

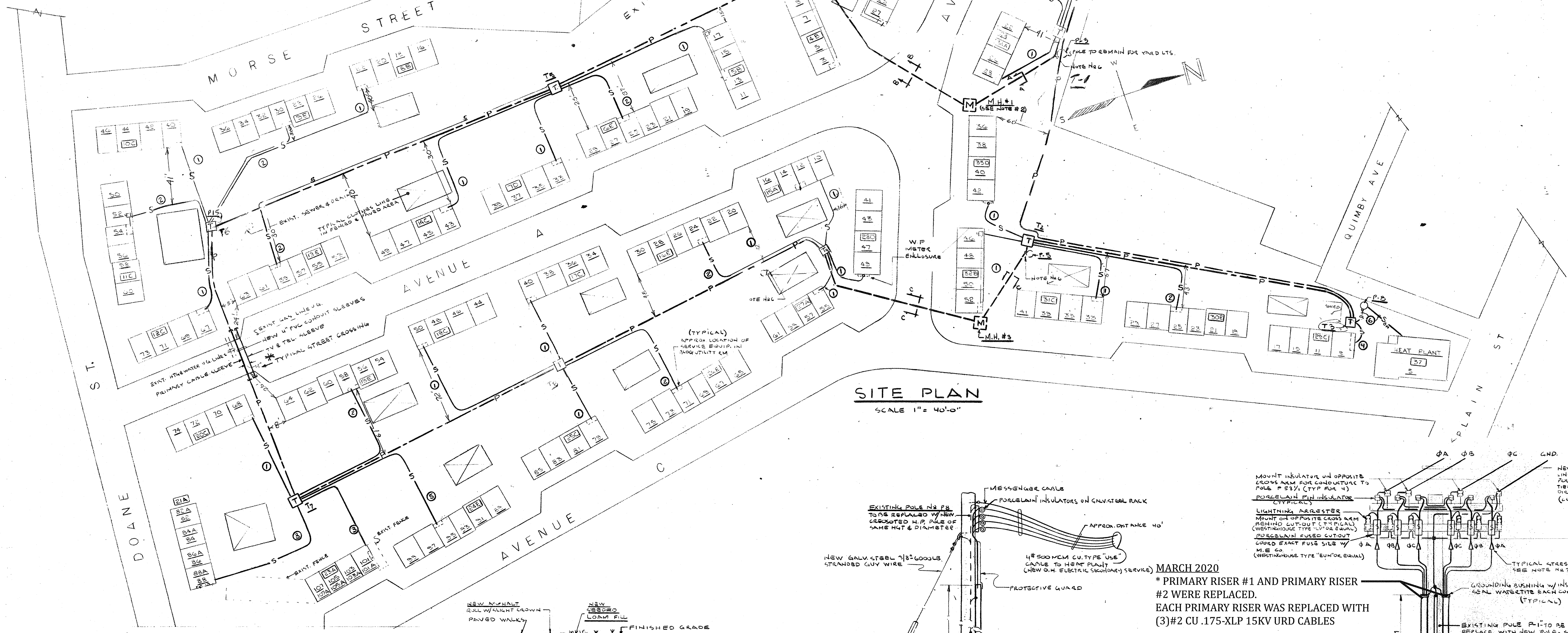
LEGEND

- T₂ PAD MOUNTED DISTRIBUTION XFMR. - T₂ INDICATES XFMR NO. 2. (SEE TRANSFORMER SCHEDULE DWG. E-11)
- P_{UB} PRIMARY UNDERGROUND DIRECT BURIAL ELECTRIC SERVICE CABLE
- P_{OH} PRIMARY OVERHEAD ELECTRIC SERVICE
- S_{UB} SECONDARY UNDERGROUND DIRECT BURIAL ELECTRIC SERVICE
- S_{OH} SECONDARY OVERHEAD ELECTRIC SERVICE
- EXISTING UNDERGROUND DUCT BANK & CONDUIT - TO BE REUSED FOR PRIMARY CONDUCTORS (EXTEND AS SHOWN)
- M_{EX} EXISTING MANHOLE
- U_{EX} EXISTING UTILITY POLE W/ EXISTING PRIMARY CONDUIT RISERS - TO BE REMOVED COMPLETELY. SEE NOTE #1
- ② SECONDARY ELECTRIC UNDERGROUND SERVICE FEEDER DESIGNATION "2" INDICATES FEEDER SIZE. SEE SCHEDULE BELOW.

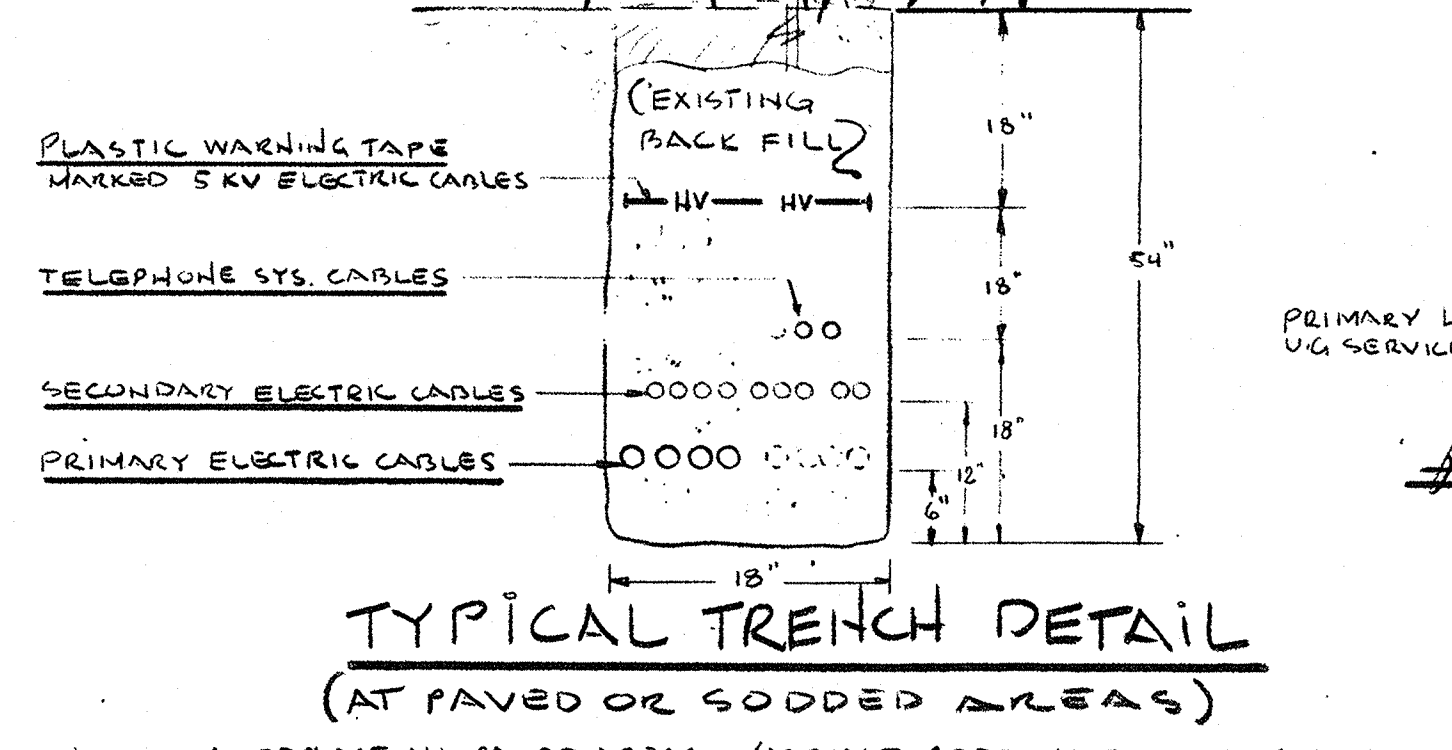
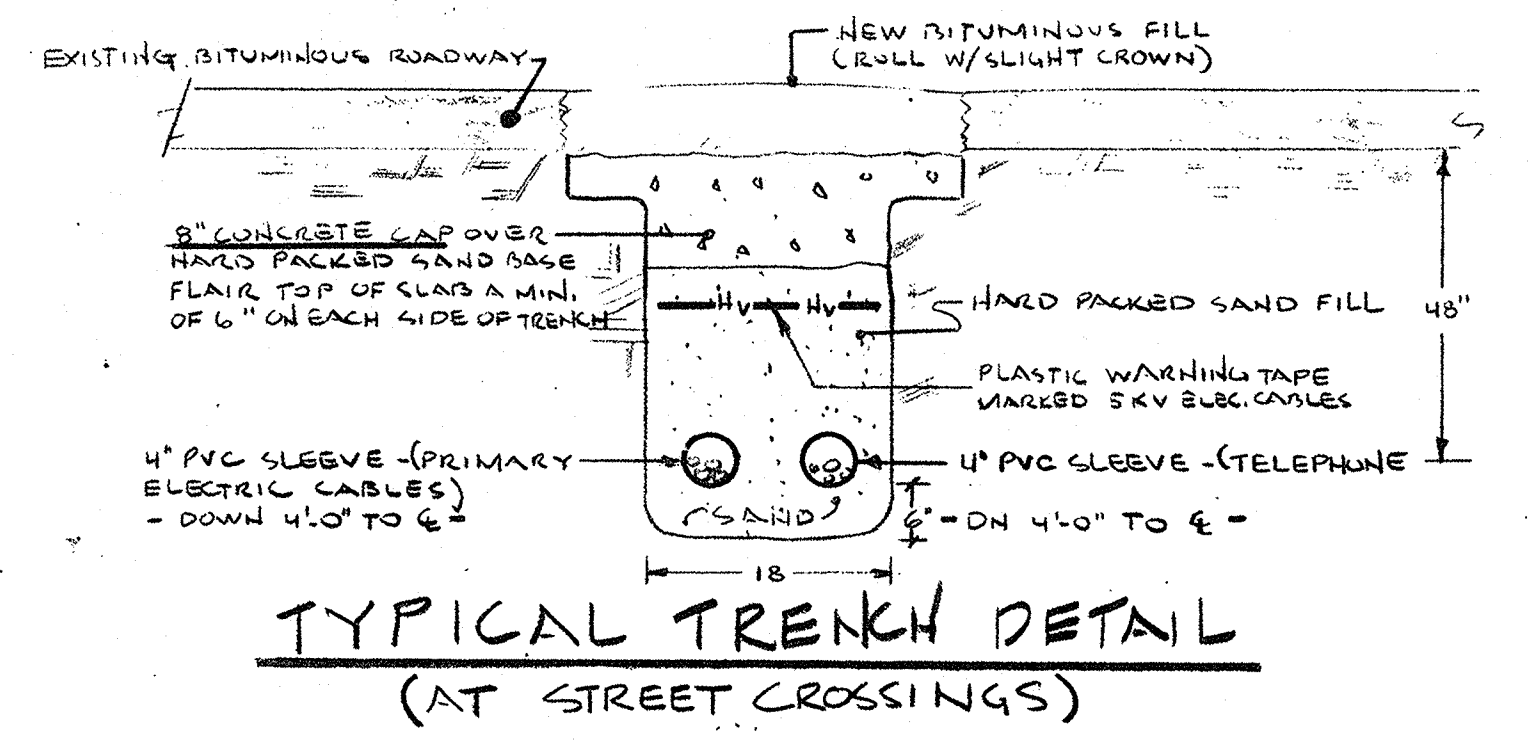
DRAWING NOTES

1. ELEC. CONTR. TO REMOVE EXIST. PRIMARY CONDUIT RISERS UP EXIST. POLES AND EXTEND UNDERGROUND UP INTO NEW TRANSFORMER PAD - REMOVE EXISTING POLES - TYPICAL FOR "S" LOCATIONS. (P'S TO REMAIN)
2. ELEC. CONTR. SHALL RAISE EXIST. MANHOLE NO. 1 & NO. 2 FRAMES & COVERS UP TO FIN. GRADE LEVEL.
3. ALL UNDERGROUND PRIMARY CABLE SHALL BE SINGLE CONDUCTOR 5KV. XLP COPPER SHIELDED W/ GROUNDING NEUTRAL AS W/REQ. BY G.E. CO. CAT. NO. 51-55044 TYPE MV-90. AEG 5-75 OR APPROVED EQUAL.
4. FURNISH & INSTALL (1) 1/2" CU. TYPE THIN CONDUIT ALONG W/ U.G. 5KV CABLES TO SERVE AS NEW UNDERGROUND SYSTEM GROUND. CONDUIT TO BE INST. AT 18" MIN. FROM GROUND U.G.
5. ALL POLE HARDWARE SHALL BE APPROVED FOR THE PURPOSE AND AS RECOMMENDED BY THE CABLE MFG. DETAIL SHOWN SHALL BE CONSIDERED AS SUFFICIENT UNLESS OTHERWISE SPECIFIED. EXACT SIZE, QUANTITY, TYPE, LOCATION AND MOUNTING SHALL BE DETERMINED IN THE FIELD TO SUIT CONDITIONS.
6. ELEC. CONTR. TO EXTEND EXISTING U.G. CONDUITS RISING UP EXIST. POLE, UNDERGROUND TO NEW XFMR PAD PRIMARY COMPARTMENT. EXIST. U.G. CONDUIT SIZE IS 3".
7. EXACT LOCATION OF NEW TRANSFORMER PADS AND UNDERGROUND TRENCHING TO BE COORDINATED WITH THE EXISTING UTILITIES, CLOTHES LINES, TREES, PAVING AND ANY OTHER OBSTACLES THAT MAY INTERFERE. NEW TRANSFORMER PADS CONSTRUCTED ON SIDES OF HILLY AREAS SHALL BE PAVED LEVEL. THIS CENTER SHALL BE 10' MIN. FROM EDGE OF HILL AS RECOMMENDED TO A POINT OF AT LEAST 1' AROUND EACH PAD. SOIL SHALL BE COMPACTED FIRMLY AND PLANTED W/ GRASS IMMEDIATELY. SEE DETAIL E-11.

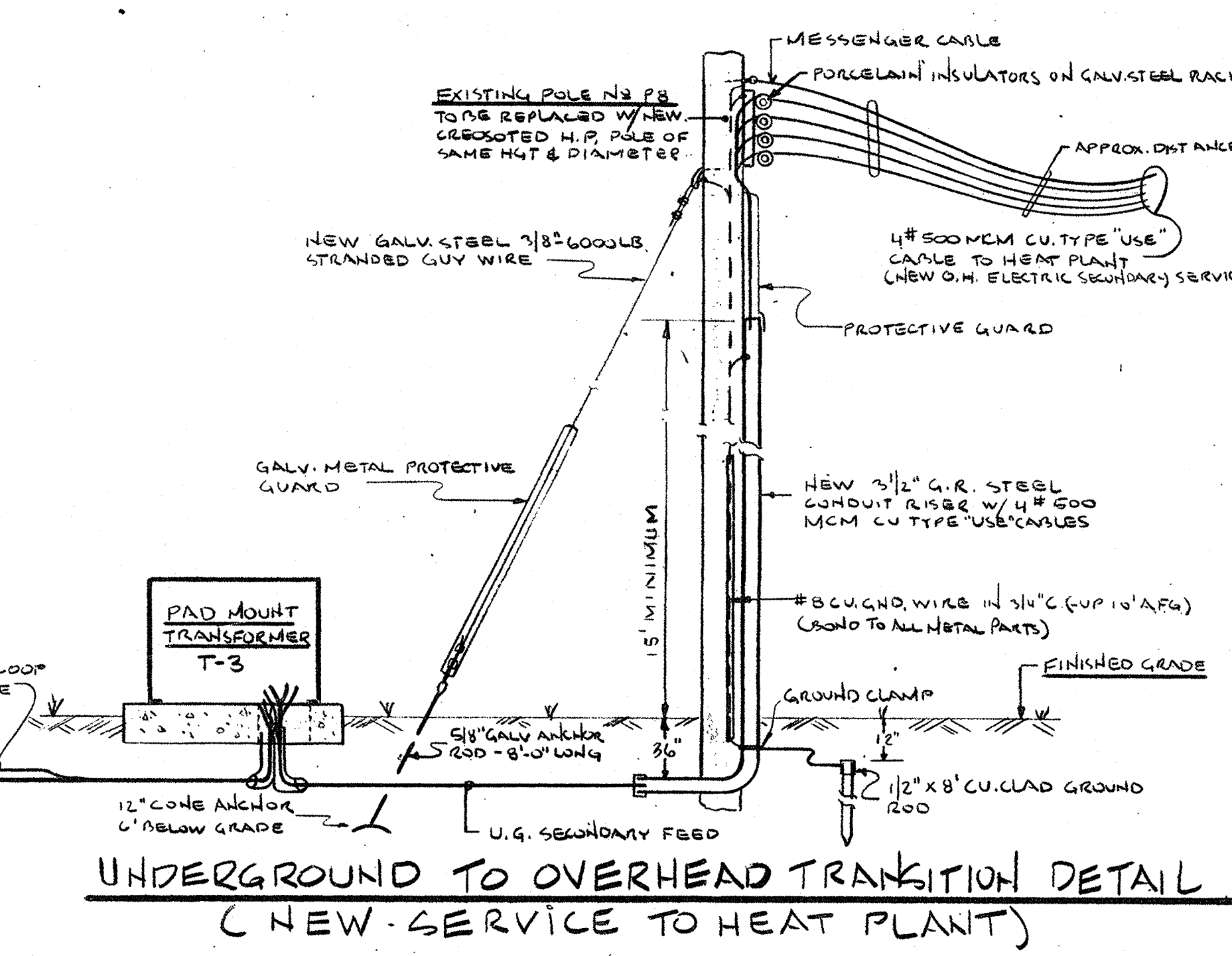
SERVICE LATERAL CONDUCTOR SCHEDULE				
SYMBOL	FEEDER SIZE	NUMBER PHASES	SIZE BLDG.	REMARKS
①	3#10CU	1Φ	4 UNIT	
②	3#10CU	1Φ	6 UNIT	
③	3#10CU	1Φ	8 UNIT	
④	4#10CU	3Φ	2000 SQ. FT. W/ VACUUM PPS IN UTILITY ROOM	
⑤	4#210CU	3Φ	PARA. 24" W/ VAC. PPS	
⑥	4#500MCM	3Φ	HEAT PLANT	CONDUCTORS RUN PARALLEL OVERHEAD.



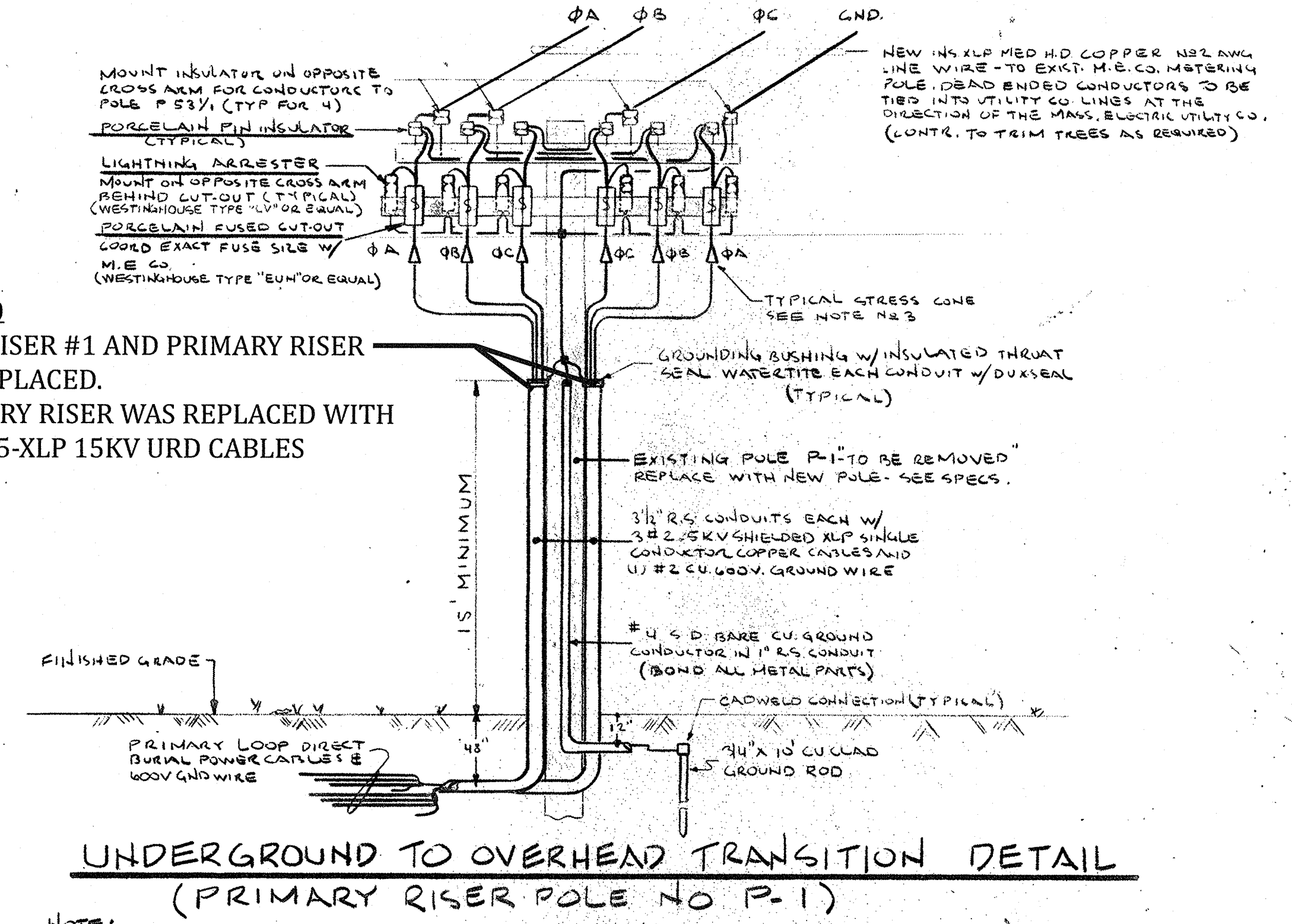
SITE PLAN
SCALE 1" = 40'-0"



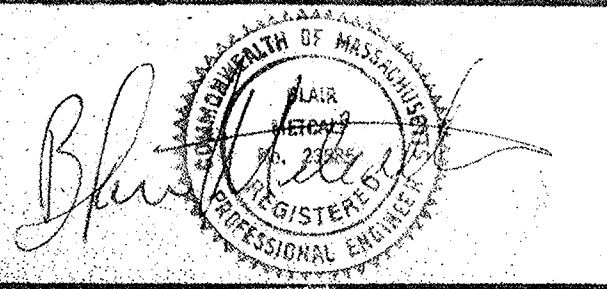
NOTE:
1. REPLACE ALL PAVED AREAS W/ ASPHALT. SEED ALL DISTURBED AREAS WITH GRASS.
2. PROVIDE CLEAN SAND BASE AT BOTTOM OF EACH TRENCH AND 6" SANDLAYER BETWEEN EACH LEVEL OF CONDUCTORS.



MARCH 2020
* PRIMARY RISER #1 AND PRIMARY RISER #2 WERE REPLACED.
EACH PRIMARY RISER WAS REPLACED WITH (3)#2 CU. 175-XLP 15KV URD CABLES



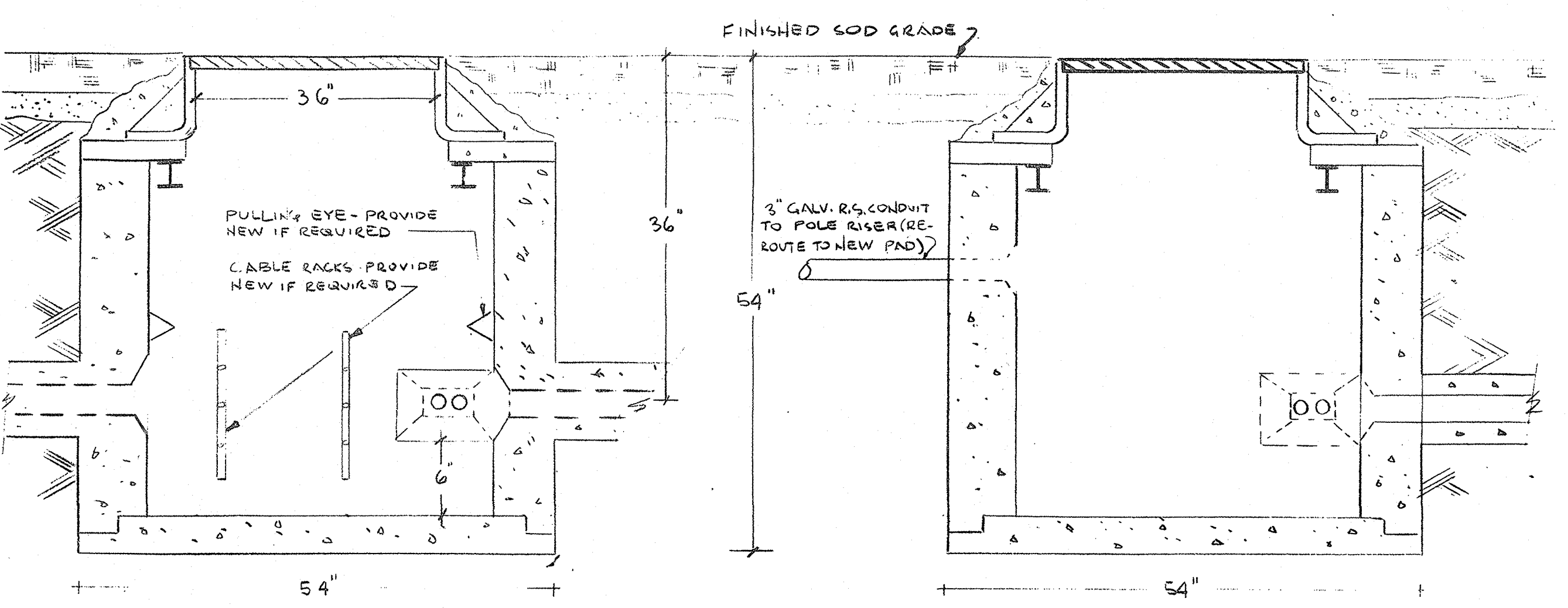
NOTE:
1. E.C. TO PROVIDE NEW CROSSARMS AND ALL ASSOCIATED POLE HARDWARE AS REQUIRED.
2. GROUND RESISTANCE SHALL BE 5 OHMS OR LESS. PROVIDE ADDITIONAL GROUND RODS, IF REQUIRED.
3. CABLE TERMINATORS SHALL BE AS RECOMMENDED BY THE APPROVED CABLE MANUFACTURER'S RECOMMENDED MEANS. PLM AND G.E.



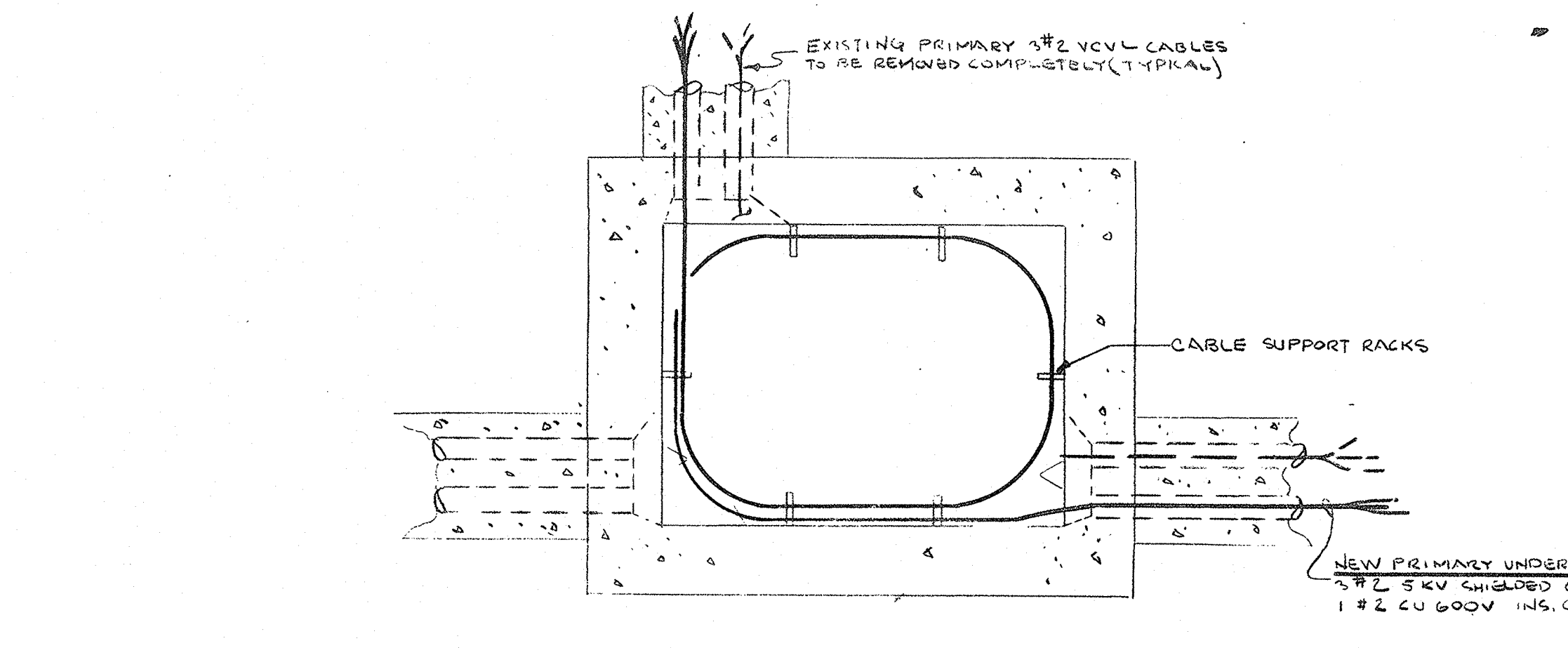
PAD MOUNTED DISTRIBUTION TRANSFORMER SCHEDULE

TRANSFORMER NO.	SIZE KVA	VOLTAGE PRI.	VOLTAGE SEC.	PHASES	DEAN-OUT LOAD BREAK CAPACITY (AMPS)	PHASE BANK	PAD LOCATION	BUILDINGS SERVED	NB. OF UNITS SERVED
T1	25	4160V 1Φ	120/208V 3Φ	1Φ	YES	A, B	ON HILL	30A, 35D, 36A	12
T2	25	4160V 1Φ	120/208V 3Φ	1Φ		B, C	FLAT AREA	30E, 31C, 32B, 33D	18
T3	150	4160V 3Φ	120/208V 3Φ	3Φ		A, B, C	HEAT PLANT	29 C HEAT PLANT	11 PLUS HEAT PLANT
T4	25	4160V 1Φ	120/208V 3Φ	1Φ		A, C	ON HILL	1A, 2 C 3A, 4 B	16
T5	37 1/2	4160V 1Φ	120/208V 3Φ	1Φ		A, B	ON HILL	5B, 6E, 7 D 8 B, 14 C	22
T6	37 1/2	4160V 1Φ	120/208V 3Φ	1Φ		B, C	ON HILL	9E, 10C, 11E 12C, 13 E	26
T7	75	4160V 1Φ	120/208V 3Φ	1Φ		A, B, C	FLAT AREA	19B, 20E, 21A 22A, 24E	32
T8	25	4160V 1Φ	120/208V 3Φ	1Φ		A, C	ON HILL	17C, 18C, 25C, 26E	18
T9	25	4160V 1Φ	120/208V 3Φ	1Φ		A, C	FLAT AREA	15A, 16B, 27A, 28D	18

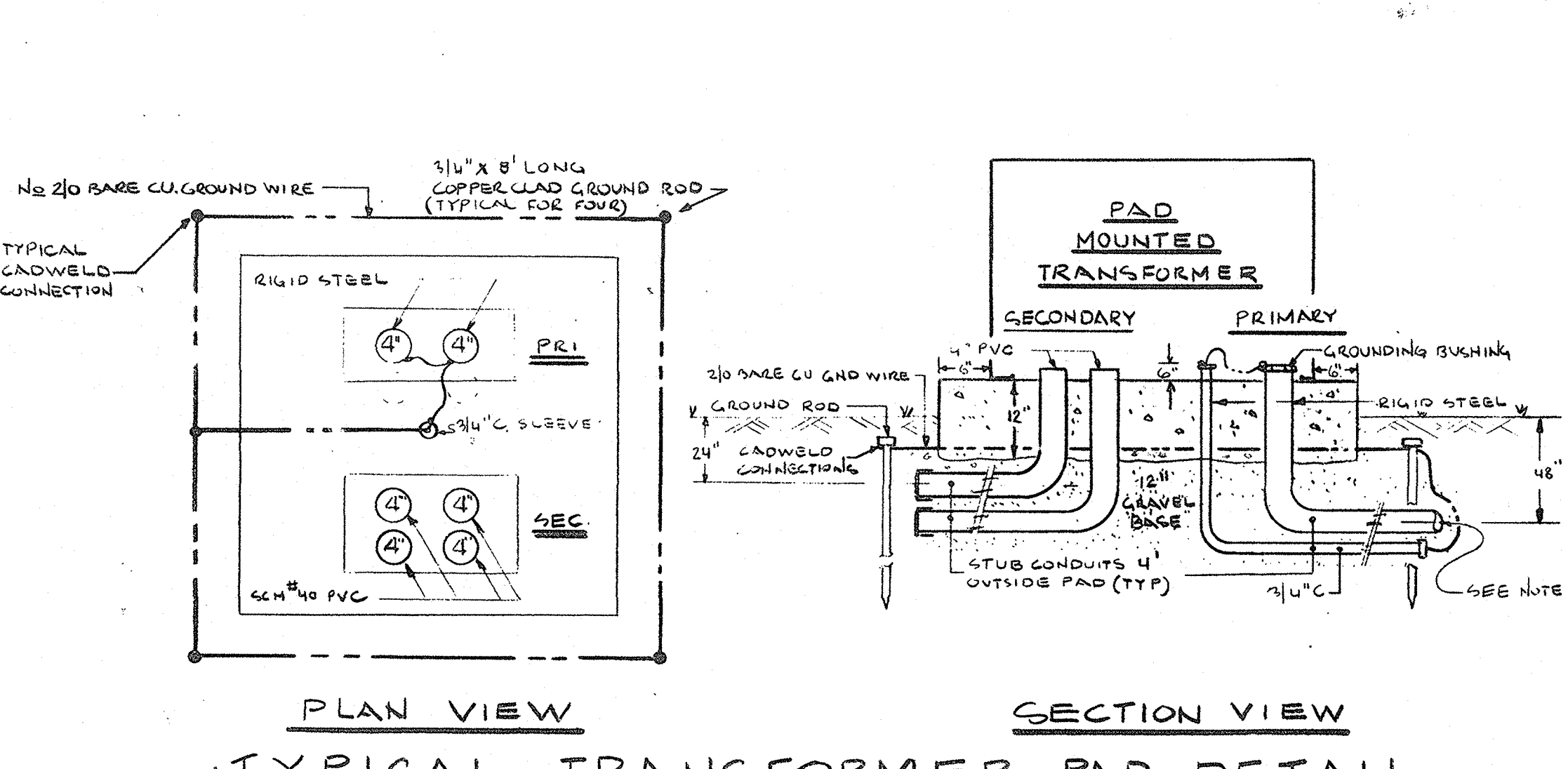
- NOTE: 1. PRIMARY LOOP FEEDERS BETWEEN XFMR'S, T-4 & T-7 SHALL BE LEFT IN OPEN POSITION IN EVENT OF ELECTRICAL FAULT IN ANY PRIMARY CABLE IN THE PRIMARY LOOP FEEDER, THE CAN BE CLOSED & PRE-SERVE BE MADE.
 2. ALL U.G. PRI. CABLES SHALL BE LABELED AS TO WHAT PHASE EACH CABLE IS AT EACH XFMR COMPARTMENT.
 3. ALL PRIMARY CABLES CONNECTED TO TRANSFORMERS SHALL USE LOAD BREAK ESNA ELBOWS AND BUSHINGS (LOZED 5122)



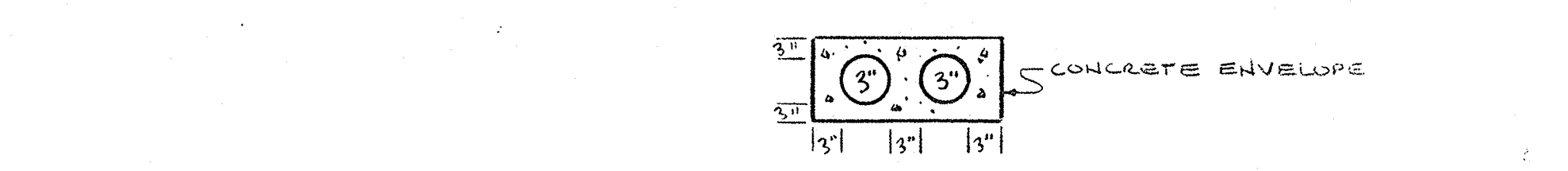
TYPICAL EXISTING MANHOLE DETAIL



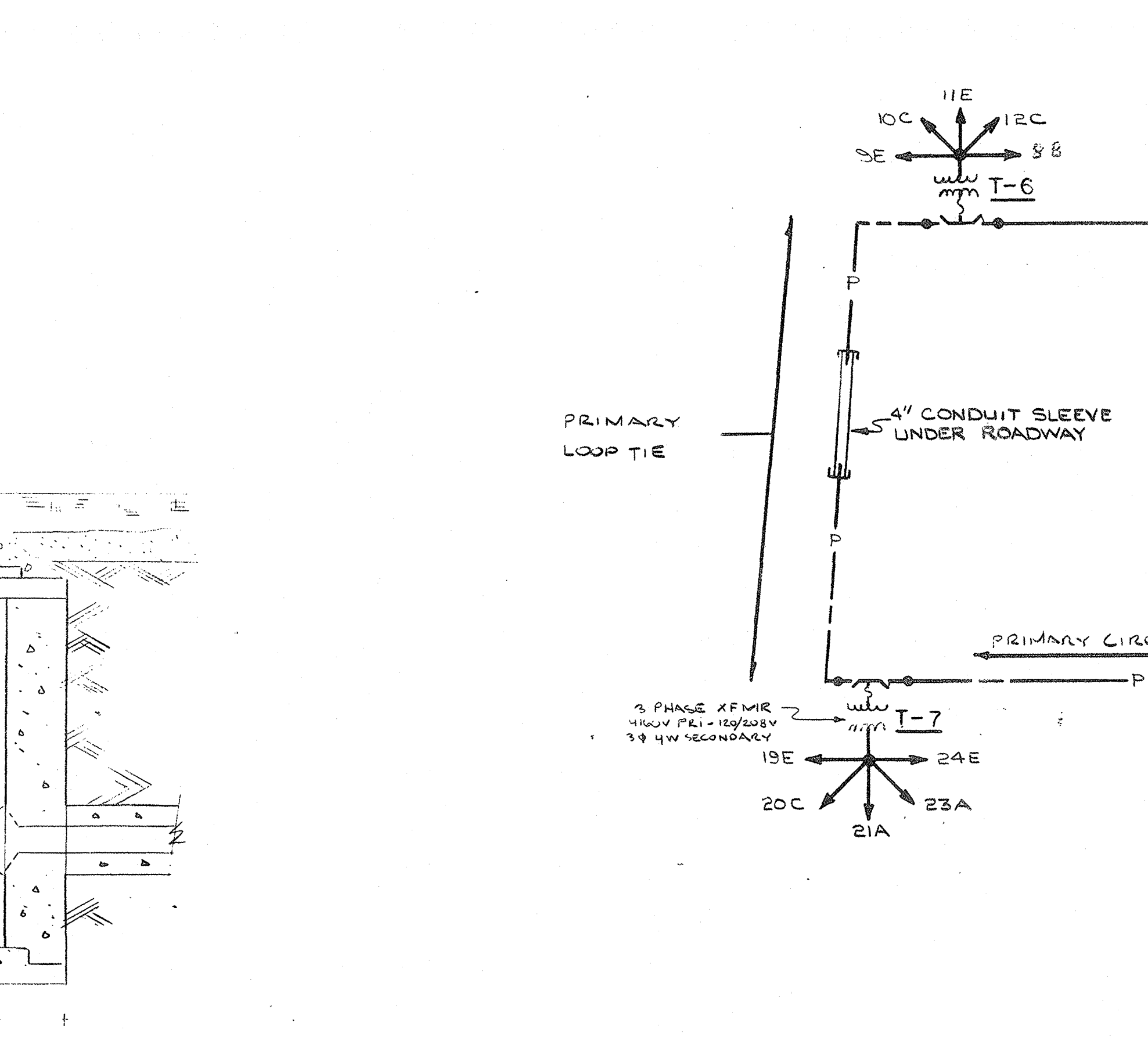
- ALL MANHOLES SHALL BE PUMPED FREE OF WATER, ALL DAMAGES REPAIRED AND CLEANED THOROUGHLY.
- ALL DUCTS AND CONDUITS SHALL BE CHECKED AND CLEANED PRIOR TO INSTALLATION OF NEW PRIMARY CABLES.
- PROVIDE NEW CABLE RACKS, PULLING IRONS, AND GROUND BUSES IN EACH MANHOLE.
- GROUND CONDUCTOR SHIELD/GROUND CABLE AND ALL METAL EQUIPMENT TO NEW GROUND BUS, PROVIDE 1/2" x 8" COPPER GND GROUND ROD W/ 3/4" D. COPPER GND CABLE TO ENVP. GND BUS, GROUND BUSTAINS TO BE ISOLATED UNLESS.
- FURNISH & INSTALL NEW U.G. PRIMARY DISTRIBUTION CABLES IN EXIST. SPACE DUCT PERK TO THE REMOVAL OF EXISTING CABLES, WHERE EVER FEASIBLE.



- NOTES:
- EXACT PAD DIMENSIONS TO BE DETERMINED IN THE FIELD IN STRICT ACCORDANCE W/ APPROVED TRANSFORMER SHOP DWS.
 - APPROX. PAD DIMENSIONS OF SINGLE PHASE XFMR'S: 48" x 12" x 12"; 3 PHASE XFMR'S: 54" x 12" x 12" O.B.R.P.
 - EXTEND EXIST. PRIMARY U.G. DUCT FROM REMOVED P.O.E. RISERS, UP INTO NEW PAD PRIMARY COMPARTMENT (T1, T4 & T9)

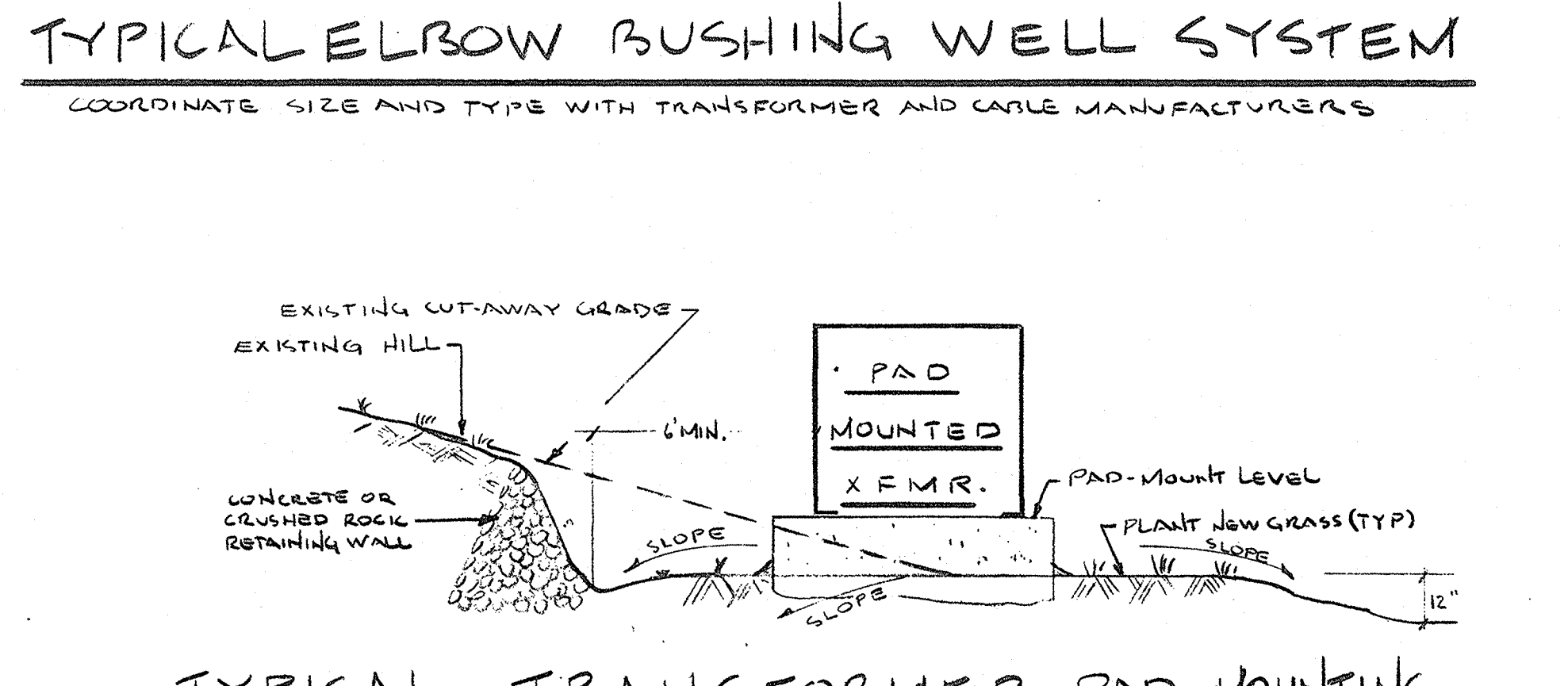
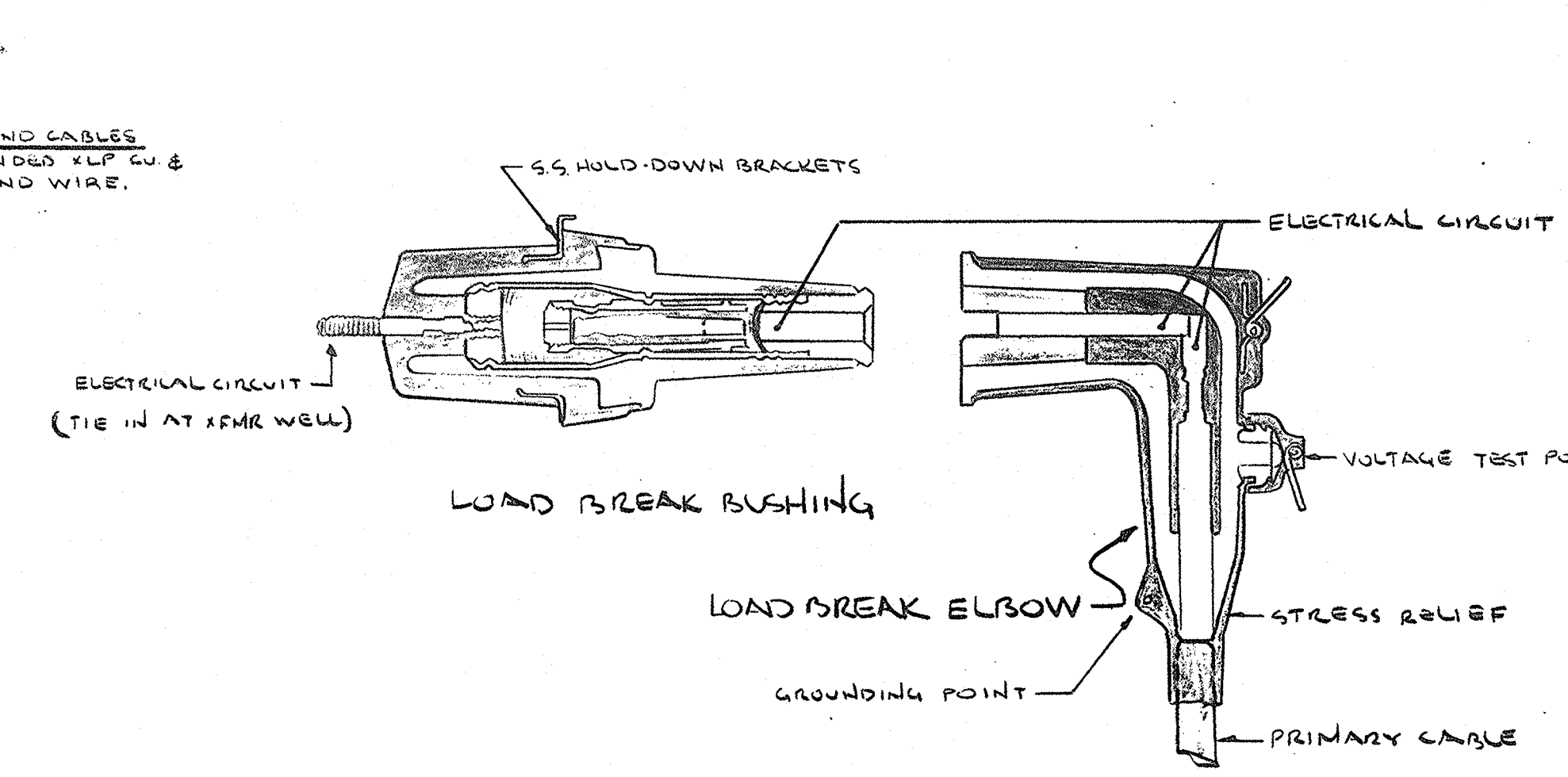


- NOTE: 1) TWO 3" FIBER DUCTS CONCRETE ENCASED;
 (1) 1" CONDUIT SPACE UTILIZE FOR NEW PRI. U.G. CABLES;
 (1) 3" CONDUIT ACTIVE (DISC. & REMOVE EXIST. PRI. CABLES)
 2) SECTION B-B SAME AS SECTION A-A EXCEPT CONDUITS ARE 4"

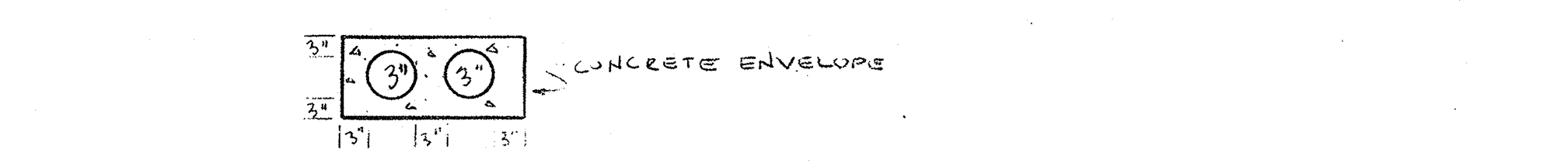


PRIMARY UNDERGROUND DISTRIBUTION ONE LINE DIAGRAM
- NOT TO SCALE -

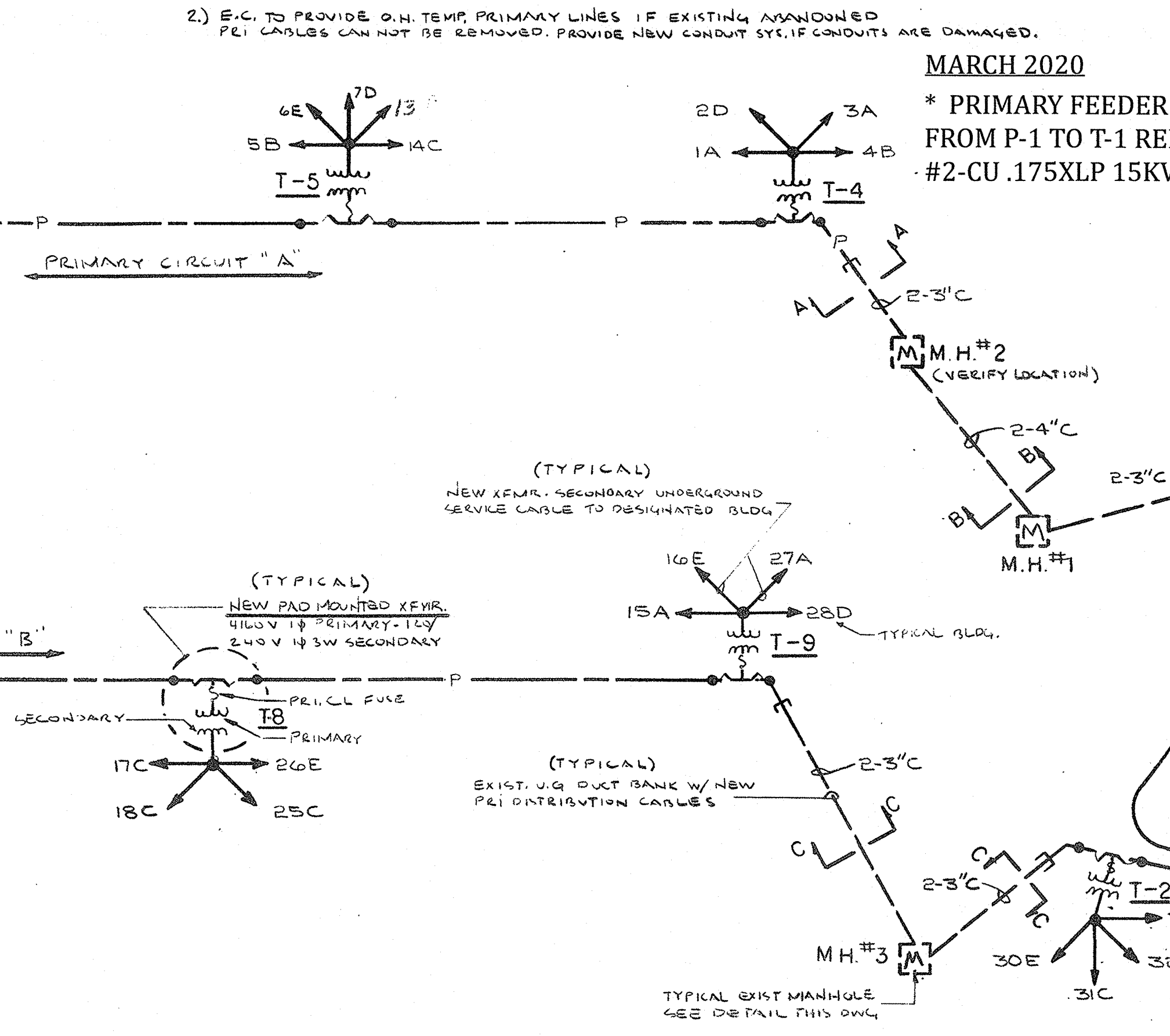
- SEE EXTERIOR DISTRIBUTION SITE PLAN DRAWING E-10 FOR BUILDINGS BEING SERVED BY NEW U.G. SERVICE LATERAL CABLES.
- BALANCE PRIMARY LOAD PER PAD MOUNT DISTRIBUTION TRANSFORMER SCHEDULE.
- ALL UNDERGROUND PRIMARY CABLE SHALL BE SINGLE CONDUCTOR 5KV, XLP CU, SHIELDED W/ GROUNDABLE NEUTRAL AS MFGD. BY G.E. CO. CAT. NO. 61-5804 TYPE MV-90 AIEG 5-75 OR APPROVED EQUAL.
- FURNISH AND INSTALL (1) 1/2" x 2 1/2" THIN CONDUCTOR ALONG W/ U.G. SKV CABLES TO SERVE AS SYS. GROUND. GROUND LOOP SHALL BE RUN UNINTERRUPTED THROUGH-OUT THE ENTIRE PRIMARY DISTRIBUTION SYSTEM.
- ALL PRIMARY AND SECONDARY CABLE RUNS SHALL NOT BE SPLICED IN TRENCHES. EACH RUN SHALL BE CONTINUOUS FROM XFMR TO XFMR, & M.H. TO M.H.
- PRIMARY ELECTRICAL SYSTEM IS A LOOP SYSTEM EMPLOYING LOOP FEED TYPE DISC. XFMR'S W/ DEAD FRONT CONSTRUCTION (MIN. W/ 4000 1Φ 4160V XFMR'S AND 6 ON 3Φ 4160V XFMR'S) DRAW-OUT C.I. FUSE ALSO, LOAD SWITCHES OR ON T/O ARE LOAD BREAK SWITCHES (SPECIAL APPLICATION) SYSTEM TRANSFORMER ARE DESIGNED AROUND WESTINGHOUSE ELEC. CO. "POWER PAD" XFMR'S OTHER MFG'S THAT ARE EQUAL AS G.E. CO.
- EC SHALL PROVIDE L.H.A. ONE "HOOK STICK" OPERATOR IS REQUIRED BY THE TRANSFORMER MFG.



- NOTES:
- CONTRACTOR SHALL EXCAVATE EXISTING HILL TO A MINIMUM OF 6" AROUND ENTIRE PAD AND BANK EXIST. CUT-AWAY PORTION WITH CONCRETE OR CUSHION STONE. FINISHED GRADE CONTINUE SHALL PITCH AWAY FROM NEW PAD FOR ADEQUATE DRAINAGE. XFMR PAD SHALL BE MOUNTED ON 12" RISE. PAVING, SILL & TAMPER - 4" DEEP AND DOWN THEREAFTER.
 - CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO FINISH GRADEING FOR HIS INSPECTION AND APPROVAL.



- NOTE: 1) TWO 3" FIBER DUCTS CONCRETE ENCASED;
 (1) 1" CONDUIT SPACE UTILIZE FOR NEW PRI. U.G. CABLES - REMOVE, REPLACE W/ NEW 5KV PRIMARY CABLES AND GROUND WIRE
 (1) 1" CONDUIT W/ PERCENT 2400 V. FEEDER CABLES, DISCONNECT AND REMOVE EXISTING CABLES COMPLETELY.
 2) EC TO PROVIDE O.H. TEMP. PRIMARY LINES IF EXISTING ABANDONED PRI. CABLES CAN NOT BE REMOVED. PROVIDE NEW CONDUIT SYF. IF CONDUITS ARE DAMAGED.



PRIMARY DISTRIBUTION SCHEMATIC WIRING DIAGRAM

- MARCH 2020
 * PRIMARY FEEDER CABLES FROM P-1 TO T-1 REPLACED WITH #2-CU .175XLP 15KV URD CABLES
- MARCH 2020
 * PRIMARY FEEDER CABLES FROM P-1 TO T-3 REPLACED WITH #2-CU .175XLP 15KV URD CABLES
- NOTES:
- EC TO RUN GROUND CONDUCTOR W/ U.G. PRI. CABLES (1/2" x 2 1/2" THIN) - GROUND CONDUCTOR NOT SHOWN ON SCHEMATIC FOR CLARITY ONLY.
 - EC TO PHASE BALANCE PRIMARY LOOP SYSTEM AS SHOWN ON DRAWINGS. ALL LOAD BREAK ELBOWS & CABLES SHALL BE PHASE LABELED AT EACH XFMR COMPARTMENT.
 - SCHEMATIC DIAGRAM SHALL BE PHOTOGRAPHED ON PLS CLASS (BLACK BACKGROUND W/ WHITE LINES ETC.) APPROX. DIM. 18" x 12" - MOUNT SCHEMATIC PLANS ON WALL OF XFMR. H.V. COMPARTMENT - LABEL EACH PHASE AS TO WHAT XFMR IT IS MOUNTED IN. EXAMPLE: PHASE A IN XFMR T-1 SHALL HAVE XFER T-1 PHASE A YOU ARE AT THIS LOCATION". ALL XFMR'S SHALL ALSO BE LABELED ON OUTSIDE W/ APPROPRIATE XFMR NO. CORRELATING W/ DWG. MOUNT ON BLACK BOARD.

CHELMSFORD STREET HOUSING
 HUD AIDED PROJECT 1-2
 ELECTRICAL REHABILITATION

LOWELL HOUSING AUTHORITY
 350 MOODY STREET
 LOWELL MASSACHUSETTS

METCALF ENGINEERING
 CONSULTING ENGINEERS
 105 IRVING STREET
 FRAMINGHAM MASSACHUSETTS

EXTERIOR DISTRIBUTION
 SYSTEM SCHEDULES
 DETAILS & DIAGRAMS

DRAWN BY: DATE 5/21/18
 CHECKED BY: SCALE: NONE
 APPROVED BY: PROJ. NO. 18011



SITE PLAN -EXISTING ELECTRICAL SYSTEM DISTRIBUTION Scale 1"= 40'

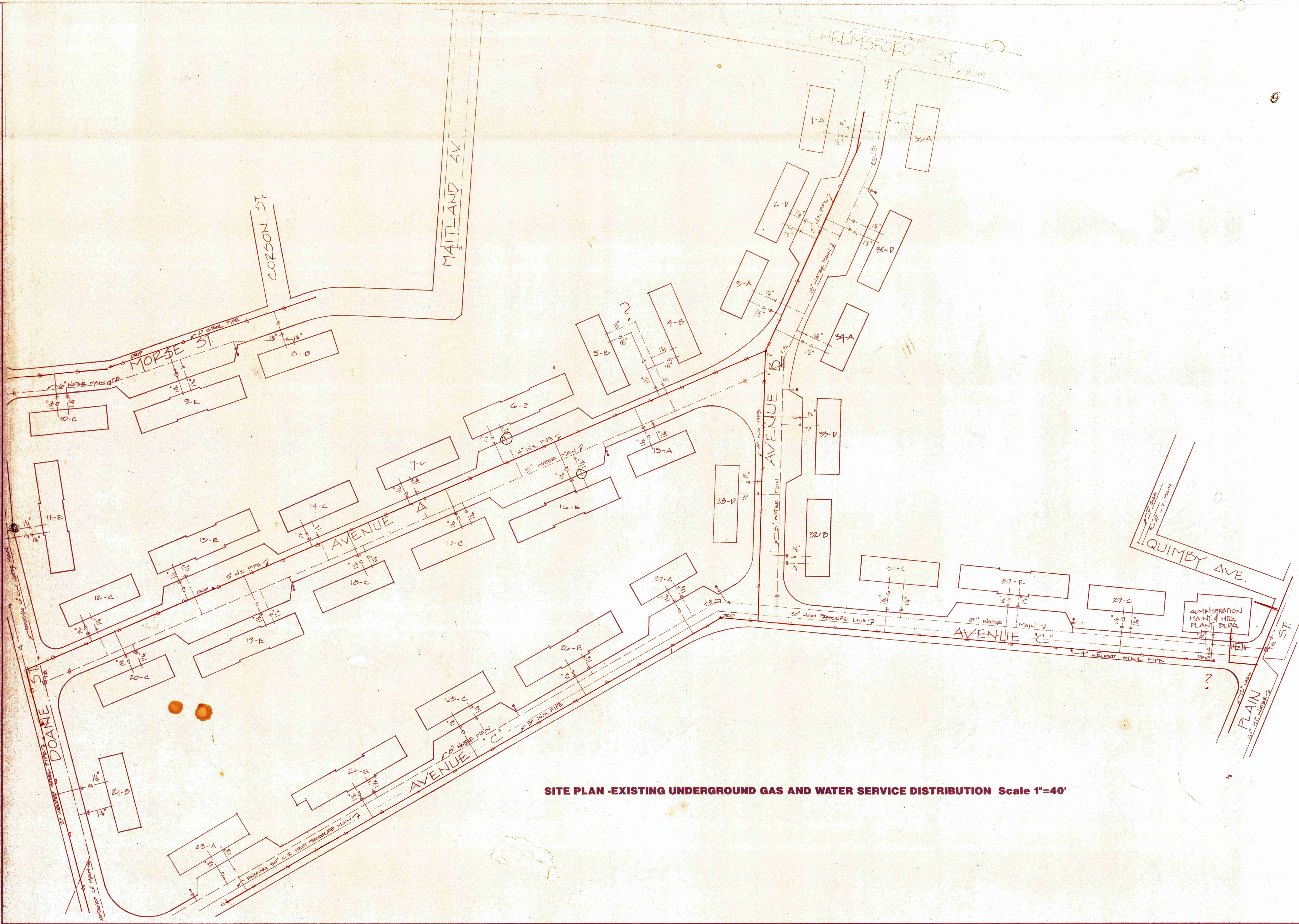
LOWELL HOUSING AUTHORITY
GEORGE W. FLANAGAN SITE
MASS. 1-2
CHELMSFORD STREET
LOWELL, MA. 01853

Mechanical Drawing
 REPLACEMENT OF DOMESTIC HOT WATER
 AND COLD WATER PIPING
 INSULATION-STEAM PIPING
 HONEY AND WELLS
 REVISIONS:
 SCALE: AS NOTED
 DATE: 10-15-06

CONSULTANT
George P. Tsoumas Assoc.
384 Brighton Street
Belmont, Ma.

ARCHITECT
JOHN CICCARIELLO & ASSOC., INC.
 88 WAVERLY STREET
 FRAMINGHAM, MASSACHUSETTS 01701
 (508) 628-3680

OWN BY: CKD BY:
 SHT: 39 OF 42
 DRAWING:
M-38



SITE PLAN -EXISTING UNDERGROUND GAS AND WATER SERVICE DISTRIBUTION Scale 1"=40'

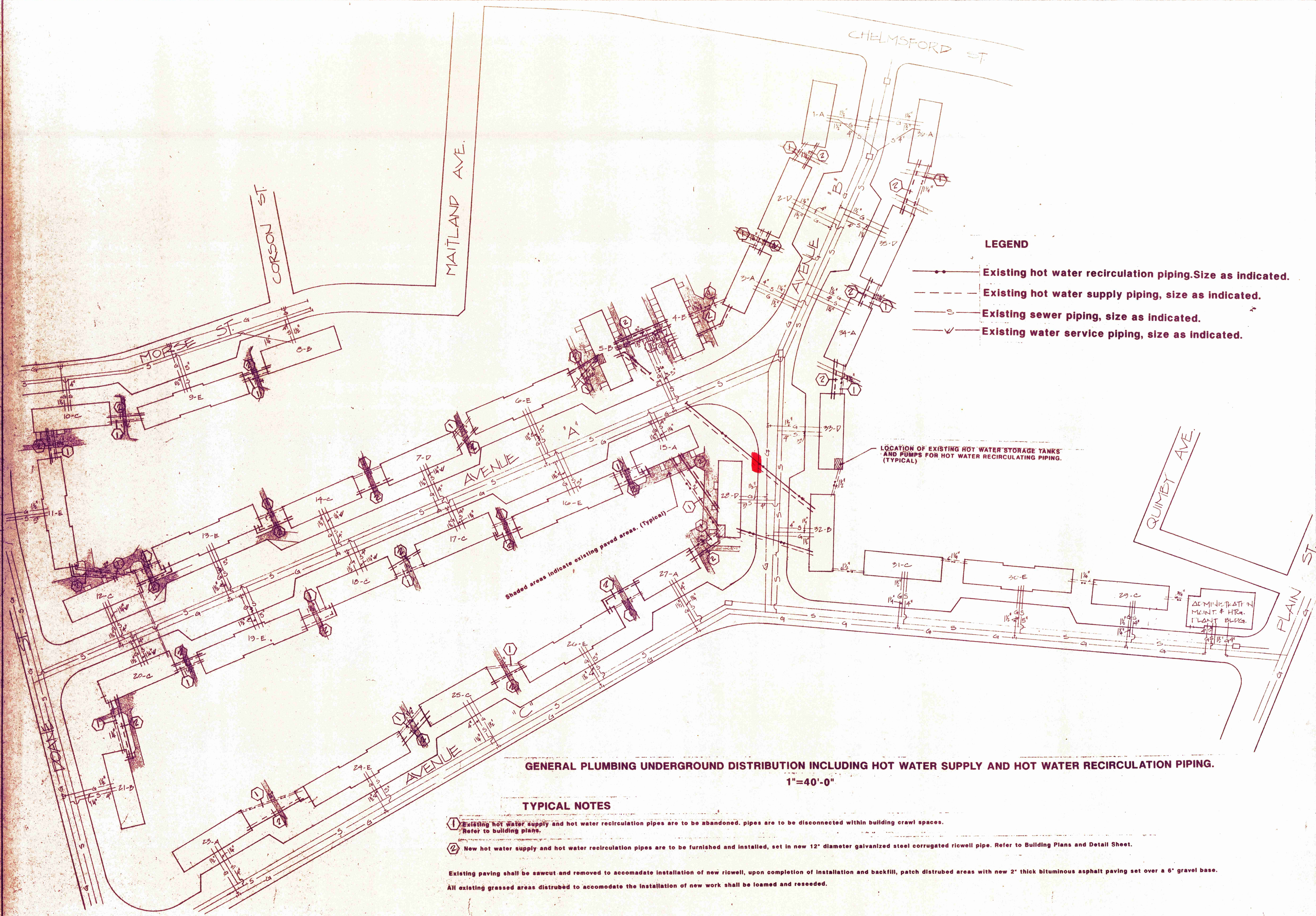
<p>CONSULTANT George P. Tsoumas Assoc. 384 Brighton Street Belmont, Ma.</p>	
<p>ARCHITECT JOHN CICCARIELLO & ASSOC., INC. 88 WAVERLY STREET FRAMINGHAM, MASSACHUSETTS 01701 (508) 626-3680</p>	
<p>Mechanical Drawing REPLACEMENT OF DOMESTIC HOT WATER AND COLD WATER PIPING INSULATION-STEAM PIPING NEW MC-WELLS</p>	
<p>PROJ NO:</p>	<p>REVISIONS: AS NOTED DATE: 10-15-90</p>
<p>LOWELL HOUSING AUTHORITY GEORGE W. FLANAGAN SITE MASS.1-2 CHELMSFORD STREET LOWELL, MA. 01853</p>	
<p>OWN BY:</p>	<p>CKD BY:</p>
<p>SHT: 40</p>	<p>OF 42</p>
<p>DRAWING:</p>	
<p>M-39</p>	



30 CB
 15 SAN M-H
 7 STORM M-H

SITE PLAN -EXISTING STORM & SANITARY DISTRIBUTION SYSTEMS Scale 1"= 40'

CONSULTANT George P. Tsoumas Assoc. 384 Brighton Street Belmont, Ma.	
ARCHITECT JOHN CICCARIELLO & ASSOC., INC. 88 WAVERLY STREET FRAMINGHAM, MASSACHUSETTS 01701 (609) 664-2660	
Mechanical Drawing REPLACEMENT OF DOMESTIC HOT WATER AND COLD WATER PIPING AND CONDENSING STEAM PIPING NEW AND EXISTING SCALE: AS NOTED REVISIONS: DATE: 10-15-90	
PROJ NO: LOWELL HOUSING AUTHORITY GEORGE W. FLANAGAN SITE MASS. 1-2 CHELMSFORD STREET LOWELL, MA. 01853	
DWN BY: 41	CKD BY: 42
M-40	



LEGEND

- Existing hot water recirculation piping. Size as indicated.
- - - Existing hot water supply piping, size as indicated.
- S - Existing sewer piping, size as indicated.
- V— Existing water service piping, size as indicated.

LOCATION OF EXISTING HOT WATER STORAGE TANKS AND PUMPS FOR HOT WATER RECIRCULATING PIPING. (TYPICAL)

Shaded areas indicate existing paved areas. (Typical)

GENERAL PLUMBING UNDERGROUND DISTRIBUTION INCLUDING HOT WATER SUPPLY AND HOT WATER RECIRCULATION PIPING.

1"=40'-0"

TYPICAL NOTES

- ① Existing hot water supply and hot water recirculation pipes are to be abandoned. pipes are to be disconnected within building crawl spaces. Refer to building plans.
- ② New hot water supply and hot water recirculation pipes are to be furnished and installed, set in new 12" diameter galvanized steel corrugated ricowell pipe. Refer to Building Plans and Detail Sheet.

Existing paving shall be sawcut and removed to accomodate installation of new ricowell, upon completion of installation and backfill, patch distrubed areas with new 2" thick bituminous asphalt paving set over a 6" gravel base.
 All existing grassed areas distrubed to accomodate the installation of new work shall be loamed and reseeded.

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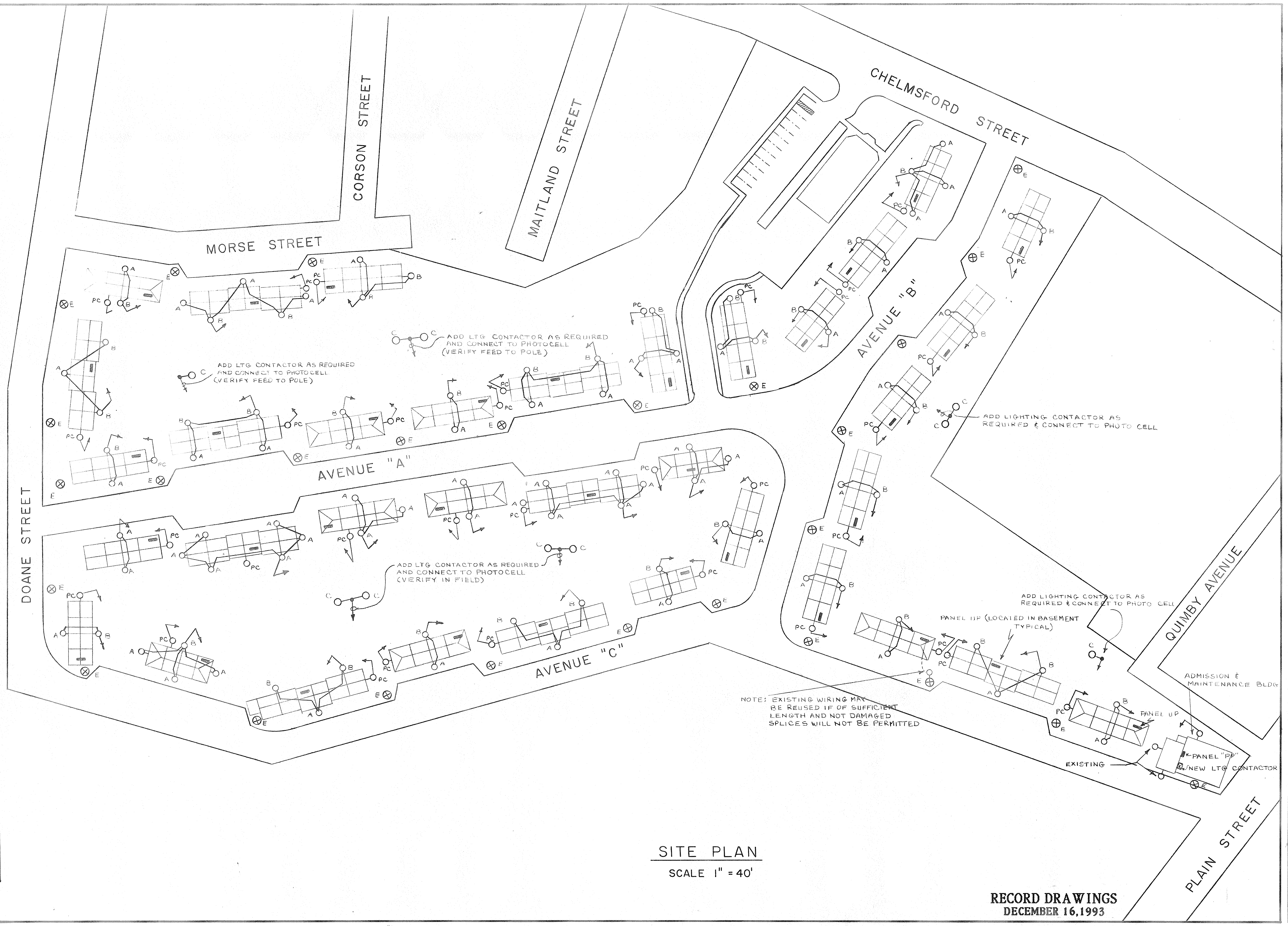
Mechanical Drawing
 REPLACEMENT OF DOMESTIC HOT WATER
 AND COLD WATER PIPING
 INSULATION-STEAM PIPING
 NEW RIC-WELLS

PROJ NO: _____
 SCALE: AS NOTED
 REVISIONS: AS NOTED
 DATE: 10-15-90

LOWELL HOUSING AUTHORITY
GEORGE W. FLANAGAN SITE
MASS. 1-2
CHELMSFORD STREET
LOWELL, MA. 01853

DWN BY: _____ CKD BY: _____
 SHT: 42 OF 42
 DRAWING: _____

M-41

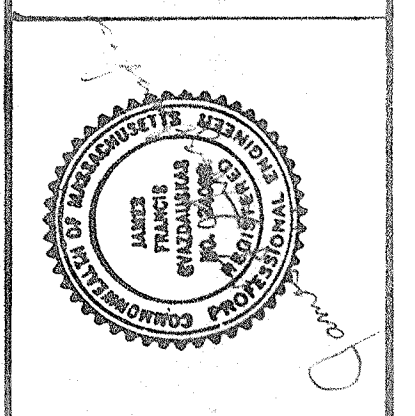


SITE PLAN
SCALE 1" = 40'

RECORD DRAWINGS
DECEMBER 16, 1993

IMPROVED SITE LIGHTING FOR:
H.U.D. MA 1-2
GEORGE W. FLANAGAN DEVELOPMENT
H.U.D. MA1-11
FRANCIS GATEHOUSE MILL DEVELOPMENT

JAMES P. GYAZDAUSKAS, P.E.
CONSULTANT: ELECTRICAL ENGINEERING
40 MAPLE LANE
SUTTON, MA 01590



SITE PLAN - IMPROVED LIGHTING
LOWELL HOUSING AUTHORITY
350 MOODY STREET
LOWELL, MASSACHUSETTS

SCALE: 1" = 40'
DATE: 6-2-93
DRAWN BY: VRR
CHECKED BY: JFG
REV:

DRAWING NO.
E-3