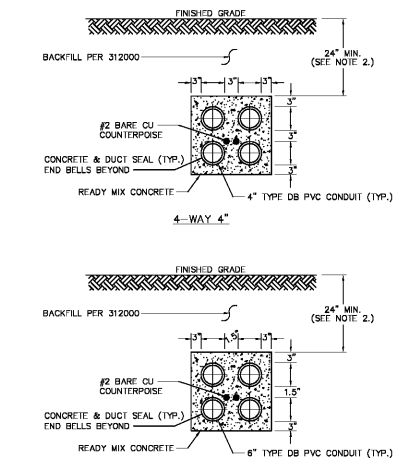


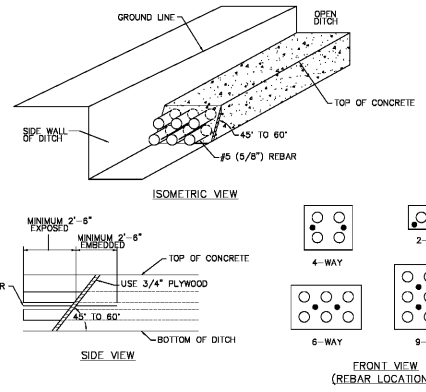
DUCT BANK INSTALLATION NOTES:

- EACH CONDUIT RUN BETWEEN MANHOLE LOCATIONS SHOULD BE AS STRAIGHT AS POSSIBLE. THE OVERALL LENGTH OF A CONDUIT RUN SHOULD NOT EXCEED 450 FEET BETWEEN MANHOLE LOCATIONS. THE MAXIMUM DISTANCE FROM MANHOLES TO RISER POLES OR PAD-MOUNTED EQUIPMENT (SWITCHGEAR, TRANSFORMER, PEDSTALS, etc.) SHOULD NOT EXCEED 100 FEET. THE TOTAL ANGULAR DEFLECTION OF ALL BENDS IN A CONDUIT RUN SHOULD NOT EXCEED 180 DEGREES.
- FOUR OR SIX INCH GREY ELECTRICAL GRADE PVC CONDUIT WITH A WALL THICKNESS OF 0.231" (B9120) OR GREATER SHALL BE USED FOR ALL DUCT BANK INSTALLATIONS.
- GREY ELECTRICAL GRADE PVC BENDS WITH A MINIMUM RADIUS OF 36 INCHES ARE REQUIRED FOR ALL BENDS.
- EFFORT SHALL BE MADE TO INSTALL THE DUCT BANK AT LEAST THREE FEET AWAY FROM FOREIGN UTILITIES WHEN POSSIBLE TO HELP PROVIDE CLEAR WORKING SPACE FOR THE MAINTENANCE OF THE FACILITIES.
- THE DUCT BANK TRENCH SHOULD BE EXCAVATED TO DEPTH WITH THE BOTTOM SMOOTH AND FREE OF ROCKS. A FOUR INCH BED OF SAND SHOULD BE ADDED IF THE BOTTOM OF THE TRENCH IS ROCKY. THE TRENCH MUST BE DEEP ENOUGH TO ALLOW THE TOP OF THE DUCT BANK ENCASEMENT TO BE A MINIMUM OF TWO FEET BELOW FINAL GRADE. NO ADDITIONAL PAYMENT WILL BE MADE FOR SAND BEDDING IF REQUIRED.
- WHEN DIGGING UNDERNEATH FOREIGN UTILITIES, CARE SHOULD BE TAKEN TO ADEQUATELY SUPPORT THESE FACILITIES SO THEY WILL NOT COLLAPSE INTO THE TRENCH.
- THE TRENCH SHALL BE ANGLED DOWN TO MANHOLES AND VAULTS AT A MINIMUM SLOPE OF 1" EVERY 20' TO ALLOW WATER TO DRAIN OUT OF THE CONDUITS. WHEN TYING THE DUCT BANK INTO MANHOLES, THE CONDUITS SHALL BE INSTALLED INTO THE LOWEST AVAILABLE HOLE ON THE MANHOLE WITH THE SPACE AROUND THEM GROUDED AND SEALED.
- CONDUIT SPACERS ARE TO BE INSTALLED APPROXIMATELY EVERY FOUR (4) FEET ALONG THE DUCT BANK.
- CONDUITS ARE TO BE PLACED ON THE SPACERS AND EACH JOINT PREPARED AND GLUED FOLLOWING THE MANUFACTURER'S SPECIFICATIONS. THE CONDUITS MUST BE SECURED IN POSITION TO PREVENT THEM FROM FLOATING TO THE TOP WHEN CONCRETE IS PLACED INTO THE TRENCH. TYPICALLY EITHER 1/2" REBAR OR 2X4 LUMBER CAN BE DRIVEN INTO THE TRENCH WALLS APPROXIMATELY EVERY TEN (10) FEET TO SECURE THE CONDUITS.
- READY MIX CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI AND A 3/8" MAXIMUM AGGREGATE SIZE IS TO BE PLACED INTO THE TRENCH AROUND THE DUCT BANK. THE CONCRETE SHALL BE VIBRATED IN ORDER TO FILL ALL THE SPACES AROUND THE CONDUITS. THERE MUST BE A MINIMUM OF THREE (3) INCHES OF CONCRETE ENCASMENT SURROUNDING THE PERIMETER OF THE DUCT BANK.
- THE REMAINING TRENCH SHALL BE BACKFILLED PER THE DUCT BANK DETAILS ON THIS SHEET.
- THE CONTRACTOR SHALL PULL A MANDREL THROUGH EACH CONDUIT IN THE DUCT BANK WITH A UTILITY OWNER REPRESENTATIVE PRESENT TO VERIFY THAT IT IS IN GOOD CONDITION AND FREE OF ANY OBSTACLES. THE MANDREL SHALL BE NO MORE THAN ONE HALF (1/2) INCH SMALLER THAN THE DIAMETER OF THE CONDUIT. THE CONTRACTOR SHALL THEN PROVIDE AND INSTALL A PULL STRING INSIDE EACH CONDUIT IN THE DUCT BANK. THE PULL STRING SHALL BE MADE FROM HIGH-STRENGTH POLYPROPYLENE OR EQUIVALENT AND BE MILDEW AND ROT RESISTANT.
- THE CONTRACTOR SHALL FOLLOW MUNICIPAL REQUIREMENTS FOR PERMITTING WORK AND FOR THE CUTTING AND REPAIRING OF ROADWAYS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY REQUIRED PERMITS.
- A #2 AND BARE COPPER GROUND WIRE SHALL BE INSTALLED IN THE CONCRETE OF THE DUCT BANK AS SHOWN IN THE DUCT BANK DETAILS ON THIS SHEET. A TEN FOOT LENGTH OF THE #2 COPPER MUST BE LIFT EXPOSED INSIDE OF EACH MANHOLE OR OTHER IN-PLACE LOCATION WITH THE ENTRY LOCATION GROUDED AND SEALED.
- THE CONTRACTOR SHALL COORDINATE WITH A UTILITY OWNER (EITHER DUKE ENERGY OR A&E) REPRESENTATIVE DURING HIS/HER CONSTRUCTION OPERATIONS. A UTILITY OWNER REPRESENTATIVE SHOULD BE ON-SITE OBSERVING CONSTRUCTION AT ALL TIMES UNLESS INSTRUCTED OTHERWISE.
- ALL MANHOLE LOCATIONS SHALL BE VERIFIED WITH THE UTILITY OWNER PRIOR TO INSTALLATION.
- CORE DRILLING INTO EXISTING MANHOLES SHALL BE ANTICIPATED. THERE SHALL BE NO SEPARATE PAY ITEM FOR THE CORE DRILLING. THIS COST SHALL BE INCIDENTAL TO THE DUCT BANK.
- A UTILITY OWNER REPRESENTATIVE MUST BE ON-SITE WHEN CORE DRILLING INTO EXISTING MANHOLES AND/OR TYING INTO EXISTING MANHOLES.
- ALL CONDUIT NOT ENCASED IN CONCRETE SHALL BE SCHEDULE 40 PVC. CONDUIT ENCASED IN CONCRETE SHALL BE TYPE DB PVC CONDUIT.



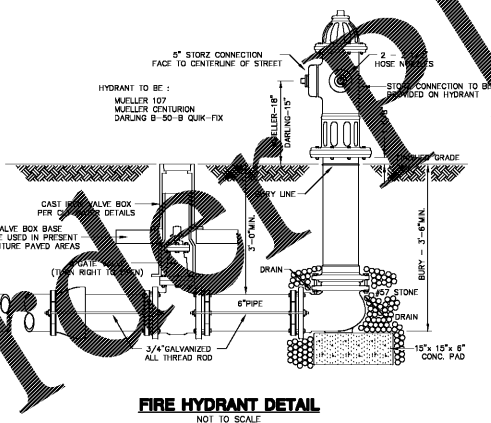
- CONCRETE ENCASED DUCT SHALL BE IN ACCORDANCE WITH THE DUCT BANK INSTALLATION NOTES ON THIS SHEET.
- IF UNDER PAVEMENT SECTION, MAINTAIN 12" OF COVER BETWEEN TOP OF DUCT BANK CONCRETE AND BOTTOM OF PAVEMENT SECTION.
- CONTRACTOR TO PROVIDE AND INSTALL PULL STRINGS IN ALL CONDUITS. PULL STRINGS ARE TO BE TIED OFF AT BOTH ENDS.
- FLATTENED DUCT BANKS SHALL RETURN THE CONDUITS TO THEIR ORIGINAL ORIENTATION AS THE TYPICAL CROSS SECTION IS REESTABLISHED.

CONCRETE ENCASED DUCT BANK DETAIL
NOT TO SCALE

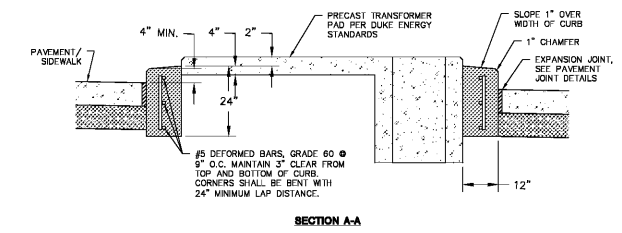


- NOTES:
- THERE ARE OCCASIONS WHEN PORTIONS OF A CONCRETE POUR FOR A SECTION OF DUCT BANK HAVE TO BE INSTALLED AT DIFFERENT TIMES. IN THESE SITUATIONS, THE FOLLOWING ACTIONS SHOULD BE TAKEN TO PROVIDE A STRONG BOND BETWEEN THE TWO DUCT BANK SECTIONS:
 - THE BARRICADE USED TO CONTAIN THE CONCRETE POUR FOR THE FIRST PORTION OF THE DUCT BANK SHOULD BE ANGLED FROM THE GROUND BACK TOWARD THE AREA BEING Poured. AN ANGLE OF 45 TO 60 DEGREES FROM THE BOTTOM OF THE TRENCH IS REQUIRED. THIS WILL PROVIDE SOME SUPPORT FOR THE CONCRETE THAT WILL BE INSTALLED WHEN THE DUCT BANK IS CONTINUED DURING THE SECOND CONCRETE POUR.
 - TWO FOOT PIECES OF #6 GALVANIZED REBAR (#6) SHOULD BE EMBEDDED 2'-6" INTO THE EDGE OF THE FIRST CONCRETE POUR. THIS WILL PROVIDE SUPPORT FOR THE SECOND CONCRETE POUR. INSTALL ONE PIECE OF REBAR ON EACH SIDE OF THE CENTER COLUMN OF CONDUIT ABOVE THE BOTTOM ROW OF CONDUIT AND BELOW THE TOP ROW OF CONDUIT. ONLY TWO PIECES OF REBAR ARE REQUIRED FOR 6-WAY OR LESS DUCT BANK SYSTEMS. SEE THE FRONT VIEW FOR EXAMPLES OF REBAR LOCATIONS FOR DIFFERENT CONDUIT COUNTS.
 - BE CERTAIN THAT THE FACE OF THE FIRST CONCRETE POUR IS CLEAN BEFORE MAKING THE SECOND POUR. THIS FACE COULD BECOME CONTAMINATED IN SITUATIONS SUCH AS WHEN IT RAINS BETWEEN POURS AND MUD ATTACHES TO THE FIRST CONCRETE FACE. IF THIS OCCURS, USE A WIRE BRUSH TO REMOVE ANY CONTAMINATION THAT IS PRESENT.
 - CONDUIT IS TO BE CAPPED OR SEALED TO PREVENT DIRT AND DEBRIS FROM ENTERING THE CONDUIT UNTIL THE DUCT BANK IS JOINED/EXTENDED.
 - IF THE DUCT BANK IS TO BE TERMINATED, OR THE TRENCH IS REQUIRED TO BE BACKFILLED, THE END OF THE DUCT SHALL BE MARKED BY A CARVED VERTICAL PIECE OF DUCT BANK CONDUIT THAT EXTENDS 2' ABOVE GRADE WHERE OUTSIDE THE TAXIWAY OBJECT FREE AREA. WHEN INSIDE THE TAXIWAY OBJECT FREE AREA, THE CONDUIT SHALL BE CAPPED FLUSH WITH THE GRADE AND MARKED WITH A SURVEY FLAG.

DUCT BANK JOINT DETAIL
NOT TO SCALE

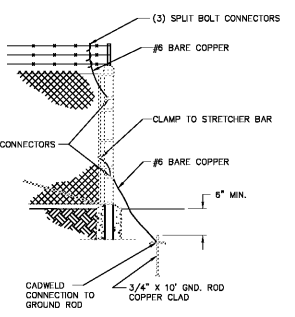


FIRE HYDRANT DETAIL
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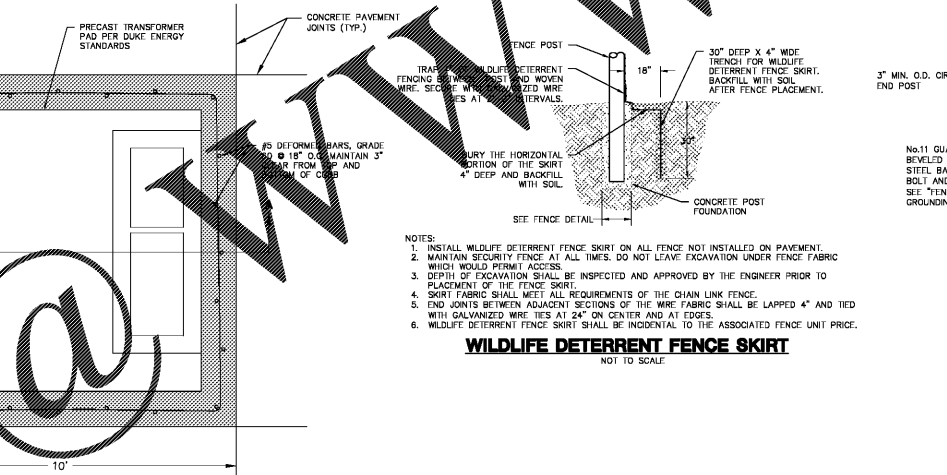


TRANSFORMER PAD/CURB DETAIL
NOT TO SCALE

- NOTES:
- BACKFILL UNDER TRANSFORMER PAD PER DUKE ENERGY SPECIFICATIONS.
 - INSTALL ISOLATION JOINT AROUND CURB PER PAVEMENT JOINT DETAILS.
 - 3,000 PSI CONCRETE SHALL BE USED FOR THE CURB.

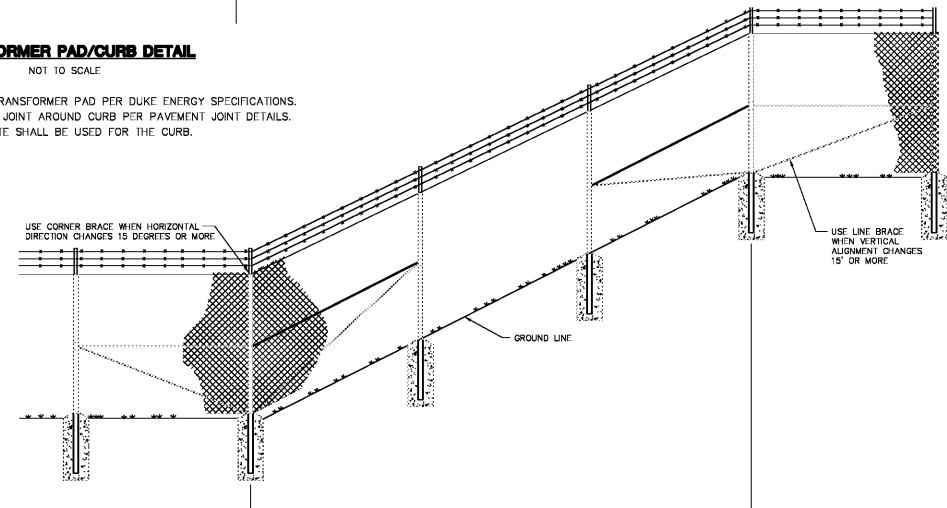


FENCE GROUNDING DETAIL
NOT TO SCALE

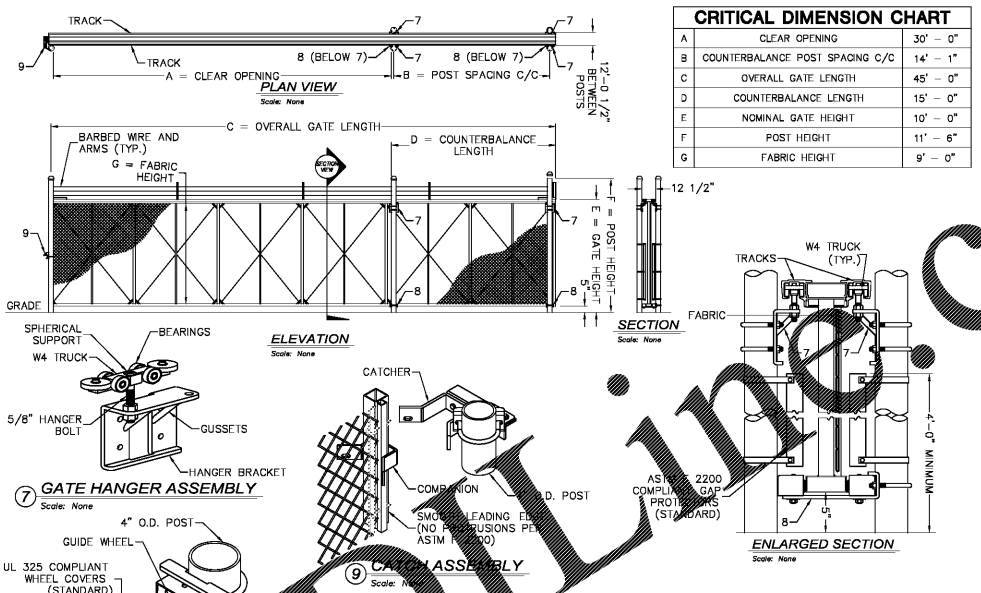


WILDLIFE DETERRENT FENCE SKIRT
NOT TO SCALE

- NOTES:
- INSTALL WILDLIFE DETERRENT FENCE SKIRT ON ALL FENCE NOT INSTALLED ON PAVEMENT.
 - MAINTAIN SECURITY FENCE AT ALL TIMES. DO NOT LEAVE EXCAVATION UNDER FENCE FABRIC WHICH WOULD PERMIT ACCESS.
 - DEPTH OF EXCAVATION SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF THE FENCE SKIRT.
 - SKIRT FABRIC SHALL MEET ALL REQUIREMENTS OF THE GRAM LINK FENCE.
 - END JOINTS BETWEEN ADJACENT SECTIONS OF THE WIRE FABRIC SHALL BE LAPPED 4" AND TIED WITH GALVANIZED WIRE TIES AT 24" ON CENTER AND AT EDGES.
 - WILDLIFE DETERRENT FENCE SKIRT SHALL BE INCIDENTAL TO THE ASSOCIATED FENCE UNIT PRICE.

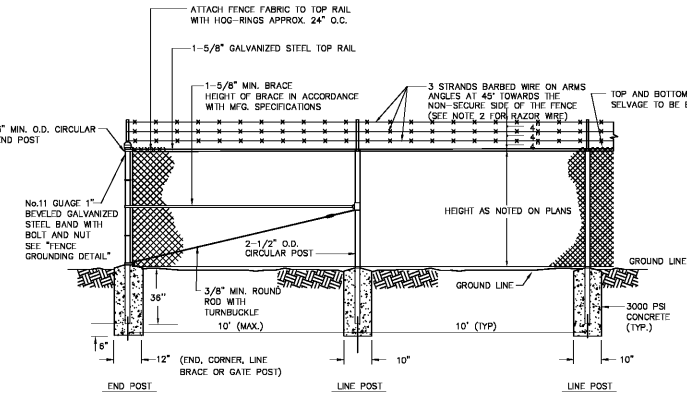


CHANGE IN FENCE ALIGNMENT DETAIL
NOT TO SCALE



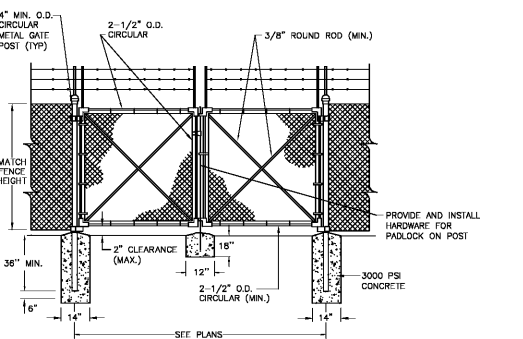
STRUCTURAL CANTILEVER SLIDE GATE
NOT TO SCALE

- NOTES:
- POST FITTINGS SHALL BE PROVIDED TO FIT 4" O.D. GATE POSTS.
 - SPACING IS 12" UNLESS A DRIVE RAIL OPERATOR SYSTEM IS INSTALLED, THEN THE POST SPACING SHALL BE 13 1/2".
 - 9/16" ARMS WITH 3 STRANDS OF BARBED WIRE AND COULD RAZOR WIRE ARE REQUIRED.
 - FOR POSTS THAT REQUIRE FABRICATION IN ONE PIECE, A 2" X 5" ALUM. TUBE WILL BE SUBSTITUTED FOR THE 5" CHANNEL BOTTOM MEMBER.
 - PROPOSED FABRIC, POSTS, POST CAPS, RAILS, BARB WIRE, AND ACCESSORIES SHALL BE BLACK VINYL COATED OR BLACK POWDER COATED.
 - POST FITTINGS SHALL PER MANUFACTURER'S RECOMMENDATIONS.



SIDA FENCE DETAIL
NOT TO SCALE

- NOTES:
- A MEASURE EXCLUDING CAP IS REQUIRED ON LINE POSTS. TUBULAR METAL MATERIAL FOR CAP SHALL CONFORM TO THE ALLOWABLE TYPES FOR OTHER LISTED FITTINGS.
 - RAZOR WIRE SHALL BE INSTALLED AROUND THE BARB WIRE ON TOP OF ALL 8' FENCE, INCLUDING GATES. RAZOR WIRE MATERIAL AND INSTALLATION SHALL MATCH EXISTING. RAZOR WIRE IS INCIDENTAL TO THE FENCE LINE ITEM.
 - THE FENCE ALIGNMENT SHALL BE FIELD SHAIRED BY THE CONTRACTOR AND VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
 - THE FENCE SHALL ALSO INCLUDE FENCE SHADE FABRIC. FABRIC SHALL BE HIGH DENSITY, POLYPROPYLENE WITH A MINIMUM OF 88% SHADE PERCENTAGE. FABRIC SHALL HAVE 3/4" BRASS ORNAMENTS @ 24" O.C. TO ATTACH TO THE FENCE. ATTACH USING GALVANIZED HOG RINGS. OWNER SHALL CHOOSE COLOR.
 - ALL GATE AND FENCE POSTS SHALL BE INSTALLED IN CONCRETE FOOTINGS AS SHOWN. NO BOLT DOWN FENCE POSTS SHALL BE INSTALLED UNLESS OTHERWISE NOTED. CONTRACTOR TO CORE DRILL THROUGH EXISTING PAVEMENT IF FENCE IS INSTALLED IN EXISTING PAVEMENT. CORE DRILLING SHALL BE INCIDENTAL TO THE FENCE LINE ITEM.
 - SEE WILDLIFE DETERRENT FENCE SKIRT DETAIL FOR ALL FENCE NOT INSTALLED ON PAVEMENT.



DOUBLE SWING GATE
NOT TO SCALE

- NOTES:
- ALL GATE MATERIALS SHALL CONFORM TO THE REQUIREMENTS AND NOTES PERTAINING TO THE SIDA FENCE.