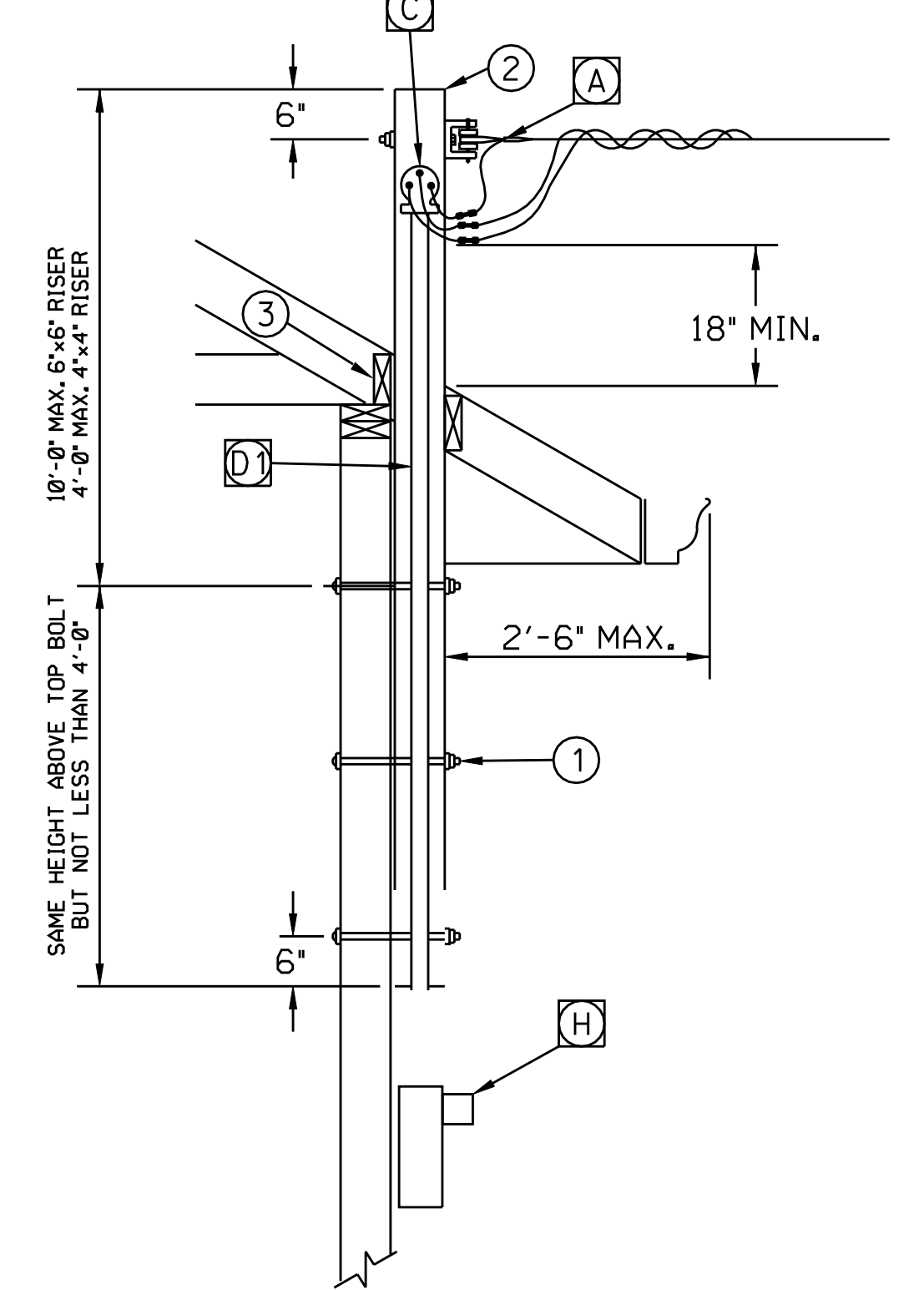
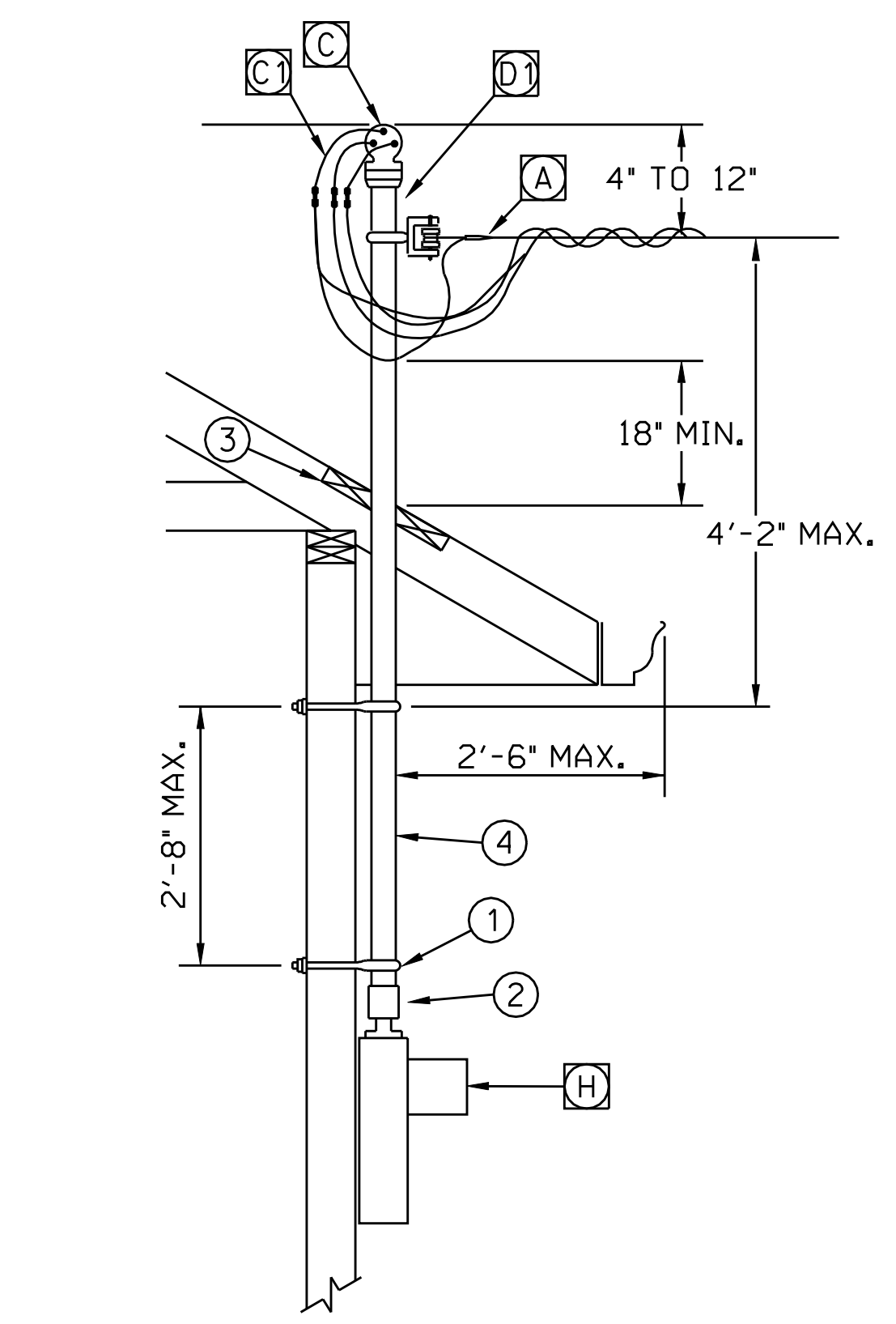


MIN. 12'-0" AT POINT OF ATTACHMENT
 MIN. 12'-0" OVER RESIDENTIAL PROPERTY AND DRIVEWAYS
 MIN. 18'-0" OVER DRIVEWAYS AND PARKING AREAS WHICH ARE SUBJECT TO TRUCK TRAFFIC

NOTE: MINIMUM SERVICE SIZE FOR NEW ONE OR TWO FAMILY DWELLING IS 200 A.
 MINIMUM SERVICE SIZE FOR NEW MULTI FAMILY OR 3 OR MORE ATTACHED FAMILY IS 100 A.



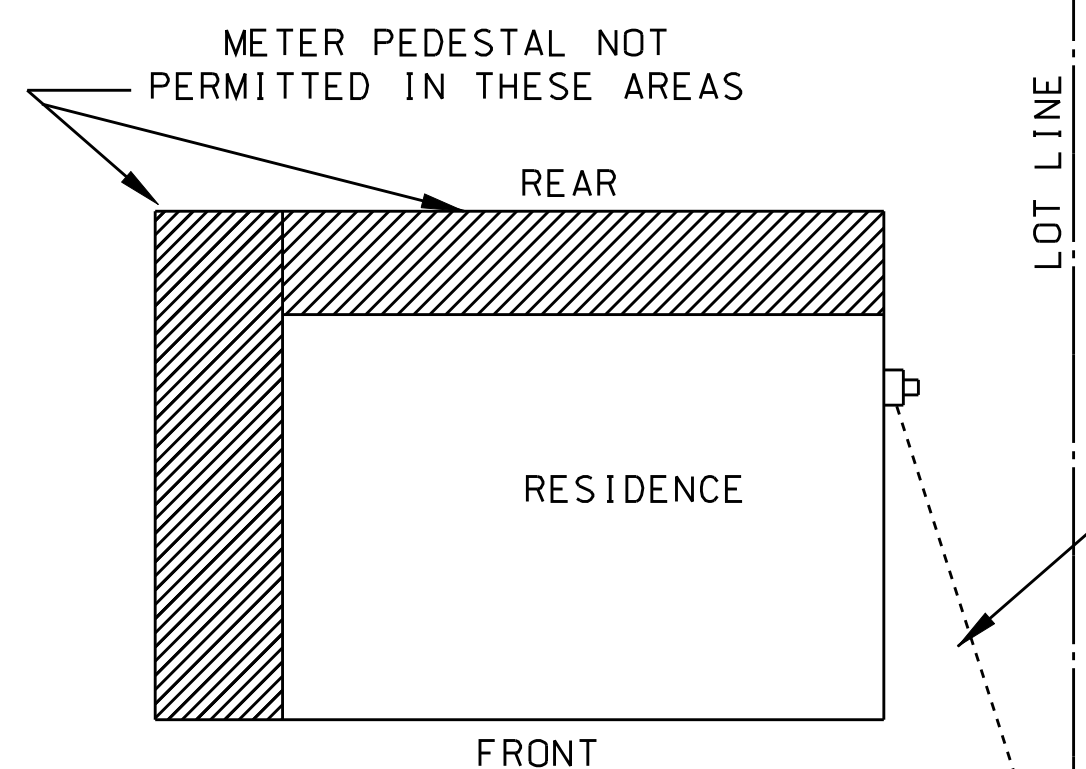
- ① 5/8" GALVANIZED MOUNTING BOLTS (WITH NUTS & WASHERS).
- ② 4"x4" OR 6"x6" PRESERVATIVE TREATED WOOD POST.
- ③ 2"x4" BLOCKING SOLIDLY INSTALLED BETWEEN RAFTERS.



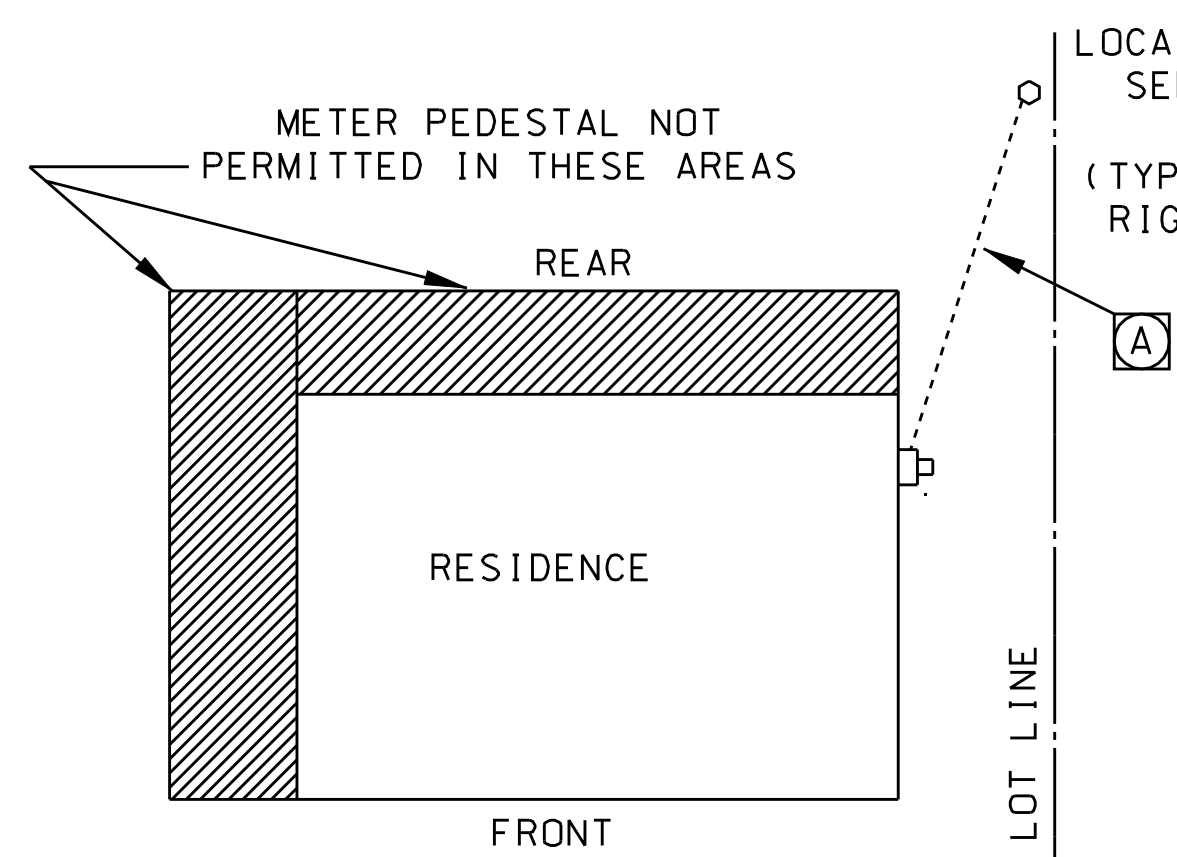
- ① MOUNTING CLAMP WITH 1/2" BOLTS, NUTS AND WASHERS.
 - ② STEEL CONDUIT REDUCER.
 - ③ 2"x4" BLOCKING SOLIDLY INSTALLED BETWEEN RAFTERS.
 - ④ RIGID STEEL CONDUIT (2 1/2" FOR UP TO 200 AMPERES, 3" FOR LARGER SERVICE ENTRANCE EQUIPMENT.
- NOTE: USE OF IMC NOT PERMITTED FOR THIS APPLICATION.

- R GROUND CONDUCTOR TO WATER LINE CONNECTOR
- S WATER METER
- T INCOMING WATER LINE
- U NATURAL GAS METER A MINIMUM OF 10'-0" FROM SERVICE EQUIPMENT

- A ELECTRIC UTILITY SERVICE CONDUCTORS AND DEAD-END CONNECTOR (BY UTILITY).
- B HOUSE ATTACHMENT BRACKET (JOSLYN CAT. NO. J7692, OR EQUIVALENT) (2-HOLE ATTACHMENT BRACKET) PULL-OFF PLATE
- C WEATHERHEAD SUITABLE FOR RGS OR IMC SERVICE PIPE
- C1 LEAVE A MINIMUM OF 12" CONDUCTOR TAIL FOR CITY SPlicing OF SERVICE
- D RIGID GALVANIZED STEEL PIPE (OR IMC) AND CONDUCTORS
 100 A - 2-#4 PHASE AND 1-#4 NEUTRAL THWN COPPER CONDUCTORS IN 1-1/4 INCH PIPE (IDENTIFY NEUTRAL WITH WHITE TAPE) NEC 310.15(B)(6)
 200 A - 2-#2/0 PHASE AND 1-#2/0 NEUTRAL THWN COPPER CONDUCTORS IN 2 INCH PIPE (IDENTIFY NEUTRAL WITH WHITE TAPE) NEC 310.15(B)(6)
 SERVICE CONDUIT IS NOT TO BE USED FOR PULL-OFF STRUCTURE WHERE NECESSARY A SEPARATE STRUCTURAL SUPPORT IS TO BE PROVIDED AND FIRMLY ANCHORED TO BUILDING STRUCTURAL MEMBER
 OTHER THAN SERVICE CONDUCTORS PROVIDED BY THE UTILITY, ALL SERVICE, FEEDER, GROUND AND BRANCH CIRCUIT CONDUCTORS ARE REQUIRED TO BE COPPER.
- D1 2 1/2" RISER PIPE (RGS)
- E WEATHERPROOF THREADED PIPE CONNECTIONS (TYPICAL ALL EXTERNAL FITTINGS)
- E1 2-HOLE CONDUIT STRAPS (TYPICAL EVERY 5 FEET)
- F THREADED METER SOCKET HUB CONNECTOR
- G INSULATED RIGID GALVANIZED STEEL BONDING BUSHING CONNECTOR
- H METER SOCKET (METER BY UTILITY)
 200 A - MILBANK CAT. NO. U8949-RL-TG-KK
 OVER 200 A - CONSULT UTILITY ENGINEERING DEPT. ADD FIFTH JAW FOR 120/208 V. 3-W SERVICE.
 METER SOCKET MUST BE SECURED TO BUILDING STRUCTURAL ELEMENT AND NOT JUST SIDING.
 AN EXTERNAL BREAKER IS REQUIRED AT ALL NEWLY CONSTRUCTED SINGLE FAMILY HOMES AND TOWNHOMES. IN THE CASE OF EXISTING HOMES WHERE A METER SOCKET REPLACEMENT TAKES PLACE DUE TO CUSTOMER INITIATED WORK SUCH AS A SERVICE UPGRADE, SERVICE RELOCATION OR MODERNIZATION OF THE SERVICE, AN EXTERNAL BREAKER IN THE NEW METER SOCKET IS REQUIRED.
 (200A-MILBANK CAT.NO. U7607-PL-200-KK)
 THE METER SOCKET WOULD ALSO HAVE TO BE REPLACED WITH ONE THAT CONTAINS A BREAKER IF THE PANEL IS MORE THAN 5' AWAY FROM THE METER SOCKET.
- J RIGID GALVANIZED STEEL PIPE (OR IMC) AND FITTINGS WITH CONDUCTORS
 200 A - 2-#2/0 PHASE AND 1-#2/0 NEUTRAL THWN COPPER CONDUCTORS IN 2 INCH PIPE
 100 A - 2-#4 PHASE AND 1-#4 NEUTRAL THWN COPPER CONDUCTORS IN 1-1/4 INCH PIPE
 BOTH ENDS OF SERVICE ENTRANCE PIPE TO BE BONDED PER NEC 250.92
 WHERE AN EXTERNAL BREAKER IS UTILIZED, AN EQUIPMENT GROUND CONDUCTOR IS REQUIRED FROM THE METER SOCKET TO THE PANEL, AND IF RINGS REMAIN FROM CONCENTRIC KNOCKOUTS, BONDING JUMPERS SIZED PER NEC 250.102(D) ARE REQUIRED AROUND THEM.
- J1 PANELBOARD WITH MAIN (100 A OR 200 A) CIRCUIT BREAKER
 EACH TENANT/PREMISE MUST HAVE A READILY ACCESSIBLE MAIN DISCONNECT, WHICH IS INTERPRETED AS A MAIN DISCONNECT INSIDE THE TENANT SPACE/PREMISE UNLESS GIVEN EXCEPTION BY THE CITY OF ST. CHARLES ELECTRIC OR BUILDING AND CODE ENFORCEMENT DEPARTMENT.
 PANELBOARD TO BE SOLIDLY SECURED TO WALL AT TOP AND BOTTOM.
 WHEN MOUNTED ON CONCRETE OR MASONRY WALLS, A MINIMUM 1/2" THICK PLYWOOD SHALL BE MOUNTED BEHIND THE ELECTRIC PANEL.
 PROVIDE MINIMUM OF 36" CLEAR WORKING SPACE IN FRONT OF PANELBOARD. (WIDTH OF CLEAR WORKING SPACE TO BE 36")
- K 1/2" RIGID GALVANIZED STEEL PIPE (OR IMC) WITH #6 CU INSULATED GROUND WIRE. CONDUIT TO INCLUDE SUITABLE CONNECTOR AT END TO PREVENT GROUND WIRE FROM BEING PULLED OUT OF METER SOCKET. BOTH ENDS OF CONDUIT TO BE BONDED PER NEC 250.64(E).
 IF THERE IS NO EXTERIOR BREAKER, INSULATED GROUND CONDUCTOR TO BE CONTINUOUS TO MAIN PANEL NOT TO BE CONNECTED AT METER SOCKET. WHERE AN EXTERNAL BREAKER IS UTILIZED, THE #6 CU GROUND CONDUCTOR FROM THE GROUND ROD IS REQUIRED TO BE LANDED IN ITS ENCLOSURE.
- L GROUND ROD CONNECTOR (MUST BE VISIBLE)
 WARNING TAG TO BE INSTALLED BY THE UTILITY.
- M 5/8" X 8' COPPERWELD GROUND ROD INSTALLED IN UNDISTURBED SOIL
- N 1/2" EMT CONDUIT WITH GROUND WIRE OR A BARE ARMORED GROUND
 100 A - NO. 8 COPPER GROUND WIRE
 200 A - NO. 4 COPPER GROUND WIRE
 WHERE AN EXTERNAL BREAKER IS UTILIZED, THE GROUND ELECTRODE CONDUCTOR FROM THE WATER PIPE SHALL BE LANDED IN THE BREAKER'S ENCLOSURE. IT IS REQUIRED TO BE INSTALLED IN ITS OWN SEPARATE CONDUIT ALL THE WAY TO THE OUTSIDE ENCLOSURE. BOTH ENDS OF CONDUIT TO BE BONDED PER NEC 250.64(E).
- O 1/2" EMT CONDUIT END CONNECTOR - SECURE CONDUCTOR TO CONDUIT
- P 1/2" CONDUIT STRAPS (TYPICAL)
- Q GROUND CONDUCTOR (AS SHOWN WITH JUMPER ACROSS WATER METER)
 100 A - NO. 8 COPPER GROUND WIRE
 200 A - NO. 4 COPPER GROUND WIRE

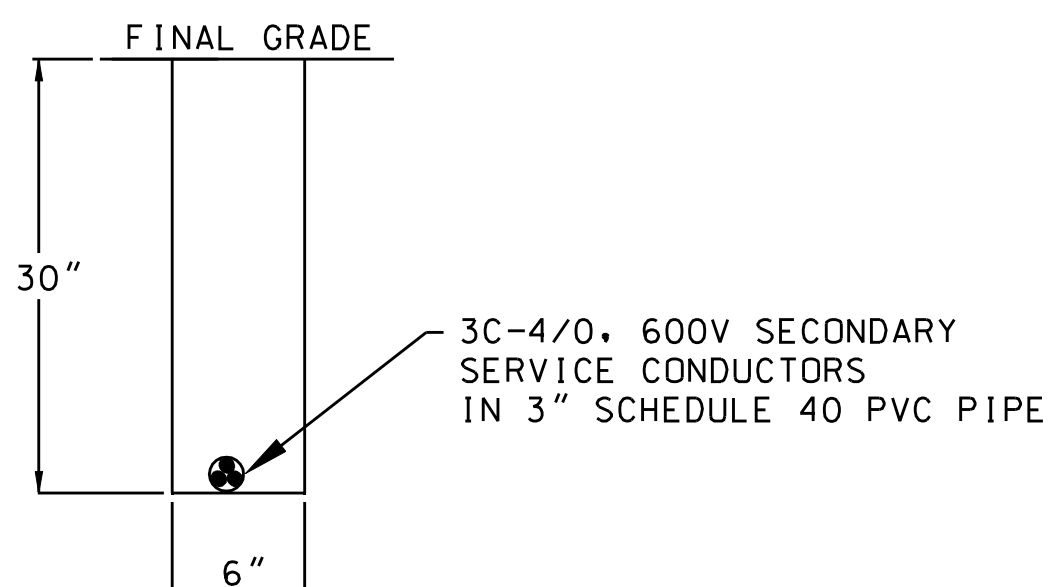


TYPICAL ARRANGEMENT
FRONT-YARD DISTRIBUTION
(TYPICAL FOR LEFT OR RIGHT SIDE OF LOT)

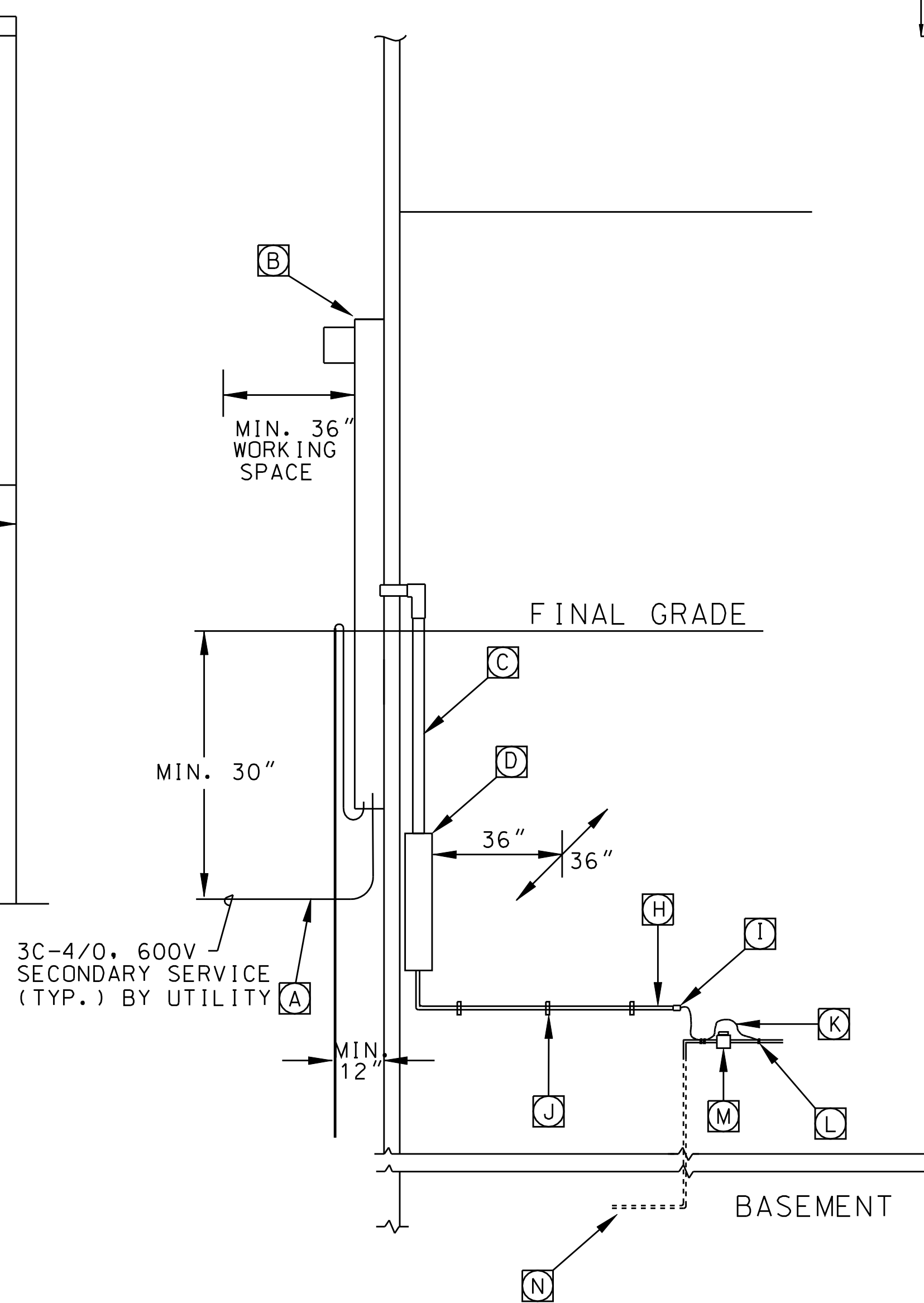
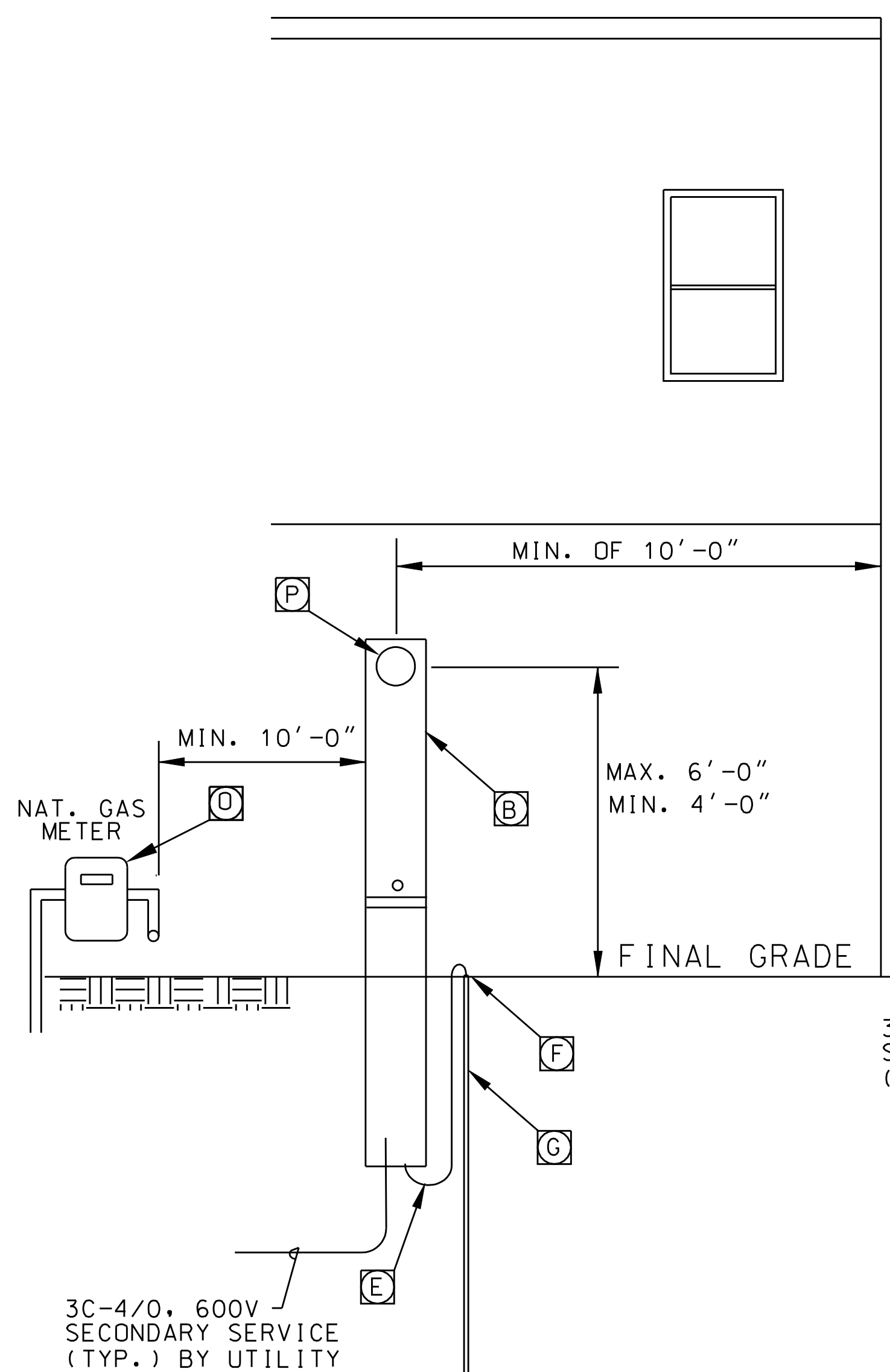


TYPICAL ARRANGEMENT
REAR-YARD DISTRIBUTION

LOCATION OF ELECTRIC
SERVICE PEDESTAL
REAR YARD
(TYPICAL FOR LEFT OR
RIGHT SIDE OF LOT)



SECTION
A-A



- L GROUND CONDUCTOR TO WATER LINE CONNECTOR
- M WATER METER
- N INCOMING WATER LINE
- O NATURAL GAS METER
MINIMUM OF 10'-0" FROM SERVICE EQUIPMENT
- P ELECTRIC METER PROVIDED BY UTILITY

NOTE: MINIMUM SERVICE SIZE FOR NEW ONE
OR TWO FAMILY DWELLING IS 200 A.
MINIMUM SERVICE SIZE FOR NEW MULTI FAMILY
OR 3 OR MORE ATTACHED FAMILY IS 100 A.

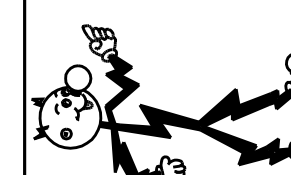
NEC & NESC PRESCRIBE MINIMUM CLEARANCES FOR SERVICE WIRES

REVISION DATE: 6/14/11

CHECKLIST AND LEGEND

- A ELECTRIC UTILITY SERVICE CONDUCTORS BY UTILITY.
ELECTRIC UTILITY TO PROVIDE TRENCH AND 3" SCHEDULE 40 PVC PIPE PER SECTION A-A FOR ALL NEW SINGLE FAMILY HOUSE SERVICES.
HOMEOWNER TO PROVIDE OPEN TRENCH AND 3" SCHEDULE 40 PVC PIPE PER SECTION A-A FOR ALL UPGRADED SINGLE FAMILY HOUSE SERVICES. ALL ELBOWS ARE TO BE SCHEDULE 40 PVC SWEEPS. PLUMBING ELBOWS ARE NOT ALLOWED.
DECKS, PORCHES OR ANY OTHER PERMANENT IMPROVEMENTS SHALL NOT BE INSTALLED OVER ELECTRIC SERVICE CONDUCTORS. THE UTILITY MAY PERMIT SUCH INSTALLATIONS PROVIDED THE SERVICE CONDUCTORS ARE RELOCATED INTO A SCHEDULE 40 PVC RACEWAY AT 30" BELOW GRADE, BY THE OWNER, FROM THE METER PEDESTAL ON THE HOME TO 10' PAST THE OBSTRUCTION.
ELECTRIC SERVICE CONDUCTORS SHALL NOT BE INSTALLED WITHIN 5'-0", IN ANY DIRECTION, OF A HOT TUB OR SWIMMING POOL. (PER NEC 680.10)
FOR SERVICES GREATER THAN 400A, SECONDARY CONDUCTORS FROM THE METER ENTRANCE TO THE TRANSFORMER, PEDESTAL OR POLE SHALL BE SUPPLIED, OWNED AND MAINTAINED BY THE CUSTOMER.
- B METER PEDESTAL (METER BY UTILITY)
200 A - MILBANK CAT. NO. NU8980-0-KK
OVER 200 A - CONSULT UTILITY ENGINEERING DEPT.
ADD FIFTH JAW FOR 120/208 V, 3-W SERVICE.
METER PEDESTAL MUST BE SECURED TO BUILDING STUDS OR OTHER STRUCTURAL ELEMENT AND NOT JUST SIDING.
METER BASE MUST BE GROUNDED.
AN EXTERNAL BREAKER IS REQUIRED AT ALL NEWLY CONSTRUCTED SINGLE FAMILY HOMES AND TOWNHOMES.
IN THE CASE OF EXISTING HOMES WHERE A METER SOCKET REPLACEMENT TAKES PLACE DUE TO CUSTOMER INITIATED WORK SUCH AS A SERVICE UPGRADE, SERVICE RELOCATION OR MODERNIZATION OF THE SERVICE, AN EXTERNAL BREAKER IN THE NEW METER SOCKET IS REQUIRED.
(200A - MILBANK CAT. NO. NU8980-0-200-KK)
THE METER SOCKET WOULD ALSO HAVE TO BE REPLACED WITH ONE THAT CONTAINS A BREAKER IF THE PANEL IS MORE THAN 5' FROM THE METER SOCKET.
- C RIGID GALVANIZED STEEL PIPE AND IMC FITTINGS WITH CONDUCTORS:
100 A - 2-#4 PHASE AND 1-#4 NEUTRAL THWN COPPER CONDUCTORS IN 1-1/4 INCH PIPE
200 A - 2-#2/0 PHASE AND 1-#2/0 NEUTRAL THWN COPPER CONDUCTORS IN 1 1/2 INCH PIPE, MINIMUM (2" PREFERRED)
BOTH ENDS OF SERVICE ENTRANCE PIPE TO BE BONDED PER NEC 250.92 IF AN EXTERNAL BREAKER IS UTILIZED, AN EQUIPMENT GROUND CONDUCTOR IS REQUIRED FROM THE METER SOCKET TO THE PANEL. IF RINGS REMAIN FROM UTILIZED CONCENTRIC KNOCKOUTS, BONDING JUMPERS SIZED PER NEC 250.102(D) ARE REQUIRED AROUND THEM.
OTHER THAN SERVICE CONDUCTORS PROVIDED BY THE UTILITY, ALL SERVICE, FEEDER, GROUND AND BRANCH CIRCUIT CONDUCTORS ARE REQUIRED TO BE COPPER.
- D PANELBOARD WITH MAIN (100 A OR 200 A) CIRCUIT BREAKER
EACH TENANT/PREMISE MUST HAVE A READILY ACCESSIBLE MAIN DISCONNECT, WHICH IS INTERPRETED AS A MAIN DISCONNECT INSIDE THE TENANT SPACE/PREMISE UNLESS GIVEN EXCEPTION BY THE CITY OF ST. CHARLES ELECTRIC OR BUILDING AND CODE ENFORCEMENT DEPARTMENT.
PANELBOARD TO BE SOLIDLY SECURED TO WALL AT TOP AND BOTTOM WHEN MOUNTED ON CONCRETE MASONARY WALLS, A MINIMUM 1/2" THICK PLYWOOD SHALL BE MOUNTED BEHIND THE ELECTRIC PANEL.
PROVIDE MINIMUM OF 36" CLEAR WORKING SPACE IN FRONT OF PANELBOARD. (WIDTH OF CLEAR WORKING SPACE TO BE 36")
TO AVOID NUISANCE TRIPS, IF NON-SIMILAR OVERCURRENT DEVICES ARE USED INSIDE AND OUTSIDE, COORDINATION CURVES MUST BE PROVIDED.
- E #6 CU INSULATED GROUND ELECTRODE CONDUCTOR, IF THERE IS NO EXTERNAL BREAKER, INSULATED GROUND CONDUCTOR TO BE CONTINUOUS TO MAIN PANEL. THE CONDUCTOR IS NOT TO BE CONNECTED AT METER SOCKET, IF AN EXTERNAL BREAKER IS UTILIZED, THE #6 CU GROUND CONDUCTOR FROM THE GROUND ROD IS REQUIRED TO BE LANDED IN ITS ENCLOSURE.
- F GROUND ROD CONNECTOR (MUST BE VISIBLE/WITH TAG)
JOSLYN CAT. NO. J8392, OR APPROVED EQUIVALENT (WARNING TAG SHALL BE SUPPLIED AND INSTALLED BY UTILITY)
- G 5/8" X 8' COPPERWELD GROUND ROD
INSTALLED IN UNDISTURBED SOIL.
- H 1/2" EMT CONDUIT WITH GROUND WIRE OR A BARE ARMORED GROUND
100 A - NO. 8 COPPER GROUND WIRE
200 A - NO. 4 COPPER GROUND WIRE
WHERE AN EXTERNAL BREAKER IS UTILIZED, THE GROUND ELECTRODE CONDUCTOR FROM THE WATER PIPE SHALL BE LANDED IN THE BREAKER'S ENCLOSURE. IT IS REQUIRED TO BE INSTALLED ITS OWN SEPARATE CONDUIT ALL THE WAY TO THE OUTSIDE ENCLOSURE.
BOTH ENDS OF CONDUIT TO BE BONDED PER NEC 250.64(E)
- I 1/2' EMT CONDUIT END CONNECTOR - SECURE CONDUCTOR TO CONDUIT
- J 1/2" CONDUIT STRAPS (TYPICAL)
- K GROUND CONDUCTOR (AS SHOWN WITH JUMPER ACROSS WATER METER)
100 A - NO. 8 COPPER GROUND WIRE
200 A - NO. 4 COPPER GROUND WIRE

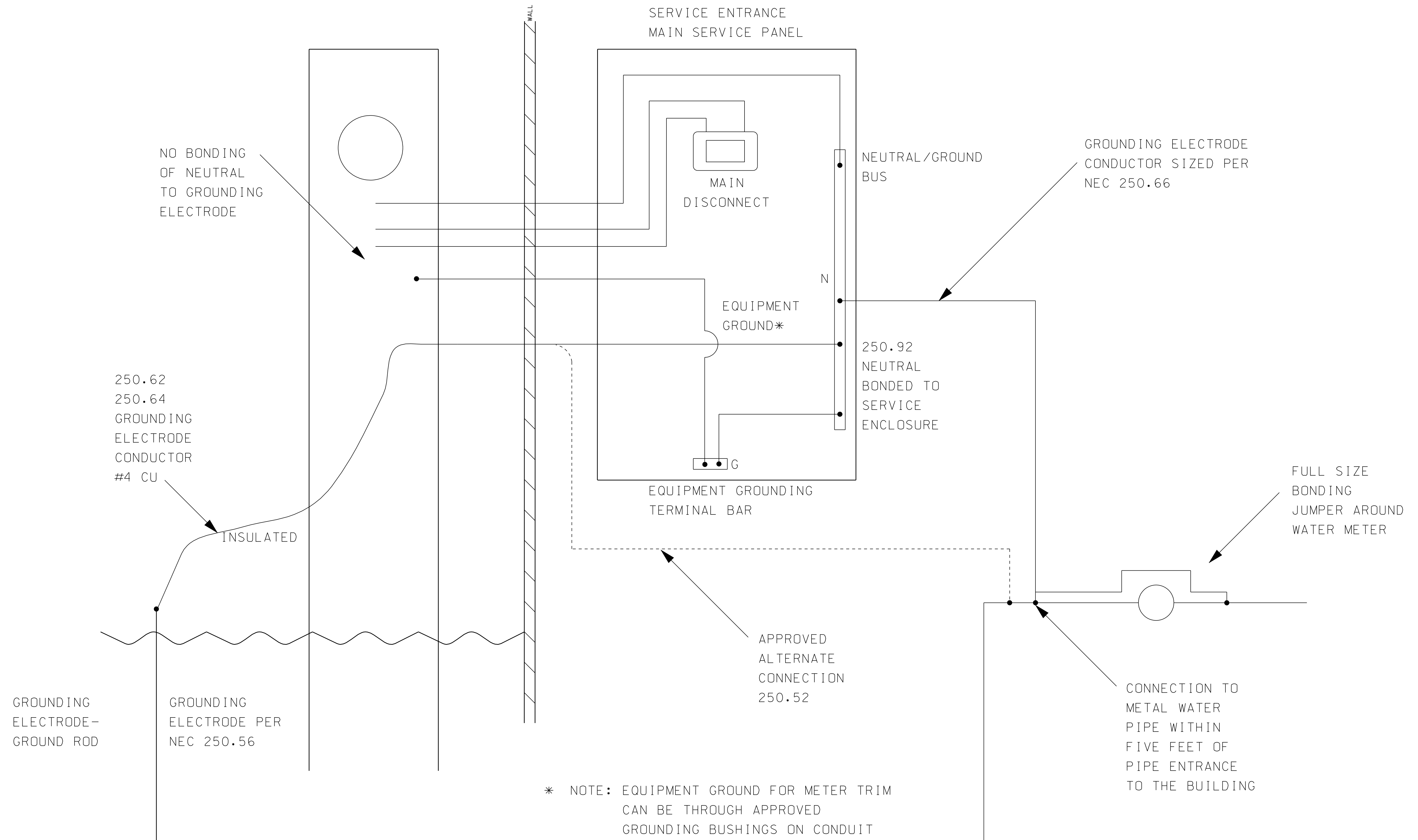
ST. CHARLES
MUNICIPAL
ELECTRIC UTILITY
ESTABLISHED IN 1892



CITY OF ST. CHARLES MUNICIPAL ELECTRIC UTILITY
NEW AND UPGRADED 100 A AND 200 A UNDERGROUND
RESIDENTIAL SERVICE INSTALLATION STANDARD

ASSEMBLY: RES2
UNDERGROUND

RESIDENTIAL & SMALL COMMERCIAL SINGLE TENANT GROUNDING REQUIREMENTS (NEC 2002)



REVISIONS	DATE	BY
1	6/14/11	RES

ST. CHARLES MUNICIPAL ELECTRIC UTILITY
Glynn Amburgey

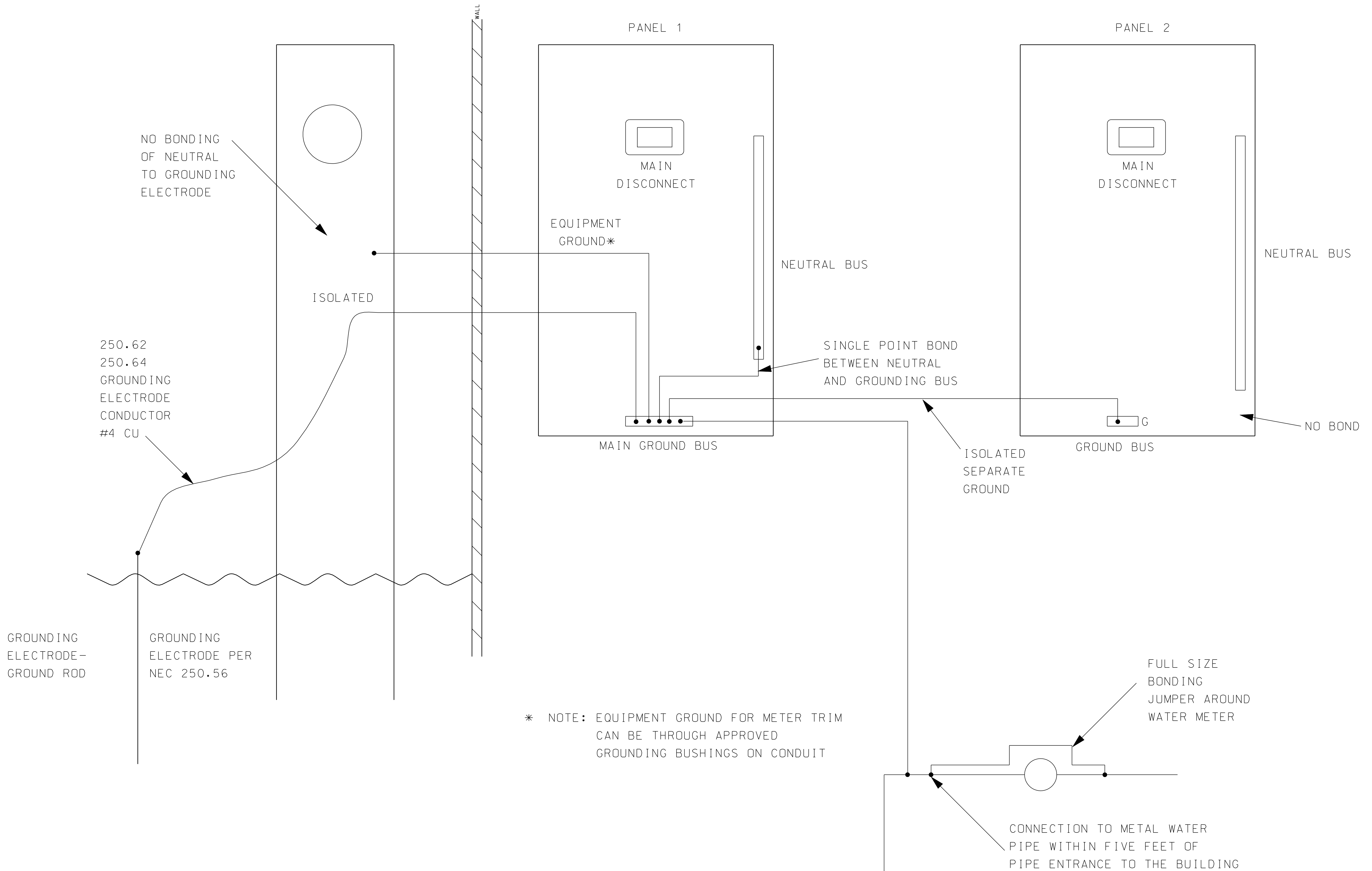
APPROVED:

ST. CHARLES MUNICIPAL ELECTRIC UTILITY
ESTABLISHED IN 1892

PROJECT: STANDARDS
DATE: JUL. 8, 2004
DESIGNER: TOM BRUHL
DRAFTSMAN: PAUL STANGER
SCALE: NO SCALE
FILE: RES.10F5.DGN

FILE: 3ELE/INSTALL/STANDARDS/RES.10F5.DGN PLOT DATE: 6-14-11

RESIDENTIAL (MULTI-PANEL) GROUNDING REQUIREMENTS



REVISIONS	DATE	DESCRIPTION

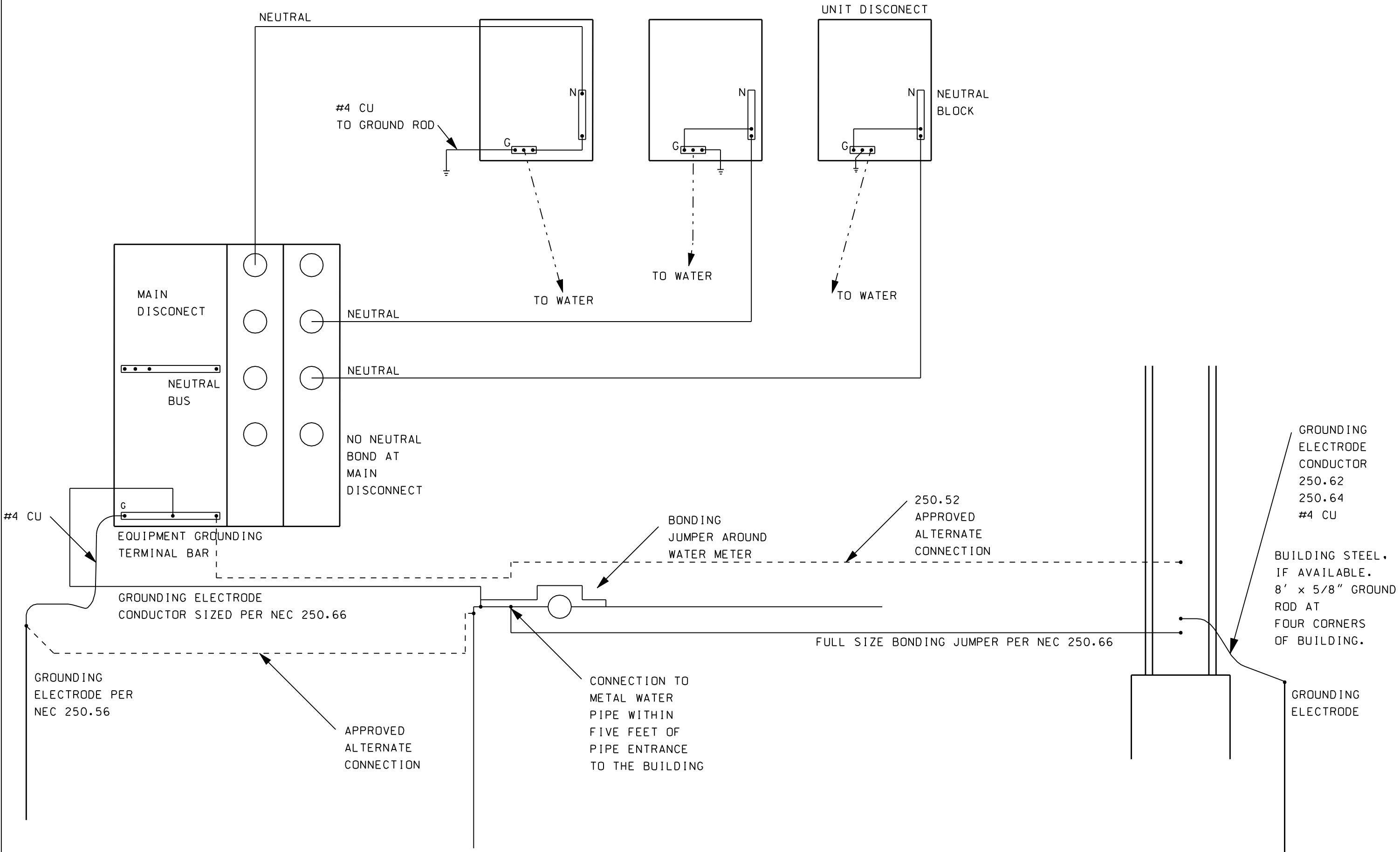
ST. CHARLES MUNICIPAL ELECTRIC UTILITY
Glynn Amburgey
APPROVED: _____



PROJECT: STANDARDS
DATE: JUL. 8, 2004
DESIGNER: TOM BRUHL
DRAFTSMAN: PAUL STANGER
SCALE: NO SCALE
FILE: RES_20F5.DGN
SHEET OF

FILE: 3.ELECT/INSTALL/STANDARDS/RES_20F5.DGN PLOT DATE: 8-20-08

RESIDENTIAL & SMALL COMMERCIAL MULTITENANT ALTERNATIVE 1
 NEUTRAL BUS CONNECTION AT MAIN - NO SEPARATE GROUND CONDUCTOR FROM MAIN TO TENANT PANELS
 EACH TENANT HAS ACCESS TO WATER PIPE GROUND & GROUND ROD



NO.	REVISION	DATE

ST. CHARLES
 MUNICIPAL ELECTRIC UTILITY
 Glynn Ambrughey

APPROVED: _____

PROJECT:
 STANDARDS

DATE:
 JULY 10, 2008

DESIGNER:
 CREIG CARR

DRAFTSMAN:
 TIM GANSEN

SCALE:
 NO SCALE

FILE:
 RES_30F5.DGN

ST. CHARLES
 MUNICIPAL
 ELECTRIC UTILITY
 ESTABLISHED IN 1892

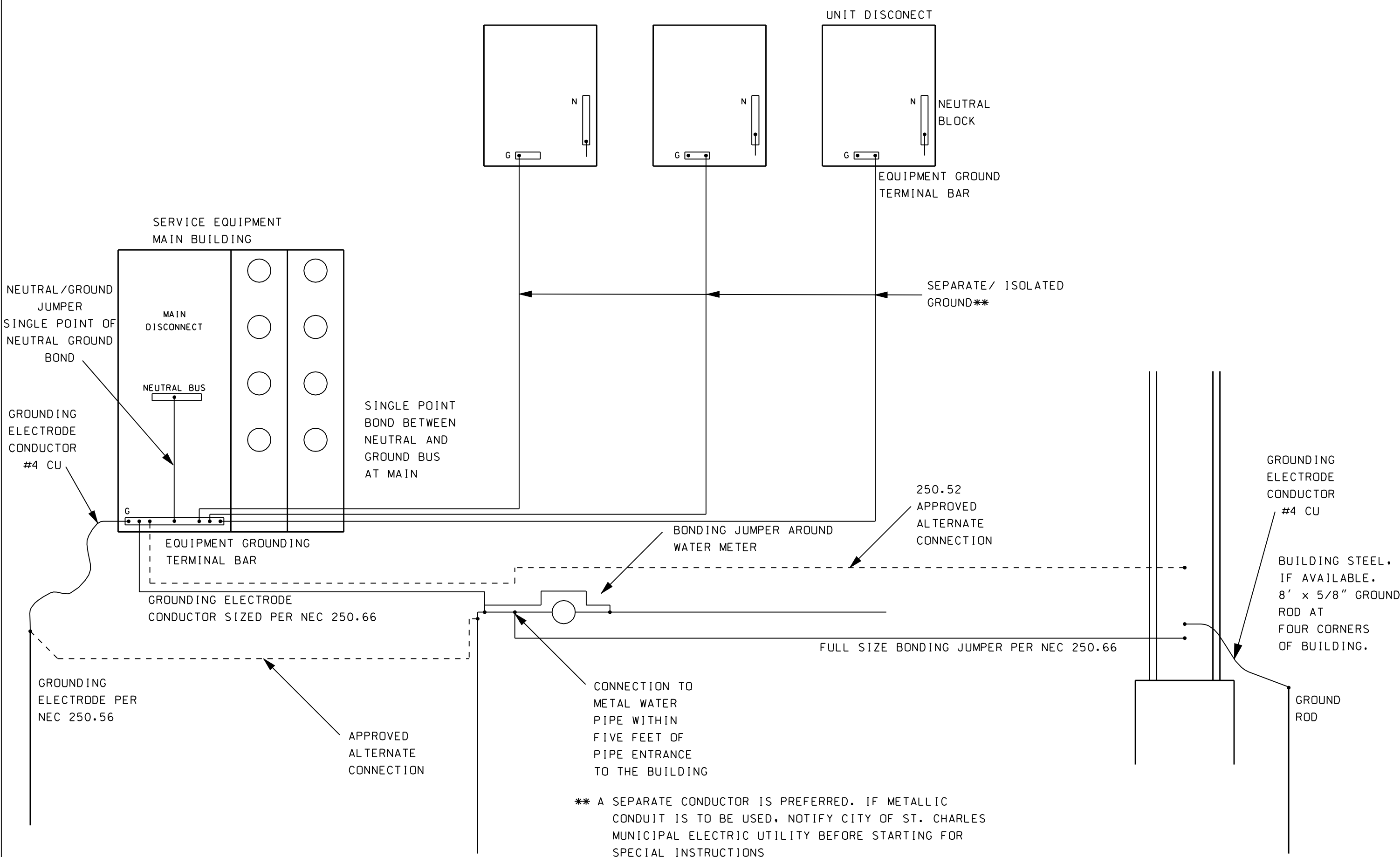
DWG NO. RES

SHEET 3 OF 5

FILE: 3ELE/SYSMAP/RES_30F5.DGN PLOT DATE: 7-22-08

RESIDENTIAL & SMALL COMMERCIAL MULTITENANT ALTERNATIVE 2

NEUTRAL BUS CONNECTION AT MAIN - SEPARATE GROUND CONDUCTORS FROM MAIN TO TENANT PANELS



** A SEPARATE CONDUCTOR IS PREFERRED. IF METALLIC CONDUIT IS TO BE USED, NOTIFY CITY OF ST. CHARLES MUNICIPAL ELECTRIC UTILITY BEFORE STARTING FOR SPECIAL INSTRUCTIONS

FILE: 3ELE/SYSMAP/RES_40F5.DGN PLOT DATE: 7-22-08

NO.	REVISION	DATE

ST. CHARLES MUNICIPAL ELECTRIC UTILITY
Glynn Ambruguey
APPROVED: _____

ST. CHARLES MUNICIPAL ELECTRIC UTILITY
ESTABLISHED IN 1892

PROJECT: STANDARDS
DATE: JAN. 6, 2004
DESIGNER: TOM BRUHL
DRAFTSMAN: PAUL STANGER
SCALE: NO SCALE
FILE: RES_40F5.DGN
SHEET 4 OF 5