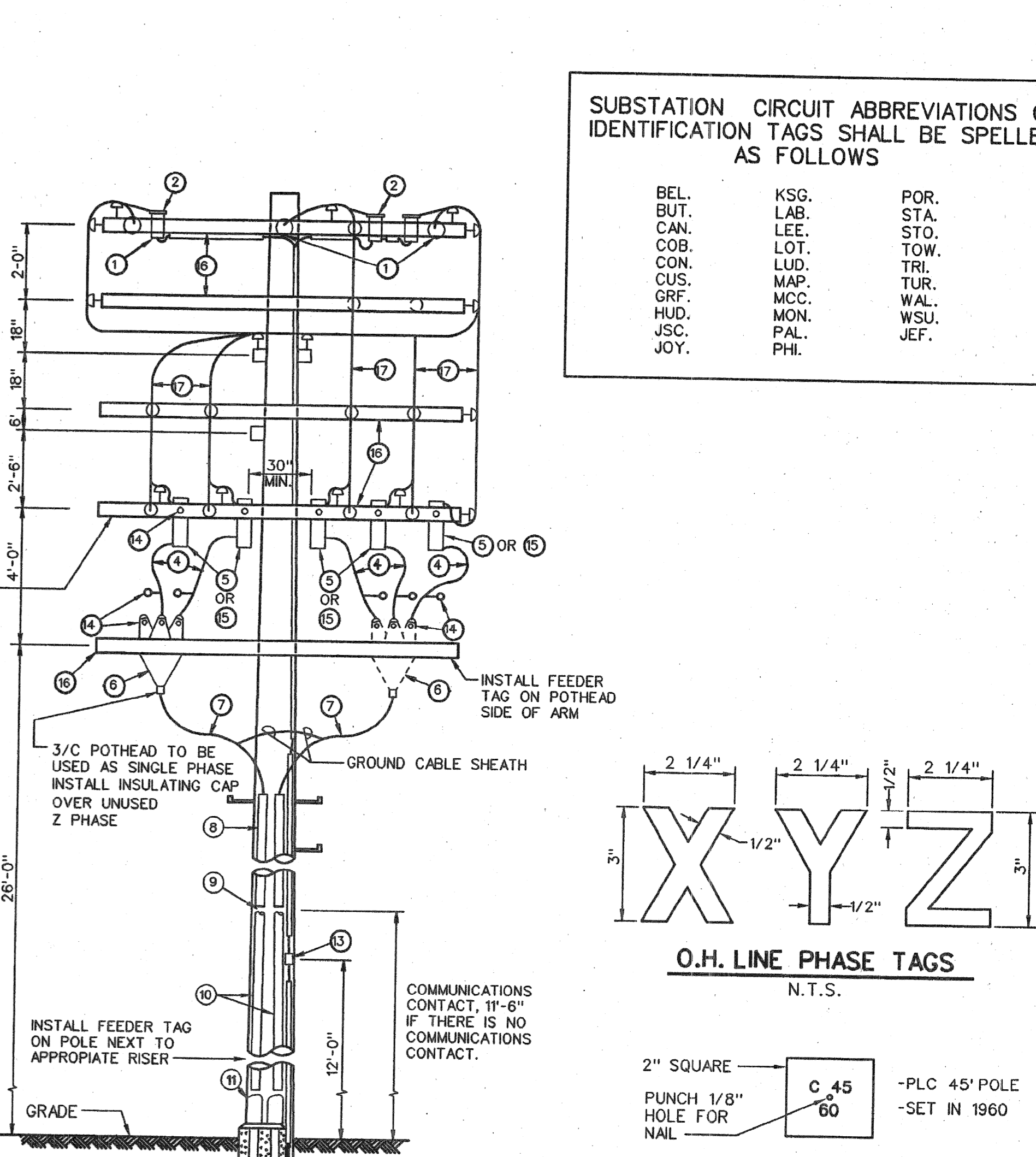
BEL.	KSG.	POR.
BUT.	LAB.	STA.
CAN.	LEE.	STO.
COB.	LOT.	TOW.
CON.	LUD.	TRI.
CUS.	MAP.	TUR.
GRF.	MCC.	WAL.
HUD.	MON.	WSU.
JSC.	PAL.	JEF.
JOY.	PHI.	



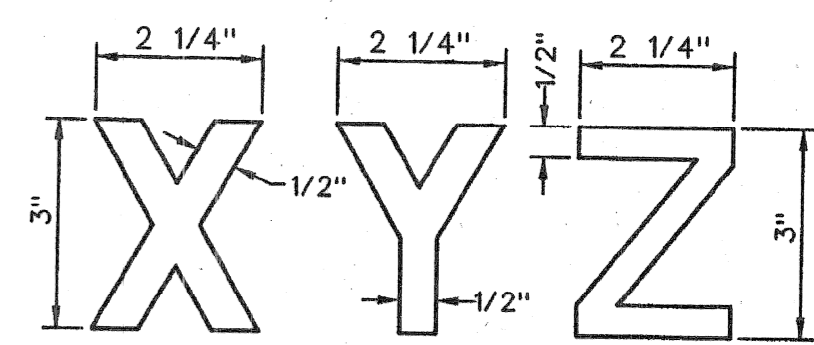
SIDE VIEW
ELEVATION VIEW
PRIMARY DISTRIBUTION CABLE POLE
N.T.S.



ELEVATION VIEW
SIDE VIEW
TYPICAL LOOP PRIMARY DISTRIBUTION CABLE POLE
N.T.S.



ELEVATION VIEW
DOUBLE PRIMARY DISTRIBUTION CABLE POLE
N.T.S.



O.H. LINE PHASE TAGS
N.T.S.

2" SQUARE
PUNCH 1/8" HOLE FOR NAIL

C 45
60

-PLC 45' POLE
-SET IN 1960

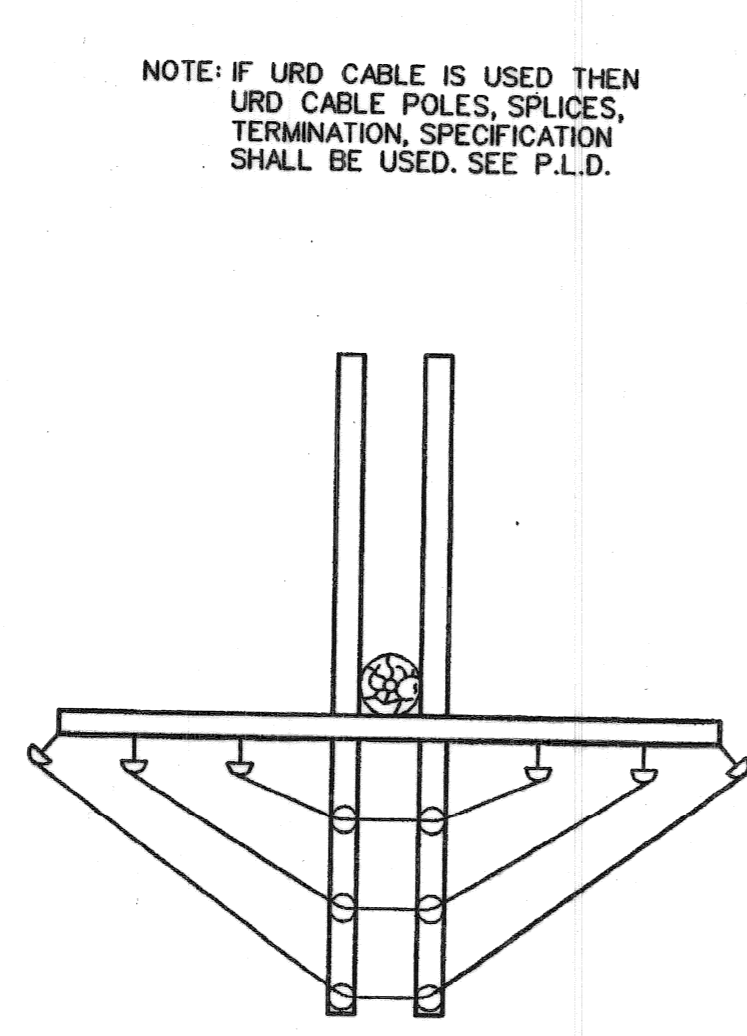
STOCK:0032" ALUMINUM
MILL FINISH

USE 1/4" STEEL STAMP FOR LETTERING PIN
SET MARKER 7'-0" ABOVE GRADE

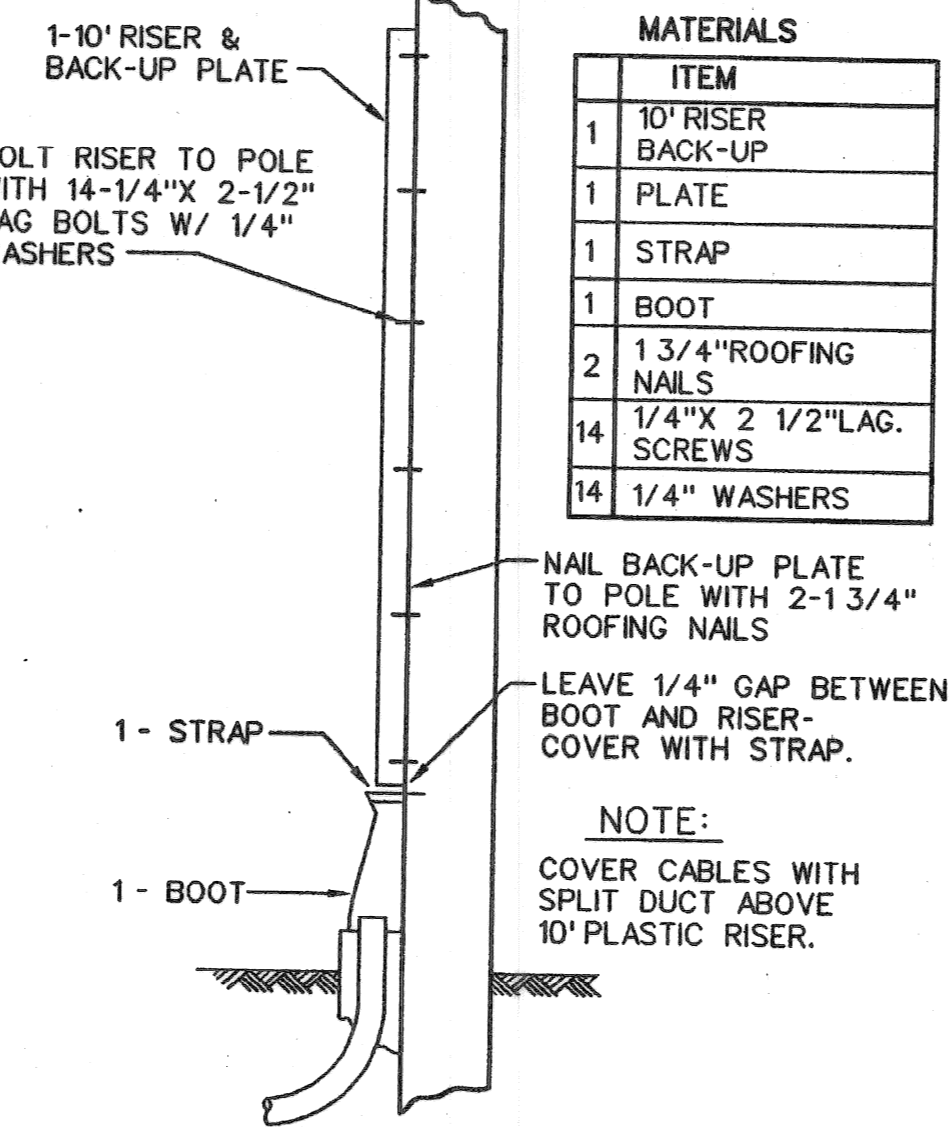
DETAIL ITEMS

1	SUSPENSION INSULATOR
2	LIGHTNING ARRESTER-RATING AND TYPE AS REQUIRED
3	*2 GROUND WIRE UNDER MOULDING
4	HIGH VOLTAGE FLEXIBLE TRAINING WIRE 4/0 AWG. EXCEPT AS OTHERWISE NOTED
5	PRIMARY SOLID BLADE DISCONNECT
6	3/C POTHEAD, 500 AMP., FLAT DIVERGENT
7	L.C. CABLE
8	4" SPLIT DUCT ABOVE G.I.P.
9	WEATHER CAP
10	10' HASKON RISER
11	HASKON BOOT
12	36" RADIUS PLASTIC BEND, NO. & SIZE OF CONDUIT AS SHOWN ON PLANS
13	FOUR SCREW CONNECTOR
14	PHASING TAGS (ON CLIMBING SIDE OF PRIMARY LINE ARMS)
15	WESTINGHOUSE FUSED CUTOUT
16	120" 8 PINS STANDARD CROSSARM
17	*4/0 TRAINING WIRE, NEOPRENE COVERED, WEATHERPROOF

- * SEE WIRING DIAGRAM ON PLANS: FUSE SIZE & ORIENTATION OF FUSE OR SOLID BLADE DISCONNECTS.
- KEEP ALL ELECTRICAL EQUIPMENT OUTSIDE OF THE 30" CLIMBING ZONE.
 - GROUND TO 48" BELOW POTHEAD ARM. INSTALL STEPS ON POLE FROM 8'-0" ABOVE.
 - THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A LIST OF ALL SPlicing MATERIALS HE PROPOSES TO USE WITH SUPPORTING DATA THAT THE MATERIAL IS SUITABLE FOR THE APPLICATION AS SHOWN ON THE DRAWING.



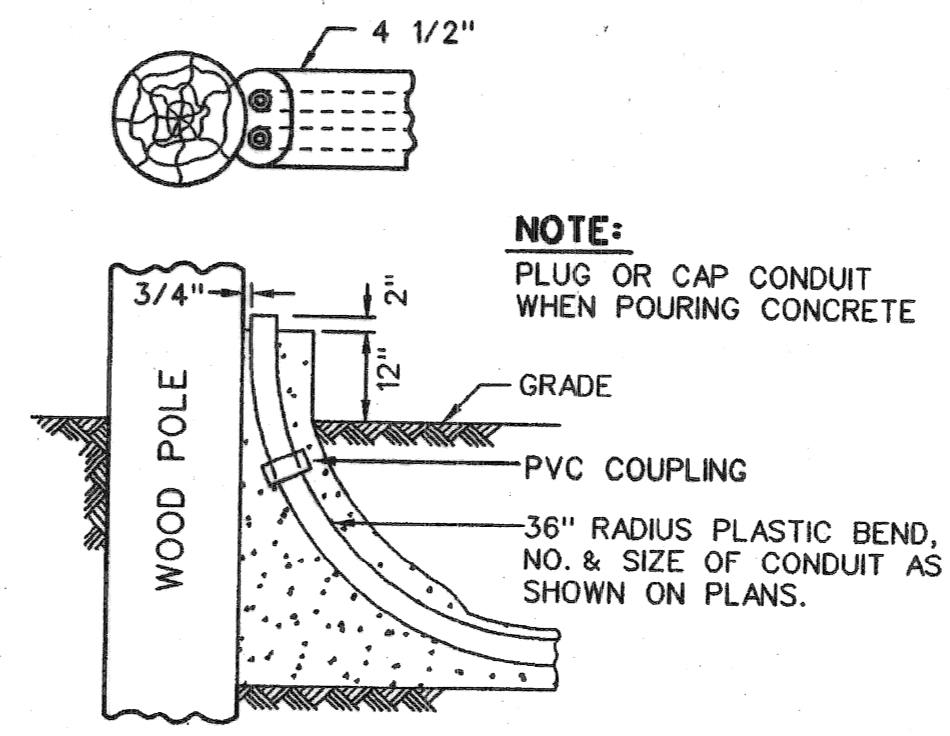
SECTION B-B
N.T.S.



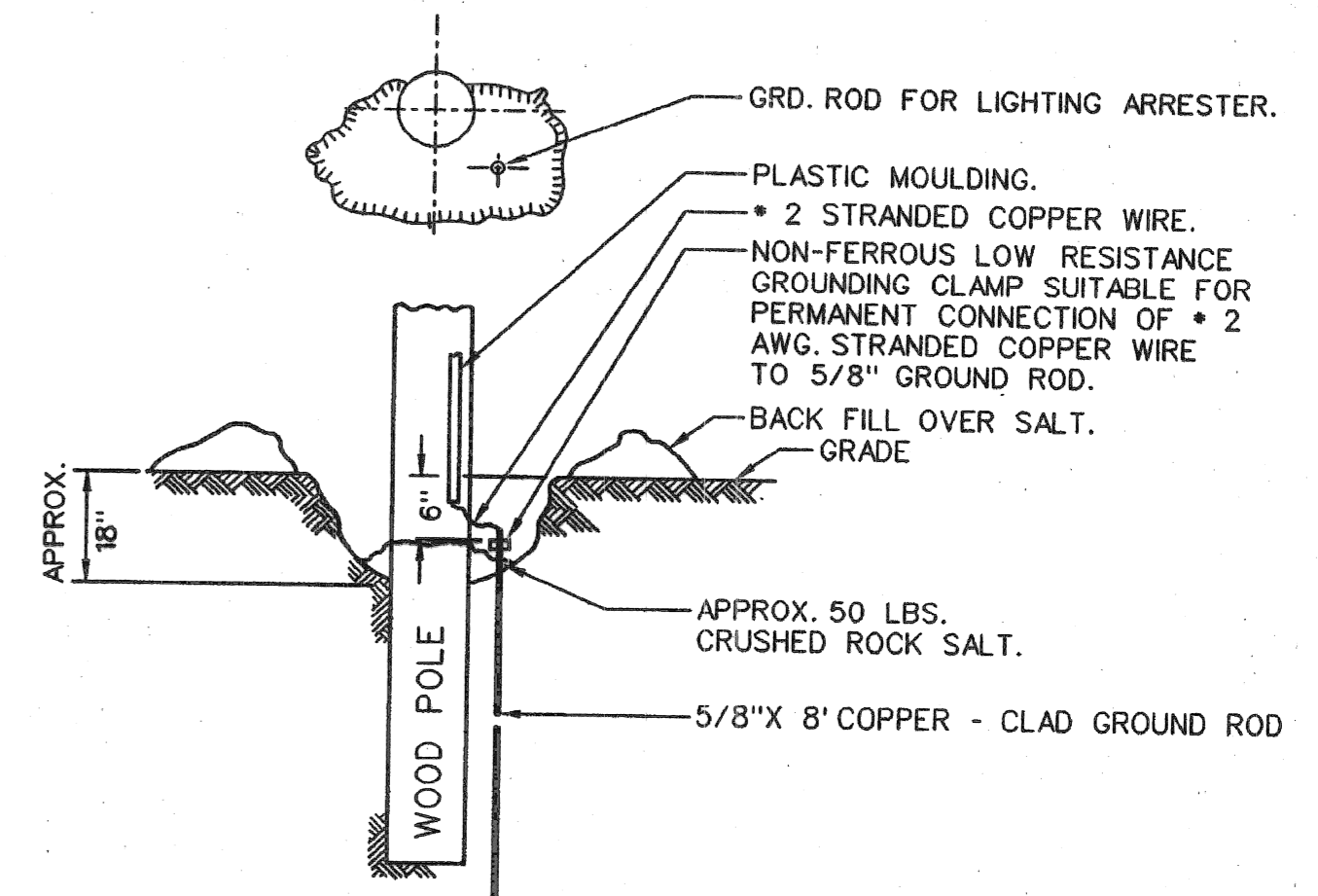
PLASTIC RISER ASSEMBLY
N.T.S.

MATERIALS

ITEM
1 10' RISER BACK-UP
1 PLATE
1 STRAP
1 BOOT
2 1 3/4" ROOFING NAILS
14 1/4" X 2 1/2" LAG SCREWS
14 1/4" WASHERS



INSTALLATION OF CONDUIT



GROUND ROD INSTALLATION
N.T.S.

DISK FILE: P.L.D. 307

Date	Description	Chkd. by

PRIMARY DISTRIBUTION CABLE POLES DETAILS

Drawn CEA
Checked
Approved
Date

Consulting Engineering Associates, Inc.
1550 WYOMING AVE. DETROIT MICHIGAN 48221
TELEPHONE: (313) 341-5797 FAX: 341-0205

Drwg. No. OF CEA

10-01-96 307

File No. _____
Sheet No. 48 of 48
Date _____

PUBLIC LIGHTING DEPARTMENT
CITY OF DETROIT