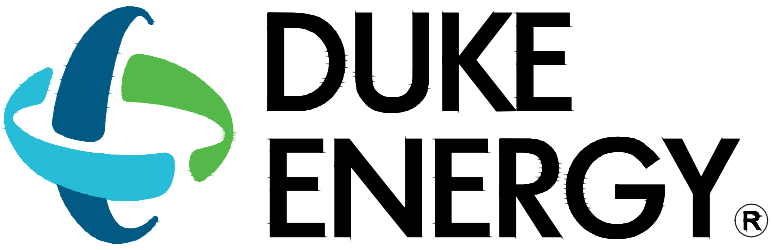


THREE-PHASE PAD-MOUNTED TRANSFORMER CONCRETE FOUNDATION SPECIFICATIONS

MECKLENBURG COUNTY, NC

JANUARY 2019

GENERAL

INSTRUCTIONS

SMALL PIT PAD

LARGE PIT PAD

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

THREE-PHASE PAD-MOUNTED TRANSFORMER
CONCRETE FOUNDATION SPECIFICATIONS
MECKLENBURG COUNTY, NC

DUKE ENERGY.

DEC	DEM	DEP	DEF
X			

TOC

INTRODUCTION

THE INFORMATION CONTAINED IN THIS DOCUMENT HAS BEEN PREPARED TO ASSIST BOTH DUKE ENERGY PERSONNEL AND DUKE ENERGY CUSTOMERS IN THE APPLICATION, INSTALLATION, AND CONSTRUCTION OF FOUNDATIONS (CONCRETE PADS) FOR ALL THREE-PHASE PAD-MOUNTED TRANSFORMERS. THIS INFORMATION IS INTENDED TO PROVIDE CLEAR DISTINCTIONS BETWEEN THE RESPONSIBILITIES OF DUKE ENERGY AND OF THE CUSTOMER. HOWEVER, IN ALL CASES, IT IS CRITICAL TO MAINTAIN AN OPEN DIALOG BETWEEN DUKE ENERGY AND THE CUSTOMER REGARDING CONDUCTOR QUANTITIES, CONDUIT SIZES AND LOCATIONS, CONNECTIONS, AND ELECTRICAL LOAD REQUIREMENTS. THIS WILL ENSURE THAT THE PROPER DIMENSIONS ARE USED FOR THE CONCRETE TRANSFORMER FOUNDATION.

PAD TYPE REQUIREMENTS

THE "PIT PAD" SHALL BE USED FOR ALL THREE-PHASE PAD-MOUNTED TRANSFORMER INSTALLATIONS IN THE DUKE ENERGY CAROLINAS WEST (DEC), DUKE ENERGY MIDWEST (DEM) AND THE NON-COASTAL DUKE ENERGY CAROLINAS EAST (DEP) TERRITORIES. IN THE DUKE ENERGY FLORIDA (DEF) AND COASTAL DEP TERRITORIES, A "FLAT PAD" SHALL BE USED.

PAD SIZE REQUIREMENTS

THERE ARE TWO DIFFERENT SIZE PADS FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS. THE PAD SIZE SHALL BE DETERMINED BASED ON THE PARAMETERS SPECIFIED IN THE TABLE BELOW.

TRANSFORMER SIZE	TRANSFORMER PRIMARY VOLTAGE CLASS	PAD SIZE	PIT PAD DWG.
300KVA AND BELOW	25 KV AND BELOW	SMALL	PAGE 3
500KVA - 5000KVA	25 KV AND BELOW	LARGE	PAGE 4
ALL	35KV	LARGE	PAGE 4

SECONDARY BUS ENCLOSURE REQUIREMENTS

A SEPARATE SECONDARY BUS ENCLOSURE IS REQUIRED WHENEVER THE CUSTOMER IS INSTALLING MORE THAN THE MAXIMUM ALLOWABLE NUMBER OF SECONDARY CONDUCTORS PER PHASE. SEE THE "SERVICE REQUIREMENTS HANDBOOK" FOR THOSE NUMBERS.

CUSTOMER RESPONSIBILITIES

THE CUSTOMER IS RESPONSIBLE FOR PROVIDING AND INSTALLING THE CONCRETE THREE-PHASE PAD-MOUNTED TRANSFORMER PAD ACCORDING TO THE SPECIFICATIONS OUTLINED IN THIS DOCUMENT. THE CUSTOMER MAY CHOOSE TO CONSTRUCT (FORM AND POUR) THE PAD ON-SITE OR PURCHASE AND INSTALL A PRE-CAST PAD FROM AN APPROVED SUPPLIER. THE CUSTOMER MUST PROVIDE AND INSTALL THE PRIMARY AND SECONDARY CONDUITS INTO THE WINDOW OPENING OF THE PAD ACCORDING TO THE SPECIFICATIONS OUTLINED IN THIS DOCUMENT.

THE CUSTOMER IS RESPONSIBLE FOR CONTACTING A DUKE ENERGY REPRESENTATIVE TO INSPECT AND APPROVE THE PAD TO BE USED. IF USING A PRE-CAST PAD, CONTACT THE DUKE ENERGY REPRESENTATIVE AFTER INSTALLATION SO THAT THE CORRECT PAD CAN BE CONFIRMED AND VERIFIED THAT IT IS IN THE CORRECT LOCATION AND LEVEL. IF CONSTRUCTING THE PAD ON-SITE, THE DUKE ENERGY REPRESENTATIVE MUST BE CONTACTED TO INSPECT THE FORM OF THE PAD, INCLUDING REBAR, PRIOR TO POURING THE CONCRETE.

THE CUSTOMER IS ALSO RESPONSIBLE FOR INFORMING THE DUKE ENERGY REPRESENTATIVE THE NUMBER, SIZE, AND TYPE OF SECONDARY CONDUCTORS THAT WILL BE INSTALLED. (EXAMPLE: 500-MCM COPPER, 600-VOLT INSULATED, 90-DEGREE C-RATED, FOUR (4) CONDUCTORS PER PHASE).

DUKE ENERGY RESPONSIBILITIES

PROVIDE AND INSTALL THE GROUND ROD(S) PRIOR TO THE INSTALLATION OF THE PAD-MOUNTED TRANSFORMER.
PROVIDE AND INSTALL THE PAD-MOUNTED TRANSFORMER.
PROVIDE AND INSTALL THE CONNECTORS TO TERMINATE THE PRIMARY AND SECONDARY CONDUCTORS TO THE TRANSFORMER TERMINALS.
METERING.

REVISED		BY	CHK'D	APPR.
3				
2				
1	6/24/19	MORGAN	VALENTIN	ADCOCK
0	3/31/19	MORGAN	VALENTIN	ADCOCK

INTRODUCTION, REQUIREMENTS AND RESPONSIBILITIES
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

CONDUIT SPECIFICATIONS

CONDUIT FOR DUKE ENERGY PRIMARY CABLES SHALL BE SPECIFIED BY A DUKE ENERGY REPRESENTATIVE TO BE EITHER 4, 5 OR 6-INCH DIAMETER AND INSTALLED BY THE CUSTOMER PRIOR TO POURING/INSTALLING THE CONCRETE PAD. THERE SHALL BE TWO PRIMARY CONDUITS INSTALLED [ONE FOR EACH SET (OF THREE) PRIMARY CABLES]. THE CONDUITS INSTALLED IN THE PRIMARY CONDUIT WINDOW SHALL BE A SCHEDULE 40 ELBOW WITH A MINIMUM 15-INCH BEND RADIUS. A DUKE ENERGY REPRESENTATIVE MAY SPECIFY A HIGHER BEND RADIUS, DEPENDING ON THE SIZE OF THE PRIMARY CABLE.

INSTALL CONDUIT END BELLS WHERE CABLES EXIT CONDUITS IN THE PRIMARY AND SECONDARY COMPARTMENTS OF THE TRANSFORMER TO MINIMIZE DAMAGE TO THE CABLES DURING INSTALLATION.

CUSTOMER SHALL INSTALL THE CONDUIT FOR THE PRIMARY CONDUCTORS AS CLOSE TO THE CENTER OF THE DESIGNATED PRIMARY SIDE OF THE WINDOW OF THE PAD AS PRACTICAL.

CUSTOMER'S SERVICE CONDUITS SHALL NOT CROSS OR INTERFERE WITH THE PRIMARY CONDUITS. THE SERVICE CONDUITS CAN EXIT THE SECONDARY SIDE OF THE PAD FROM THE FRONT, REAR OR RIGHT SIDE.

THE SERVICE CONDUITS SHALL NOT EXTEND OUTSIDE THE DESIGNATED SECONDARY SIDE OF THE WINDOW OF THE PAD.

CONCRETE SPECIFICATIONS (IF CUSTOMER CONSTRUCTS PAD)

1. CONCRETE MIX USED FOR TRANSFORMER PADS SHALL MEET THE FOLLOWING REQUIREMENTS:
   - MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI
   - MAXIMUM WATER/CEMENT RATIO OF 0.50
   - MAXIMUM SLUMP OF 4 INCHES
   - AIR-ENTRAINMENT CONTENT BETWEEN 4 AND 8 PERCENT

2. CONCRETE SHALL BE AFFORDED ADEQUATE CURE FOR A MINIMUM OF:
   - FIVE (5) DAYS IF THE AMBIENT TEMPERATURE IS OVER 70 DEGREES F OR
   - SEVEN (7) DAYS IF THE AMBIENT AVERAGE TEMPERATURE IS BELOW 70 DEGREES F.

3. ADEQUATE CURE CAN BE PERFORMED BY ANY OF THE FOLLOWING METHODS:
   - WATERPROOF MEMBRANES
   - SPRINKLING OR SOAKING
   - CURING COMPOUNDS

4. PAD SHALL BE SUPPORTED ON A SUB-BASE OF SAND, GRAVEL OR CRUSHED STONE. THE GRANULAR SUB-BASE IS TO BE A MINIMUM OF FOUR (4) INCHES THICK AND SHALL BE COMPACTED WITH A VIBRATORY COMPACTOR.

5. DAMPEN THE SUB-BASE PRIOR TO CONCRETE PLACEMENT. AT THE TIME OF PLACEMENT, THE SUB-BASE SHALL NOT CONTAIN STANDING WATER.

6. THE TOP OF THE CONCRETE PAD MUST BE STEEL TROWELED AND COMPLETELY SMOOTH AND LEVEL TO PREVENT "GAPS" BETWEEN THE TRANSFORMER AND THE SURFACE OF THE CONCRETE PAD.

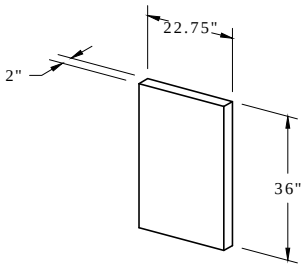
DUKE ENERGY.

REVISED		BY	CHK'D	APPR.
3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK

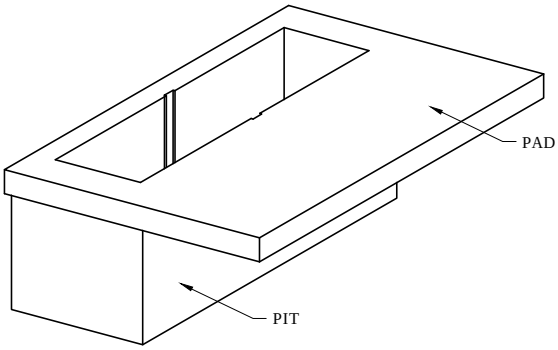
CONDUIT AND CONCRETE SPECIFICATIONS

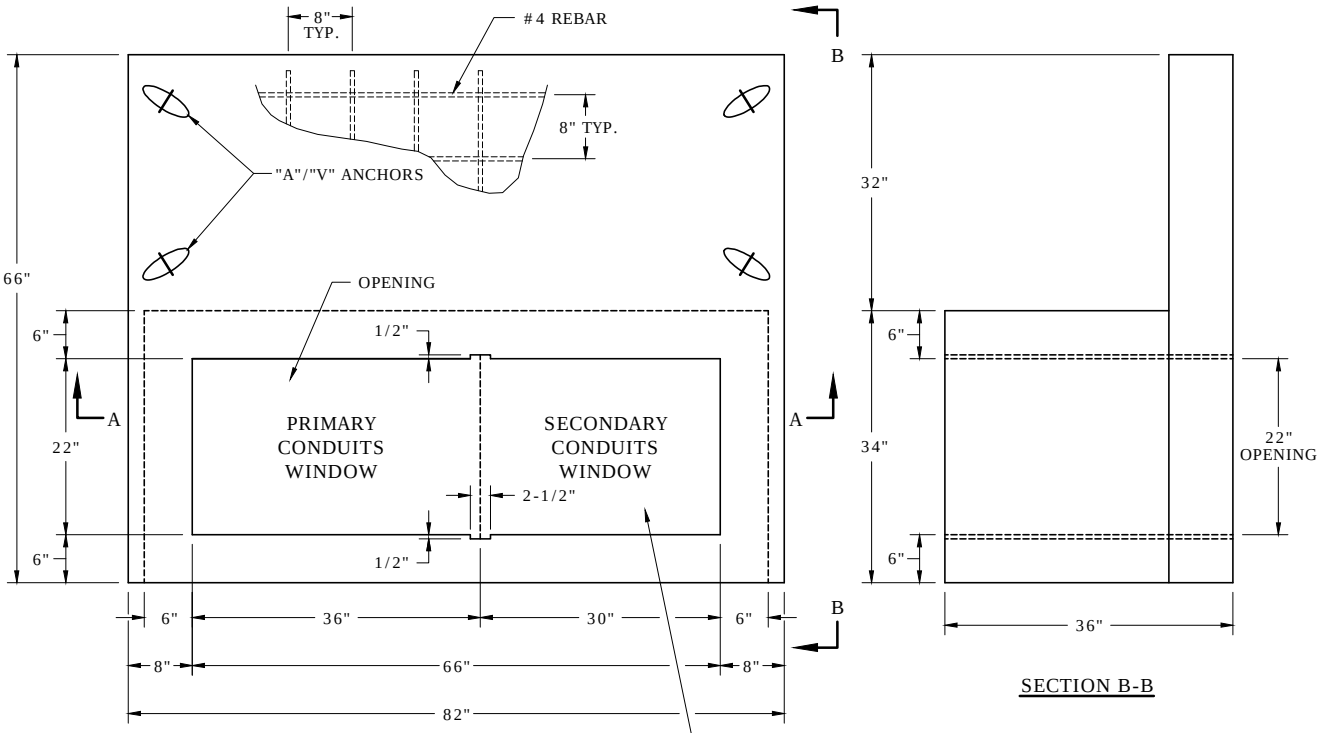
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			



PRIMARY/SECONDARY DIVIDER
ONLY REQUIRED IN MECKLENBURG COUNTY, NC

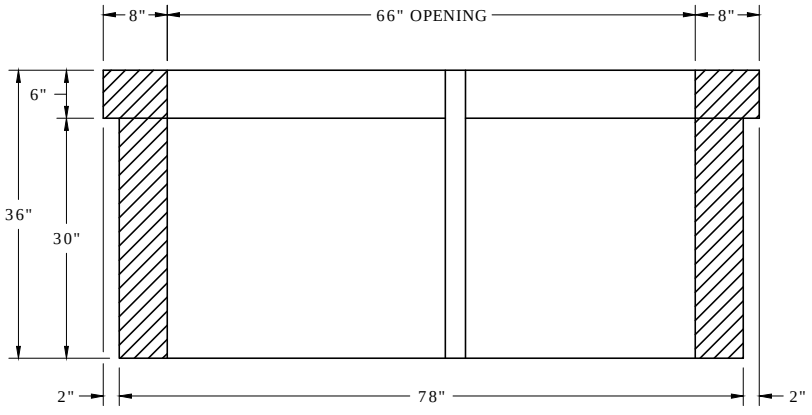




PLAN VIEW

ALL SERVICE CONDUITS TO BE WITHIN THE 30" WIDE WINDOW

SECTION B-B

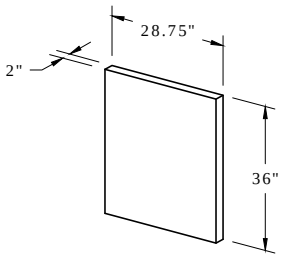


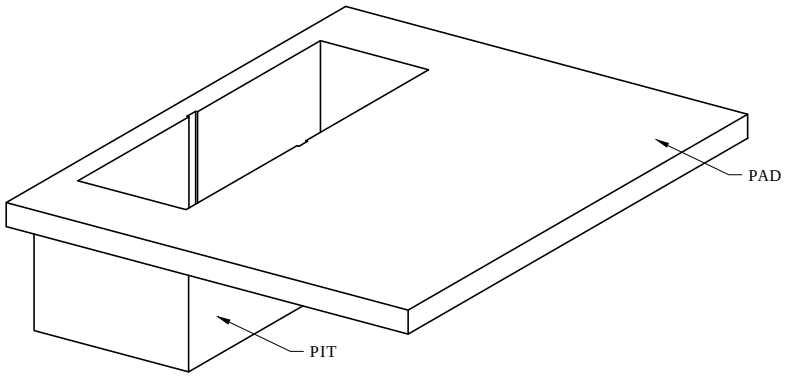
SECTION A-A

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

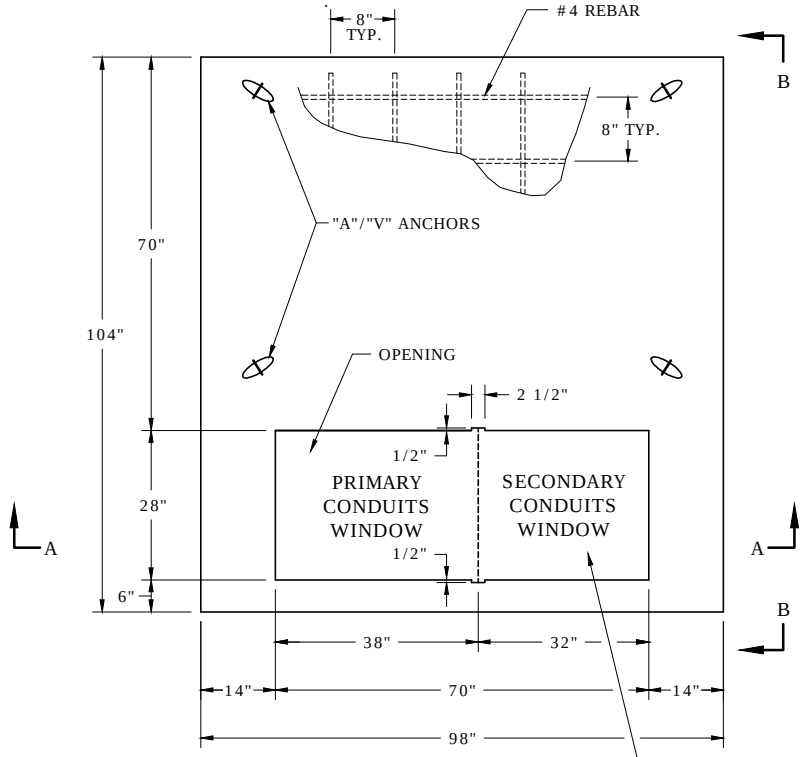
SMALL PIT PAD SPECIFICATIONS
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			



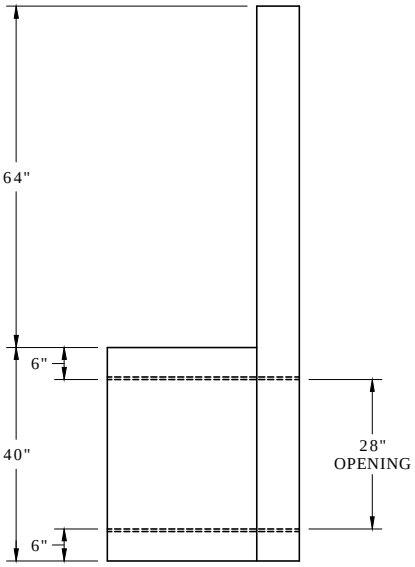


PRIMARY/SECONDARY DIVIDER
ONLY REQUIRED IN MECKLENBURG COUNTY, NC

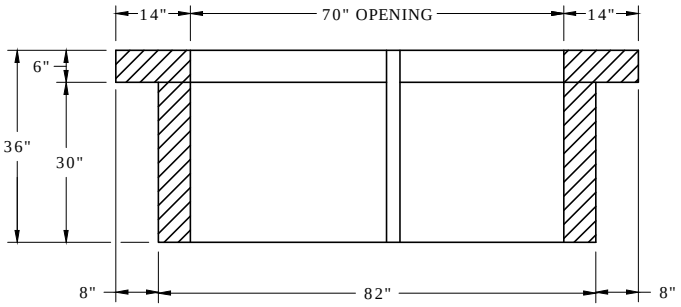


PLAN VIEW

ALL SERVICE CONDUITS TO BE WITHIN THE 32" WIDE WINDOW



SECTION B-B



SECTION A-A

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

LARGE PIT PAD SPECIFICATIONS
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

ENCORE PRECAST
CONTACT: JIM MALONEY
PHONE: 513.726.5678 EXT. 103
EMAIL: JMALONEY@ENCOREPRECASTLLC.COM
WEBSITE: ENCOREPRECASTLLC.COM

OLDCASTLE PRECAST
CONTACT: ALEX PALOMEQUE
PHONE: 704.788.4050
EMAIL: ALEX.PALOMEQUE@OLDCASTLE.COM
WEBSITE: OLDCASTLEINFRASTRUCTURE.COM

PBC PRECAST
CONTACT: JOHNATHAN AVERY
PHONE: 910.260.1820
EMAIL: JAVERY@HOGSLAT.COM
WEBSITE: PBCPRECAST.COM

TRENWA
CONTACT: ELLIOTT SCHURR
PHONE: 859.781.0831 EXT. 17
EMAIL: DUKEORDERS@TRENWA.COM
WEBSITE: TRENWA.COM/REQUEST-QUOTE/

UTILITY PRECAST
CONTACT: LARINDA BUESCH
PHONE: 704.721.0106
EMAIL: LARINDA@UTILITYPRECASTINC.COM
WEBSITE: UTILITYPRECASTINC.COM

PRE-CAST CONCRETE PADS					
PAD TYPE	SUPPLIER PART NUMBER				
	ENCORE PRECAST	OLDCASTLE PRECAST	PBC PRECAST	TRENWA	UTILITY PRECAST
SMALL FLAT PAD	TRPAD082066	SEE CONTACT ABOVE	FP82666	PAD-82x66	FTP8120
LARGE FLAT PAD	TRPAD098104	SEE CONTACT ABOVE	FP981046	PAD-104x98	FTP8130
SMALL PIT	TRPIT082066	SEE CONTACT ABOVE	PIT783430	PIT-78x34	FTP8121
LARGE PIT	TRPIT098104	SEE CONTACT ABOVE	PIT824030	PIT-82x40	FTP8131
SMALL DIVIDER	TRDV036023	SEE CONTACT ABOVE	DESMDIV	PITDIV-36x23	FTP8122
LARGE DIVIDER	TRDV036030	SEE CONTACT ABOVE	DELGDIV	PITDIV-36x29	FTP8132

REVISED		BY	CHK'D	APPR.
3				
2	8/21/19	MORGAN	VALENTIN	ADCOCK
1	6/24/19	MORGAN	VALENTIN	ADCOCK
0	3/31/19	MORGAN	VALENTIN	ADCOCK

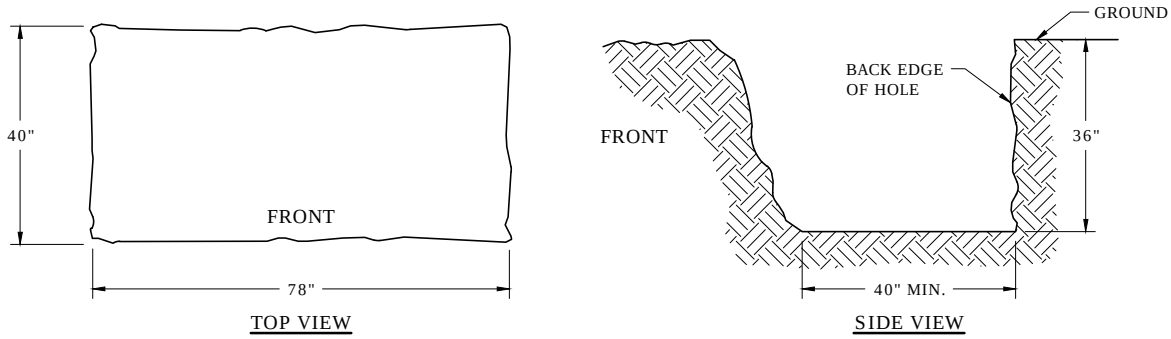
APPROVED SUPPLIERS OF
PRE-CAST CONCRETE PADS
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

INSTALLING A SMALL TWO-PIECE PRE-CAST PIT PAD

STEP 1:
DIG A RECTANGULAR SHAPED HOLE APPROXIMATELY 40 INCHES BY 78 INCHES AND 36 INCHES DEEP FOR THE PIT. (SEE BELOW)

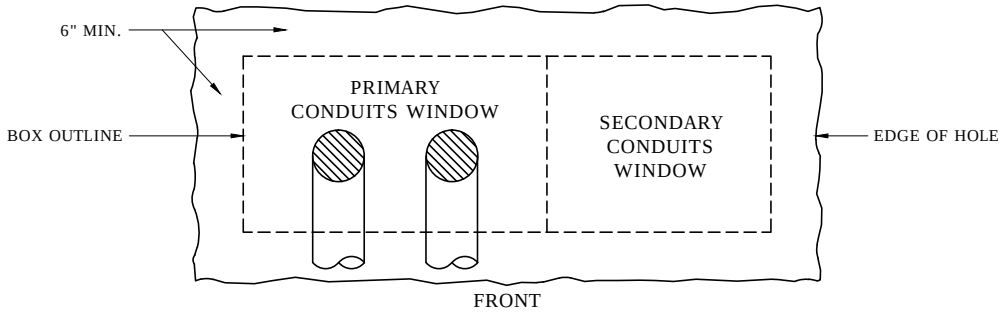
NOTE: THE HOLE INDICATES THE FRONT OF THE TRANSFORMER PAD. THE PAD SHOULD BE LOCATED SO THAT A MINIMUM OF 10 FEET OF CLEARANCE CAN BE MAINTAINED IN FRONT OF THE TRANSFORMER AND A MINIMUM OF 3 FEET OF CLEARANCE ON ALL OTHER SIDES.



TOP VIEW SIDE VIEW

STEP 2:
INSTALL TWO (2) CONDUIT ELBOWS IN THE BOTTOM OF THE HOLE FOR THE PRIMARY CONDUCTORS AS SPECIFIED BY DUKE ENERGY ENTERING FROM THE FRONT OF HOLE AND PLACED SO THEY WILL COME UP IN THE CENTER OF THE PRIMARY SIDE OF THE WINDOW OPENING OF THE PAD. TAPE BOTH ENDS OF CONDUITS COMPLETELY CLOSED.

NOTE: THE CUSTOMER'S SECONDARY CONDUITS SHOULD BE INSTALLED AT THIS TIME. IF THE CUSTOMER IS PROVIDING THE SERVICE CONDUCTORS TO THE TRANSFORMER, THEY MAY ELECT TO ENTER THE SECONDARY SIDE OF THE PIT FROM THE FRONT, REAR OR RIGHT SIDE. IF DUKE ENERGY IS PROVIDING THE SERVICE CONDUCTORS, ALL CONDUITS MUST ENTER FROM THE FRONT OF THE PIT.



TOP VIEW

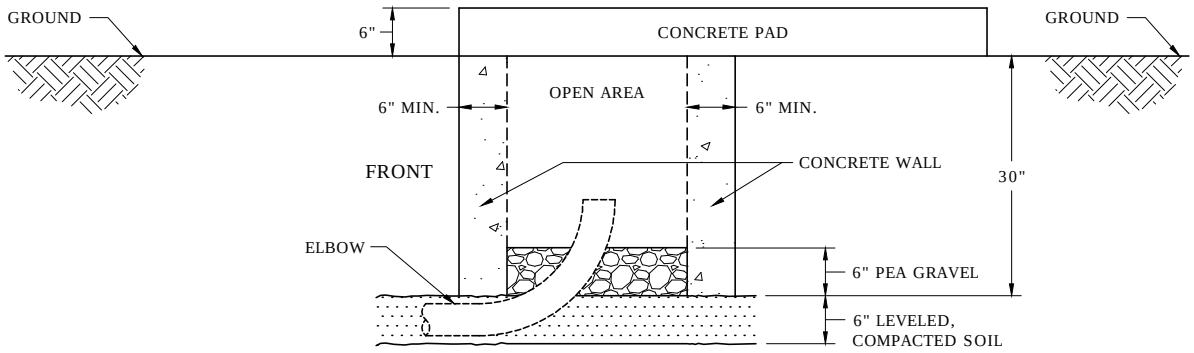
STEP 3:
FILL APPROXIMATELY 6 INCHES OF LEVELED, COMPACTED SOIL IN THE HOLE TO SUPPORT THE CONDUIT ELBOWS. INSTALL THE PIT IN PLACE SO THAT THE CONDUITS ARE LOCATED IN THE CORRECT POSITION WITHIN THE PAD WINDOW. ENSURE THAT THE TOP OF THE PIT IS INSTALLED LEVEL AND FLUSH WITH THE SURROUNDING EARTH SO THAT WHEN THE PAD IS INSTALLED, THE BOTTOM IS IN CONTACT WITH THE ENTIRE SURFACE AREA OF THE TOP OF THE PIT.

REVISED		BY	CHK'D	APPR.
3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK

INSTALLING A SMALL TWO-PIECE
PRE-CAST PIT PAD
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

STEP 4:
FILL IN THE AREA IN FRONT OF AND AROUND THE PIT WITH DIRT. CAREFULLY COMPACT THE GROUND AROUND THIS AREA TO PREPARE FOR THE FLAT PORTION OF THE PIT PAD. FILL THE BOTTOM OF THE PIT WITH 6 INCHES OF PEA GRAVEL (SEE BELOW). ENSURE THE TOP OF THE PIT IS FREE OF GRAVEL AND OTHER DEBRIS.

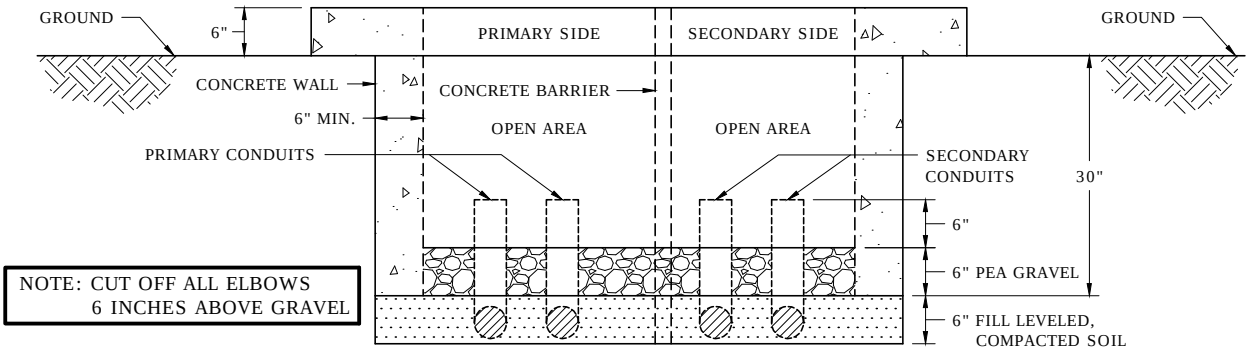


SIDE VIEW

STEP 5:
APPLY A LAYER OF CONSEAL ON THE TOP OF THE PIT BEFORE PLACING THE PAD ONTO THE PIT TO SEAL AND ADHERE THE PAD TO THE PIT.

STEP 6:
INSTALL THE FLAT PORTION OF THE PAD ON THE GROUND AND PIT, LINING UP THE WINDOW OF THE PAD WITH THE PIT. SECURE THE PAD TO THE PIT SO THAT THEY REMAIN IN LINE.

STEP 7:
SLIDE THE DIVIDER INTO THE GROOVE IN THE PAD AND PIT SO THAT IT IS FLUSH WITH THE TOP OF THE PAD.



FRONT VIEW

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

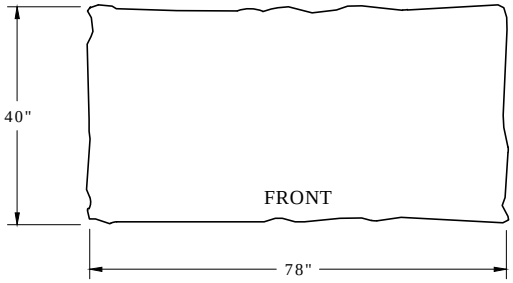
INSTALLING A SMALL TWO-PIECE
PRE-CAST PIT PAD
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

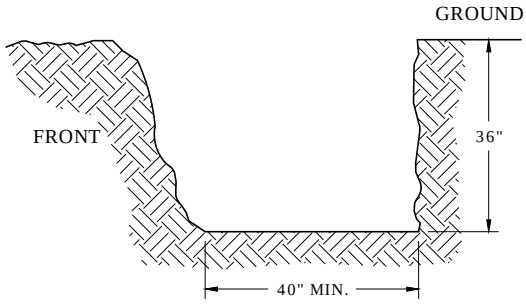
BUILDING A SMALL PIT PAD

STEP 1:
DIG A RECTANGULAR SHAPED HOLE APPROXIMATELY 40 INCHES BY 78 INCHES AND 36 INCHES DEEP FOR THE PIT. (SEE BELOW)

NOTE: THE HOLE INDICATES THE FRONT OF THE TRANSFORMER PAD. THE PAD SHOULD BE LOCATED SO THAT A MINIMUM OF 10 FEET OF CLEARANCE CAN BE MAINTAINED IN FRONT OF THE TRANSFORMER AND A MINIMUM OF 3 FEET OF CLEARANCE ON ALL OTHER SIDES.

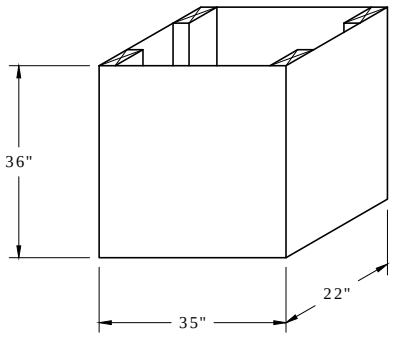


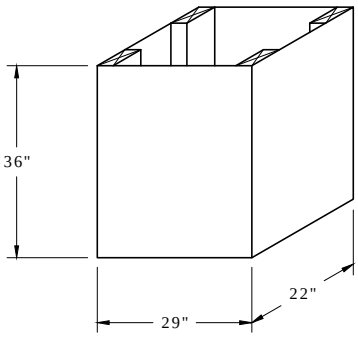
TOP VIEW



SIDE VIEW

STEP 2:
BUILD TWO RECTANGULAR SHAPED BOXES, OPEN AT THE TOP AND BOTTOM, FROM 2-INCH BY 4-INCH BOARDS AND PLYWOOD. THE PLYWOOD SIDES OF THE BOXES SHOULD BE 36 INCHES TALL.

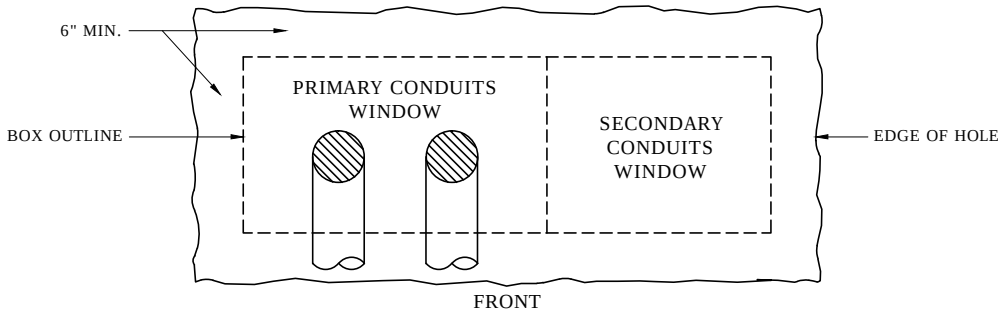




WINDOW OPENING FOR THE SMALL 82-INCH BY 66-INCH "PIT" PAD

STEP 3:
SET THE BOXES IN THE HOLE AND POSITION THEM SO THAT A MINIMUM OF 6 INCHES OF SPACE EXISTS BETWEEN THE SIDES AND BACK OF THE BOXES AND THE EDGE OF THE HOLE. (THE SPACE BETWEEN THE BOXES AND FRONT EDGE OF HOLE WILL BE APPROXIMATELY 12 INCHES.) TRACE A LINE AROUND THE BOTTOM OUTSIDE EDGE OF THE BOX IN DIRT AND THEN REMOVE THEM. INSTALL TWO (2) CONDUIT ELBOWS IN THE BOTTOM OF THE HOLE FOR THE PRIMARY CONDUCTORS AS SPECIFIED BY DUKE ENERGY ENTERING FROM THE FRONT OF HOLE AND PLACED SO THEY WILL COME UP IN THE CENTER OF THE PRIMARY SIDE OF THE OUTLINE OF THE BOX. TAPE BOTH ENDS OF CONDUITS COMPLETELY CLOSED.

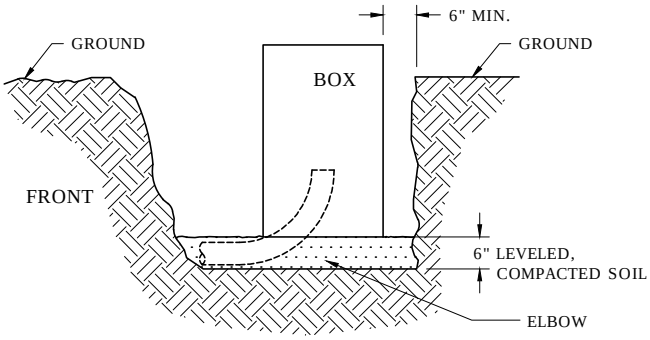
NOTE: THE CUSTOMER'S SECONDARY CONDUITS SHOULD BE INSTALLED AT THIS TIME. IF THE CUSTOMER IS PROVIDING THE SERVICE CONDUCTORS TO THE TRANSFORMER, THEY MAY ELECT TO ENTER THE SECONDARY SIDE OF THE PIT FROM THE FRONT, REAR OR RIGHT SIDE. IF DUKE ENERGY IS PROVIDING THE SERVICE CONDUCTORS, ALL CONDUITS MUST ENTER FROM THE FRONT OF THE PIT.



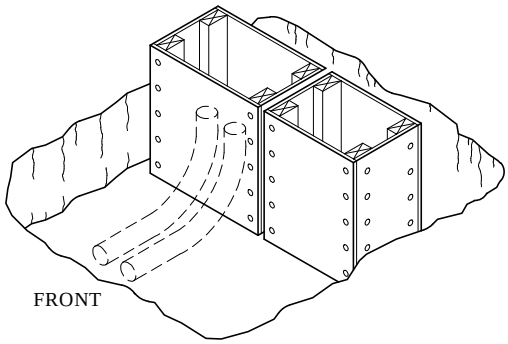
TOP VIEW

STEP 4:

FILL APPROXIMATELY 6 INCHES OF LEVELED, COMPACTED SOIL IN THE HOLE TO SUPPORT THE CONDUIT ELBOWS. PLACE THE BOXES BACK IN THE HOLE OVER CONDUITS, POSITIONING THEM AGAIN SO A MINIMUM OF 6 INCHES OF SPACE EXISTS BETWEEN THE BACK AND SIDES OF THE HOLE AND BOXES. THERE MUST BE 2 INCHES OF SEPARATION BETWEEN THE BOXES. THE BOXES SHOULD STICK OUT FROM THE TOP OF THE HOLE APPROXIMATELY 6 INCHES (OR THE WIDTH OF A STANDARD 2-INCH BY 6-INCH BOARD). MAKE SURE THE CONDUITS ENTER CORRECTLY IN THE PRIMARY AND SECONDARY SIDE OF THE PIT.



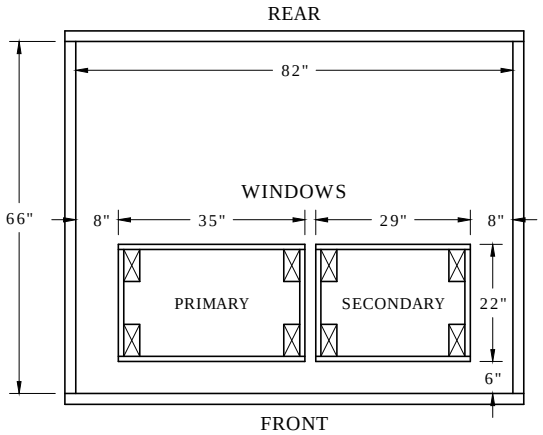
SIDE VIEW



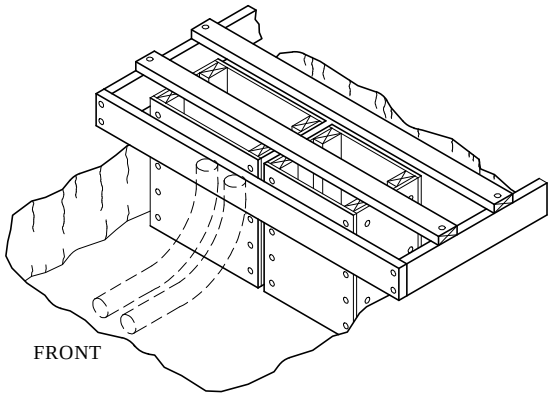
STEP 5:

FORM THE TOP PART OF THE PAD USING 2-INCH BY 6-INCH BOARDS USING THE DIMENSIONS AS INDICATED BELOW.

NOTE: IT MAY BE EASIER TO "LEVEL" THE BOXES WITH THE SIDES IF YOU LAY TWO 2-INCH BY 4-INCH BOARDS ON THE TOP OF THE SIDE BOARDS SO THAT THEY CROSS OVER TOP OF BOXES AS SHOWN BELOW. TACK THESE BOARDS ONTO THE TOP OF THE BOXES TO ENSURE SIDES ARE THE SAME HEIGHT AS THE BOXES.



SMALL 82-INCH BY 66-INCH PAD



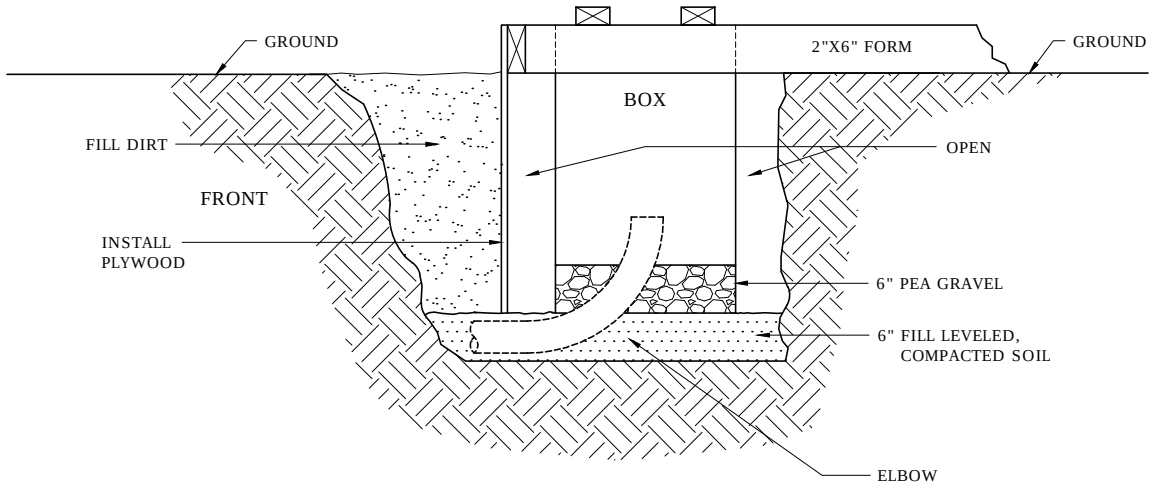
3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

BUILDING A SMALL PIT PAD

MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

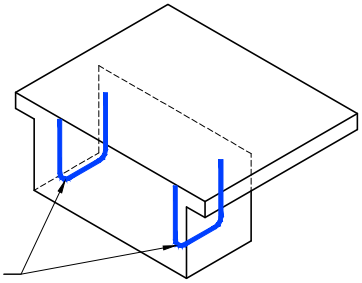
STEP 6:
INSTALL A PIECE OF PLYWOOD INSIDE THE HOLE LONG ENOUGH TO REACH FROM ONE SIDE OF THE HOLE TO THE OTHER AND WIDE ENOUGH TO REACH FROM THE TOP OF THE FRONT 2-INCH BY 6-INCH FORM TO THE BOTTOM OF THE HOLE. (THESE DIMENSIONS SHOULD BE APPROXIMATELY 78 INCHES BY 40 INCHES.) TACK THE PLYWOOD TO THE FRONT OF THE 2-INCH BY 6-INCH BOARD AND LET THE BOTTOM OF THE BOARD REST ON THE GROUND. PLYWOOD MUST BE THICK ENOUGH SO IT WON'T GIVE AT BOTTOM OF HOLE WHEN THE CONCRETE IS POURED. SEE BELOW.



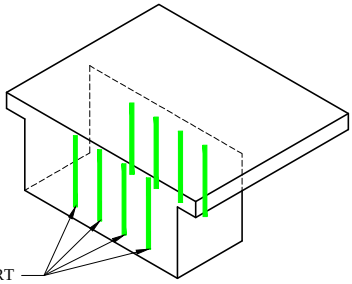
SIDE VIEW

STEP 7:
FILL IN THE AREA BETWEEN THE PLYWOOD AND THE FRONT OF THE HOLE WITH DIRT. BE CAREFUL THAT PLYWOOD DOESN'T "PUSH IN" AT BOTTOM. FILL THE BOTTOM OF THE BOXES WITH 6 INCHES OF PEA GRAVEL. SEE ABOVE.

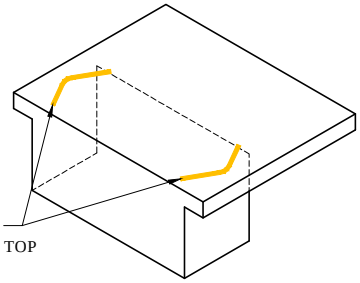
STEP 8:
INSTALL AND TIE TOGETHER THE REINFORCING BARS AROUND THE BOXES IN THE "PIT AREA" AND "PAD AREA" TO REINFORCE ENTIRE PIT PAD. (SEE PAGES 11 AND 12 FOR MORE COMPLETE DETAILS.) CONTACT YOUR DUKE ENERGY REPRESENTATIVE TO INSPECT THE PAD BEFORE POURING CONCRETE.



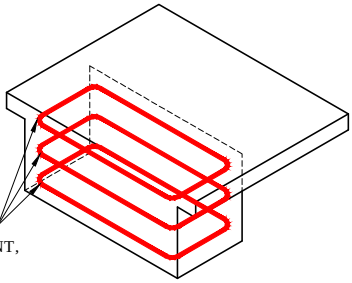
4R1 QUANTITY (2)
EACH SIDE OF PIT



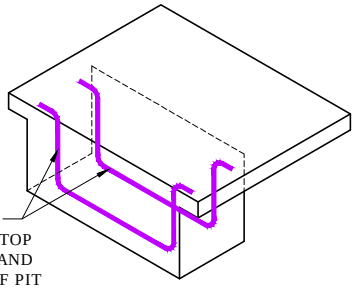
4R5 SPACED 10" APART
IN FRONT AND BACK OF PIT



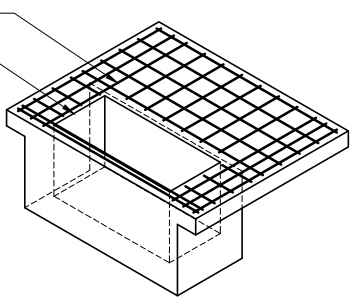
4R4 QUANTITY (2)
EACH SIDE OF THE TOP



4R3 QUANTITY (3)
AROUND SIDES, FRONT,
AND BACK OF PIT



4R2 QUANTITY (2)
EACH SIDE OF THE TOP
DOWN THE SIDES, AND
ACROSS BOTTOM OF PIT



BARS @ 8" SPACING

OPEN PIT AREA

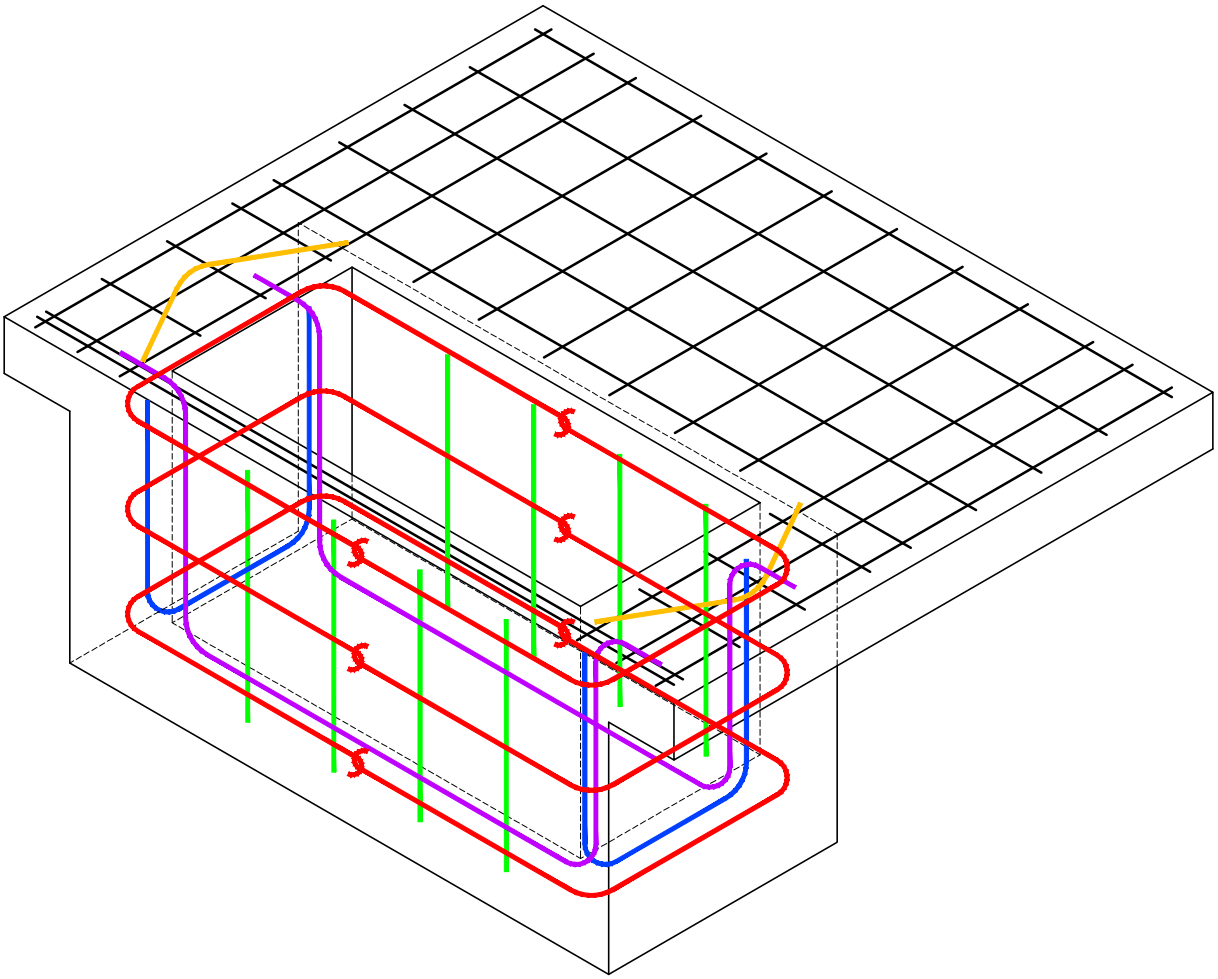
ALL BARS #4 GRADE 60 DEFORMED				
SHAPE DETAIL	SYMBOL	MARK	QTY	DESCRIPTION
		4R1	2	CENTER BARS IN "PIT BOX" SIDE WALLS. PROVIDE 3" CLEARANCE FROM WALL BOTTOM AND 2" CLEARANCE FROM TOP SURFACE OF PAD.
		4R2	2	CENTER BARS IN "PIT BOX" END WALLS. PROVIDE 3" CLEARANCE FROM WALL BOTTOM AND 2" CLEARANCE FROM TOP SURFACE OF PAD. TERMINATE BAR ENDS 2" FROM PAD EDGES.
		4R3	4	CENTER BARS IN "PIT BOX" END AND SIDE WALLS. PLACE BOTTOM BAR 3" FROM PIT BOTTOM. PLACE TOP BAR 2" FROM TOP SURFACE. MAXIMUM BAR SPACING IS 12".
		4R4	2	PLACE BARS IN APPROXIMATE LOCATIONS SHOWN TO PROVIDE CORNER CRACK CONTROL. PROVIDE 2" CLEARANCE FROM TOP SURFACE AND ANY CONCRETE EDGE.
		4R5	8	CENTER IN END WALLS OF "PIT BOX". TERMINATE BARS 3" FROM BOTTOM SURFACE AND 2" FROM TOP SURFACE. MAXIMUM BAR SPACING IS 12".
-	-	WWF	-	PROVIDE 2" CLEARANCE FROM TOP SURFACE. TERMINATE 2" FROM PAD EDGES.

DUKE ENERGY.

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

BUILDING A SMALL PIT PAD
REINFORCEMENT SPECIFICATIONS
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			



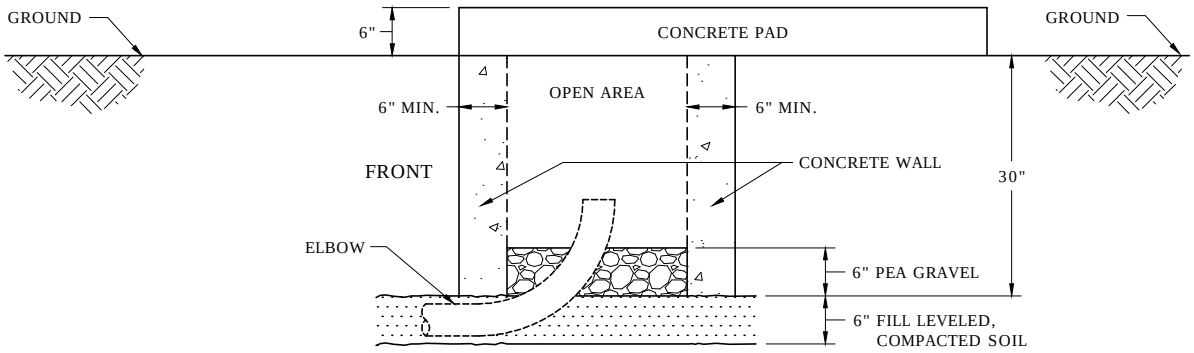
ALL BARS #4 GRADE 60 DEFORMED		
SHAPE DETAIL	SYMBOL	MARK
		4R1
		4R2
		4R3
		4R4
		4R5

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

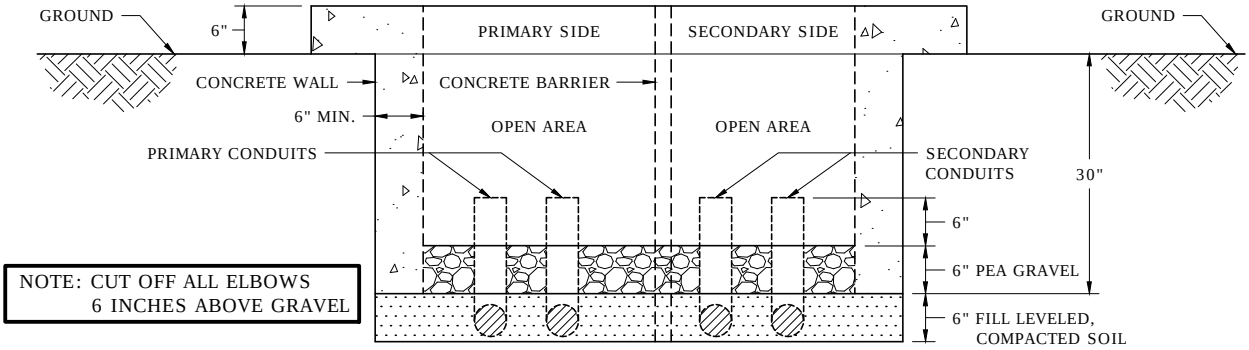
BUILDING A SMALL PIT PAD
CONCRETE PIT PAD - COMPLETE CONSTRUCTION
MECKLENBURG COUNTY, NC

DUKE ENERGY.

DEC	DEM	DEP	DEF
X			



SIDE VIEW



FRONT VIEW

STEP 9:
POUR CONCRETE AROUND THE BOXES AND WITHIN THE 2-INCH BY 6-INCH FORMS. SEE PAGE 2 FOR CONCRETE MIX SPECIFICATIONS.

STEP 10:
ALLOW CONCRETE TO SET UP, THEN REMOVE 2-INCH BY 6-INCH FORMS AND BOXES.

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

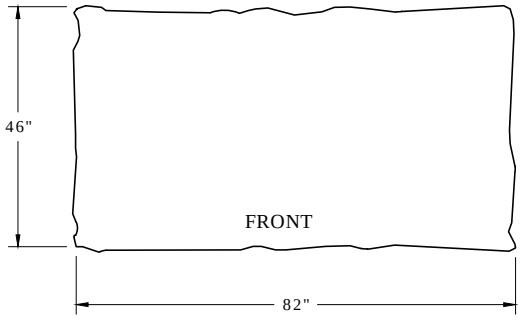
BUILDING A SMALL PIT PAD
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

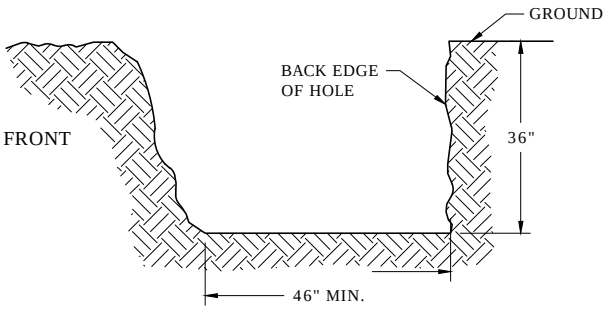
INSTALLING A LARGE TWO-PIECE PRE-CAST PIT PAD

STEP 1:
DIG A RECTANGULAR SHAPED HOLE APPROXIMATELY 46 INCHES BY 82 INCHES AND 36 INCHES DEEP FOR THE PIT. (SEE BELOW)

NOTE: THE HOLE INDICATES THE FRONT OF THE TRANSFORMER PAD. THE PAD SHOULD BE LOCATED SO THAT A MINIMUM OF 10 FEET OF CLEARANCE CAN BE MAINTAINED IN FRONT OF THE TRANSFORMER AND A MINIMUM OF 3 FEET OF CLEARANCE ON ALL OTHER SIDES.



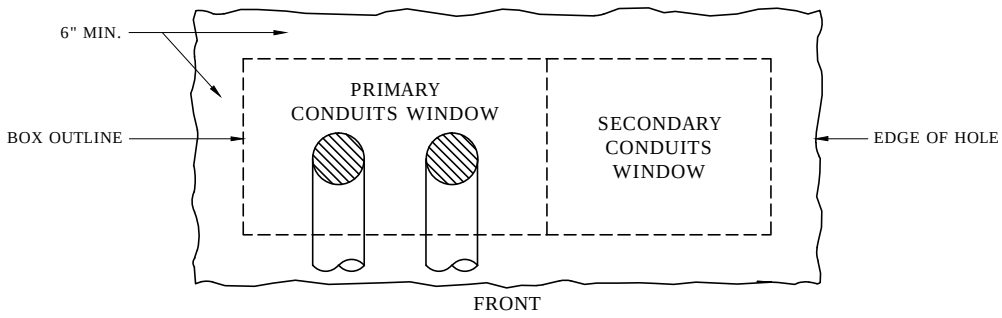
TOP VIEW



SIDE VIEW

STEP 2:
INSTALL TWO (2) CONDUIT ELBOWS IN THE BOTTOM OF THE HOLE FOR THE PRIMARY CONDUCTORS AS SPECIFIED BY DUKE ENERGY ENTERING FROM THE FRONT OF HOLE AND PLACED SO THEY WILL COME UP IN THE CENTER OF THE PRIMARY SIDE OF THE WINDOW OPENING OF THE PAD. TAPE BOTH ENDS OF CONDUITS COMPLETELY CLOSED.

NOTE: THE CUSTOMER'S SECONDARY CONDUITS SHOULD BE INSTALLED AT THIS TIME. IF THE CUSTOMER IS PROVIDING THE SERVICE CONDUCTORS TO THE TRANSFORMER, THEY MAY ELECT TO ENTER THE SECONDARY SIDE OF THE PIT FROM THE FRONT, REAR OR RIGHT SIDE. IF DUKE ENERGY IS PROVIDING THE SERVICE CONDUCTORS, ALL CONDUITS MUST ENTER FROM THE FRONT OF THE PIT.



TOP VIEW

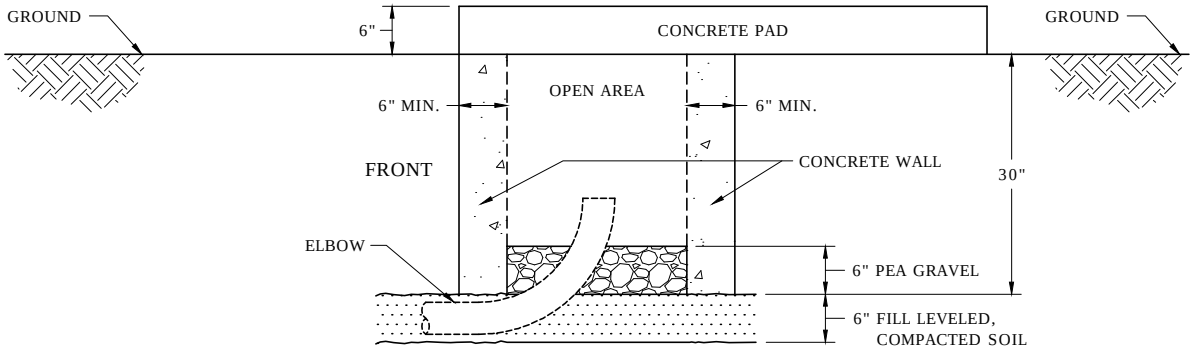
STEP 3:
FILL APPROXIMATELY 6 INCHES OF LEVELED, COMPACTED SOIL IN THE HOLE TO SUPPORT THE CONDUIT ELBOWS. INSTALL THE PIT IN PLACE SO THAT THE CONDUITS ARE LOCATED IN THE CORRECT POSITION WITHIN THE PAD WINDOW. ENSURE THAT THE TOP OF THE PIT IS INSTALLED LEVEL AND FLUSH WITH THE SURROUNDING EARTH SO THAT WHEN THE PAD IS INSTALLED, THE BOTTOM IS IN CONTACT WITH THE ENTIRE SURFACE AREA OF THE TOP OF THE PIT.

REVISED	BY	CHK'D	APPR.
3			
2			
1			
0 3/31/19	MORGAN	VALENTIN	ADCOCK

INSTALLING A LARGE TWO-PIECE
PRE-CAST PIT PAD
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

STEP 4:
FILL IN THE AREA IN FRONT OF AND AROUND THE PIT WITH DIRT. CAREFULLY COMPACT THE GROUND AROUND THIS AREA TO PREPARE FOR THE FLAT PORTION OF THE PIT PAD. FILL THE BOTTOM OF THE PIT WITH 6 INCHES OF PEA GRAVEL (SEE BELOW). ENSURE THE TOP OF THE PIT IS FREE OF GRAVEL AND OTHER DEBRIS.

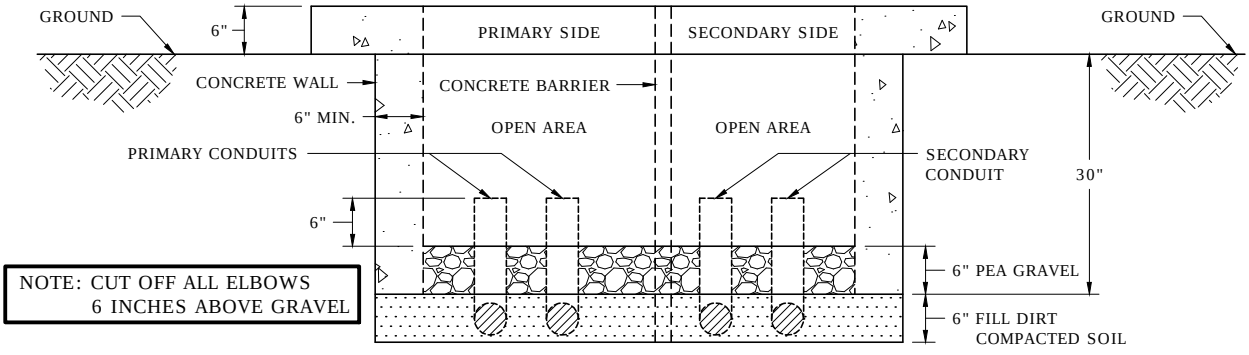


SIDE VIEW

STEP 5:
APPLY A LAYER OF CONSEAL ON THE TOP OF THE PIT BEFORE PLACING THE PAD ONTO THE PIT TO SEAL AND ADHERE THE PAD TO THE PIT.

STEP 6:
INSTALL THE FLAT PORTION OF THE PAD ON THE GROUND AND PIT, LINING UP THE WINDOW OF THE PAD WITH THE PIT. SECURE THE PAD TO THE PIT SO THAT THEY REMAIN IN LINE.

STEP 7:
SLIDE THE DIVIDER INTO THE GROOVE IN THE PAD AND PIT SO THAT IT IS FLUSH WITH THE TOP OF THE PAD.



FRONT VIEW

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

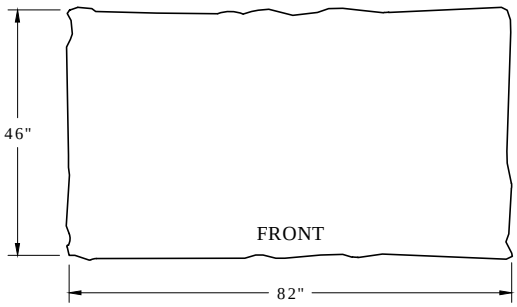
INSTALLING A LARGE TWO-PIECE
PRE-CAST PIT PAD
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

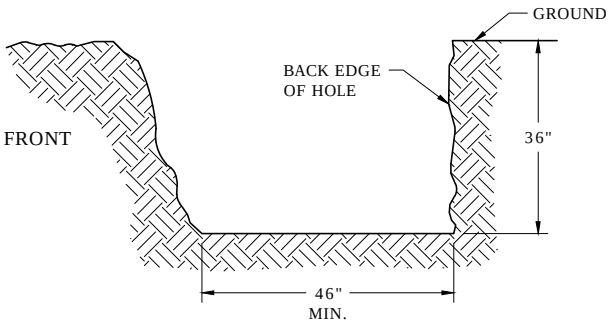
BUILDING A LARGE PIT PAD

STEP 1:
DIG A RECTANGULAR SHAPED HOLE APPROXIMATELY 46 INCHES BY 82 INCHES AND 36 INCHES DEEP FOR THE PIT. (SEE BELOW)

NOTE: THE HOLE INDICATES THE FRONT OF THE TRANSFORMER PAD. THE PAD SHOULD BE LOCATED SO THAT A MINIMUM OF 10 FEET OF CLEARANCE CAN BE MAINTAINED IN FRONT OF THE TRANSFORMER AND A MINIMUM OF 3 FEET OF CLEARANCE ON ALL OTHER SIDES.

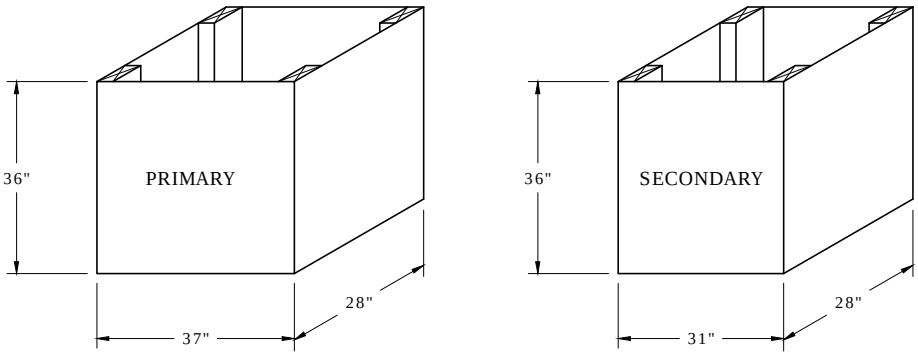


TOP VIEW



SIDE VIEW

STEP 2:
BUILD TWO RECTANGULAR SHAPED BOXES, OPEN AT THE TOP AND BOTTOM, FROM 2-INCH BY 4-INCH BOARDS AND PLYWOOD. THE PLYWOOD SIDES OF THE BOXES SHOULD BE 36 INCHES TALL.



WINDOW OPENING FOR THE LARGE 104-INCH BY 98-INCH "PIT" PAD

STEP 3:
SET THE BOXES IN THE HOLE AND POSITION THEM SO THAT A MINIMUM OF 6 INCHES OF SPACE EXISTS BETWEEN THE SIDES AND BACK OF THE BOXES AND THE EDGE OF THE HOLE. (THE SPACE BETWEEN THE BOXES AND FRONT EDGE OF HOLE WILL BE APPROXIMATELY 12 INCHES.) TRACE A LINE AROUND THE BOTTOM OUTSIDE EDGE OF THE BOXES IN DIRT AND THEN REMOVE THEM. INSTALL TWO (2) CONDUIT ELBOWS IN THE BOTTOM OF THE HOLE FOR THE PRIMARY CONDUCTORS AS SPECIFIED BY DUKE ENERGY ENTERING FROM THE FRONT OF HOLE AND PLACED SO THEY WILL COME UP IN THE CENTER OF THE PRIMARY SIDE OF THE OUTLINE OF THE BOX. TAPE BOTH ENDS OF CONDUITS COMPLETELY CLOSED.

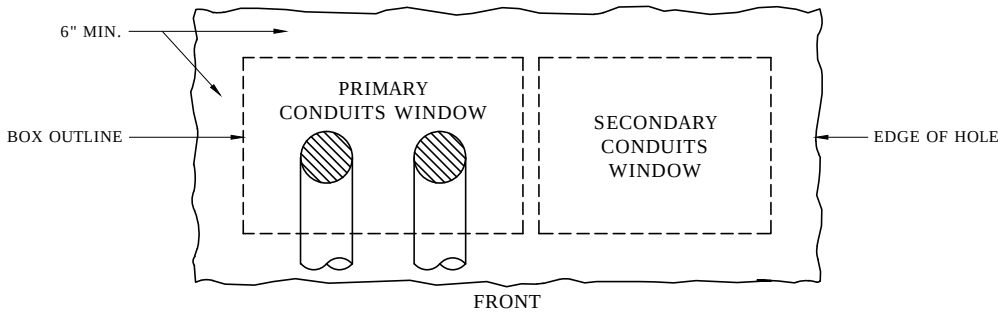
NOTE: THE CUSTOMER'S SECONDARY CONDUITS SHOULD BE INSTALLED AT THIS TIME. IF THE CUSTOMER IS PROVIDING THE SERVICE CONDUCTORS TO THE TRANSFORMER, THEY MAY ELECT TO ENTER THE SECONDARY SIDE OF THE PIT FROM THE FRONT, REAR OR RIGHT SIDE. IF DUKE ENERGY IS PROVIDING THE SERVICE CONDUCTORS, ALL CONDUITS MUST ENTER FROM THE FRONT OF THE PIT.

DUKE ENERGY.

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

BUILDING A LARGE PIT PAD
MECKLENBURG COUNTY, NC

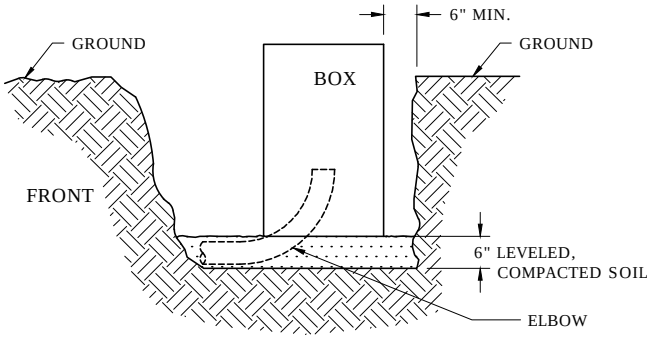
DEC	DEM	DEP	DEF
X			



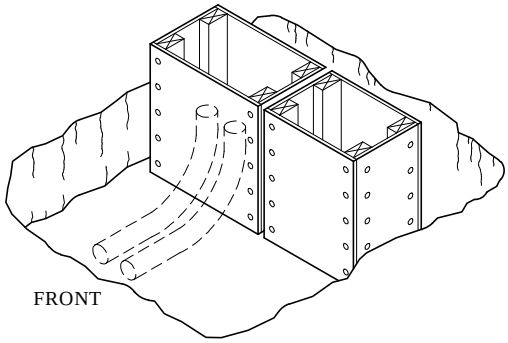
TOP VIEW

STEP 4:

FILL APPROXIMATELY 6 INCHES OF LEVELED, COMPACTED SOIL IN THE HOLE TO SUPPORT THE CONDUIT ELBOWS. PLACE THE BOXES BACK IN THE HOLE OVER CONDUITS, POSITIONING THEM AGAIN SO A MINIMUM OF 6 INCHES OF SPACE EXISTS BETWEEN THE BACK AND SIDES OF THE HOLE AND BOXES. THERE MUST BE 2 INCHES OF SEPARATION BETWEEN THE BOXES. THE BOXES SHOULD STICK OUT FROM THE TOP OF THE HOLE APPROXIMATELY 6 INCHES (OR THE WIDTH OF A STANDARD 2-INCH BY 6-INCH BOARD). MAKE SURE THE CONDUITS ENTER CORRECTLY IN THE PRIMARY AND SECONDARY SIDE OF THE PIT.



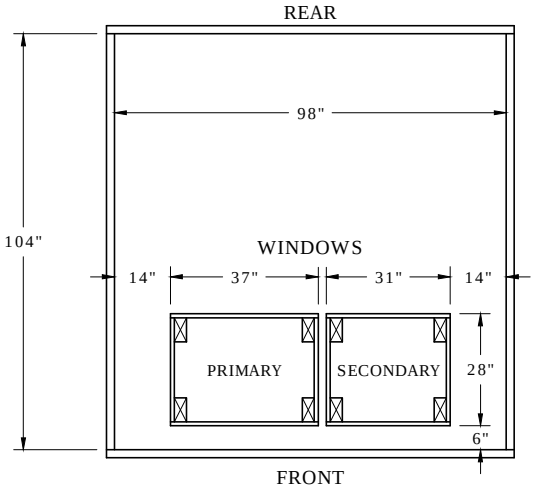
SIDE VIEW



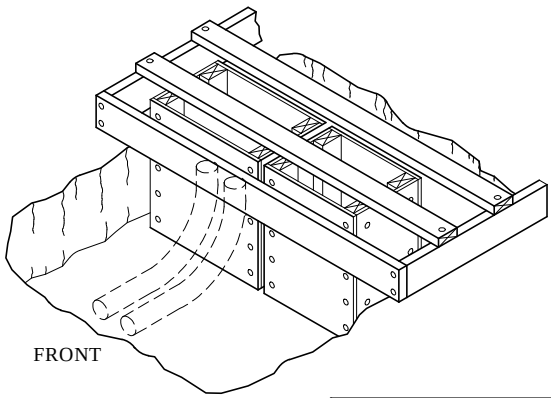
STEP 5:

FORM THE TOP PART OF THE PAD USING 2-INCH BY 6-INCH BOARDS USING THE DIMENSIONS AS INDICATED BELOW.

NOTE: IT MAY BE EASIER TO "LEVEL" THE BOXES WITH THE SIDES IF YOU LAY TWO 2-INCH BY 4-INCH BOARDS ON THE TOP OF THE SIDE BOARDS SO THAT THEY CROSS OVER TOP OF BOXES AS SHOWN BELOW. TACK THESE BOARDS ONTO THE TOP OF THE BOXES TO ENSURE SIDES ARE THE SAME HEIGHT AS THE BOXES.



LARGE 104-INCH X 98-INCH PAD



DUKE ENERGY.

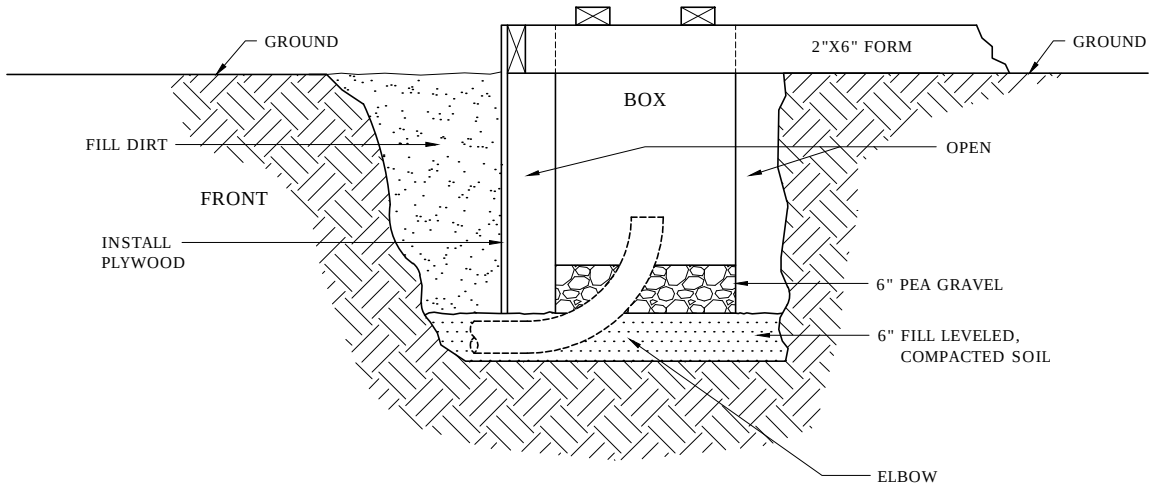
3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

BUILDING A LARGE PIT PAD

MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			

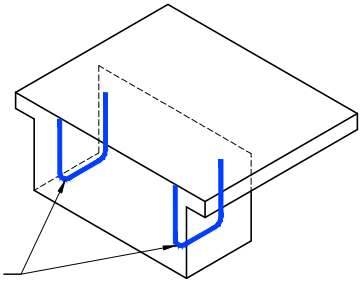
STEP 6:
INSTALL A PIECE OF PLYWOOD INSIDE THE HOLE LONG ENOUGH TO REACH FROM ONE SIDE OF THE HOLE TO THE OTHER AND WIDE ENOUGH TO REACH FROM THE TOP OF THE FRONT 2-INCH BY 6-INCH FORM TO THE BOTTOM OF THE HOLE. (THESE DIMENSIONS SHOULD BE APPROXIMATELY 82 INCHES BY 40 INCHES.) TACK THE PLYWOOD TO THE FRONT OF THE 2-INCH BY 6-INCH BOARD AND LET THE BOTTOM OF THE BOARD REST ON THE GROUND. PLYWOOD MUST BE THICK ENOUGH SO IT WON'T GIVE AT BOTTOM OF HOLE WHEN THE CONCRETE IS POURED. SEE BELOW.



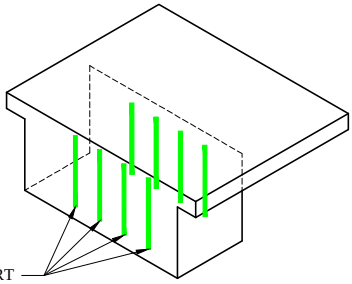
SIDE VIEW

STEP 7:
FILL IN THE AREA BETWEEN THE PLYWOOD AND THE FRONT OF THE HOLE WITH DIRT. BE CAREFUL THAT PLYWOOD DOESN'T "PUSH IN" AT BOTTOM. FILL THE BOTTOM OF THE BOXES WITH 6 INCHES OF PEA GRAVEL. SEE ABOVE.

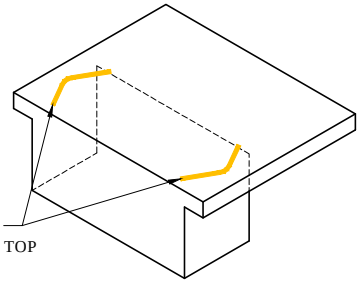
STEP 8:
INSTALL AND TIE TOGETHER THE REINFORCING BARS AROUND THE BOXES IN THE "PIT AREA" AND "PAD AREA" TO REINFORCE ENTIRE PIT PAD. (SEE PAGES 19 AND 20 FOR MORE COMPLETE DETAILS.) CONTACT YOUR DUKE ENERGY REPRESENTATIVE TO INSPECT THE PAD BEFORE POURING CONCRETE.



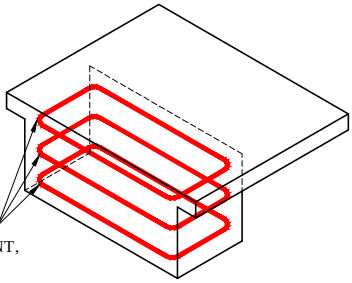
4R1 QUANTITY (2)
EACH SIDE OF PIT



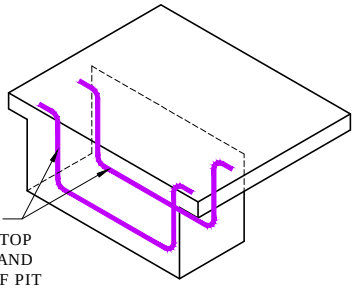
4R5 SPACED 10" APART
IN FRONT AND BACK OF PIT



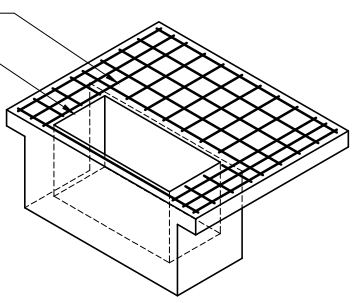
4R4 QUANTITY (2)
EACH SIDE OF THE TOP



4R3 QUANTITY (3)
AROUND SIDES, FRONT,
AND BACK OF PIT



4R2 QUANTITY (2)
EACH SIDE OF THE TOP
DOWN THE SIDES, AND
ACROSS BOTTOM OF PIT



BARS @ 8" SPACING

OPEN PIT AREA

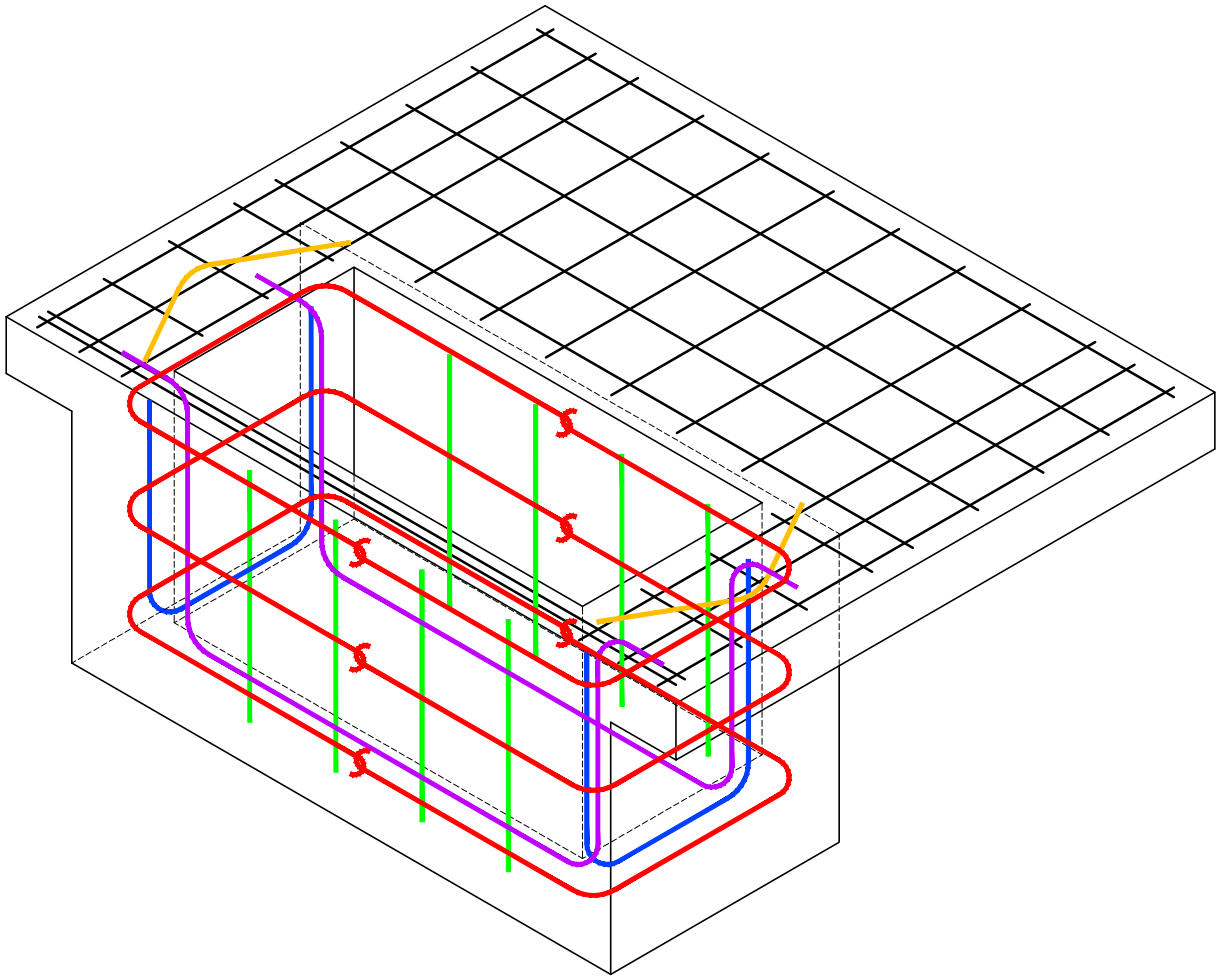
ALL BARS #4 GRADE 60 DEFORMED				
SHAPE DETAIL	SYMBOL	MARK	QTY	DESCRIPTION
		4R1	2	CENTER BARS IN "PIT BOX" SIDE WALLS. PROVIDE 3" CLEARANCE FROM WALL BOTTOM AND 2" CLEARANCE FROM TOP SURFACE OF PAD.
		4R2	2	CENTER BARS IN "PIT BOX" END WALLS. PROVIDE 3" CLEARANCE FROM WALL BOTTOM AND 2" CLEARANCE FROM TOP SURFACE OF PAD. TERMINATE BAR ENDS 2" FROM PAD EDGES.
		4R3	4	CENTER BARS IN "PIT BOX" END AND SIDE WALLS. PLACE BOTTOM BAR 3" FROM PIT BOTTOM. PLACE TOP BAR 2" FROM TOP SURFACE. MAXIMUM BAR SPACING IS 12".
		4R4	2	PLACE BARS IN APPROXIMATE LOCATIONS SHOWN TO PROVIDE CORNER CRACK CONTROL. PROVIDE 2" CLEARANCE FROM TOP SURFACE AND ANY CONCRETE EDGE.
		4R5	8	CENTER IN END WALLS OF "PIT BOX". TERMINATE BARS 3" FROM BOTTOM SURFACE AND 2" FROM TOP SURFACE. MAXIMUM BAR SPACING IS 12".
-	-	WWF	-	PROVIDE 2" CLEARANCE FROM TOP SURFACE. TERMINATE 2" FROM PAD EDGES.

DUKE ENERGY.

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

BUILDING A LARGE PIT PAD
REINFORCEMENT SPECIFICATIONS
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			



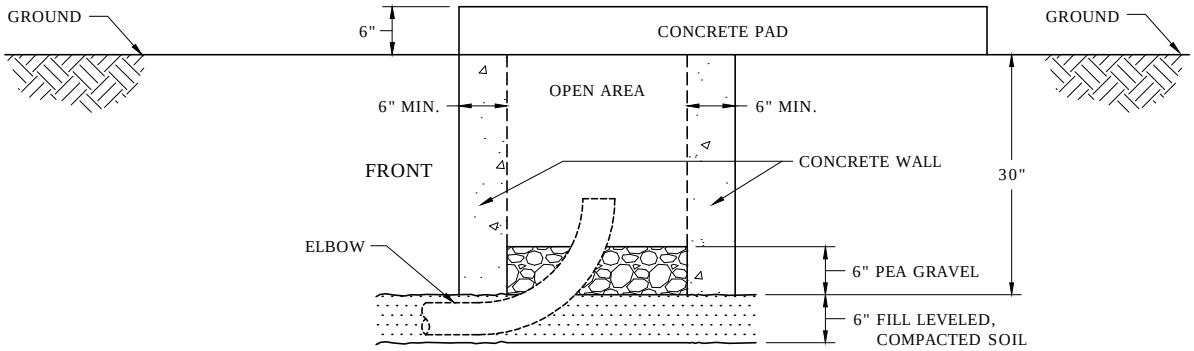
ALL BARS #4 GRADE 60 DEFORMED		
SHAPE DETAIL	SYMBOL	MARK
		4R1
		4R2
		4R3
		4R4
		4R5

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

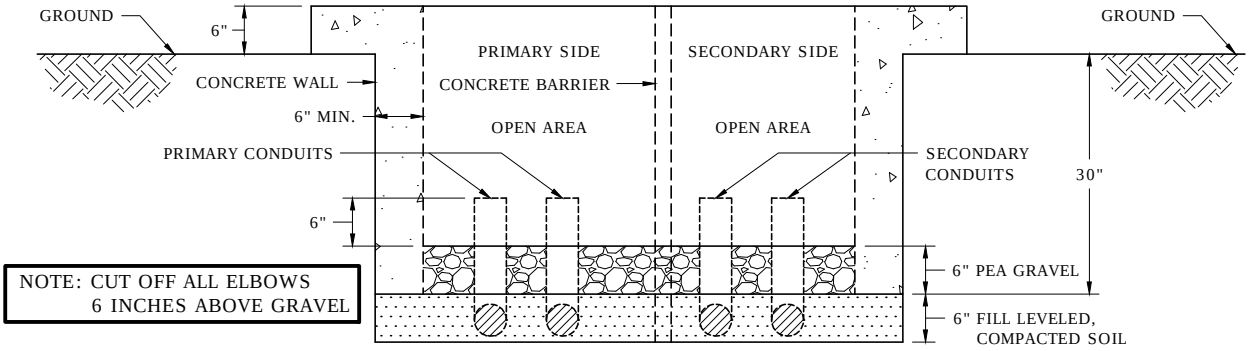
BUILDING A LARGE PIT PAD
CONCRETE PIT PAD - COMPLETE CONSTRUCTION
MECKLENBURG COUNTY, NC

DUKE ENERGY.

DEC	DEM	DEP	DEF
X			



SIDE VIEW



FRONT VIEW

STEP 9:
POUR CONCRETE AROUND THE BOXES AND WITHIN THE 2-INCH BY 6-INCH FORMS. SEE PAGE 2 FOR CONCRETE MIX SPECIFICATIONS.

STEP 10:
ALLOW CONCRETE TO SET UP, THEN REMOVE 2-INCH BY 6-INCH FORMS AND BOXES.

3				
2				
1				
0	3/31/19	MORGAN	VALENTIN	ADCOCK
REVISED		BY	CHK'D	APPR.

BUILDING A LARGE PIT PAD
MECKLENBURG COUNTY, NC

DEC	DEM	DEP	DEF
X			