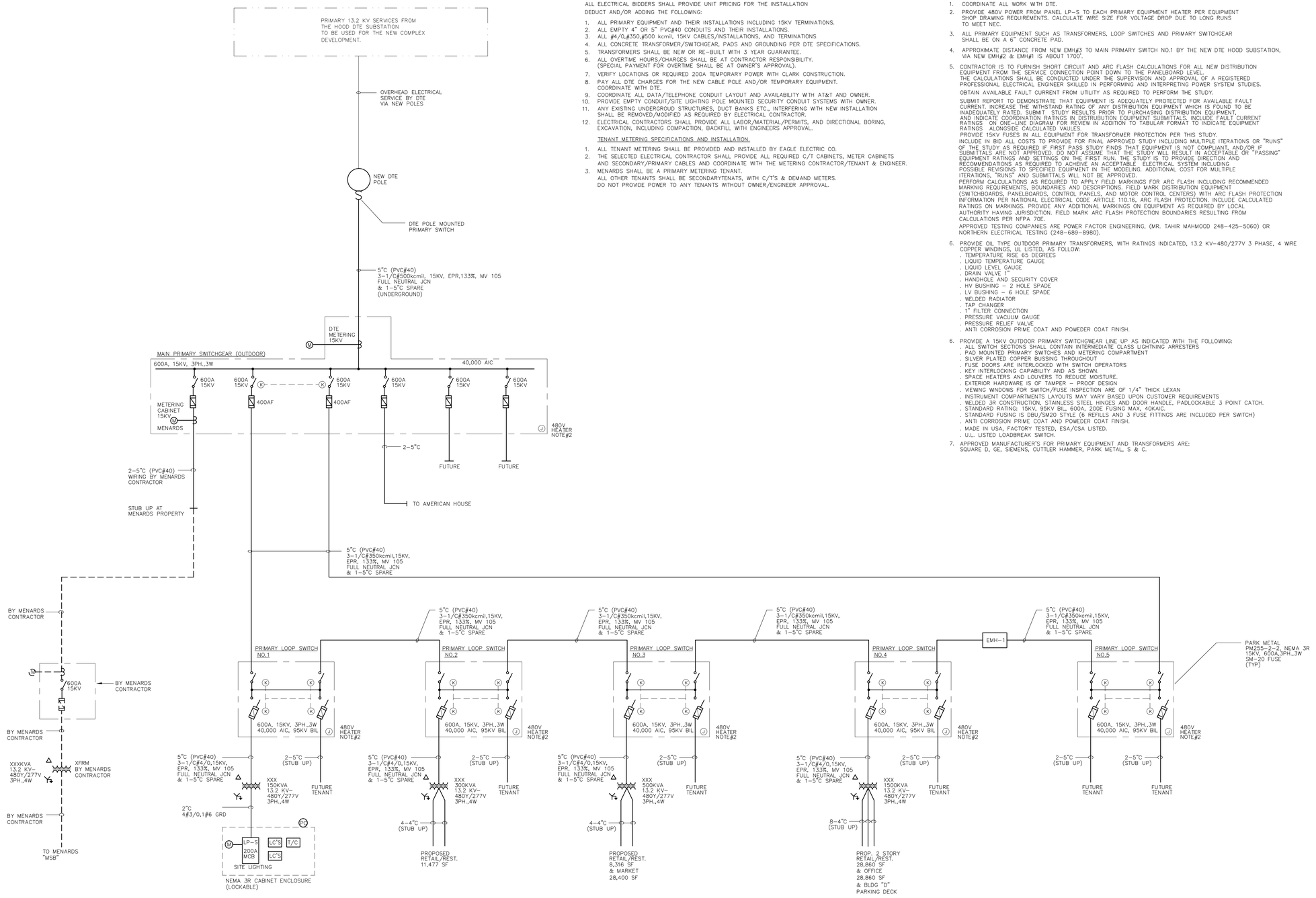

ELECTRICAL GENERAL NOTES:

ALL ELECTRICAL BIDDERS SHALL PROVIDE UNIT PRICING FOR THE INSTALLATION DEDUCT AND/OR ADDING THE FOLLOWING:

1. ALL PRIMARY EQUIPMENT AND THEIR INSTALLATIONS INCLUDING 15KV TERMINATIONS.
2. ALL EMPTY 4" OR 5" PVC#40 CONDUITS AND THEIR INSTALLATIONS.
3. ALL #4/0,#350,#500 kcmil, 15KV CABLES/INSTALLATIONS, AND TERMINATIONS
4. ALL CONCRETE TRANSFORMER/SWITCHGEAR, PADS AND GROUNDING PER DTE SPECIFICATIONS.
5. TRANSFORMERS SHALL BE NEW OR RE-BUILT WITH 3 YEAR GUARANTEE.
6. ALL OVERTIME HOURS/CHARGES SHALL BE AT CONTRACTOR RESPONSIBILITY. (SPECIAL PAYMENT FOR OVERTIME SHALL BE AT OWNER'S APPROVAL).
7. VERIFY LOCATIONS OR REQUIRED 200A TEMPORARY POWER WITH CLARK CONSTRUCTION.
8. PAY ALL DTE CHARGES FOR THE NEW CABLE POLE AND/OR TEMPORARY EQUIPMENT. COORDINATE WITH DTE.
9. COORDINATE ALL DATA/TELEPHONE CONDUIT LAYOUT AND AVAILABILITY WITH AT&T AND OWNER.
10. PROVIDE EMPTY CONDUIT/SITE LIGHTING POLE MOUNTED SECURITY CONDUIT SYSTEMS WITH OWNER.
11. ANY EXISTING UNDERGROUD STRUCTURES, DUCT BANKS ETC., INTERFERING WITH NEW INSTALLATION SHALL BE REMOVED/MODIFIED AS REQUIRED BY ELECTRICAL CONTRACTOR.
12. ELECTRICAL CONTRACTORS SHALL PROVIDE ALL LABOR/MATERIAL/PERMITS, AND DIRECTIONAL BORING, EXCAVATION, INCLUDING COMPACTION, BACKFILL WITH ENGINEERS APPROVAL.

TENANT METERING SPECIFICATIONS AND INSTALLATION.

1. ALL TENANT METERING SHALL BE PROVIDED AND INSTALLED BY EAGLE ELECTRIC CO.
2. THE SELECTED ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED C/T CABINETS, METER CABINETS AND SECONDARY/PRIMARY CABLES AND COORDINATE WITH THE METERING CONTRACTOR/TENANT & ENGINEER.
3. MENARDS SHALL BE A PRIMARY METERING TENANT. ALL OTHER TENANTS SHALL BE SECONDARYTENATS, WITH C/T'S & DEMAND METERS. DO NOT PROVIDE POWER TO ANY TENANTS WITHOUT OWNER/ENGINEER APPROVAL.

ELECTRICAL NOTES:

1. COORDINATE ALL WORK WITH DTE.
2. PROVIDE 480V POWER FROM PANEL LP-S TO EACH PRIMARY EQUIPMENT HEATER PER EQUIPMENT SHOP DRAWING REQUIREMENTS. CALCULATE WIRE SIZE FOR VOLTAGE DROP DUE TO LONG RUNS TO MEET NEC.
3. ALL PRIMARY EQUIPMENT SUCH AS TRANSFORMERS, LOOP SWITCHES AND PRIMARY SWITCHGEAR SHALL BE ON A 6" CONCRETE PAD.
4. APPROXIMATE DISTANCE FROM NEW EMH#3 TO MAIN PRIMARY SWITCH NO.1 BY THE NEW DTE HOOD SUBSTATION, VIA NEW EMH#2 & EMH#1 IS ABOUT 1700'.
5. CONTRACTOR IS TO FURNISH SHORT CIRCUIT AND ARC FLASH CALCULATIONS FOR ALL NEW DISTRIBUTION EQUIPMENT FROM THE SERVICE CONNECTION POINT DOWN TO THE PANELBOARD LEVEL. THE CALCULATIONS SHALL BE CONDUCTED UNDER THE SUPERVISION AND APPROVAL OF A REGISTERED PROFESSIONAL ELECTRICAL ENGINEER SKILLED IN PERFORMING AND INTERPRETING POWER SYSTEM STUDIES.
   OBTAIN AVAILABLE FAULT CURRENT FROM UTILITY AS REQUIRED TO PERFORM THE STUDY.
   SUBMIT REPORT TO DEMONSTRATE THAT EQUIPMENT IS ADEQUATELY PROTECTED FOR AVAILABLE FAULT CURRENT, INCREASE THE WITHSTAND RATING OF ANY DISTRIBUTION EQUIPMENT WHICH IS FOUND TO BE INADEQUATELY RATED. SUBMIT STUDY RESULTS PRIOR TO PURCHASING DISTRIBUTION EQUIPMENT, AND INDICATE COORDINATION RATINGS IN DISTRUBUTION EQUIPMENT SUBMITTALS. INCLUDE FAULT CURRENT RATINGS ON ONE-LINE DIAGRAM FOR REVIEW IN ADDITION TO TABULAR FORMAT TO INDICATE EQUIPMENT RATINGS ALONGSIDE CALCULATED VAULES.
   PROVIDE 15KV FUSES IN ALL EQUIPMENT FOR TRANSFORMER PROTECTION PER THIS STUDY.
   INCLUDE IN BID ALL COSTS TO PROVIDE FOR FINAL APPROVED STUDY INCLUDING MULTIPLE ITERATIONS OR "RUNS" OF THE STUDY AS REQUIRED IF FIRST PASS STUDY FINDS THAT EQUIPMENT IS NOT COMPLIANT, AND/OR IF SUBMITTALS ARE NOT APPROVED. DO NOT ASSUME THAT THE STUDY WILL RESULT IN ACCEPTABLE OR "PASSING" EQUIPMENT RATINGS AND SETTINGS ON THE FIRST RUN. THE STUDY IS TO PROVIDE DIRECTION AND RECOMMENDATIONS AS REQUIRED TO ACHEIVE AN ACCEPTABLE ELECTRICAL SYSTEM INCLUDING POSSIBLE REVISIONS TO SPECIFIED EQUIPMENT IN THE MODELING. ADDITIONAL COST FOR MULTIPLE ITERATIONS, "RUNS" AND SUBMITTALS WILL NOT BE APPROVED.
   PERFORM CALCULATIONS AS REQUIRED TO APPLY FIELD MARKINGS FOR ARC FLASH INCLUDING RECOMMENDED MARKNIG REQUIREMENTS, BOUNDARIES AND DESCRIPTIONS. FIELD MARK DISTRIBUTION EQUIPMENT (SWITCHBOARDS, PANELBOARDS, CONTROL PANELS, AND MOTOR CONTROL CENTERS) WITH ARC FLASH PROTECTION INFORMATION PER NATIONAL ELECTRICAL CODE ARTICLE 110.16, ARC FLASH PROTECTION. INCLUDE CALCULATED RATINGS ON MARKINGS. PROVIDE ANY ADDITIONAL MARKINGS ON EQUIPMENT AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION. FIELD MARK ARC FLASH PROTECTION BOUNDARIES RESULTING FROM CALCULATIONS PER NFPA 70E.
   APPROVED TESTING COMPANIES ARE POWER FACTOR ENGINEERING, (MR. TAHIR MAHMOOD 248-425-5060) OR NORTHERN ELECTRICAL TESTING (248-689-8980).
6. PROVIDE OIL TYPE OUTDOOR PRIMARY TRANSFORMERS, WITH RATINGS INDICATED, 13.2 KV-480/277V 3 PHASE, 4 WIRE COPPER WINDINGS, UL LISTED, AS FOLLOW:
   . TEMPERATURE RISE 65 DEGREES
   . LIQUID TEMPERATURE GAUGE
   . LIQUID LEVEL GAUGE
   . DRAIN VALVE 1"
   . HANDHOLE AND SECURITY COVER
   . HV BUSHING - 2 HOLE SPADE
   . LV BUSHING - 6 HOLE SPADE
   . WELDED RADIATOR
   . TAP CHANGER
   . 1" FILTER CONNECTION
   . PRESSURE VACUUM GAUGE
   . PRESSURE RELIEF VALVE
   . ANTI CORROSION PRIME COAT AND POWEDER COAT FINISH.
6. PROVIDE A 15KV OUTDOOR PRIMARY SWITCHGWEAR LINE UP AS INDICATED WITH THE FOLLOWING:
   . ALL SWITCH SECTIONS SHALL CONTAIN INTERMEDIATE CLASS LIGHTNING ARRESTERS
   . PAD MOUNTED PRIMARY SWITCHES AND METERING COMPARTMENT
   . SILVER PLATED COPPER BUSSING THROUGHOUT
   . FUSE DOORS ARE INTERLOCKED WITH SWITCH OPERATORS
   . KEY INTERLOCKING CAPABILITY AND AS SHOWN.
   . SPACE HEATERS AND LOUVERS TO REDUCE MOISTURE.
   . EXTERIOR HARDWARE IS OF TAMPER - PROOF DESIGN
   . VIEWND WINDOWS FOR SWITCH/FUSE INSPECTION ARE OF 1/4" THICK LEXAN
   . INSTRUMENT COMPARTMENTS LAYOUTS MAY VARY BASED UPON CUSTOMER REQUIREMENTS
   . WELDED 3R CONSTRUCTION, STAINLESS STEEL HINGES AND DOOR HANDLE, PADLOCKABLE 3 POINT CATCH.
   . STANDARD RATING: 15KV, 95KV BIL, 600A, 200E FUSING MAX, 40KAIC.
   . STANDARD FUSING IS DBU/SM20 STYLE (6 REFILLS AND 3 FUSE FITTINGS ARE INCLUDED PER SWITCH)
   . ANTI CORROSION PRIME COAT AND POWEDER COAT FINISH.
   . MADE IN USA, FACTORY TESTED, ESA/CSA LISTED.
   . U.L. LISTED LOADBREAK SWITCH.
7. APPROVED MANUFACTURER'S FOR PRIMARY EQUIPMENT AND TRANSFORMERS ARE: SQUARE D, GE, SIEMENS, CUTTLER HAMMER, PARK METAL, S & C.

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PO BOX, BIRMINGHAM, MICHIGAN 48012
Tel. 248-646-2643

JOB TITLE:

XXXX

BLOOMFIELD VILLAGE

XXXX

SHEET TITLE:

PRIMARY ONE LINE DIAGRAM

SEAL

STATE OF MICHIGAN
DONALD E. WORSLEY ENGINEER No. 12484
LICENSED PROFESSIONAL ENGINEER

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DRAWN: AGT
DESIGNED: LK
CHECKED: LK
APPROVED: LK
DATE: 4.3.17
PROJECT No. XXX
ACADFILE: XXX
SHEET No. E-2