Engineering Technical Drawings

REVISED:

May 1, 2025

Minimum Clearance for Overhead Service Drops

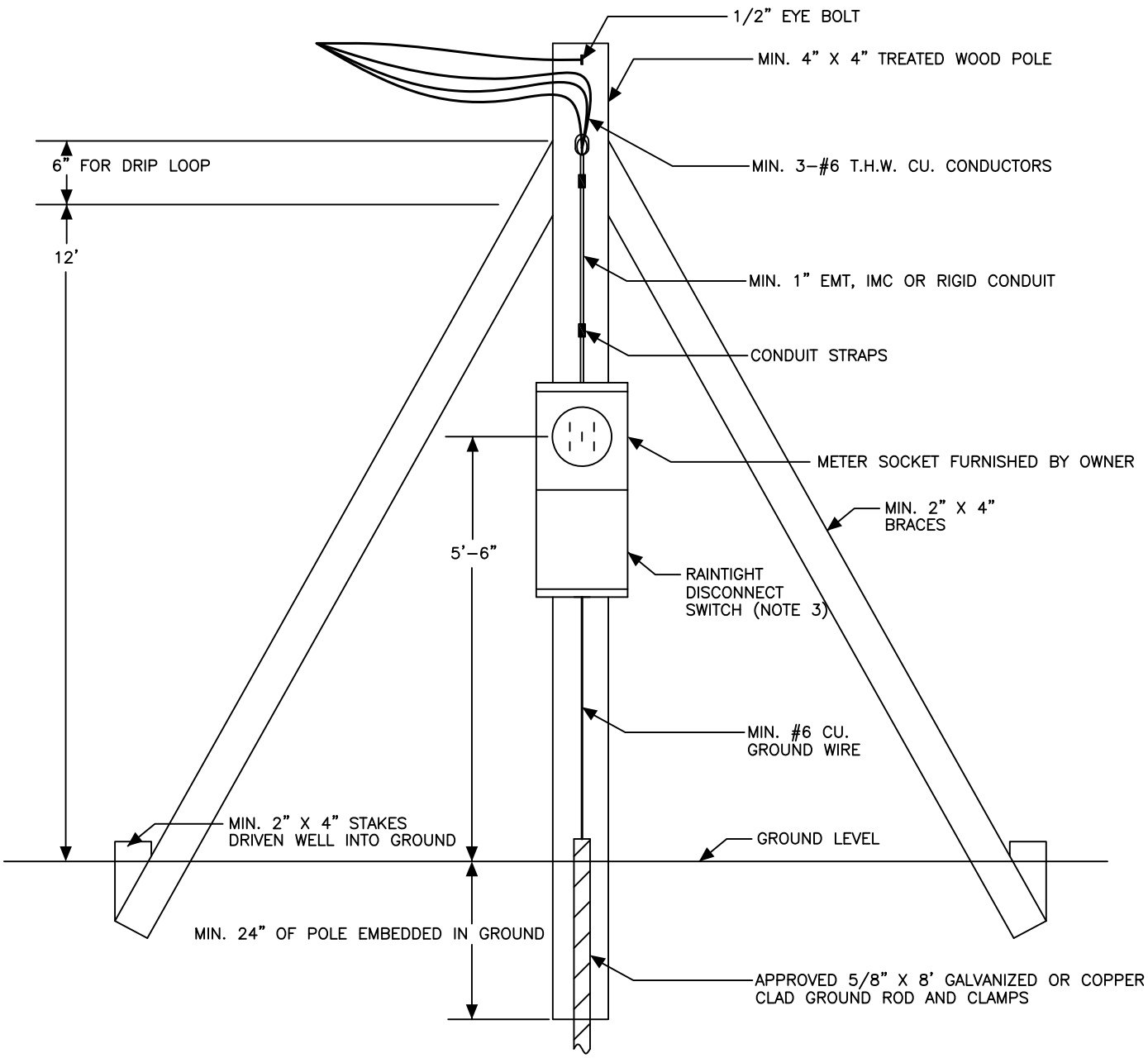
Minimum Clearances from NESC for covered overhead service drop cable on a messenger (triplex, quad…) (including drip loops) connected to building. Clearances are vertical unless otherwise noted

	1 Phase 124/240 or 3 phase 120/208	3 phase 120/240 delta with wild leg	1 or 3 phase 480
Customer owned conductors on drip loop from roof overhang less than 4'+	1.5'	1.5'	8'
Customer owned conductors on drip loop from roof or overhang greater than 4'+	3'	3'	8'
Roof within 6' of mast no more than 4' from edge	1.5'	1.5'	1.5'
Roof Greater than 6' from mast	3'	3	3'
Accessible Roofs, balconies, attached decks fire escapes	10'	10'	10'
Under Accessible Roofs, balconies, attached decks fire escapes	3'	3'	3'
Horizontal clearance porches decks fire escapes…	5'	5'	5'
Windows all directions except above	3'	3'	3'
Residential Pedestrian Surface*	10'	10.5'	-
Residential Driveway	12'	12.5	-
Non-Residential Pedestrian surface*	12'	12'	12'
Commercial Driveway++	18'	18'	18'
Public Road++	22'	22'	22'
Railroad	24'	24'	24'

+ Determined by NEC

++ Determined by Stricter GEUS service policy

* areas where riders on horses or other large animals, vehicles, or other mobile units exceeding 8 feet are not reasonably anticipated



FRONT VIEW

NOTES:

1.) DISTANCE TO GEUS SECONDARY POLE SHALL NOT BE MORE THAN 100' FOR 100 AMP OR SMALLER SERVICES AND NOT MORE THAN 75' FOR 150 AMP AND 200 AMP SERVICES. FOR SERVICES LARGER THAN 200 AMP, CONSULT WITH GEUS ENGINEERING DEPARTMENT.

2.) A MINIMUM CLEARANCE OF 18' IS REQUIRED OVER COMMERCIAL DRIVEWAYS AND PARKING LOTS. A MINIMUM of 22' CLEARANCE IS REQUIRED OVER PUBLIC STREETS.

3.) DUAL ELEMENT FUSES OR CIRCUIT BREAKERS SHALL BE USED IN RAIN TIGHT ENCLOSURE. NO PLUG-TYPE FUSES ALLOWED. G.F.I. PROTECTION REQUIRED ON 120V RECEPTACLE.

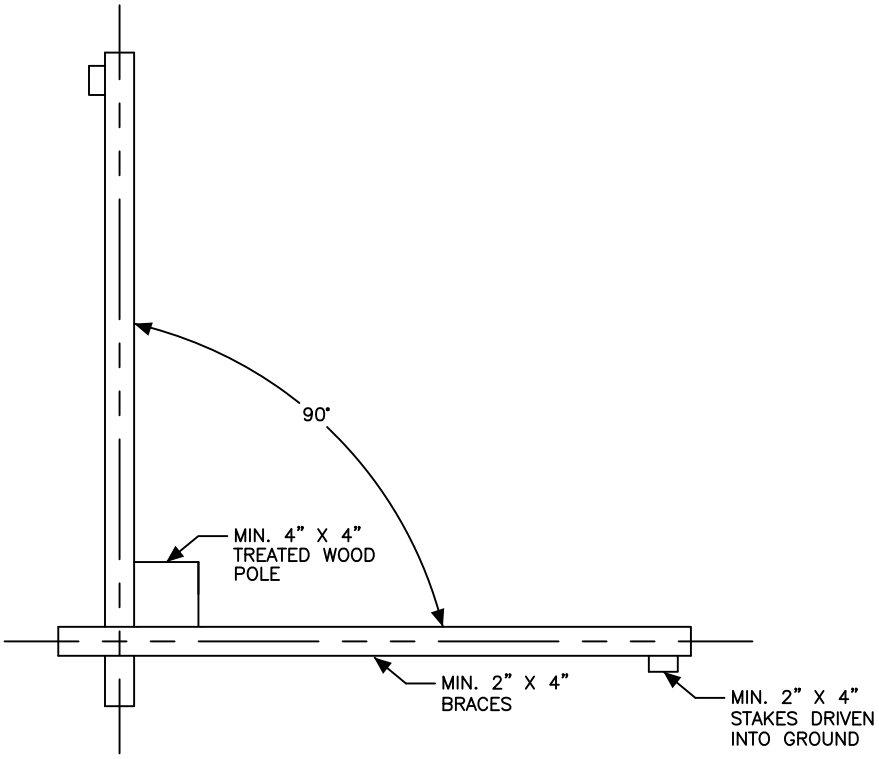
4.) CUSTOMER SHALL BE RESPONSIBLE FOR PROVIDING PROPER IDENTIFICATION AT THE SERVICE LOCATION PRIOR TO SERVICE BEING RENDERED.

5.) MINIMUM 24" CONDUCTOR TAILS AT WEATHER HEAD. NEUTRAL SHALL BE CLEARLY IDENTIFIED.

6.) CUSTOMER MUST CONTACT ALL UTILITIES TO OBTAIN LOCATES PRIOR TO EXCAVATION.

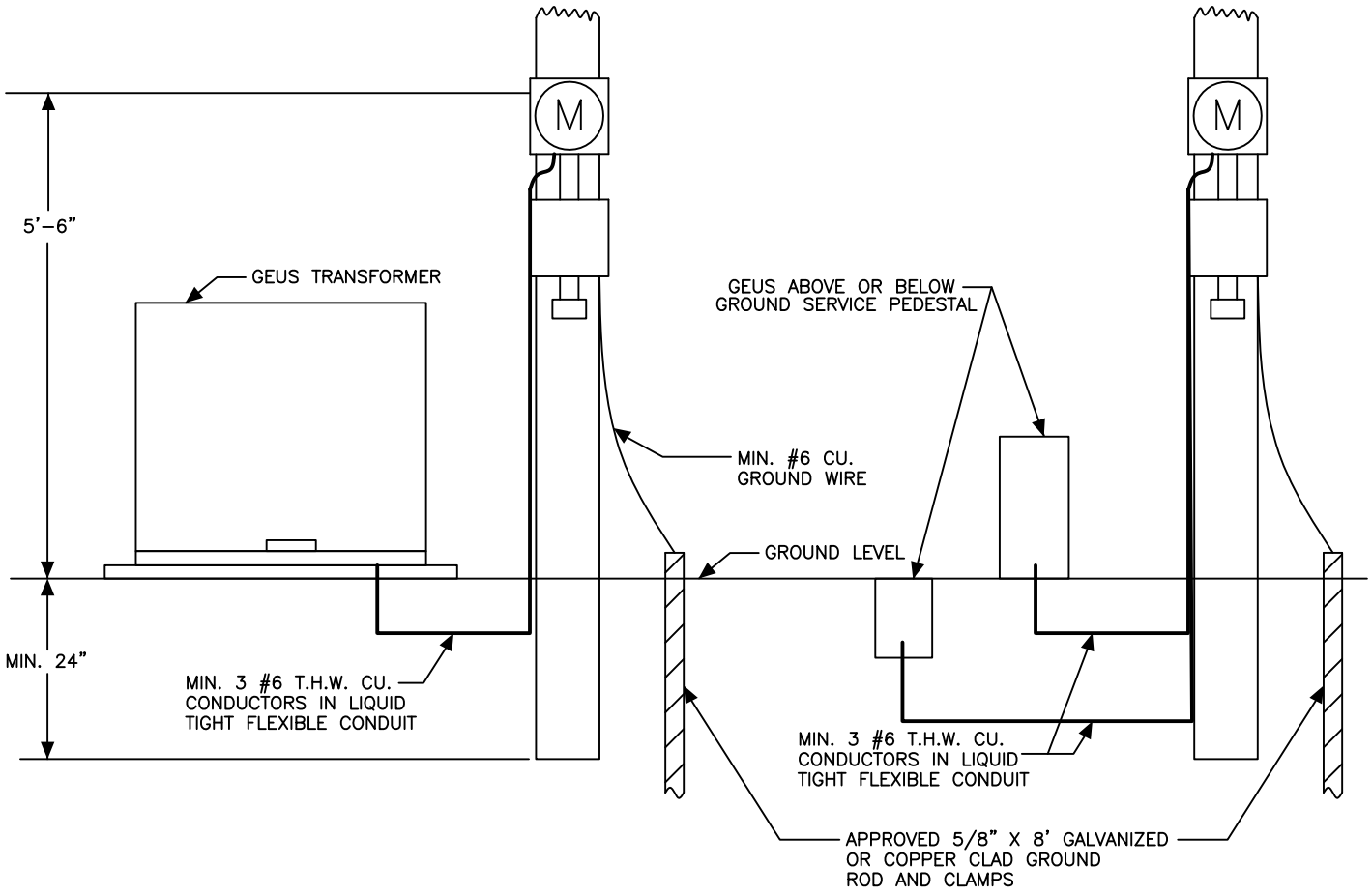
GEUS Energizing the Community

DRAWN BY	TEMPORARY CONSTRUCTION SERVICE FROM OVERHEAD SYSTEM	DATE
JKS		6/20/2016
CHK'D BY		DWG NO.
ZVM		Q1.1.1
APPROVED BY		
ADC		



TOP VIEW

GEUS Energizing the Community	DRAWN BY JKS CHK'D BY ZVM APPROVED BY ADC	TEMPORARY SERVICE FROM OVERHEAD SYSTEM	DATE 6/20/2016 DWG NO. Q1.1.2



NOTES:

1.) DUAL ELEMENT FUSES OR CIRCUIT BREAKERS SHALL BE USED IN RAINTIGHT ENCLOSURE. NO PLUG TYPE FUSES ALLOWED G.F.I. PROTECTION REQUIRED ON 120V RECEPTACLE.

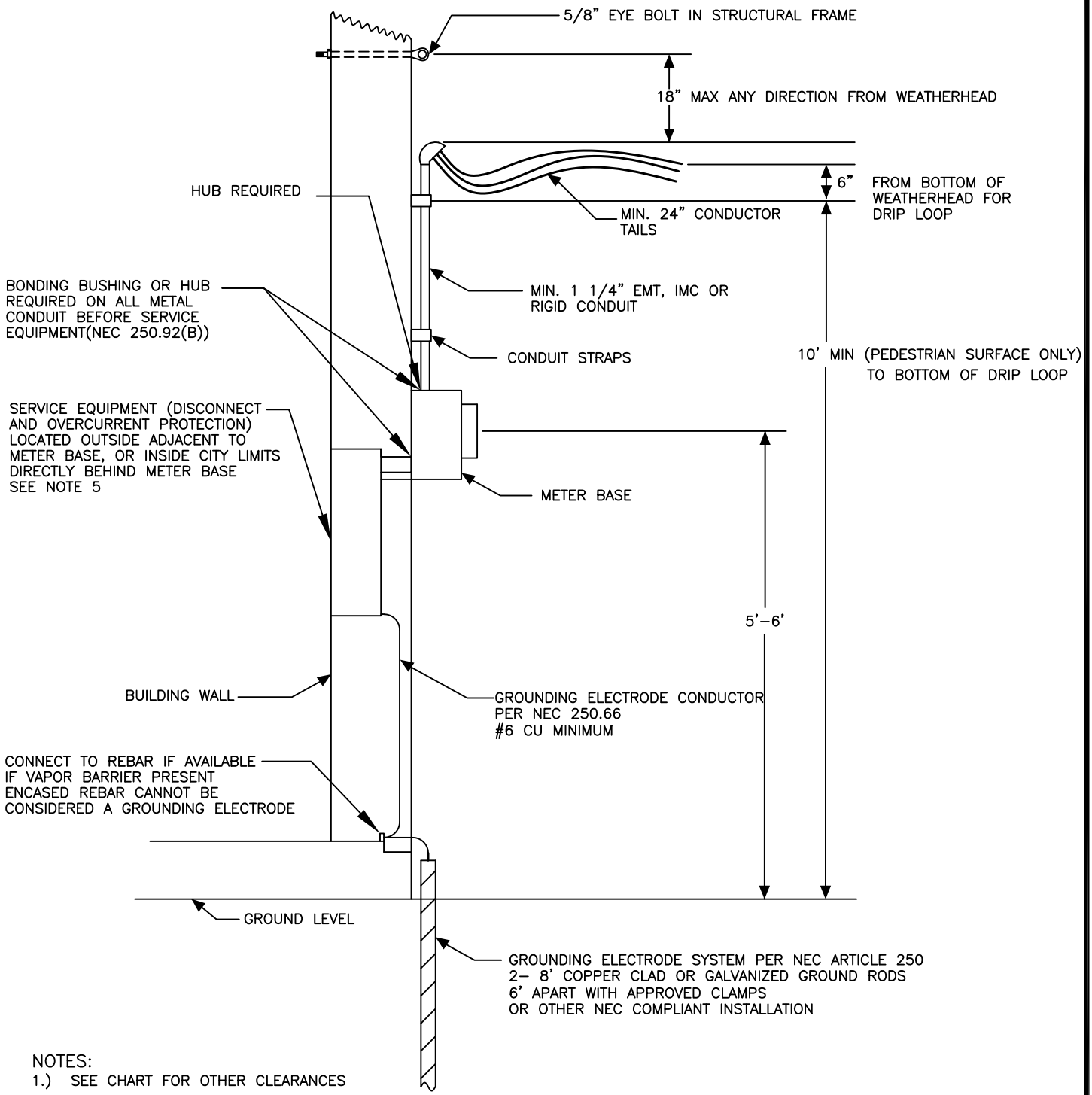
2.) CUSTOMER SHALL BE RESPONSIBLE FOR PROVIDING PROPER IDENTIFICATION AT THE SERVICE LOCATION PRIOR TO SERVICE BEING RENDERED.

3.) CUSTOMER TO PROVIDE 36" OF SERVICE ENTRANCE CONDUCTOR BEYOND CONDUIT.

4.) CUSTOMER MUST CONTACT ALL UTILITIES TO OBTAIN LOCATES PRIOR TO EXCAVATION.

GEUS Energizing the Community

DRAWN BY JKS	TEMPORARY SERVICE FROM UNDERGROUND SYSTEM	DATE 6/20/2016
CHK'D BY ZVM		DWG NO. UQ1.1
APPROVED BY ADC		



NOTES:

1.) SEE CHART FOR OTHER CLEARANCES

2.) A MINIMUM 24" CONDUCTOR EXTENDED FROM WEATHER HEAD, WITH NEUTRAL CONDUCTOR PLAINLY IDENTIFIED.

3.) METER BASE MUST BE SECURELY AND PERMANENTLY MOUNTED TO EXTERIOR OF BUILDING WALL.

4.) EYE BOLT TO BE INSTALLED BY CUSTOMER.

5.) OUTSIDE DISCONNECT REQUIRED FOR ALL 1 & 2 FAMILY DWELLINGS OUTSIDE CITY LIMITS. (2020 NEC 230.85)

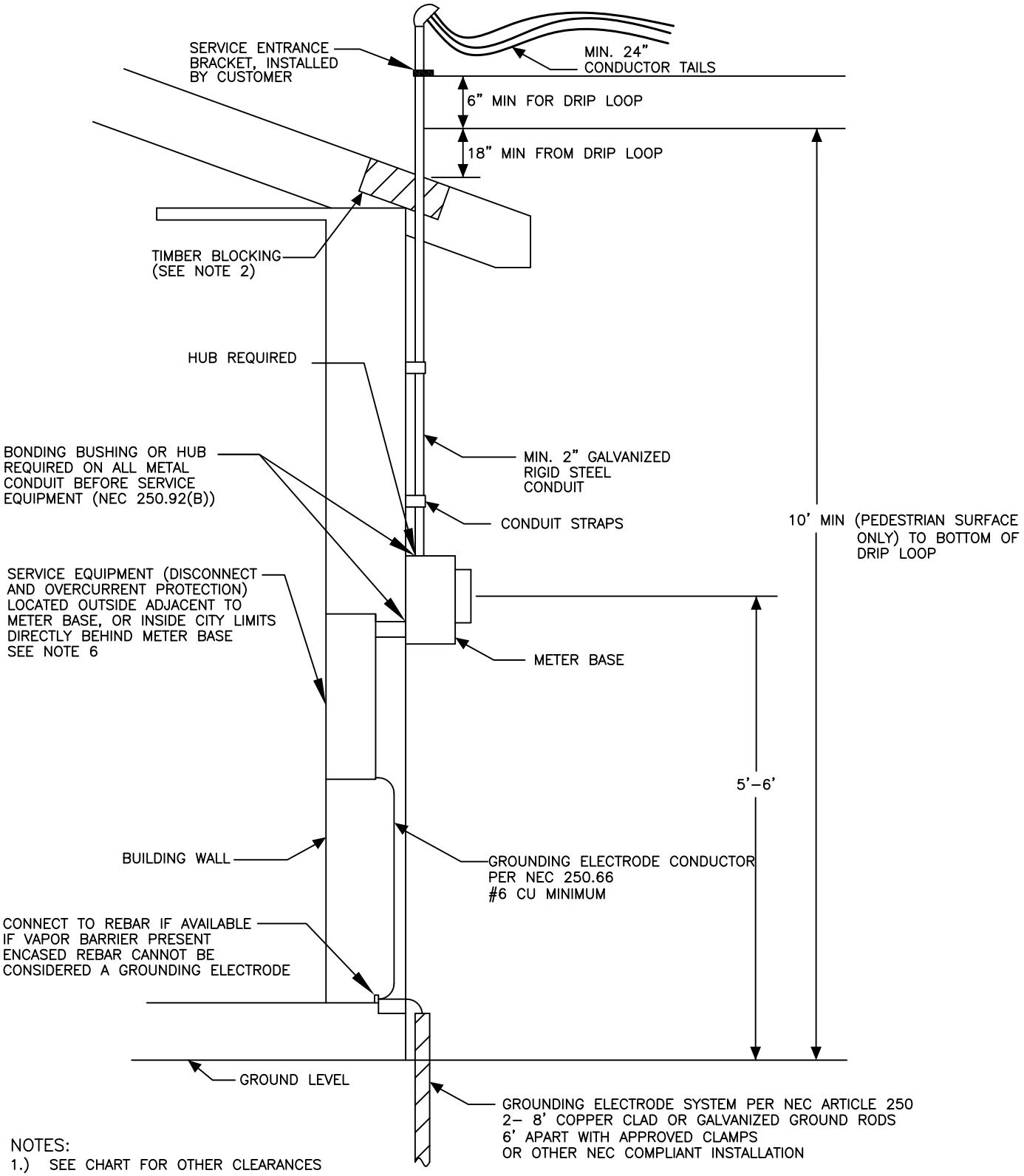
GEUS Energizing the Community

DRAWN BY	CHK'D BY	APPROVED BY
JKS	JRS	ZVM

SERVICE ENTRANCE FOR HOUSES WITH ADEQUATE HEIGHT

DATE: 7/25/2022

DWG NO.: Q1.2



NOTES:

1.) SEE CHART FOR OTHER CLEARANCES

2.) A MINIMUM OF 24" CONDUCTOR TAILS EXTEND FROM WEATHER HEAD WITH NEUTRAL CONDUCTOR PLAINLY IDENTIFIED

3.) MAST SHALL HAVE SUFFICIENT SUPPORT (EX. 2" X 6" FRAMING BETWEEN RAFTERS TO REINFORCE ROOF DECKING). WHERE SERVICE IS LONG OR EXTRA HEAVY, THE ELECTRICAL INSPECTOR MAY REQUIRE ADDITIONAL SUPPORT.

4.) FOR ROOF OVERHANG GREATER THAN 48" ALL EXPOSED CONDUCTORS INCLUDING DRIP LOOP MUST BE 3' FROM ROOF

5.) METER BASE MUST BE SECURELY AND PERMANENTLY MOUNTED TO EXTERIOR OF BUILDING WALL.

6.) OUTSIDE DISCONNECT REQUIRED FOR ALL 1 & 2 FAMILY HOMES OUTSIDE CITY LIMITS. (2020 NEC 230.85)

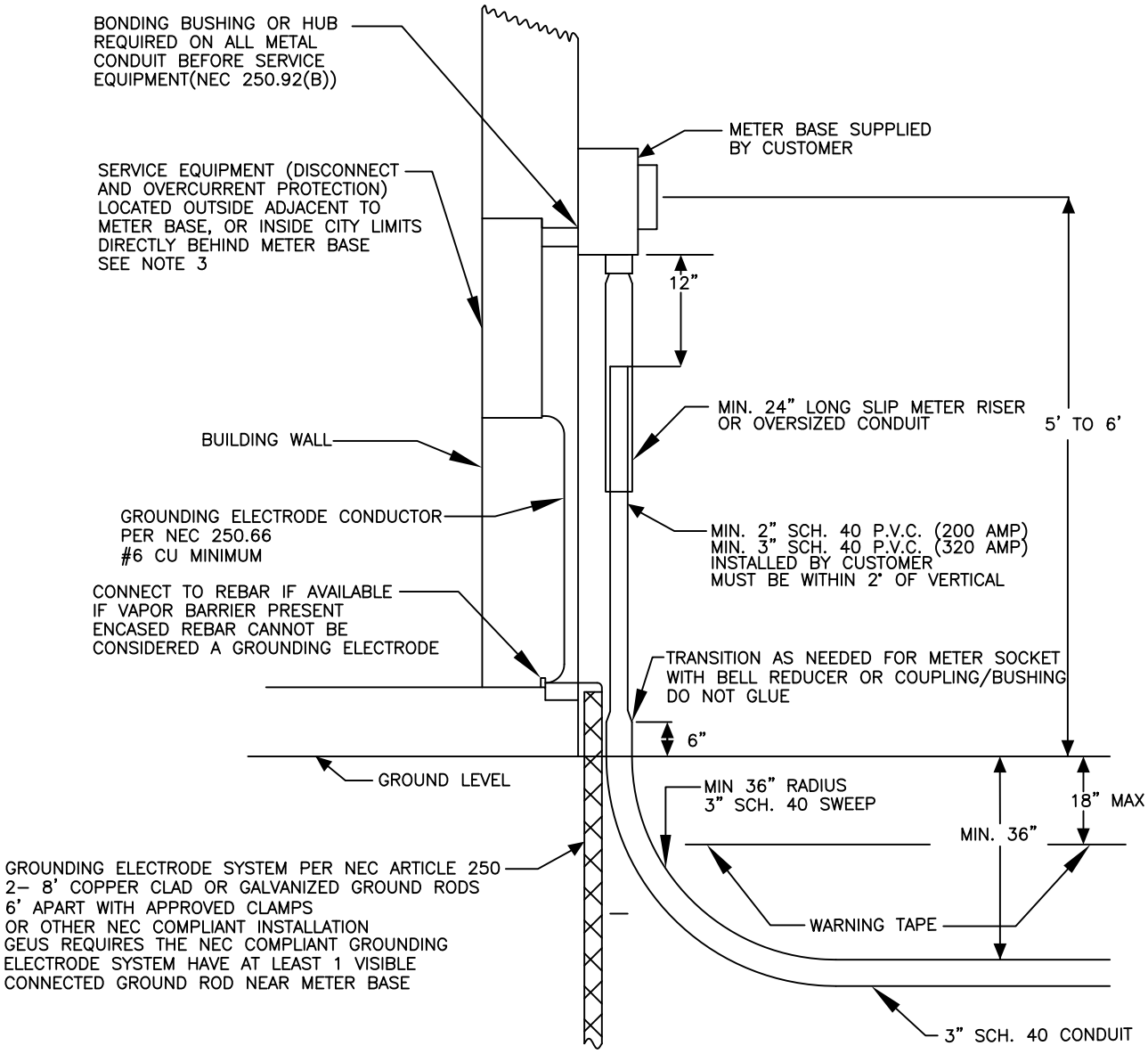
GEUS Energizing the Community

DRAWN BY	CHK'D BY	APPROVED BY
JKS	ZVM	ADC

SERVICE ENTRANCE FOR HOUSES WITH LOW ROOF

DATE: 6/20/2016

DWG NO. Q1.3



NOTES:

1.) METER BASE MUST BE SECURELY AND PERMANENTLY MOUNTED TO EXTERIOR OF BUILDING WALL.

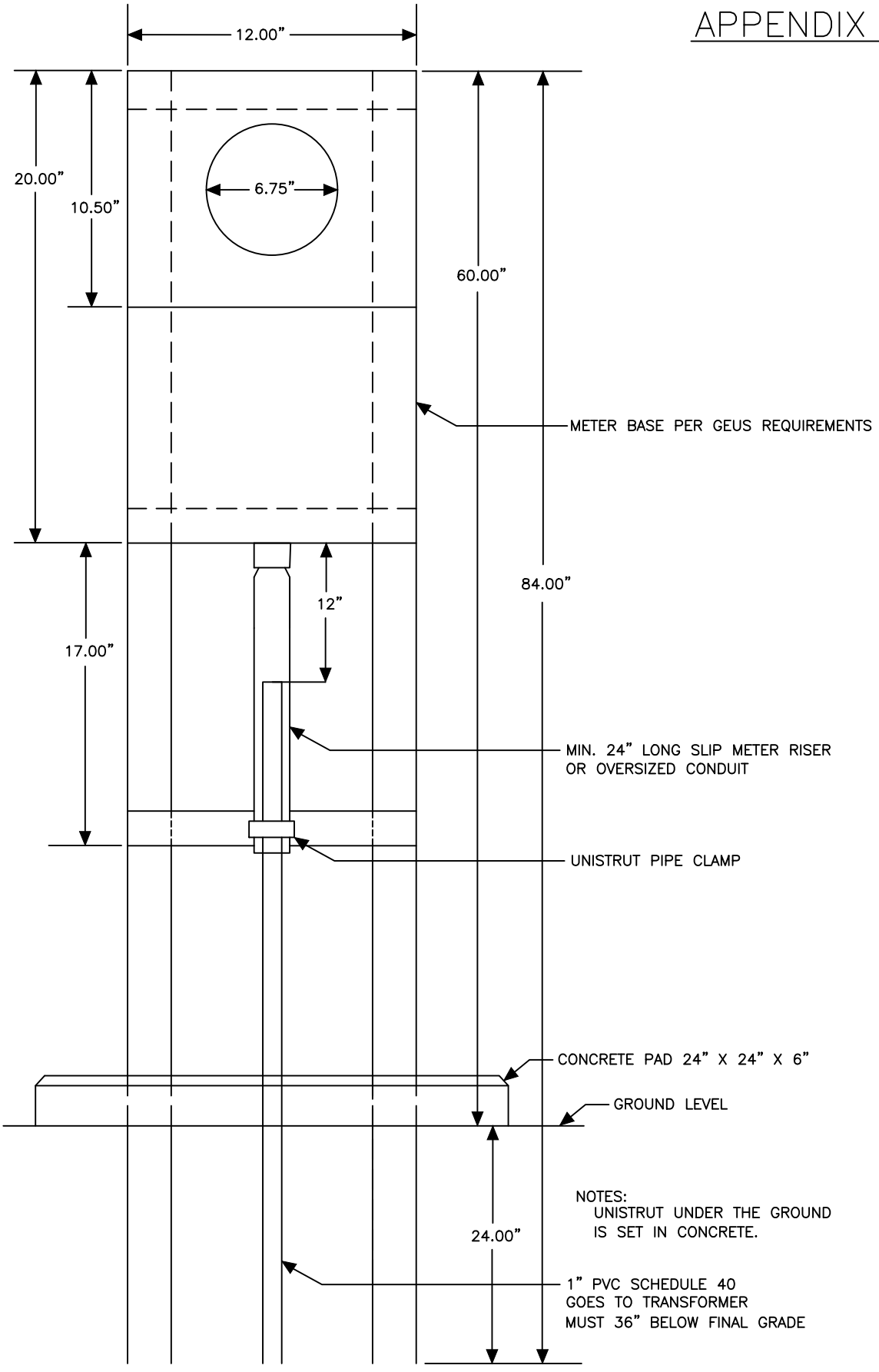
2.) CUSTOMER MUST CONTACT ALL UTILITIES TO OBTAIN LOCATES PRIOR TO EXCAVATION.

3.) OUTSIDE DISCONNECT REQUIRED FOR ALL 1 & 2 FAMILY DWELLINGS OUTSIDE OF CITY LIMITS. (2020 NEC 230.85)

GEUS Energizing the Community

DRAWN BY JKS	RESIDENTIAL UNDERGROUND SERVICE	DATE 6/20/2016	
CHK'D BY ZVM		DWG NO. UQ1.2	
APPROVED BY ADC			

APPENDIX "I"



FRONT VIEW

GEUS Energizing the Community

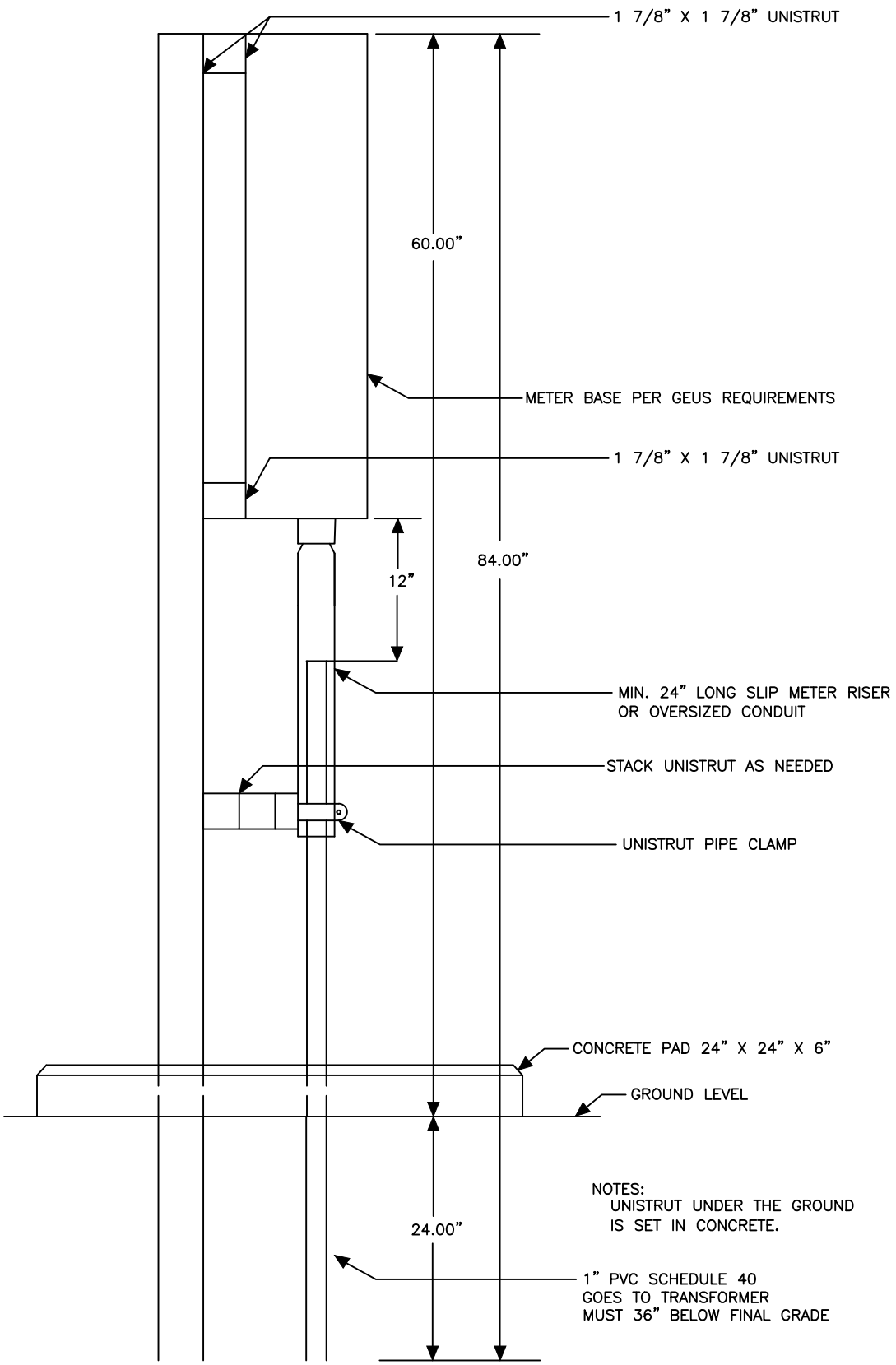
DRAWN BY	JKS
CHK'D BY	ZVM
APPROVED BY	ADC

METER UNISTRUT INSTALL DETAIL
FRONT VIEW

DATE 1/27/2023

DWG NO. UQ3.1.1

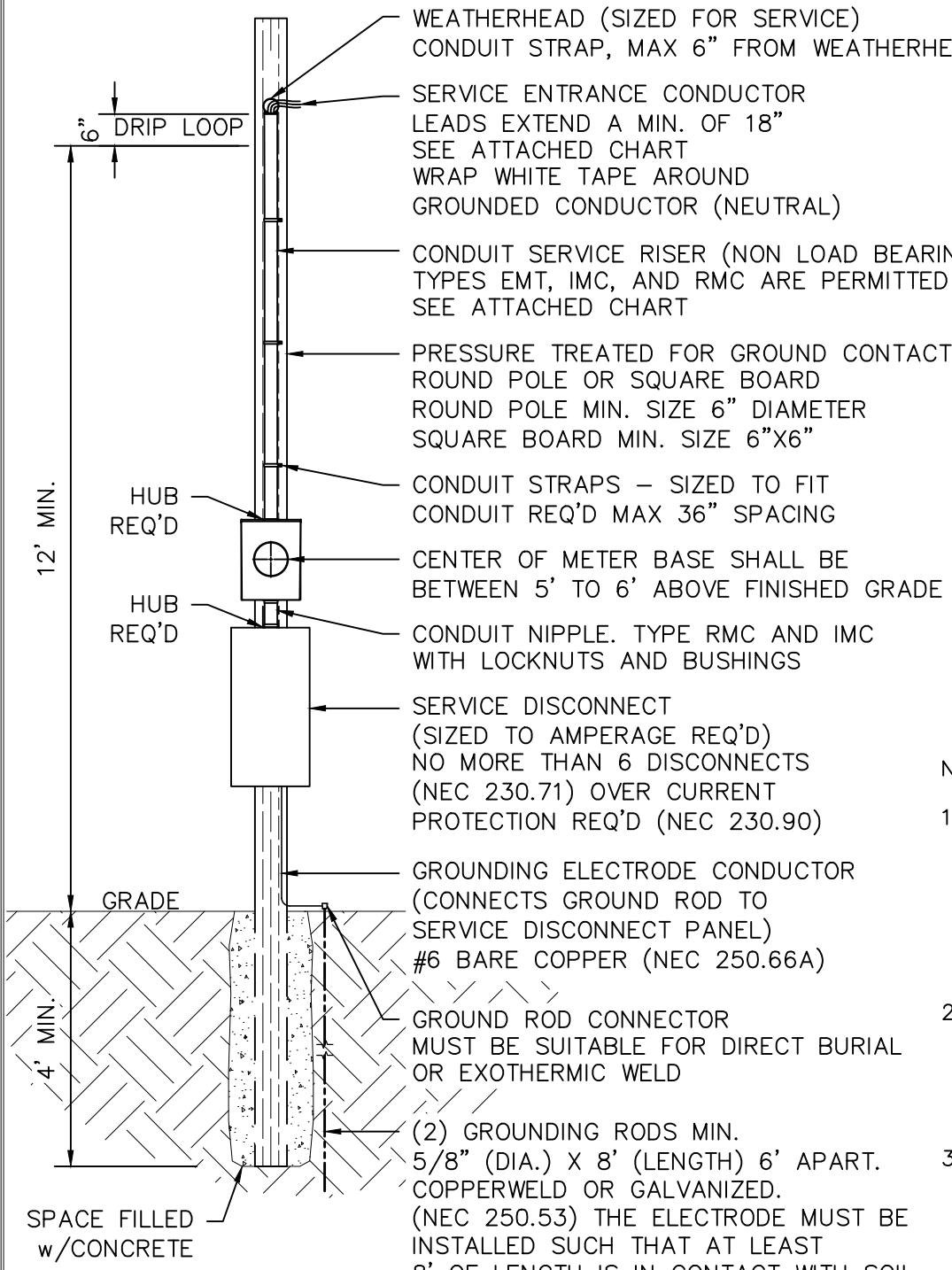
APPENDIX "I"



SIDE VIEW

GEUS Energizing the Community	DRAWN BY JKS CHK'D BY ZVM APPROVED BY ADC	METER UNISTRUT INSTALL DETAIL SIDE VIEW	DATE 1/27/2023 DWG NO. UQ3.1.2

PERMANENT OVERHEAD SERVICE – DWELLINGS (METER POLE)



WEATHERHEAD (SIZED FOR SERVICE)
CONDUIT STRAP, MAX 6" FROM WEATHERHEAD

SERVICE ENTRANCE CONDUCTOR
LEADS EXTEND A MIN. OF 18"
SEE ATTACHED CHART
WRAP WHITE TAPE AROUND
GROUNDED CONDUCTOR (NEUTRAL)

CONDUIT SERVICE RISER (NON LOAD BEARING)
TYPES EMT, IMC, AND RMC ARE PERMITTED
SEE ATTACHED CHART

PRESSURE TREATED FOR GROUND CONTACT
ROUND POLE OR SQUARE BOARD
ROUND POLE MIN. SIZE 6" DIAMETER
SQUARE BOARD MIN. SIZE 6"X6"

CONDUIT STRAPS – SIZED TO FIT
CONDUIT REQ'D MAX 36" SPACING

CENTER OF METER BASE SHALL BE
BETWEEN 5' TO 6' ABOVE FINISHED GRADE

CONDUIT NIPPLE. TYPE RMC AND IMC
WITH LOCKNUTS AND BUSHINGS

SERVICE DISCONNECT
(SIZED TO AMPERAGE REQ'D)
NO MORE THAN 6 DISCONNECTS
(NEC 230.71) OVER CURRENT
PROTECTION REQ'D (NEC 230.90)

GROUNDING ELECTRODE CONDUCTOR
(CONNECTS GROUND ROD TO
SERVICE DISCONNECT PANEL)
#6 BARE COPPER (NEC 250.66A)

GROUND ROD CONNECTOR
MUST BE SUITABLE FOR DIRECT BURIAL
OR EXOTHERMIC WELD

(2) GROUNDING RODS MIN.
5/8" (DIA.) X 8' (LENGTH) 6' APART.
COPPERWELD OR GALVANIZED.
(NEC 250.53) THE ELECTRODE MUST BE
INSTALLED SUCH THAT AT LEAST
8' OF LENGTH IS IN CONTACT WITH SOIL.
MUST BE IN SOIL, NOT CONCRETE.

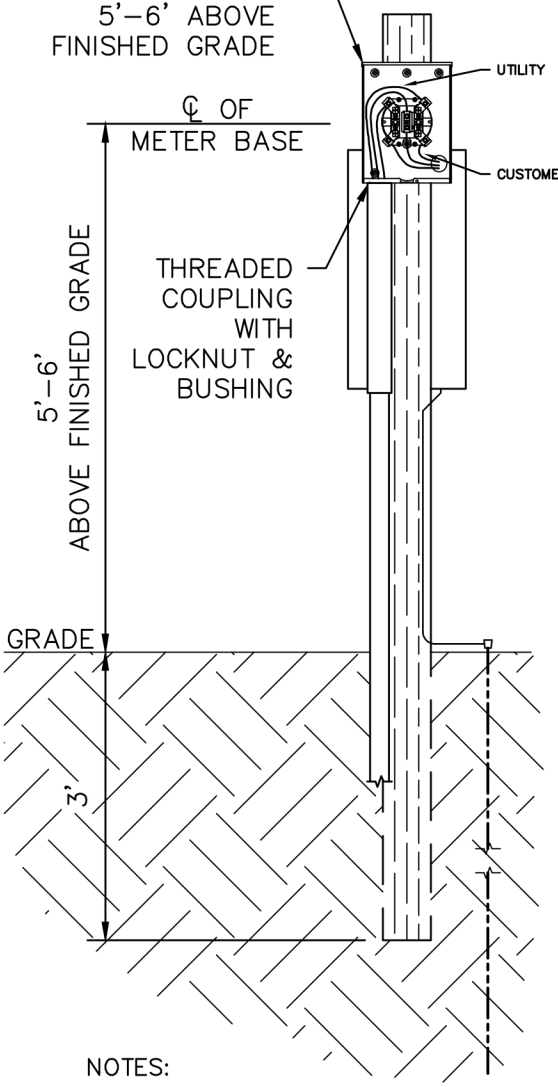
NOTES:

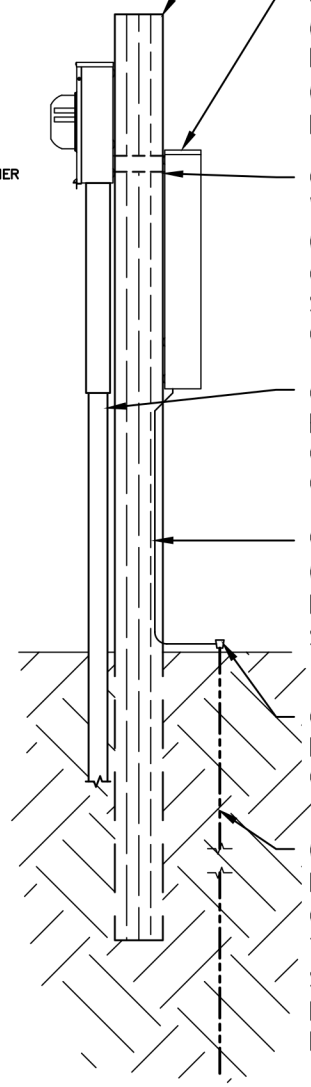
1. ALL 125V, SINGLE–PHASE SERVICE RECEPTACLES INSTALLED OUTDOORS SHALL HAVE GROUND–FAULT–CIRCUIT–INTERRUPTER PROTECTION FOR PERSONNEL.
2. GOVERNING BODIES SUCH AS COUNTIES, MUNICIPALITIES, ETC. WITH LEGAL JURISDICTION; MAY ENFORCE ADDITIONAL RULES AND REGULATIONS
3. WHERE LOCAL INSPECTION AUTHORITY IS NOT INVOLVED, METER INSTALLATIONS SHOULD BE WIRED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE OR GEUS SPECIFICATIONS WHEN THE GEUS SPECIFICATIONS EXCEED THOSE OF THE NATIONAL ELECTRIC CODE.

SHEET#	MULTI SHEET DRAWING INFORMATION:	DRAWN BY:	APPROVED BY:	SHEET INFORMATION:
001		JAD	JS	PERMANENT OH SERVICE DWELLINGS (METER POLE)
		DATE: 03/22/21	SCALE: 3/8" = 1'0"	
		REVISION DATE:	DWG NAME: Permanent Overhead Service Meter Pole (Dwellings).dwg	

GEUS Energizing the Community

PERMANENT UNDERGROUND SERVICE (METER POLE)





PRESSURE TREATED FOR GROUND CONTACT MIN, 6" DIA. ROUND POLE OR 4"X6" SQUARE POLE (METAL POLE IN CONCRETE ALSO ACCEPTABLE)

SERVICE DISCONNECT (SIZED TO AMPERAGE REQ'D) NO MORE THAN 6 DISCONNECTS (NEC 230.71) OVER CURRENT PROTECTION REQ'D (NEC 230.90)

CONDUIT NIPPLE. TYPE RMC & IMC WITH LOCKNUTS & BUSHINGS (NEC 250.92B) GROUNDING BUSHING REQ'D. SEE ATTACHED CHART FOR CONDUIT & WIRE SIZE.

CONDUIT (MIN. 2") w/EXPANSION JOINT FOR THE MECHANICAL PROTECTION OF PERMANENT UNDERGROUND ENTRANCE CONDUCTORS.

GROUNDING ELECTRODE CONDUCTOR (CONNECTING GROUND ROD TO SERVICE DISCONNECT PANEL) #6 BARE COPPER. STAPLED TO POLE EVERY 6". (NEC 250.66A)

GROUND ROD CONNECTOR MUST BE SUITABLE FOR DIRECT BURIAL OR EXOTHERMIC WELD

(2) GROUNDING RODS MIN. 5/8" (DIA.) X 8' (LENGTH) 6' APART. COPPERWELD OR GALVANIZED. (NEC 250.53) THE ELECTRODE MUST BE INSTALLED SUCH THAT AT LEAST 8' OF LENGTH IS IN CONTACT WITH SOIL. MUST BE IN SOIL, NOT CONCRETE.

NOTES:

1. ALL 125V, SINGLE–PHASE SERVICE RECEPTACLES INSTALLED OUTDOORS SHALL HAVE GROUND–FAULT–CIRCUIT– INTERRUPTER PROTECTION FOR PERSONNEL.
2. GOVERNING BODIES SUCH AS COUNTIES, MUNICIPALITIES, ETC. WITH LEGAL JURISDICTION; MAY ENFORCE ADDITIONAL RULES AND REGULATIONS
3. WHERE LOCAL INSPECTION AUTHORITY IS NOT INVOLVED, METER INSTALLATIONS SHOULD BE WIRED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE OR GEUS SPECIFICATIONS WHEN THE GEUS SPECIFICATIONS EXCEED THOSE OF THE NATIONAL ELECTRIC CODE.

SHEET#	MULTI SHEET DRAWING INFORMATION:	DRAWN BY:	APPROVED BY:	SHEET INFORMATION:
001		JAD	JS	PERMANENT UG SERVICE (METER POLE)
		DATE: 03/22/21	SCALE: 1/2" = 1'0"	
		REVISION DATE:	DWG NAME: Permanent Underground Service (Meter Pole).dwg	

GEUS Energizing the Community

Customer Wire Size for Full Service Capability based on NEC

Breaker rating (amps)	Min Meter socket rating (amps)	Single Phase Dwelling unit (entire load) per NEC 310.15(B)(7)		Non Dwelling unit and individual panels of dwelling unit		Parallel conductors (Minimum of 1/0 AWG)			
						Same Conduit		Different Conduit	
		Copper	Aluminum	Copper	Aluminum	Copper	Aluminum	Copper	Aluminum
100	100	4 AWG (102 amps)	2 AWG (108 amps)	3 AWG (100 amps)	1 AWG (100 amps)				
125	125	2 AWG (139 amps)	1/0 AWG (145 amps)	1 AWG (130 amps)	2/0 AWG (135 amps)		2-1/0 AWG (216 amps)		2-1/0 AWG (240 amps)
150	125	1 AWG (157 amps)	2/0 AWG (163 amps)	1/0 AWG (150 amps)	3/0 AWG (155 amps)		2-1/0 AWG (216 amps)		2-1/0 AWG (240 amps)
175	150	1/0 AWG (181 amps)	3/0 AWG (187 amps)	2/0 AWG (175 amps)	4/0 AWG (180 amps)	2-1/0 AWG (272 Amps)	2-1/0 AWG (216 amps)	2-1/0 AWG (300 amps)	2-1/0 AWG (240 amps)
200	200	2/0 AWG (211 amps)	4/0 AWG (217 amps)	3/0 AWG (200 amps)	250 MCM (205 amps)	2-1/0 AWG (272 Amps)	2-1/0 AWG (216 amps)	2-1/0 AWG (300 amps)	2-1/0 AWG (240 amps)
300 (2-150 or 100 & 200)	320	250 MCM (307 amps)	350 MCM (301 amps)	350 MCM (310 amps)	500 MCM (310 amps)	2-2/0 AWG (312 Amps)	2-4/0 AWG (328 amps	2-1/0 AWG (300 amps)	2-4/0 AWG (360 amps)
325 (200 & 125)	320	300 MCM (343 amps)	400 MCM (325 amps)	400 MCM (335 amps)	600 MCM (340 amps)	2-3/0 AWG (360 Amps)	2-4/0 AWG (328 amps	2-2/0 AWG (350 amps	2-4/0 AWG (360 amps)
400 (2- 200)	320	400 MCM (404 amps)	600 MCM (410 amps)	600 MCM (420 amps)	900 MCM (425 amps)	2-4/0 AWG (416 amps)	2-300 MCM (368 amps)	2-3/0 AWG (400 amps)	2-250 MCM (410 amps)

Conduit size for 3 wire single phase service (6 wires if parallel)	1.25"	1.5"	2"	2.5"	3"	4"

Meter sockets are rated for 100% load continuously and 120% load for short periods of time. Breakers are rated for 80% load continuously and 100% load for short periods of time.

Wires are sized for fully loaded service. Smaller wire sizes may be permitted in certain situations depending on calculated load and NEC rules. If smaller wire is provided the burden of proof is on the installer.

320 amp meter socket for GEUS customers must be single phase.

GEUS
Energizing the Community

UNDERGROUND SPECIFICATION DRAWINGS

CONDUIT DETAILS

C1 – PRIMARY CONDUIT INSTALLATION
C2 – SECONDARY CONDUIT INSTALLATION
C3 – SERVICE CONDUIT INSTALLATION
C4 – PRIMARY & SECONDARY CONDUIT SAME DITCH INSTALLATION
C5 – 600 AMP & 200 AMP PRIMARY CONDUIT SAME DITCH INSTALLATION
C6 – DUCT BANK INSTALLATION
C7 – CONDUIT INSTALLATION CROSSING A ROAD RIGHT OF WAY
C8 – RISER DIAGRAM FOR PRIMARY & SECONDARY INSTALLATION

EASEMENT DETAILS

E1 – STREET EASEMENT
E2 – ALLEY EASEMENT

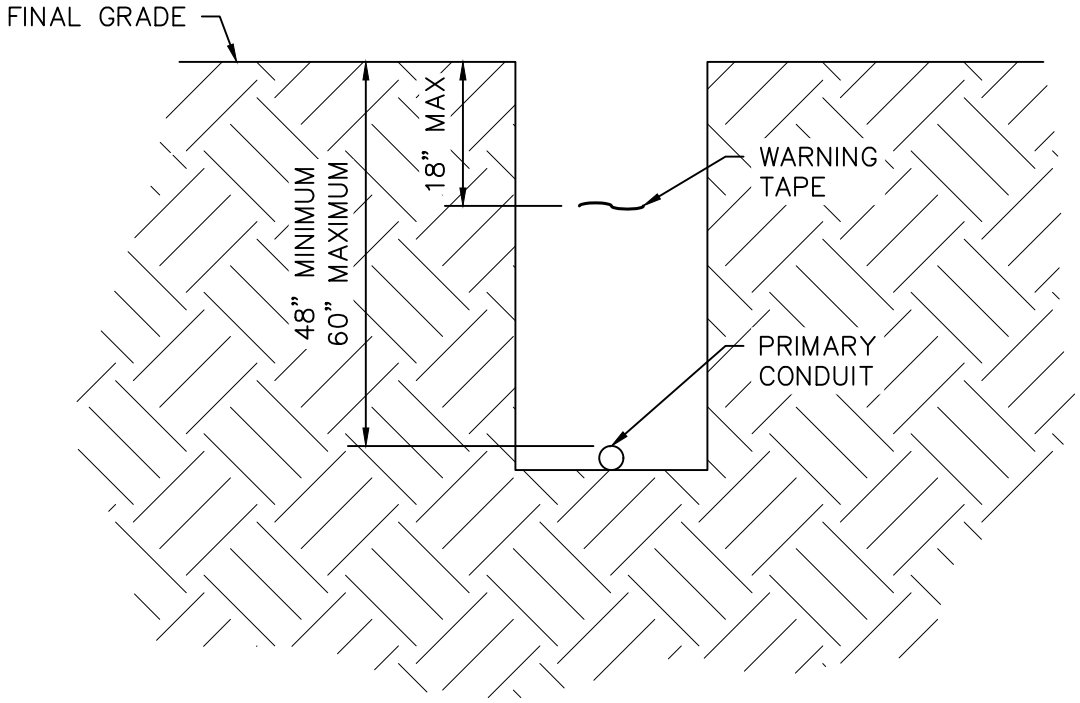
PEDESTAL DETAILS

P1 – SUBSURFACE PEDESTAL
P2 – SECONDARY PEDESTAL INSTALLATION

TRANSFORMER DETAILS

T1 – SINGLE PHASE TRANSFORMER PRECAST PAD
T2 – SINGLE PHASE TRANSFORMER INSTALLATION

PRIMARY CONDUIT INSTALLATION



NOTES:

1. CONSULT GEUS ENGINEERING FOR CONDUIT SIZE AND QUANTITY.
2. ALL CONDUIT SHALL BE SCH 40 PVC.
3. THIS CONSTRUCTION STANDARD IS FOR LABOR AND EQUIPMENT ONLY.
4. DISTANCE FROM CENTER OF TRENCH TO PROPERTY LINE OR EASEMENT TO BE COORDINATED BETWEEN GEUS ENGINEERING AND DEVELOPER PRIOR TO CONDUIT INSTALLATION.

GEUS Energizing the Community

SHEET INFORMATION: PRIMARY CONDUIT INSTALLATION

APPROVED BY: ZM

SCALE: 1/2"=1'-0"

DWG NAME: GEUS Underground Specification Drawings.dwg

DRAWN BY: JAD

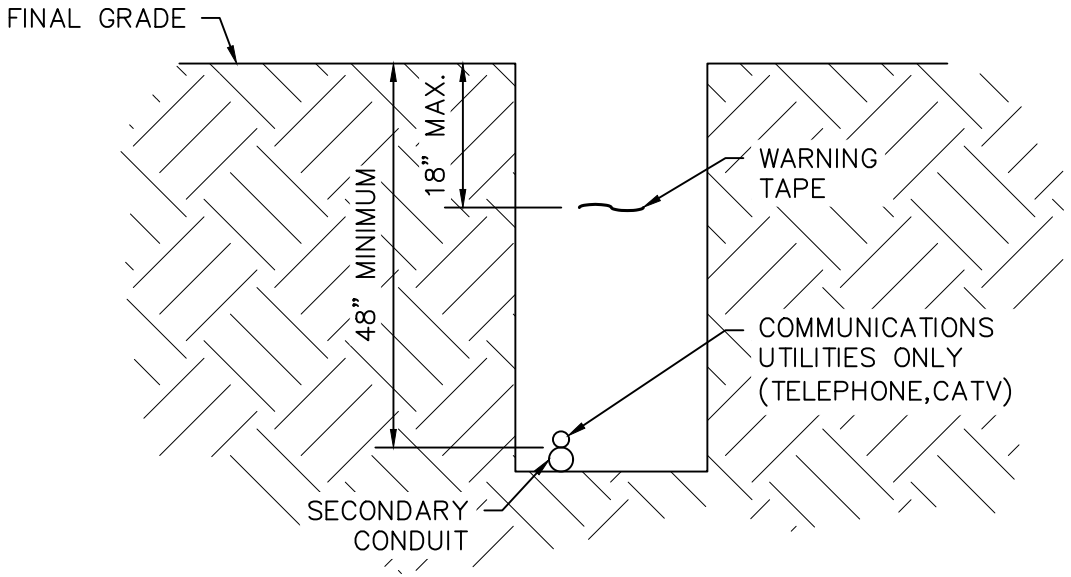
DATE: 06/10/21

REVISION DATE:

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS

SHEET# C1

SECONDARY CONDUIT INSTALLATION



NOTES:

1. CONSULT GEUS ENGINEERING FOR CONDUIT SIZE AND QUANTITY.
2. ALL CONDUIT SHALL BE SCH 40 PVC.
3. THIS CONSTRUCTION STANDARD IS FOR LABOR AND EQUIPMENT ONLY.
4. DISTANCE FROM CENTER OF TRENCH TO PROPERTY LINE OR EASEMENT TO BE COORDINATED BETWEEN GEUS ENGINEERING AND DEVELOPER PRIOR TO CONDUIT INSTALLATION.

GEUS Energizing the Community

SHEET INFORMATION: SECONDARY CONDUIT INSTALLATION

APPROVED BY: ZM

SCALE: 1/2"=1'-0"

DWG NAME: GEUS Underground Specification Drawings.dwg

DRAWN BY: CJC

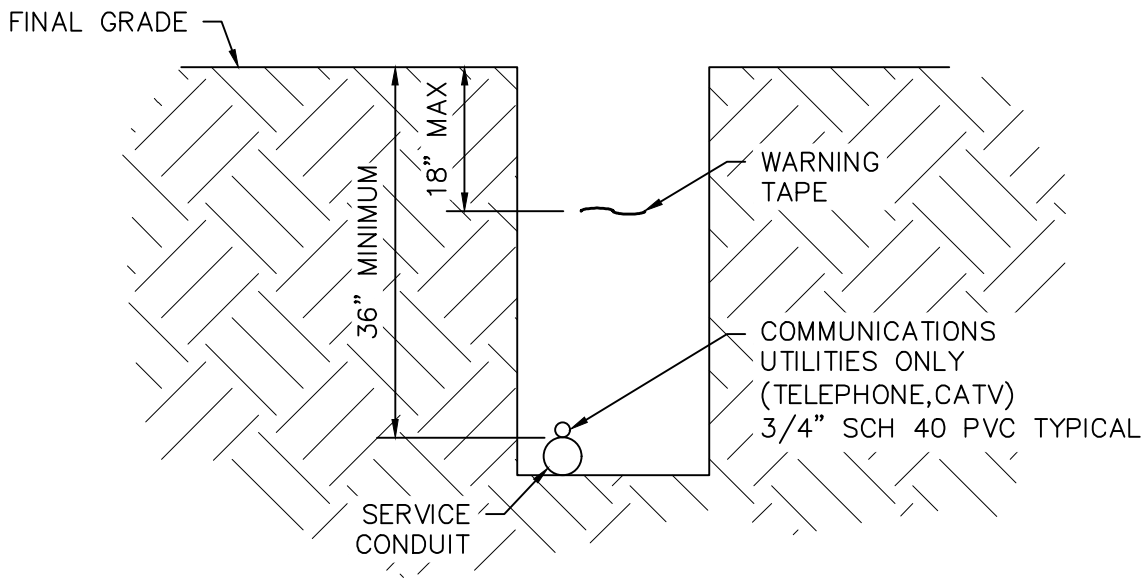
DATE: 07/14/22

REVISION DATE:

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS

SHEET# C2

SERVICE CONDUIT INSTALLATION



NOTES:

1. CONSULT GEUS ENGINEERING FOR CONDUIT SIZE AND QUANTITY.
2. ALL CONDUIT SHALL BE SCH 40 PVC.
3. THIS CONSTRUCTION STANDARD IS FOR LABOR AND EQUIPMENT ONLY.
4. DISTANCE FROM CENTER OF TRENCH TO PROPERTY LINE OR EASEMENT TO BE COORDINATED BETWEEN GEUS ENGINEERING AND DEVELOPER PRIOR TO CONDUIT INSTALLATION.

GEUS Energizing the Community

SHEET INFORMATION: SERVICE CONDUIT INSTALLATION

APPROVED BY: ZM

SCALE: 1/2"=1'-0"

DWG NAME: GEUS Underground Specification Drawings.dwg

DRAWN BY: CJC

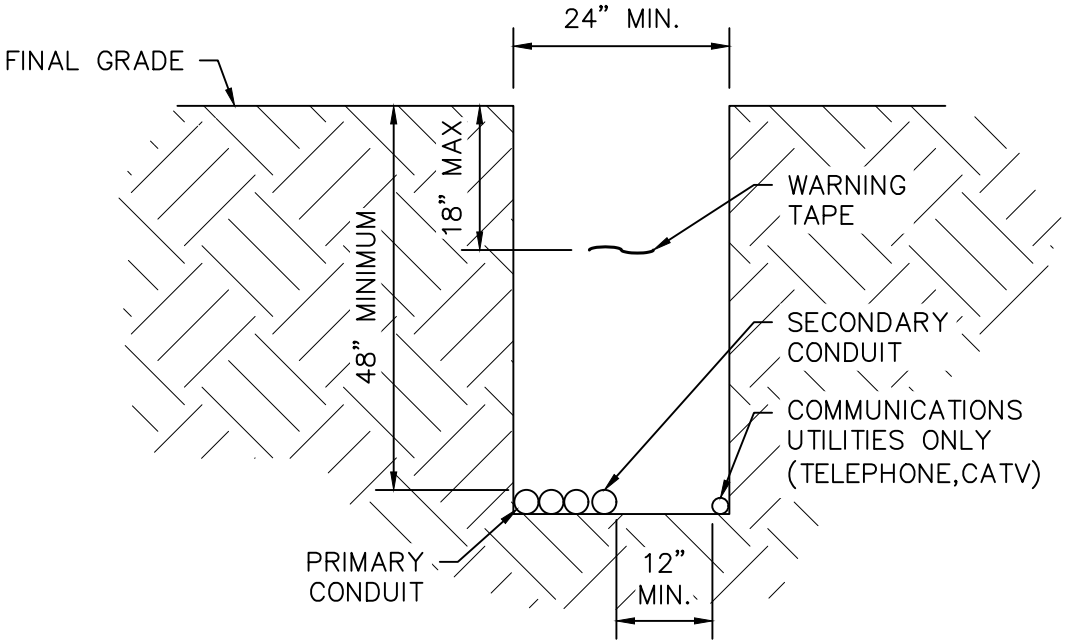
DATE: 07/14/22

REVISION DATE:

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS

SHEET# C3

PRIMARY & SECONDARY CONDUIT – SAME DITCH INSTALLATION



NOTES:

1. CONSULT GEUS ENGINEERING FOR CONDUIT SIZE AND QUANTITY.
2. ALL CONDUIT SHALL BE SCH 40 PVC.
3. THIS CONSTRUCTION STANDARD IS FOR LABOR AND EQUIPMENT ONLY.
4. DISTANCE FROM CENTER OF TRENCH TO PROPERTY LINE OR EASEMENT TO BE COORDINATED BETWEEN GEUS ENGINEERING AND DEVELOPER PRIOR TO CONDUIT INSTALLATION.

GEUS Energizing the Community

SHEET INFORMATION: PRIMARY & SECONDARY CONDUIT SAME DITCH INSTALLATION

APPROVED BY: ZM

SCALE: 1/2"=1'-0"

DWG NAME: GEUS Underground Specification Drawings.dwg

DRAWN BY: JAD

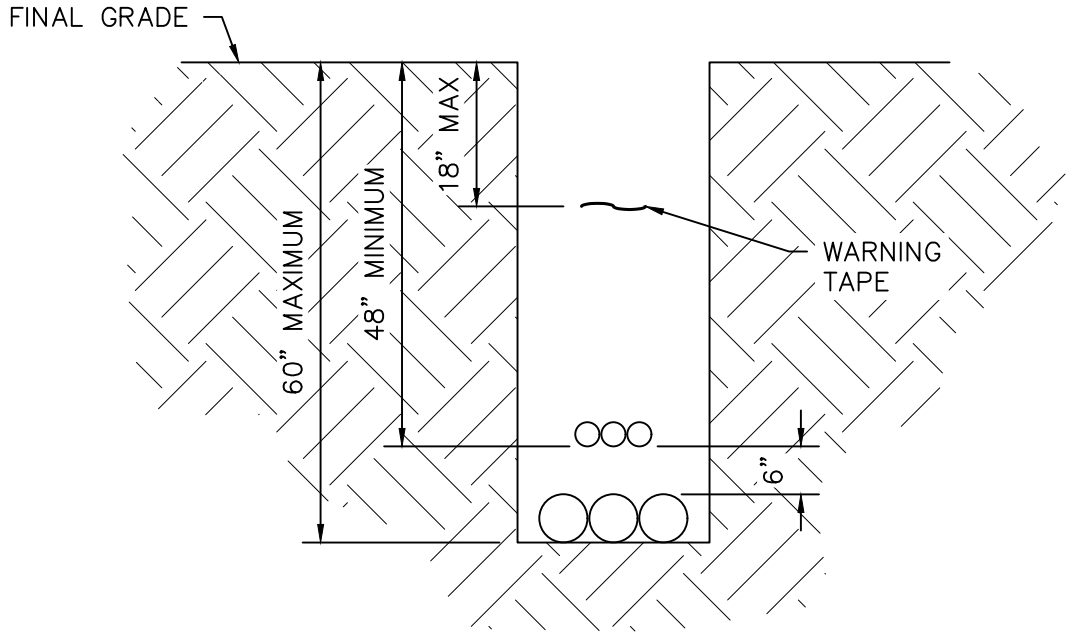
DATE: 06/10/21

REVISION DATE:

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS

SHEET# C4

600 AMP & 200 AMP PRIMARY CONDUIT – SAME DITCH INSTALLATION



NOTES:

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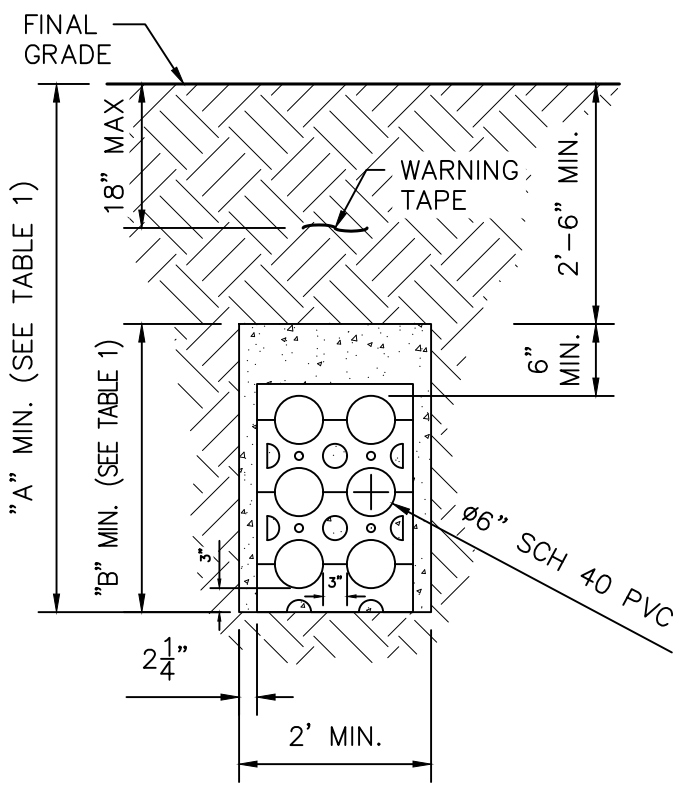
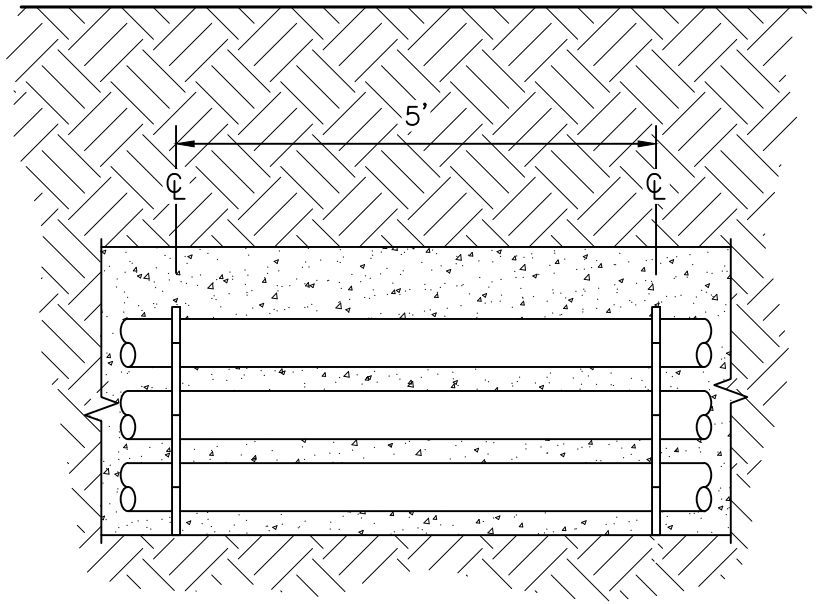
2. ALL CONDUIT SHALL BE SCH 40 PVC.
3. THIS CONSTRUCTION STANDARD IS FOR LABOR AND EQUIPMENT ONLY.
4. DISTANCE FROM CENTER OF TRENCH TO PROPERTY LINE OR EASEMENT TO BE COORDINATED BETWEEN GEUS ENGINEERING AND DEVELOPER PRIOR TO CONDUIT INSTALLATION.

GEUS Energizing the Community

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS	DRAWN BY: JAD	APPROVED BY: ZM	SHEET INFORMATION: 600 AMP & 200 AMP PRIMARY CONDUIT SAME DITCH INSTALLATION
	DATE: 06/10/21	SCALE: 1/2"=1'-0"	DWG NAME: GEUS Underground Specification Drawings.dwg
	REVISION DATE:		
SHEET# C5			



END VIEW OF TRENCH
(TYPICAL 6E6 DUCT INSTALLATION SHOWN)



SECTION VIEW OF TRENCH

TABLE 1					
DIMENSIONS	2E6	4E6	6E6	8E6	10E6
A (MIN)	3'-10"	4'-8"	5'-6"	6'-4"	7'-2"
B (MIN)	1'-4"	2'-2"	3'-0"	3'-10"	4'-8"

NOTES:

1. CONDUIT TO BE 6" SCH 40 PVC FOR CONCRETE ENCASEMENT
2. CONCRETE ENCASEMENT ALL CONCRETE TO HAVE COMPRESSIVE STRENGTH OF 3000 PSI AT TWENTY EIGHT DAYS
3. INSTALL SPACERS EVERY 5 FEET. ALL SPACERS TO PROVIDE 3" VERTICAL AND HORIZONTAL SEPARATION BETWEEN CONDUITS.
4. INSTALL 6" GALV. CONDUIT BENDS AND ADAPTERS ON ANGLES GREATER THAN 15°.
5. BASE PADS NOT REQUIRED EXCEPT IN SANDY OR LOOSE SOIL.

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SHEET INFORMATION: DUCT BANK INSTALLATION

APPROVED BY: ZM

SCALE: 1/2"=1'-0"

DRAWN BY: JAD

DATE: 06/10/21

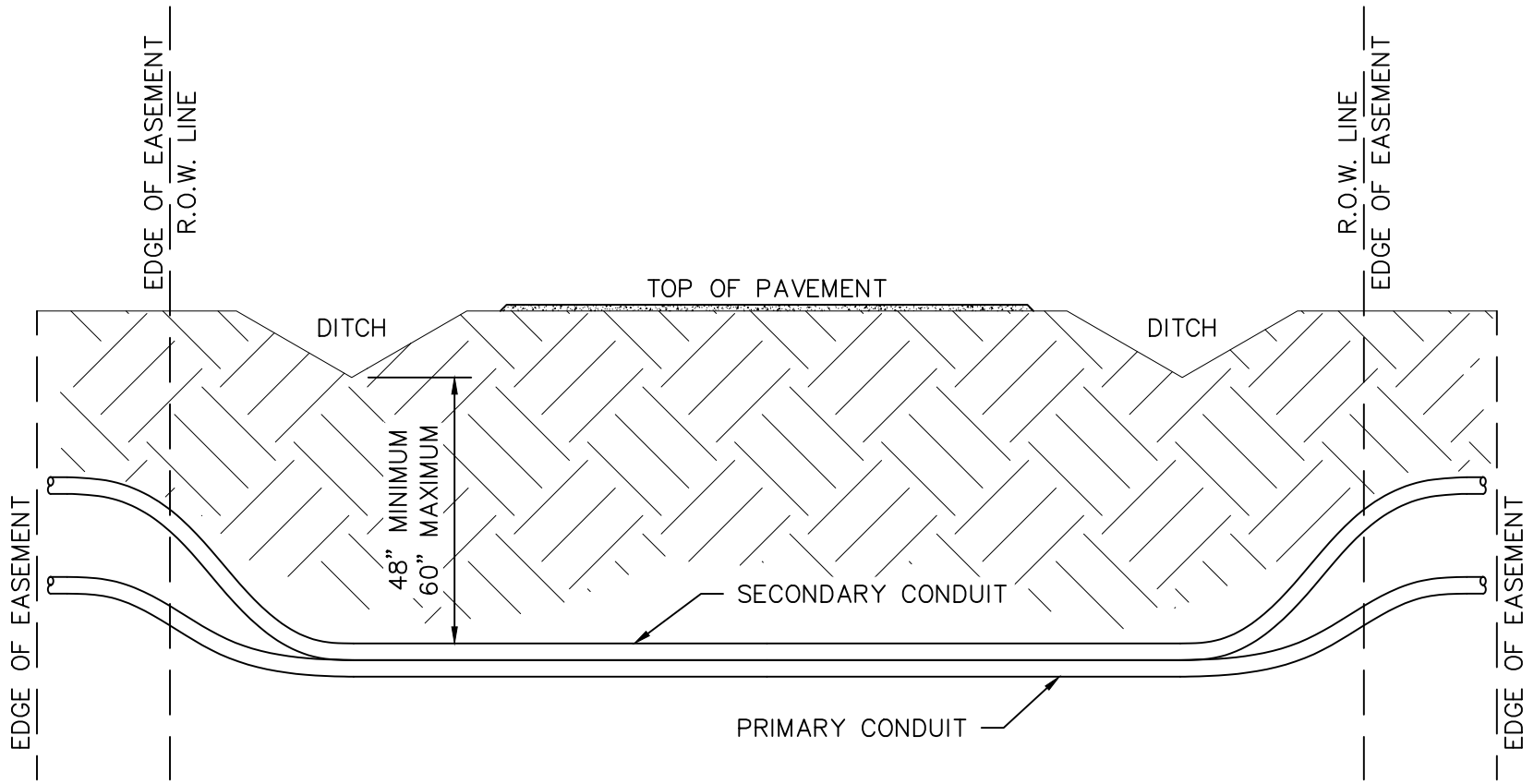
REVISION DATE:

DWG NAME: GEUS Underground Specification Drawings.dwg

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS

SHEET# 05

CONDUIT INSTALLATION
CROSSING A ROAD RIGHT OF WAY



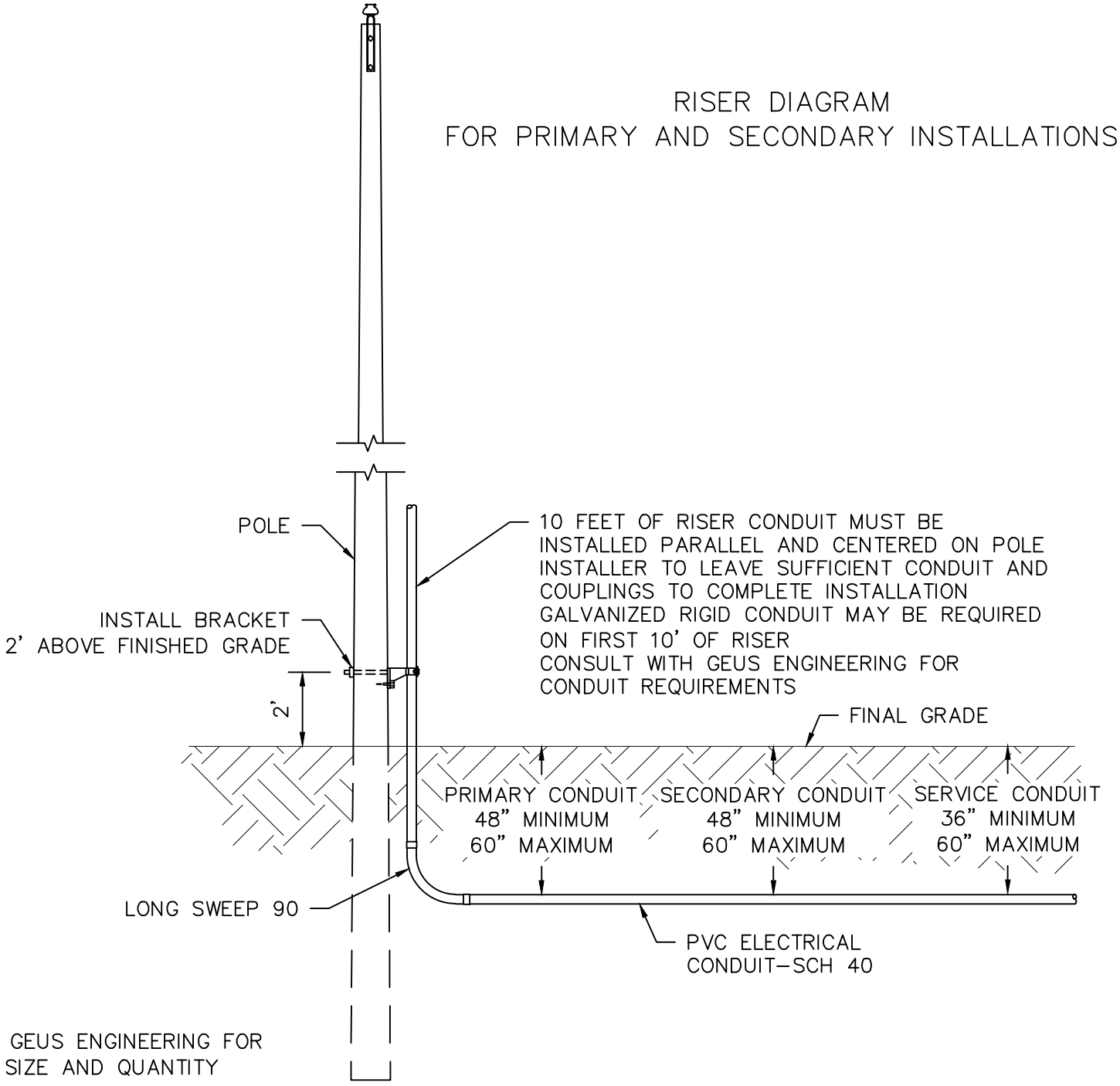
NOTES:

1. BACKFILL ROAD CROSSINGS PER LOCAL CODE REQUIREMENTS
2. INSTALL WARNING TAPE PER TRENCHING SPECIFICATIONS
3. WHEN TRENCHING, PRIMARY AND SECONDARY CONDUIT MAY BE INSTALLED WITHOUT SEPARATION UNDER PAVEMENT AND MUST TRANSITION TO NORMAL OPERATING DEPTH BEFORE EXITING ROAD RIGHT OF WAY AND ENTERING EASEMENT
4. WHEN BORING EXISTING ROAD, PRIMARY AND SECONDARY CONDUIT MAY BE INSTALLED WITHOUT SEPARATION FOR ENTIRE LENGTH OF ROAD RIGHT OF WAY AND MUST TRANSITION TO STANDARD DEPTHS IN EASEMENT AREA. 90'S OR 45'S WILL NOT BE ACCEPTED WHEN TRANSITIONING CONDUITS TO STANDARD DEPTHS

GEUS Energizing the Community

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS	DRAWN BY: JAD	APPROVED BY: ZM	SHEET INFORMATION: CONDUIT INSTALLATION CROSSING A ROAD R.O.W.
	DATE: 06/10/21	SCALE: 3/8"=1'-0"	DWG NAME: GEUS Underground Specification Drawings.dwg
	REVISION DATE:		
SHEET# C7			

RISER DIAGRAM
FOR PRIMARY AND SECONDARY INSTALLATIONS



NOTES:

1. CONSULT GEUS ENGINEERING FOR CONDUIT SIZE AND QUANTITY

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SHEET INFORMATION: RISER DIAGRAM FOR PRIMARY AND SECONADRY INSTALLATIONS

APPROVED BY: ZM

SCALE: 1/4"=1'-0"

DWG NAME: GEUS Underground Specification Drawings.dwg

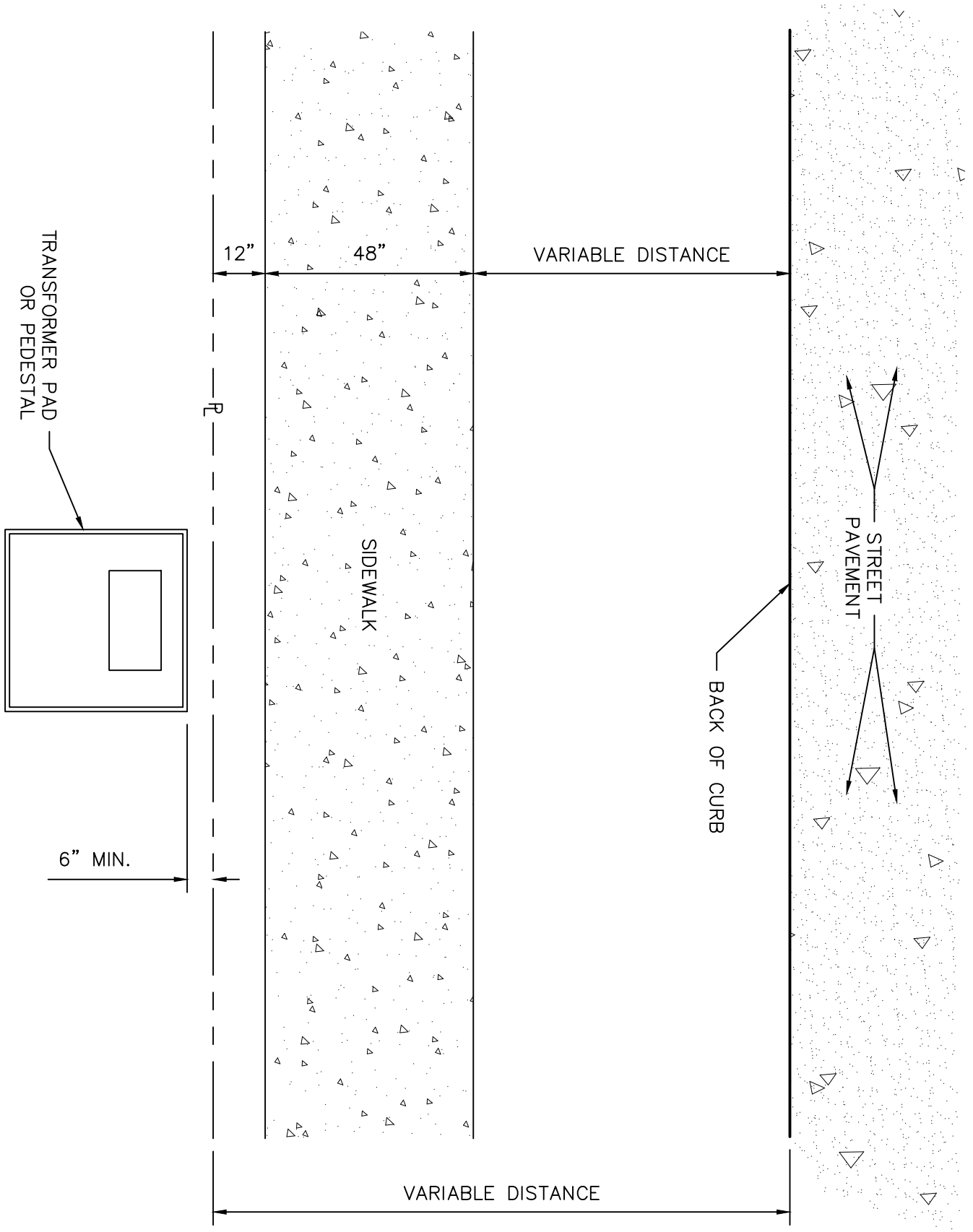
DRAWN BY: CJC

DATE: 07/14/22

REVISION DATE:

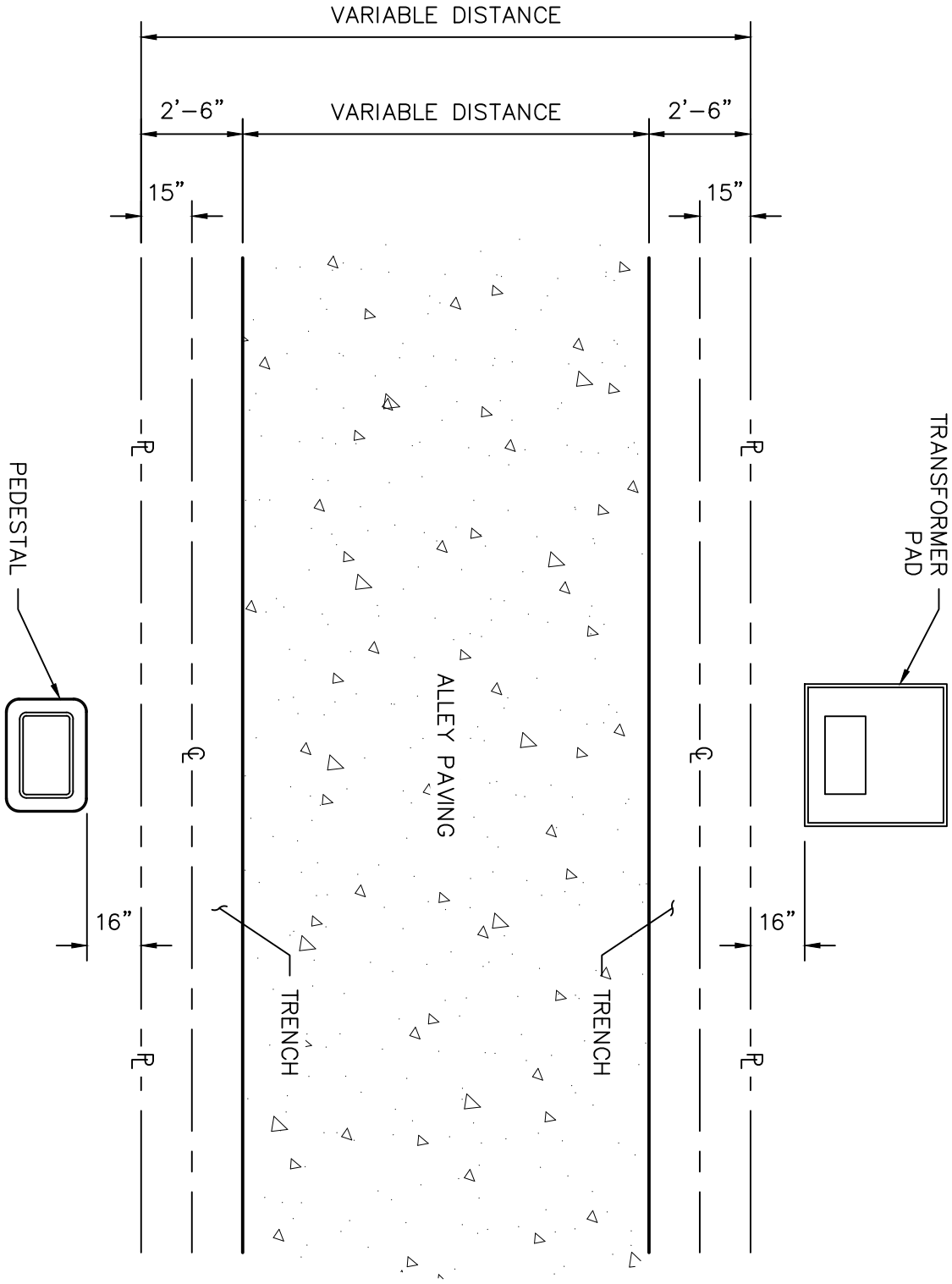
MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS

SHEET# C 08



SHEET# E1	MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS	DRAWN BY: JAD	APPROVED BY: ZM	SHEET INFORMATION: STREET EASEMENTS
		DATE: 06/10/21	SCALE: 3/8"=1'-0"	
		REVISION DATE:	DWG NAME: GEUS Underground Specification Drawings.dwg	

GEUS Energizing the Community



SHEET# E2	MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS	DRAWN BY: JAD	APPROVED BY: ZM	SHEET INFORMATION: ALLEY EASEMENTS
		DATE: 06/10/21	SCALE: 1/4"=1'-0"	
		REVISION DATE:	DWG NAME: GEUS Underground Specification Drawings.dwg	

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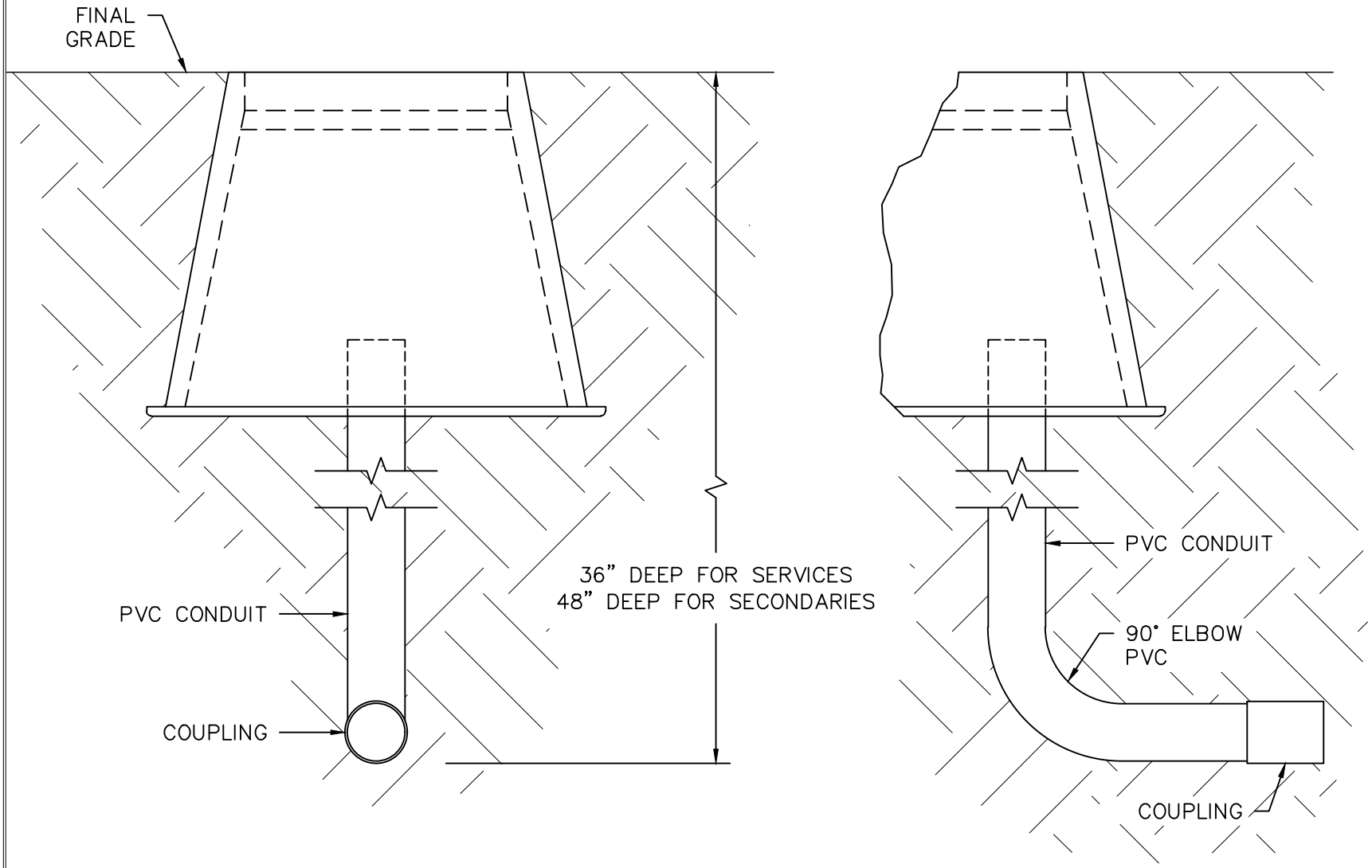
SUBSURFACE PEDESTAL



NOTES:
1. CONSULT GEUS ENGINEERING FOR CONDUIT SIZE AND QUANTITY.

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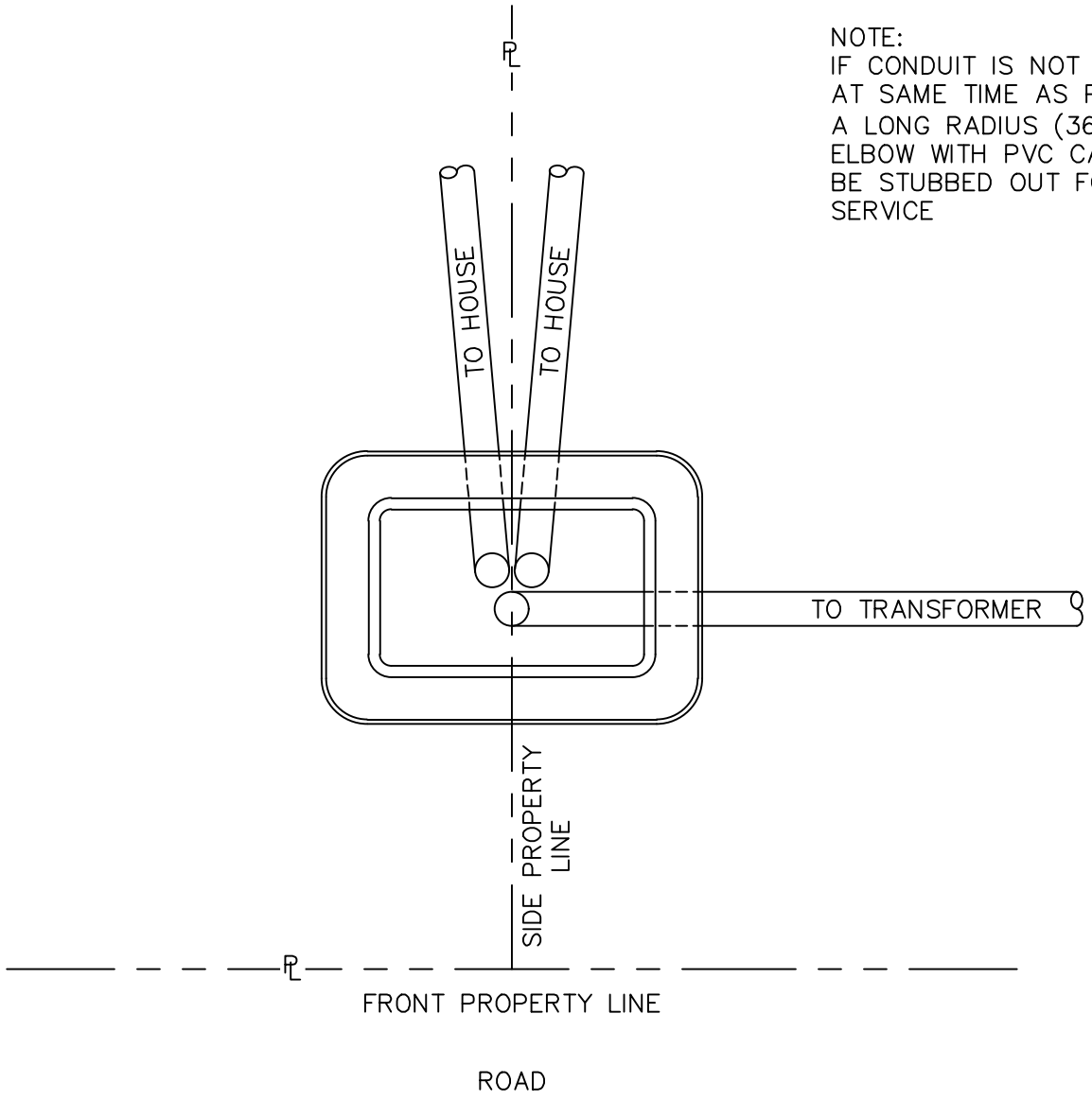
SHEET INFORMATION: SUBSURFACE PEDESTAL
APPROVED BY: ZM
SCALE: 1-1/2"=1'-0"
DWG NAME: GEUS Underground Specification Drawings.dwg
DRAWN BY: CJC
DATE: 07/14/22
REVISION DATE:
MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS
SHEET# D 1

SECONDARY PEDESTAL INSTALLATION



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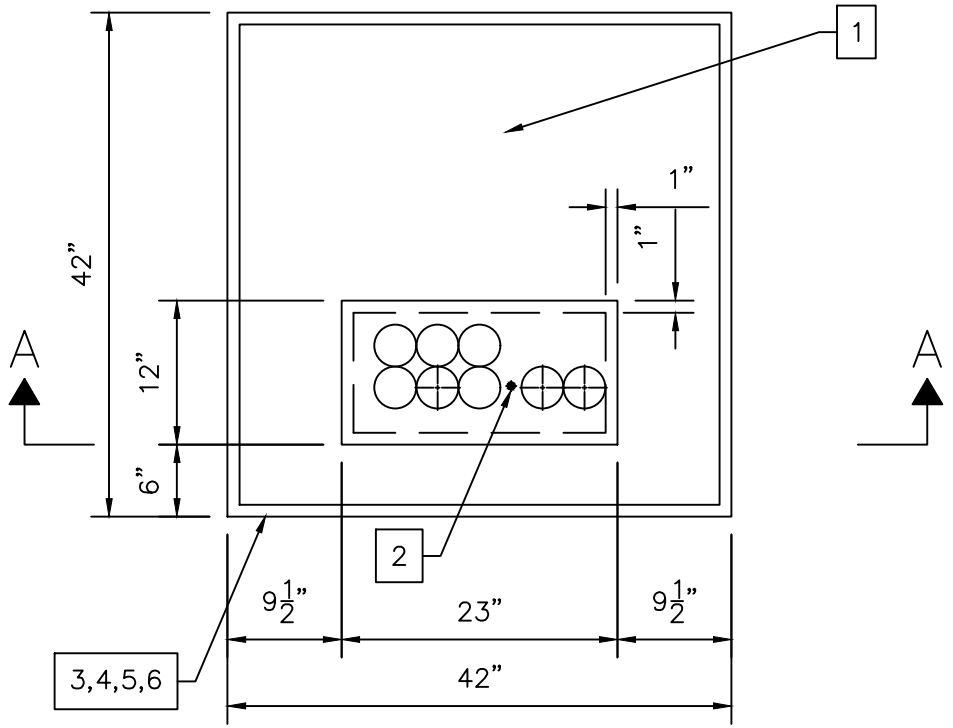
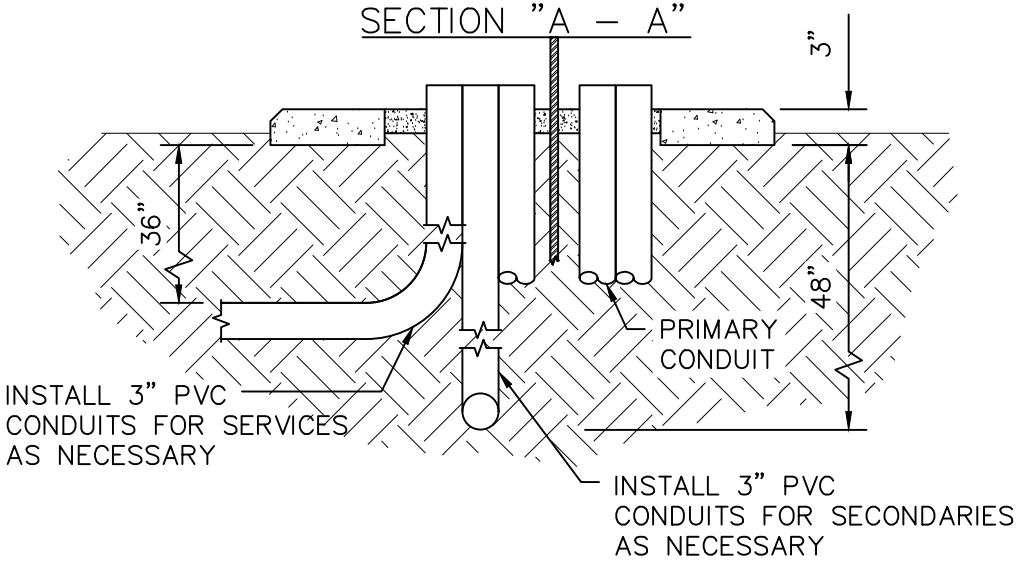
MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS	DRAWN BY: CJC	APPROVED BY: ZM	SHEET INFORMATION: SECONDARY PEDESTAL INSTALLATION
	DATE: 07/14/22	SCALE: 3/4"=1'-0"	
	REVISION DATE:	DWG NAME: GEUS Underground Specification Drawings.dwg	
SHEET# D 2			

SINGLE PHASE
TRANSFORMER PRECAST PAD





NOTE:

1. A PRECAST FIBERCRETE PAD SHALL BE USED.
2. GROUND ROD SHALL EXTEND 6" ABOVE GROUND SURFACE
3. FRONT OF PAD SHALL BE PARALLEL TO PROPERTY LINE, SIDEWALK, CURB, OR STREET AS DIRECTED BY GEUS.
4. PAD SHALL BE FULLY SUPPORTED BY COMPACTED SOIL AND LEVEL WHERE OPPOSITE SIDES OF PAD IN ANY DIRECTION SHALL NOT VARY MORE THAN $\frac{1}{2}$" .
5. SOIL AROUND PAD MUST SLOPE NO MORE THAN 30° FROM HORIZONTAL. SLOPED SOIL SHALL BE COMPACTED
6. THE FINAL GRADE IN THE 42"X 48" SECTION IN FRONT OF PAD MUST BE AT OR LOWER THAN PAD ELEVATION

ITEM	QTY	DESCRIPTION
1	1	PAD, TRANSFORMER, PRECAST FIBERCRETE 42" X 42"
2	1	ROD, GROUND 5/8" X 8' CU

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SHEET INFORMATION: SINGLE PHASE TRANSFORMER PRECAST PAD

APPROVED BY: ZVM

SCALE: 3/4"=1'-0"

DWG NAME: GEUS Underground Specification Drawings 4-24-2023.dwg

DRAWN BY: JRS

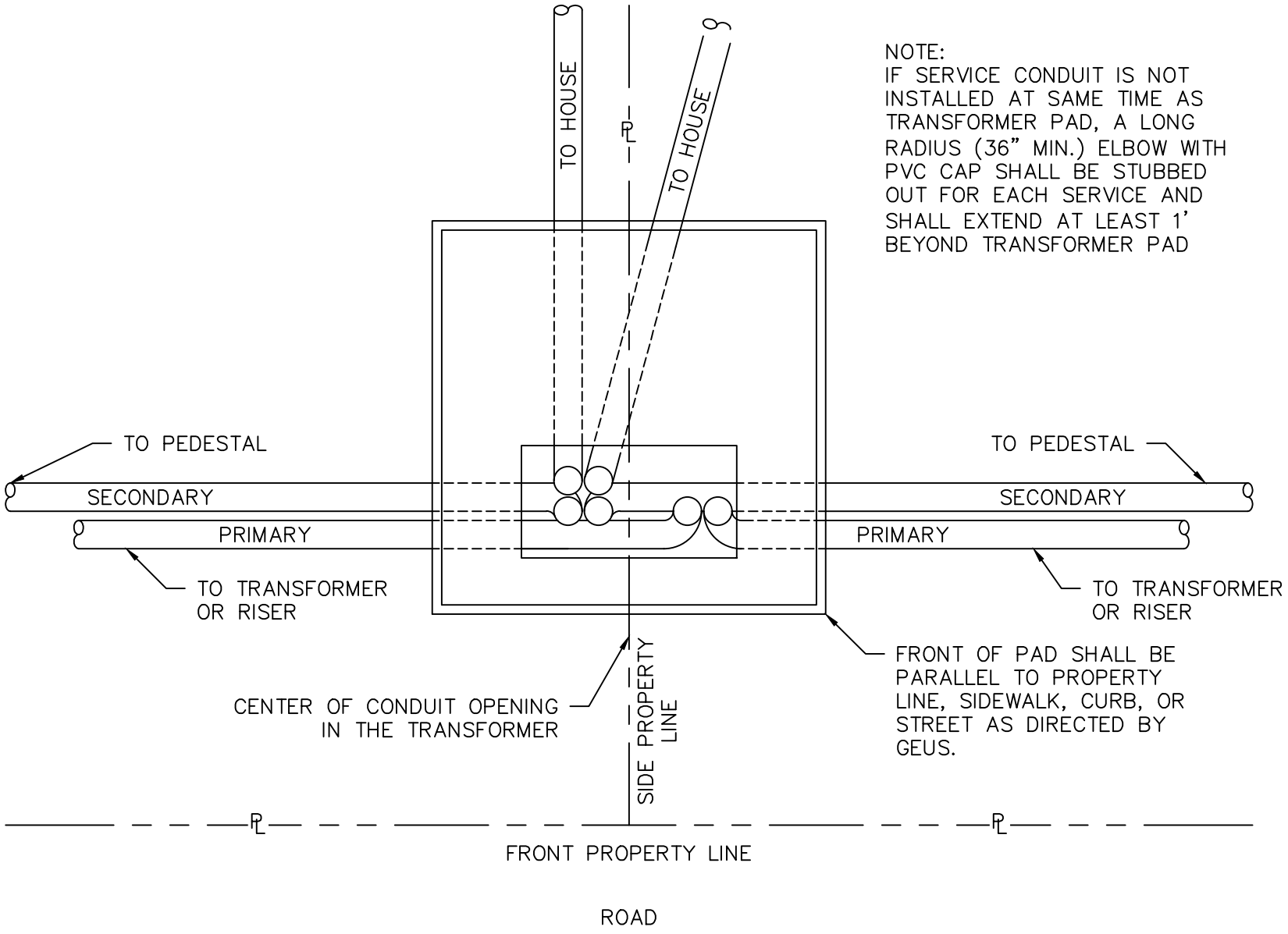
DATE: 07/14/22

REVISION DATE: 4/26/23

MULTI SHEET DRAWING INFORMATION: GEUS UNDERGROUND SPECIFICATION DRAWINGS

SHEET# 11

FRONT LOT TRANSFORMER PAD INSTALLATION
REFER TO SINGLE PHASE XFRMR PAD DRAWING FOR CONDUIT SPACING

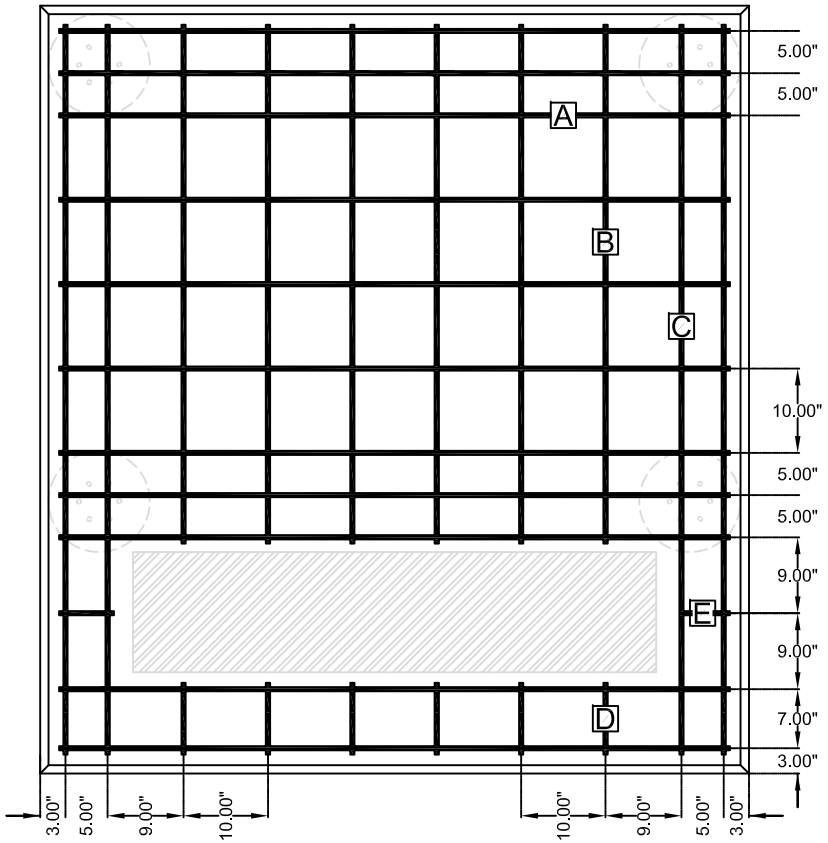


Energizing the Community

GEUS Underground Specification Drawings 4-24-2023.dwg

SHEET INFORMATION:	SINGLE PHASE TRANSFORMER PAD INSTALLATION
APPROVED BY:	ZVM
SCALE:	3/4"=1'-0"
DWG. NAME:	GEUS Underground Specification Drawings 4-24-2023.dwg
DRAWN BY:	JRS
DATE:	07/14/22
REVISION DATE:	4/26/23
MULTI SHEET DRAWING INFORMATION:	GEUS UNDERGROUND SPECIFICATION DRAWINGS
SHEET#	T2

TOP VIEW STEEL LAYOUT



FRONT VIEW STEEL LAYOUT

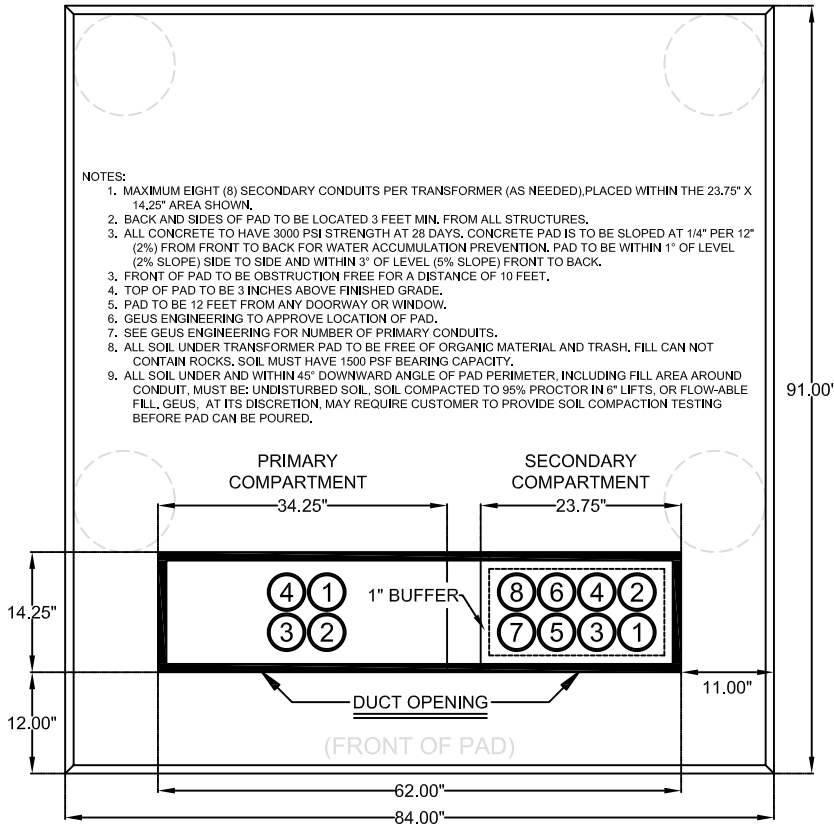
SEE UM3.3
FOR PIER DETAIL

REINFORCING SCHEDULE				
CALLOUT	SIZE	LENGTH	QUANTITY	SHAPE
A	#4	78"	11	STRAIGHT
B	#4	60"	6	STRAIGHT
C	#4	85"	4	STRAIGHT
D	#4	7"	6	STRAIGHT
E	#4	5"	2	STRAIGHT

REINFORCING NOTES:
1. REINFORCING STEEL TIES MUST MAINTAIN INTENDED POSITION OF STEEL DURING POUR. REINFORCING STEEL CROSSINGS TO BE TIED AT PERIPHERY AND EVERY 3RD CROSSING. MORE TIES MAY BE NECESSARY.
2. REBAR CHAIRS OR OTHER APPROVED MEANS MUST BE USED TO MAINTAIN CLEARANCE FROM EARTH.
3. NO 4 REBAR TO BE PLACED ON 10" CENTERS ONLESS OTHERWISE NOTED.

TOP VIEW

NOTES:
1. MAXIMUM EIGHT (8) SECONDARY CONDUITS PER TRANSFORMER (AS NEEDED),PLACED WITHIN THE 23.75" X 14.25" AREA SHOWN.
2. BACK AND SIDES OF PAD TO BE LOCATED 3 FEET MIN. FROM ALL STRUCTURES.
3. ALL CONCRETE TO HAVE 3000 PSI STRENGTH AT 28 DAYS. CONCRETE PAD IS TO BE SLOPED AT 1/4" PER 12" (2%) FROM FRONT TO BACK FOR WATER ACCUMULATION PREVENTION. PAD TO BE WITHIN 1° OF LEVEL (2% SLOPE) SIDE TO SIDE AND WITHIN 3° OF LEVEL (5% SLOPE) FRONT TO BACK.
3. FRONT OF PAD TO BE OBSTRUCTION FREE FOR A DISTANCE OF 10 FEET.
4. TOP OF PAD TO BE 3 INCHES ABOVE FINISHED GRADE.
5. PAD TO BE 12 FEET FROM ANY DOORWAY OR WINDOW.
6. GEUS ENGINEERING TO APPROVE LOCATION OF PAD.
7. SEE GEUS ENGINEERING FOR NUMBER OF PRIMARY CONDUITS.
8. ALL SOIL UNDER TRANSFORMER PAD TO BE FREE OF ORGANIC MATERIAL AND TRASH. FILL CAN NOT CONTAIN ROCKS. SOIL MUST HAVE 1500 PSF BEARING CAPACITY.
9. ALL SOIL UNDER AND WITHIN 45° DOWNWARD ANGLE OF PAD PERIMETER, INCLUDING FILL AREA AROUND CONDUIT, MUST BE: UNDISTURBED SOIL, SOIL COMPACTED TO 95% PROCTOR IN 6" LIFTS, OR FLOW-ABLE FILL, GEUS, AT ITS DISCRETION, MAY REQUIRE CUSTOMER TO PROVIDE SOIL COMPACTION TESTING BEFORE PAD CAN BE POURED.



FRONT VIEW

SEE UM3.3
FOR PIER DETAIL

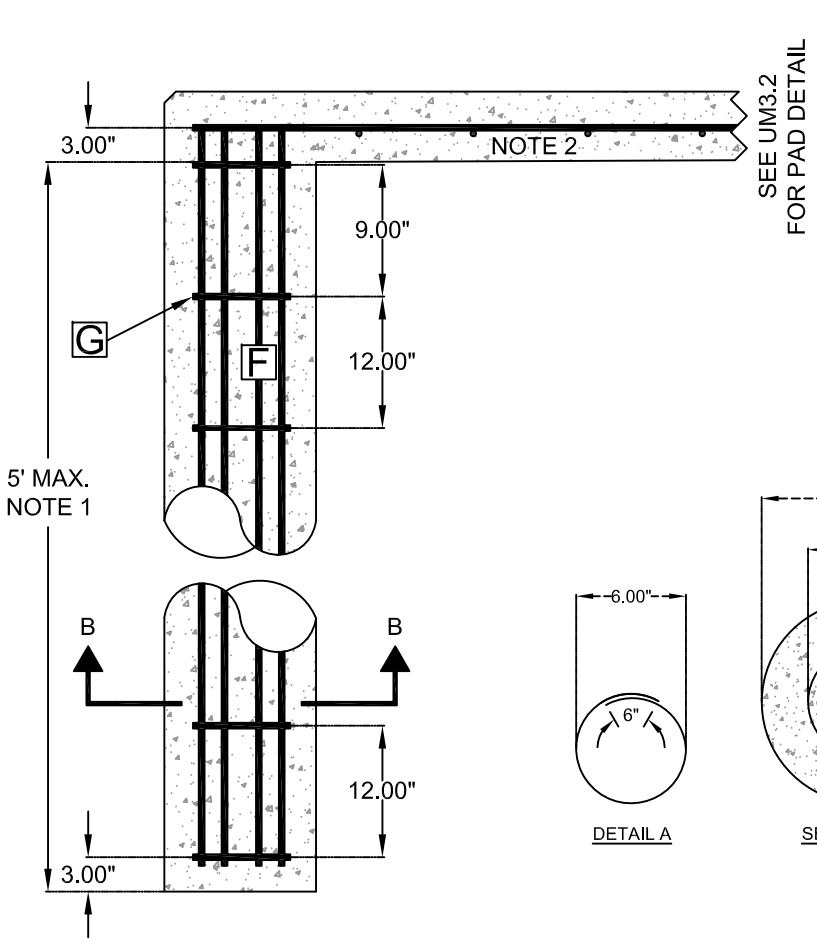
Energizing the Community

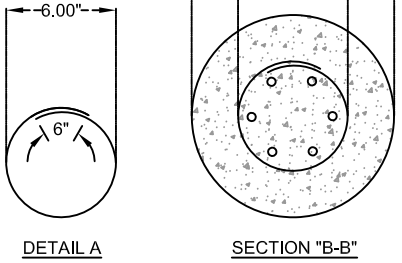
DRAWN BY	GM
CHK'D BY	ZM
APPROVED BY	ZM

CONCRETE PAD FOR THREE-PHASE
PAD-MOUNTED TRANSFORMER

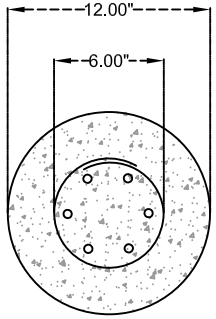
DATE 1/14/2019

DWG NO. UM3.2

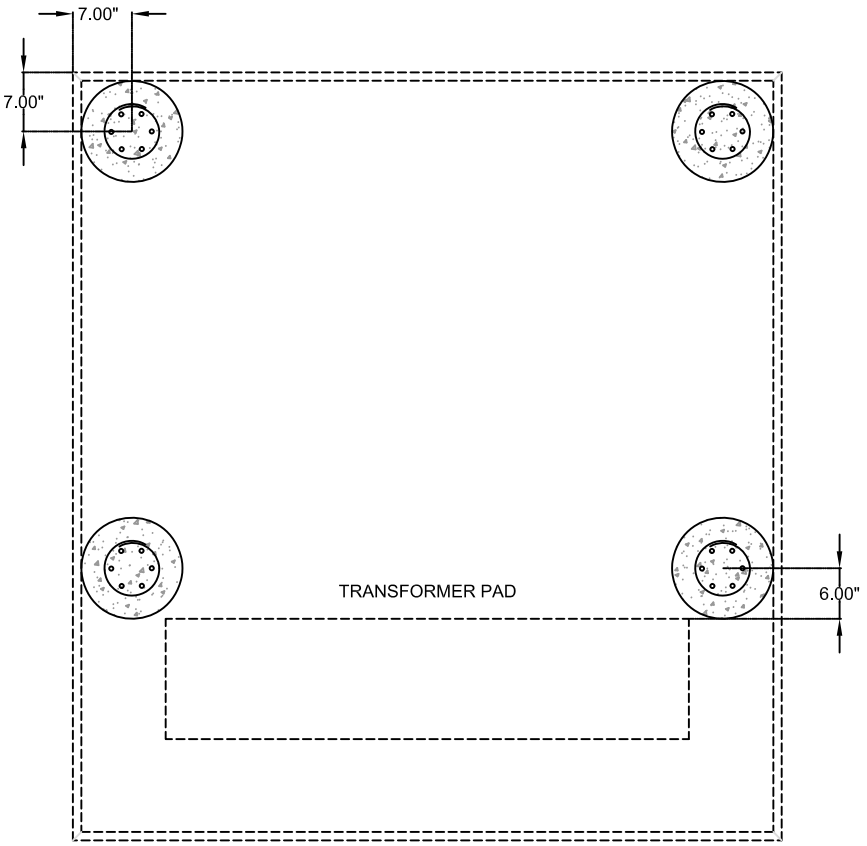




DETAIL A



SECTION "B-B"



NOTES:
1. PIER DEPTH SHALL BE 5 FEET BELOW BOTTOM OF PAD UNLESS ROCK OR OTHER HARD SURFACES ARE ENCOUNTERED. IF ROCK OR OTHER HARD SURFACES ARE ENCOUNTERED PRIOR TO A 5 FOOT DEPTH, PIER DEPTH SHALL EXTEND 6 INCHES INTO THE HARD SURFACE.
2. PIER REINFORCING TO EXTEND 3 INCHES INTO PAD.
3. REINFORCING STEEL TIES MUST MAINTAIN INTENDED POSITION OF STEEL DURING POUR. REINFORCING STEEL CROSSINGS TO BE TIED AT PERIPHERY EVERY 3RD CROSSING AND AT CLOSEST CROSSING TO SPLICE. HOOPS SHALL HAVE 2 TIES AT SPLICE,. MORE TIES MAY BE NECESSARY.
4. HOOPS TO BE PLACED AT 12" CENTERS UNLESS OTHERWISE NOTED.

REINFORCING SCHEDULE				
CALLOUT	SIZE	LENGTH	QUANTITY	SHAPE
F	#5	60"	24	STRAIGHT
G	#3	25"	24	HOOP (DETAIL - "A")

DATE 1/14/2019

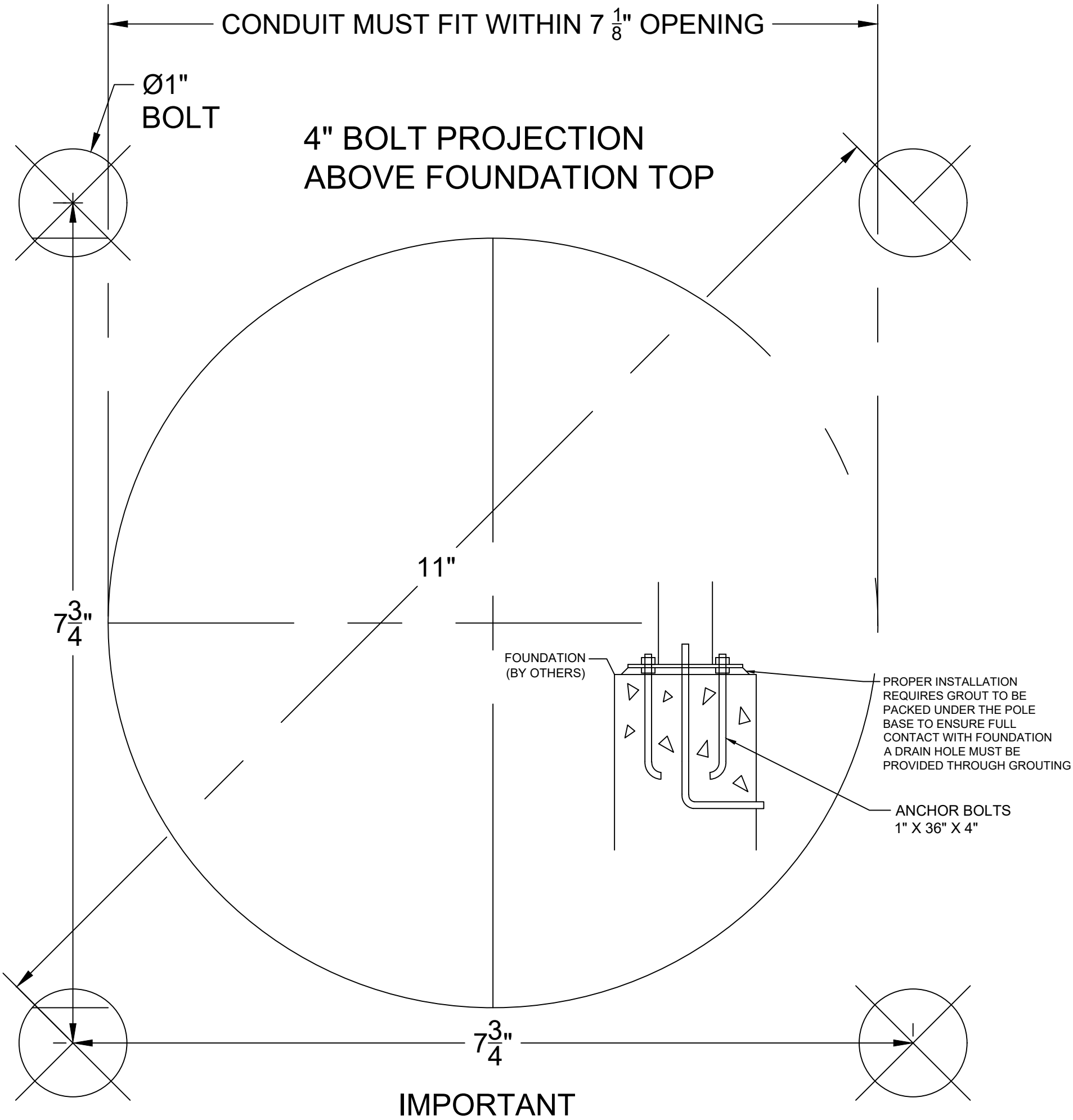
DWG NO. UM3.3

CONCRETE PAD PIER DETAILS FOR THREE PHASE PAD-MOUNTED TRANSFORMER

DRAWN BY	CHK'D BY	APPROVED BY
GM	ZM	ZM

GEUS
Energizing the Community

11" DIAMETER BOLT CIRCLE
ANCHOR BOLT TEMPLATE



IMPORTANT

TO ENSURE ACCURACY PRIOR TO ANCHOR BOLT INSTALLATION, THE INSTALLER MUST VERIFY THE ANCHOR BOLT TEMPLATE CORRECTLY MATCHES JOB SPECIFICATIONS. **INSTALLER RESPONSIBLE FOR VERIFYING DIMENSIONS BEFORE USING TEMPLATE**. INTENDED TO PRINT ON 11X17.

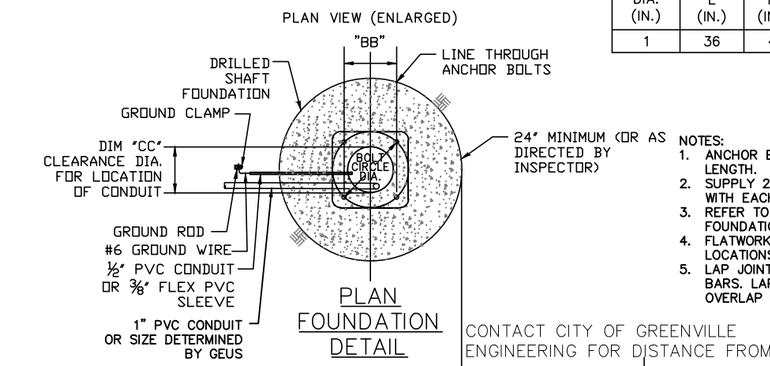
WJM PARTNERS, INC. WILL NOT ACCEPT LIABILITY FOR ANCHOR BOLTS INSTALLED INCORRECTLY.

PLEASE SEE GEUS SPECIFICATION FOR COMPLETE DETAILS. BOLTS MUST BE SUPPORTED IN VERTICAL POSITION UNTIL FOUNDATION IS CURED

ANCHOR BOLT TEMPLATE FOR 11" DIA. BOLT CIRCLE

ANCHOR BOLT SCHEDULE				
BOLT DIA. (IN.)	LENGTH "L" (IN.)	HOOK "H" (IN.)	THREAD "T" (IN.)	HEIGHT ABOVE FOUNDATION
1	36	4	6	4 ½"

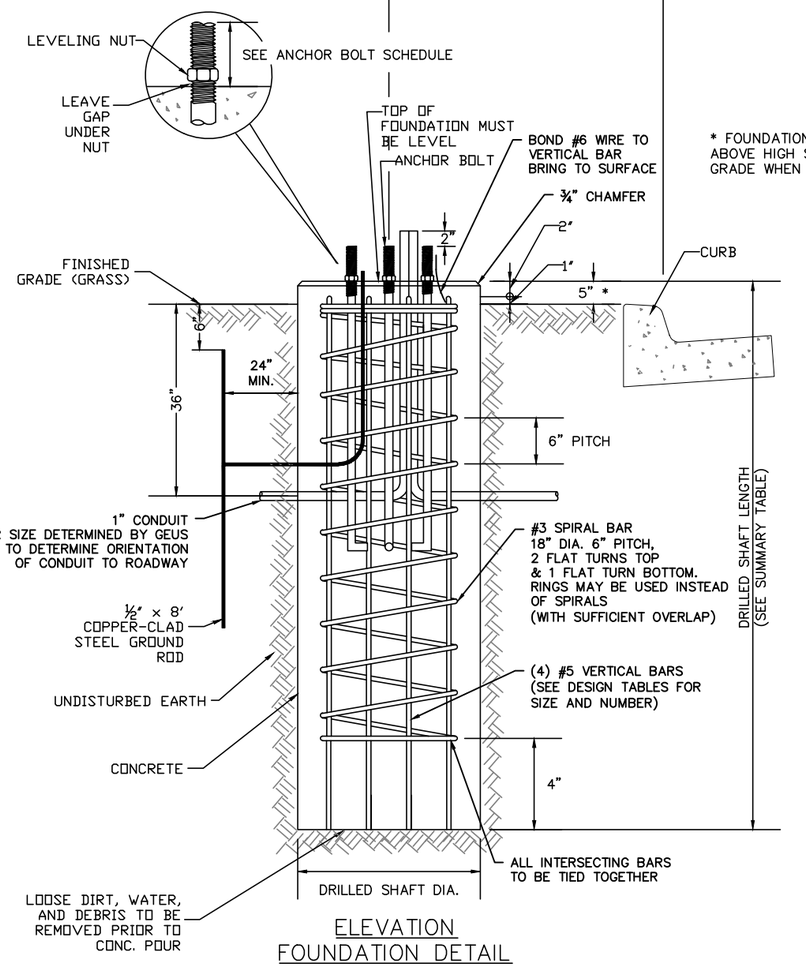
FOUNDATION DESIGN TABLE										
DRILLED SHAFT DIA.	REINFORCING STEEL		DRILLED SHAFT LENGTH (FEET)	GROUND ROD SIZE	ANCHOR BOLT DESIGN					DIM. "CC" CLEARANCE DIA. FOR LOCATION OF CONDUIT
	VERT. BARS	SPIRAL & PITCH			ANCHOR BOLT DIA.	ANCHOR BOLT TOTAL LENGTH	BOLT CIRCLE DIA.	ANCHOR TYPE NO.	DISTANCE ACROSS BOLTS DIM. "BB"	
24"	4–#5	18"x #3 AT 6"	8	½" x 8'	1"	40"	11"	47	7 25/32"	6 ½"



PLAN FOUNDATION DETAIL

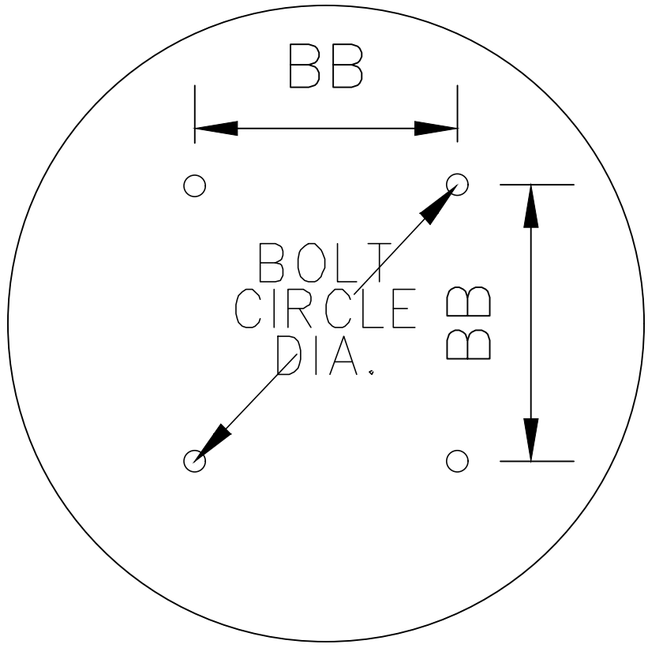
NOTES:
1. ANCHOR BOLTS SHALL BE GALVANIZED THE FULL LENGTH.
2. SUPPLY 2 NUTS, 2 WASHERS & 1 LOCK WASHER WITH EACH ANCHOR BOLT.
3. REFER TO DECORATIVE POLE DETAIL SHEETS FOR FOUNDATION AND ANCHOR BOLT DETAILS.
4. FLATWORK NEEDS TO BE LEVELED OUT AT LOCATIONS OF POLE FOUNDATIONS.
5. LAP JOINTS ARE NOT PERMITTED ON VERTICAL BARS. LAP JOINTS ON SPIRAL RINGS MUST OVERLAP BY 40 DIAMETERS AND CONTAIN 3 TIES.

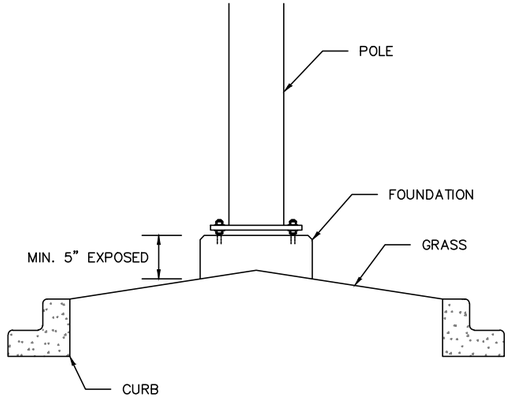
CONTACT CITY OF GREENVILLE ENGINEERING FOR DISTANCE FROM CURB



ELEVATION FOUNDATION DETAIL

* FOUNDATION SHALL BE 5" ABOVE HIGH SIDE OF FINISHED GRADE WHEN ON A SLOPE.





MEDIAN FOUNDATION DETAIL

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STREET LIGHT FOUNDATION DETAILS

SHEET INFORMATION:

APPROVED BY: ZVM

SCALE: NTS

REVISED BY: JRS

DATE: 2/11/2021

REVISION DATE: 4/26/2023

DWG NAME: Street Light Foundation Details_Revised_April_2023.dwg

MULTI SHEET DRAWING INFORMATION:

SHEET# 101