

3.02 EMBEDDED AND UNDERGROUND CONDUIT INSTALLATION NOTES:

- A. WHERE EMBEDDED CONDUIT RUNS ARE NOT SHOWN DIMENSIONED, THE CONTRACTOR MAY ADJUST THE GENERAL ROUTING WITHOUT THE CONSENT OF THE ENGINEER. HOWEVER, IT IS THE INTENT THAT ALL CONDUIT RUNS BE ROUTED USING THE SHORTEST POSSIBLE ROUTE CONSISTENT WITH THE CRITERIA SET FORTH IN THIS DRAWING. SHOULD CONTRACTOR DESIRE TO ALTER A CONDUIT RUN, HE SHALL BE RESPONSIBLE FOR PERFORMING CABLE PULLING TENSION CALCULATIONS, CONSISTENT WITH THE CRITERIA SHOWN IN PARAGRAPH 8, TO ASSURE THAT THIS CHANGE WILL NOT CAUSE MAXIMUM ALLOWABLE PULLING TENSION OF CABLES TO BE EXCEEDED.
- B. PARALLEL CONDUIT RUNS IN FLOOR SLAB OR WALLS SHALL BE SEPARATED BY A MIN. OF 1 1/2" OR 3" (DEPENDING ON CONCRETE DESIGN MIX USED) SIDEWALL TO SIDEWALL TO ALLOW FOR PLACEMENT OF REINFORCING RODS AND THE POURING OF COARSE AGGREGATE CONCRETE. EXCEPT IN THE AREA OF ABS 007 417, THE MIN. CONDUIT SEPARATION SHALL BE 1/2" AND MIN. OF 3/8" AGGREGATE CONCRETE SHALL BE USED IN THIS AREA.
- C. WHEN RIGID STEEL CONDUIT CROSSES AN EXPANSION JOINT, A CONDUIT EXPANSION COUPLING SHALL BE PROVIDED.
- D. EMBEDDED CONDUITS IN CONCRETE WALLS OR FLOOR SLABS SHALL HAVE A MINIMUM CONCRETE COVER OF 1 1/2 INCHES EXCEPT WHERE THE SURFACE IN QUESTION WILL BE EXPOSED TO OUTSIDE WEATHER CONDITIONS OR IN CONTACT WITH EARTH. UNDER THESE CONDITIONS THERE WILL BE A MINIMUM COVER OF 3 INCHES. ENGINEERING PERMISSION MUST BE GIVEN IN WRITING AND BEFORE INSTALLATION TO ALLOW LESS COVER UNDER SPECIAL CIRCUMSTANCES WHERE THE SPECIFIED COVER CANNOT BE PROVIDED.
- E. CONDUITS EMBEDDED IN CONCRETE FLOOR SLAB AND ENTERING FROM THE BOTTOM.
 - 1) TO FLOOR OR PAD MOUNTED ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH FIGURES 4 AND 5 ON SHEET 5F. CONDUIT INSTALLED IN FLOOR WHICH IS NOT SPECIFICALLY NOTED ON DRAWING TO BE FLUSH WITH FLOOR, NOR IS ABLE TO BE INSTALLED PER FIG. 4 (SH. 5F), SHALL BE INSTALLED PER 3.02E, PARAGRAPH 2.
 - 2) TO ELEVATED MOUNTED ELECTRICAL EQUIPMENT SHALL BE STUBBED UP 16 INCHES (+1", -11") ABOVE FINISHED FLOOR IN ACCORDANCE WITH FIGURES 6 AND 10 ON SHEET 5F UNLESS OTHERWISE NOTED ON DRAWING.
- F. PVC CONDUIT SHALL BE SCHEDULE 40.
- G. ALL DUCT BANKS SHALL HAVE A MINIMUM CONTINUOUS SLOPE OF 3 INCHES IN 100 FEET, UNLESS OTHERWISE NOTED.
- H. WHERE PVC CONDUITS TERMINATE IN MANHOLES, HANDHOLES & CONCRETE ENCASED DUCT BANKS, END BELLS FLUSH TO THE CONCRETE FACING SHALL BE PROVIDED. FOR DETAILS SEE FIG. 3 SH. 5F.
- I. WHERE RIGID GALVANIZED STEEL CONDUITS TERMINATE IN MANHOLES, HANDHOLES & CONCRETE ENCASED DUCT BANKS, A COUPLING FLUSH TO THE CONCRETE FACING SHALL BE PROVIDED. FOR DETAIL SEE FIG. 3 SH. 5F.
- J. ALL CONDUITS EXITING FROM A DUCT BANK SHALL BE ENCASED IN CONCRETE WITH NOT LESS THAN TWO (2) INCHES OF COVER ALL AROUND.
- K. ALL UNDERGROUND CONDUITS THAT TERMINATE ABOVE GRADE IN OUTDOOR AREAS SHALL HAVE A SIX (6) INCH HIGH CONCRETE BASE WITH A TWO (2) TO THREE (3) INCH ENVELOPE AND A ONE (1) INCH CHAMFER.
- L. PROVIDE 1" PRE-MOULDED JOINT FILLER AROUND DUCT BANKS ENTERING MANHOLES, HANDHOLES AND PENETRATING BUILDING WALLS & FLOOR SLABS.
- M. WHERE EMBEDDED CONDUITS TURN OUT OF A FOUNDATION, SLAB OR FILL, THE TERMINATION DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE TAKEN TO REPRESENT THE POSITION OF THE STRAIGHT EXTENSION OF THE CONDUIT EXTERNAL TO AND IMMEDIATELY FOLLOWING THE BEND.
- N. WHEN DIMENSIONED CONDUITS PENETRATE WALLS OR FLOORS A TOLERANCE OF ± TWO INCHES IS ACCEPTABLE (HOWEVER, IF THE CONTRACTOR ELECTS TO USE THE TOLERANCES PROVIDED HEREIN, THE CONDUIT RUN SHALL BE REVIEWED, BY THE CONTRACTOR, TO DETERMINE IF THE CONDUIT TERMINATION CAN BE ACCOMPLISHED). IN ADDITION TO THE ABOVE TOLERANCE, CONDUITS ENTERING MCC'S MUST MAINTAIN A MAXIMUM ± TO ± SPACING OF 12" (+0 - 1"). HOWEVER CONDUIT ENVELOPE INSTALLATION TOLERANCE REMAINS AT ± 1".
- P. A TOLERANCE OF ± 3 INCHES IS ACCEPTABLE FOR MANHOLE AND DUCT BANK ELEVATIONS EXCEPT AT TERMINATION POINTS WITH BUILDINGS, PROVIDING THE MINIMUM SLOPE AS GIVEN BY NOTE G CAN BE MAINTAINED.

- Q. ALL EMBEDDED CONDUIT ENDS SHALL BE CLOSED WITH CAPS, PLUGS OR BUSHINGS AND BLANK DISC DURING CONSTRUCTION. ENDS OF SPARE CONDUITS SHALL BE PLUGGED OR CAPPED. CONDUIT TO BE EMBEDDED IN CONCRETE SHALL BE HELD FIRMLY IN PLACE BY WIRING IT TO REINFORCED STEEL OR BY OTHER APPROVED MEANS SO THAT CONDUIT WILL BE HELD SECURELY IN POSITION DURING PLACEMENT OF CONCRETE AND UNTIL CONCRETE IS SET.
- R. FIBRE CONDUITS SHALL BE CONCRETE ENCASED UNLESS OTHERWISE SHOWN ON DRAWINGS.
- S. THE INTEGRITY OF PVC CONDUIT JOINTS SHALL BE CHECKED IMMEDIATELY BEFORE CONCRETE IS PLACED TO INSURE THAT THE CONDUIT DID NOT PULL OUT OF SLEEVE DUE TO CONTRACTION.
- T. CONDUIT DIMENSIONS AND ELEVATIONS ARE TO THE CENTER LINES OF CONDUITS UNLESS OTHERWISE NOTED.
- U. IN CASES WHERE NEITHER CONDUIT ENDS CAN BE TURNED TO MAKE A CONNECTION DUE TO CONGESTION, BENDS, ETC., ERICKSON OR SPLIT COUPLINGS MAY BE USED PER SPEC. 3240-502 ATTACHMENT #3. COMPRESSION COUPLINGS AND COMPRESSION CONNECTORS (HUBS), ARE ALLOWED WITH A WRITTEN PRE-APPROVAL CHANGE BY ENGINEER WHEN CONNECTION OF UNTHREADED CONDUIT IS NECESSARY DUE TO DAMAGE OR CONSTRUCTABILITY.
- V. WHERE CND DRAINS ARE SPECIFIED, USE "T" CONDULET SUCH AS APPLETON T400-M OR ENGINEER APPROVED EQUAL WITH GALVANIZED FINISH AND INSTALLED TO BE CONCRETE TIGHT AND 4" TO 3" REDUCER WHERE REQUIRED.
- W. ALL EMBEDDED CONDUIT BENDS SHOWN IN DRAWINGS ARE WITH THE MIN. BENDING RADIUS SHOWN ON PAR. 3.01 E.1 UNLESS OTHERWISE SPECIFICALLY NOTED ON DRAWINGS.
- X. A RUN OF EMBEDDED CONDUIT BETWEEN ANY TWO PULL POINTS SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL) INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT AN OUTLET OR FITTING.
- Y. EMBEDDED PULL BOXES & JUNCTION BOXES THAT DO NOT HAVE ANY EXPOSED RACEWAY CONNECTIONS MAY DEVIATE FROM DESIGN LOCATION IN ANY DIRECTION EXCEPT ELEVATION, BY ± 2". BOXES EMBEDDED IN BOTTOM OF A SLAB MAY BE RECESSED A MAXIMUM OF 1" INTO SLAB. BOXES EMBEDDED ON TOP OF A SLAB SHALL NOT BE RECESSED.

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REV.	DATE	BY	APPROVED
7	5-7-82	PS	ESYR
6	7-21-81	SP	ESYR
5	2-17-81	SP	ESYR
4	8-22-80	EM	ESYR
3	4-10-79	E.S.	ESYR
2	9-29-78	RA	ESYR
1	12-16-77	CM	ESYR

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EDASCO SERVICES INCORPORATED DIV. ELECT. OR. E.M. CH. R. ABRAMOWITZ DATE FEB. 24-77	WASHINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECTS NO. 3 & 5 GENERAL NOTES, SYMBOLS AND REFERENCE DRAWINGS WPPSS-4240 D-5023 SHEET 1

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