F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
1545	00-00115-00-BR	DUPAGE	97	81
STA. 1+31.77		TO STA. 5+50.00		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

CONTRACT 83961

CONDUIT RUN INSTALLATION

CONDUIT BELLS

ALL CONDUITS SHALL TERMINATE AT A PRE-CAST MANHOLE IN PLASTIC CONDUIT ENTRANCE BELL ENDS AS SHOWN ON PAGE 8 OF THIS STANDARD. ALL CONDUITS SHALL TERMINATE AT A VAULT PER THIS STANDARD. IF CONDUIT PLUGS ARE USED, THEY SHOULD BE REMOVED AFTER CONSTRUCTION IS COMPLETED UNLESS OTHERWISE SPECIFIED.

BACKFILLING

AFTER THE CONCRETE SHEATHING HAS ATTAINED ITS INITIAL SET, THE TRENCH SHALL BE BACKFILLED. SAND OR OTHER STATE OR MUNICIPAL APPROVED MATERIAL SHALL BE USED UNDER PAVEMENTS EXCEPT WHEN THE EXCAVATED MATERIAL IS FINE, DRY, CAN BE WELL COMPACTED, AND WILL NOT SETTLE AFTER PAVEMENT IS RESTORED. IF THE EXCAVATION IS MADE IN SANDY SOIL, THE REMOVED MATERIAL MAY BE USED FOR BACKFILL IF SATISFACTORY TO THE ENGINEER. LAKE SAND SHALL NEVER BE USED FOR THE BACKFILL IN CONDUIT TRENCHES BECAUSE OF ITS POOR HEAT-CONDUCTING PROPERTIES. ALL BACKFILL IN PAVED AREAS SHALL BE THOROUGHLY COMPACTED AND FLOODED.

CONDUIT RUNS IN PARKWAYS MAY BE BACKFILLED WITH THE EXCAVATED MATERIAL IF IT IS CLAY, LOAM, COARSE SAND, OR GRAVEL.

WHEN LAKE SAND, PEAT, CINDERS, SLAG, OR OTHER MATERIALS WITH POOR HEAT CONDUCTING PROPERTIES ARE ENCOUNTERED IN THE CONDUIT EXCAVATION, THERMAL BACKFILL SHALL BE ADDED AROUND AND ABOVE THE CONDUIT, AS SPECIFIED ON THE INSTALLATION PLANS OR BY THE ENGINEER. THIS THERMAL BACKFILL WILL BE SPECIFIED OR BANK RUN GRAVEL FROM A LOCATION APPROVED BY THE ENGINEER.

PAVING, CURBS, SIDEWALKS

REPLACEMENT OF PAVING, CURBS, AND SIDEWALKS SHALL BE DONE IN ACCORDANCE WITH THE MUNICIPAL OR STATE REQUIREMENTS.

CONDUIT PREPARATION

AFTER THE CONCRETE SHEATHING HAS ATTAINED ITS INITIAL SET, EACH CONDUIT SHALL BE RODDED AND MANDRELLED, BY THE CONTRACTOR OR CREW, THROUGH EACH OF THE CONDUIT. WHEN A PREVIOUSLY DEAD-END CONDUIT RUN IS EXTENDED, THE ENTIRE RUN SHALL BE RODDED AND MANDRELLED. CONDUIT RUNS CONTAINING OR TERMINATING IN SMALL RADIUS BENDS THAT WILL NOT PERMIT THE PASSAGE OF A STANDARD SIZE MANDREL, SHALL BE MANDRELLED THROUGH THEIR STRAIGHT PORTION PRIOR TO THE CONSTRUCTION OR INSTALLATION OF THE BENDS. THE MANDRELING OF SMALL RADIUS BENDS SHALL BE DONE WITH A FLEXIBLE MANDREL NO SMALLER IN DIAMETER THAN 1/2 INCH LESS THAN THE NOMINAL DIAMETER OF THE BEND.

WHEN REQUESTED, THE CONTRACTOR SHALL, AS A PART OF THE MANDRELING OPERATION, PULL IN AND LEAVE IN CERTAIN DESIGNATED DUCTS A #12 SOL. CU. MARKER CABLE (DPU-E# 280-113-00040, WHITE), (DPU-E# 280-113-00041, BLACK), (DPU-E# 280-113-00042, RED), (DPU-E# 280-113-00043, GREEN), (DPU-E# 280-113-00044, BLUE), (DPU-E# 280-113-00045, ORANGE), OR (DPU-E# 280-113-00046, YELLOW). ADDITIONALLY A 22GA. DETECTABLE MULETAPE 1250# STRENGTH @ 3000' (DPU-E# 450-024-00010), MAY BE USED. EITHER OPTION WILL BE FURNISHED BY THE CITY OF NAPERVILLE DPU-E.

LATERALS

CONDUIT LATERALS THAT ARE TO BE CONCRETE ENCASED SHALL BE INSTALLED IN THE SAME MANNER AS MAIN CONDUIT RUNS. LATERALS THAT TERMINATE AT MANHOLE WALLS SHALL BE CONSTRUCTED AS SHOWN ON THIS STANDARD. THOSE THAT TERMINATE AT A POLE SHALL BE CONSTRUCTED PER PAGE 9 OF THIS STANDARD. THOSE TERMINATING AT AN EQUIPMENT FOUNDATION SHALL BE CONSTRUCTED PER THAT SPECIFIC EQUIPMENT FOUNDATION STANDARD.

DENSE CONDUIT SHEATHING FOR SPECIAL CONDITIONS

WHEN SPECIFIED ON THE INSTALLATION DRAWINGS, CONDUIT RUNS TO BE INSTALLED IN KNOWN CORROSIVE LOCATIONS, SUCH AS IN CINDER FILL, ADJACENT TO COAL STORAGE PILES, IN GAS PURIFIER SLAG, ETC., SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS. ALL OTHER PROCEDURES GIVEN IN PRECEEDING PAGES OF THIS STANDARD SHALL BE FOLLOWED.

THE OUTER SHEATHING ALL AROUND SHALL BE 4 INCHES THICK.

CONCRETE SHALL CONSIST OF THE FOLLOWING MIX:

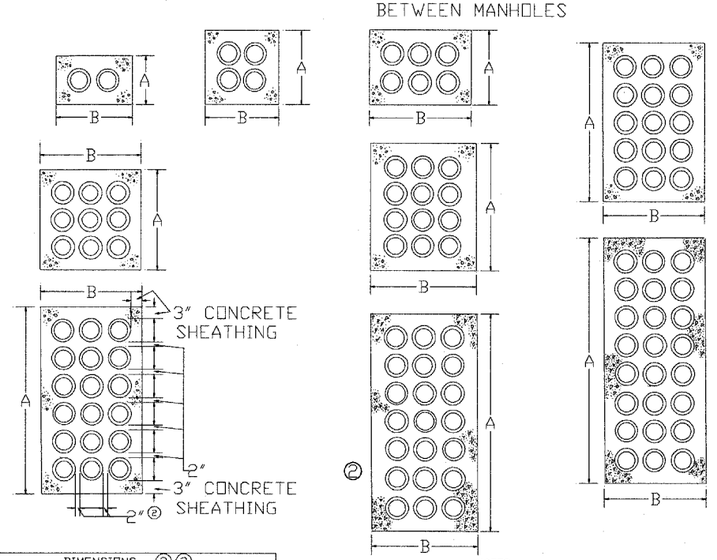
1 PART TYPE 1 PORTLAND CEMENT
2 PARTS #2 TORPEDO SAND
2 PARTS PEA GRAVEL (NOT CRUSHED STONE)
1/2 BAG OF FLY ASH SHALL BE ADDED TO THE MIX FOR EACH BAG OF PORTLAND CEMENT USED.
FOR AN ALTERNATIVE TO PORTLAND CEMENT AND FLY ASH, LUMNITE CEMENT SHALL BE SPECIFIED. INCLUDE AIR ENTRAINMENT AGENT TO ENTRAIN 7 1/2 PERCENT OF AIR IN CONCRETE.

INCLUDING FREE SURFACE MOISTURE IN THE AGGREGATES OF NOT MORE THAN 6 GALLONS OF WATER PER BAG OF CEMENT SHALL BE USED.

MINIMUM SLUMP SHALL BE 2 INCHES AND MAXIMUM SLUMP IS 4 INCHES.

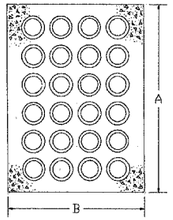
NAPERVILLE PUBLIC UTILITIES DEPARTMENT	DUCTBANK CONSTRUCTION SPECIFICATION	DATE: 08-22-06 Page 5 of 11
ELECTRIC STANDARDS		C30-1900

CONDUIT RUN FORMATIONS
BETWEEN MANHOLES



NO. OF DUCTS	DIMENSIONS ②③ PLASTIC CONDUIT 5" CONDUIT A *	5" CONDUIT B *	6" CONDUIT A *	6" CONDUIT B *
2	11 3/4"	19"	12 3/4"	21 1/2"
4	19"	19"	21 1/2"	21 1/2"
6	19"	26 1/2"	21 1/2"	30"
9	26 1/2"	26 1/2"	30"	30"
12	33 3/4"	26 1/2"	38 3/4"	30"
15	41"	26 1/2"	47 1/2"	30"
18	48 1/4"	26 1/2"	55 3/4"	30"
21	55 1/2"	26 1/2"	64 3/4"	30"
24(3X8)	63"	26 1/2"	73"	30"
24(4X6)	48 1/4"	34"	55 3/4"	38 3/4"

* DIMENSIONS ARE TO THE NEXT LARGER 1/4"



NOTES:

APPLICATION

- THIS STANDARD SHALL BE USED FOR THE ARRANGEMENT OF CONDUIT FORMATIONS BETWEEN MANHOLES.

INFORMATION

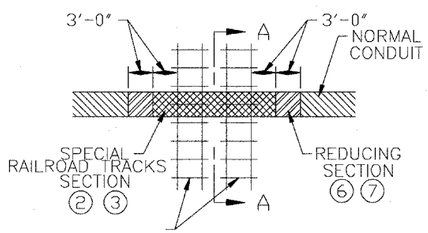
1 THIS STANDARD COVERS THE ARRANGEMENT OF THE CONDUIT IN CONDUIT RUNS AND LATERALS.

② THE SEPARATION BETWEEN CONDUITS SHALL BE 2" INCHES. CONCRETE SHEATHING SHALL BE 3" INCHES THICK EXCEPT WHERE A CONDUIT RUN IS UNDER RAILROAD SWITCH TRACKS OR MAIN LINE RAILROAD TRACKS. THEN THE SHEATHING SHALL BE AS SHOWN ON PAGE 7.

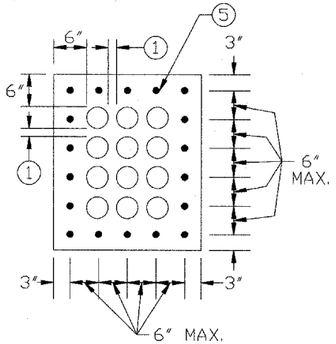
③ THESE DIMENSIONS REFLECT THE USE OF PLASTIC BASE SPACERS WHICH PROVIDES A HORIZONTAL AND VERTICAL SEPARATION AT OR GREATER THAN THE MINIMUM REQUIREMENTS.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	DUCTBANK CONSTRUCTION SPECIFICATION	DATE: 08-22-06 PAGE 6 OF 11
ELECTRIC STANDARDS		C30-1900

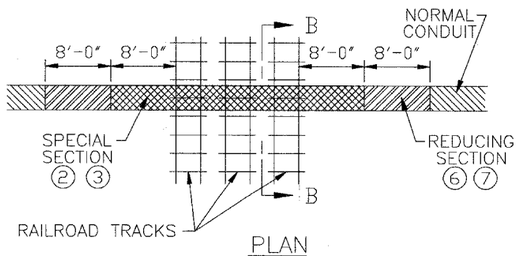
CONDUIT RUN RR TRACK CROSSING
SWITCH TRACKS OR MAIN LINE TRACKS



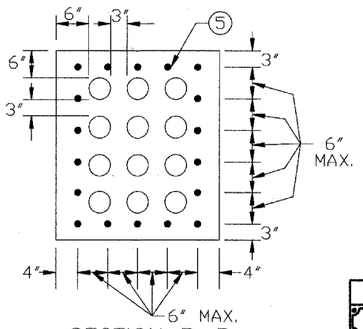
PLAN
1 OR 2 TRACKS



SECTION A-A
TYPICAL



PLAN
3 OR MORE TRACKS



SECTION B-B
TYPICAL

NAPERVILLE PUBLIC UTILITIES DEPARTMENT	DUCTBANK CONSTRUCTION SPECIFICATION	DATE: 08-22-06 PAGE 7 OF 11
ELECTRIC STANDARDS		C30-1900

NOTES:

APPLICATION

- THIS STANDARD SHALL BE USED FOR THE FORMATION OF CONDUIT RUNS THAT CROSS UNDER RAILROAD TRACKS.

INFORMATION

① NORMAL DUCT SPACING AS ON PAGE 6 (2 INCHES).

② TOP OF SPECIAL SECTION TO BE AT LEAST 50" BELOW TOP OF RAIL.

③ CONCRETE MIXTURE OF SPECIAL SECTION TO BE OF DENSE SHEATHING, SEE PAGE 5.

④ LEAVE TRACK SHORING IN PLACE AT LEAST 7 DAYS UNLESS QUICK SETTING CEMENT IS USED.

⑤ #6 GRADE 60 REINFORCING BARS, OVERLAP THE ENDS 18".

⑥ DUCTS OF REDUCING SECTION TO BE LAID AS REVERSE CURVE.

⑦ REDUCE HORIZONTAL AND VERTICAL SEPARATION OF DUCTS FROM 3" TO NORMAL, AND THE ENVELOPE FROM 6" TO 3". CONCRETE MIXTURE OF REDUCING SECTION TO BE NORMAL SHEATHING.

CITY OF NAPERVILLE/DEPARTMENT OF PUBLIC UTILITIES - ELECTRIC

CALL J.U.L.I.E. 48 HRS. PRIOR TO CONSTRUCTION

PROJECT TITLE: BAILEY RD. BRIDGE DUCTBANK INSTALLATION	MAP NO.: -	CAD FILE/ JOB: 005B199001C15.DWG	
PROJECT DESCRIPTION: COORDINATED WITH BRIDGE IMPROVEMENT	DRAWN BY: JK	PROJECT NO.: EU12-06-04	
DATE: 05-15-07	WORK REQUEST NO.: 58199	CHK'D:	SEC:	COMPLETED BY:
ISSUED				
ENGINEER: RPB		APPR:	SCALE: NTS	SHEET 15 OF 23
REVISION: 1 2 3				