WAYNE STATE UNIVERSITY
ATHLETIC MULTI-PURPOSE FACILITY
DTE-PLD ELECTRICAL CONVERSION

WSU PROJECT NO. 091-291627

BIDS 02/22/2017

WAYNE STATE UNIVERSITY

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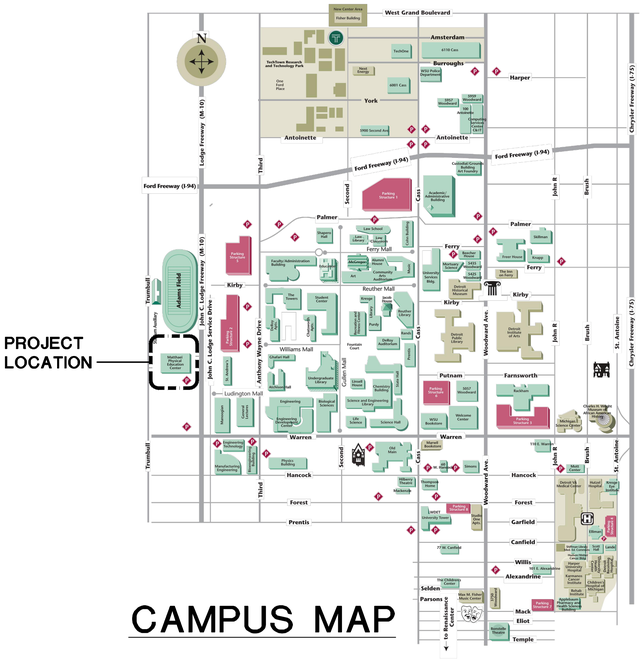
PBA PROJECT NO: 2016.0501

ELECTRICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
E0.1	ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2	ELECTRICAL STANDARD SCHEDULES AND DETAILS
E1.1	ELECTRICAL SITE PLAN
E1.2	ENLARGED ELECTRICAL PLAN
E5.1	ONE LINE DIAGRAM

REFERENCE ONLY - CIVIL DRAWING INDEX

SHEET NO.	SHEET TITLE
C101	DEMOLITION PLAN
C102	UTILITY PLAN
C103	GRADING LAYOUT PLAN AND DETAILS
L.01	SITE PLAN



CAMPUS MAP

ELECTRICAL SYMBOL LIST

(NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION
FX	FIXTURE TYPE
	LIGHTING FIXTURE
	DIRECT/INDIRECT LIGHTING FIXTURE
	EMERGENCY FIXTURE
FX-NL	NIGHT LIGHTING FIXTURE
	LIGHTING FIXTURE
	EMERGENCY FIXTURE
	WALL MOUNTED LIGHTING FIXTURE
	LIGHTING FIXTURE
	EMERGENCY FIXTURE
	DIRECTIONAL LIGHTING FIXTURE
	PENDANT LIGHTING FIXTURE
	WALL SCONCE
	LIGHTING TRACK
	TRACK LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE
	POLE MOUNTED LIGHTING FIXTURE – POST TOP
	BOLLARD LIGHTING FIXTURE
	EMERGENCY LIGHTING UNIT
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)
	EXIT LIGHTING FIXTURE – WALL MOUNTED
ELTD	EMERGENCY LOAD TRANSFER DEVICE
S	SINGLE POLE TOGGLE SWITCH
S2	TWO POLE TOGGLE SWITCH
S3	3 WAY TOGGLE SWITCH
S4	4 WAY TOGGLE SWITCH
K	KEY OPERATED SWITCH
K3	3 WAY KEY OPERATED SWITCH
K4	4 WAY KEY OPERATED SWITCH
D	DIMMER SWITCH
D3	3 WAY DIMMER SWITCH
DO	DIMMER OCCUPANCY SENSOR SWITCH
DL	LOW VOLTAGE DIMMER SWITCH
SP	PILOT SWITCH

SYMBOL	DESCRIPTION
TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION
TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER
TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL
TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP
TWCDP	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP
RGP	REMOTE GENERATOR ANNUCIATOR PANEL
ATS	AUTOMATIC TRANSFER SWITCH
UPS	UN-INTERRUPTABLE POWER SUPPLY
CSX	LOW VOLTAGE CONTROL STATION "X" INDICATES TYPE
	SINGLE RECEPTACLE
DP	DUPLEX RECEPTACLE
PP	QUAD RECEPTACLE
	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY AND GFI RECEPTACLES)
X	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER
	DUPLEX EMERGENCY RECEPTACLE
	TAMPER RESISTANT RECEPTACLE
	QUAD TAMPER RESISTANT RECEPTACLE
	ABOVE COUNTER DUPLEX TAMPER RESISTANT RECEPTACLE
	DUPLEX UPS RECEPTACLE
	USB RECEPTACLE
	4 PORT USB CHARGING STATION
	CEILING MOUNTED DUPLEX RECEPTACLE
	POWER POLE
	SPECIAL RECEPTACLE – REFER TO ELECTRICAL STANDARD SCHEDULES
	MULTI-OUTLET RACEWAY
X"	MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET "X" INDICATES TYPE
PTX	POKE THRU SERVICE FITTING "X" INDICATES TYPE
FBX	FLOOR BOX SERVICE FITTING "X" INDICATES TYPE
AFX	ACCESS FLOOR SERVICE FITTING "X" INDICATES TYPE
RX	CORD REEL "X" INDICATES TYPE
	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S3S3	3-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
S4S4	4-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES
ST	DIGITAL TIME SWITCH
SI	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER-ILLUMINATED WHEN SWITCH IS IN "OFF" POSITION
SL	LOW VOLTAGE SWITCH
SO	OCCUPANCY SENSOR
SO2	OCCUPANCY SENSOR
OS X	OCCUPANCY SENSOR "X" INDICATES TYPE

REFER TO ELECTRICAL STANDARD SCHEDULES

SYMBOL	DESCRIPTION
CP	CONTROL PANEL
	MOTOR
VFC	VARIABLE FREQUENCY CONTROLLER.
	MANUAL CONTROLLER
	MAGNETIC CONTROLLER
	COMBINATION MAGNETIC CONTROLLER
	NON-FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
CB	ENCLOSED CIRCUIT BREAKER
	PUSH BUTTON STATION
	JUNCTION BOX
	HARD WIRE POWER CONNECTION
DP	AUTOMATIC DOOR CONTROLLER
PP	AUTOMATIC DOOR PUSH PAD OPERATOR
	GROUND ROD
	GROUND CONNECTION
X	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE
	CONDUIT UP
	CONDUIT DOWN
	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	ABOVE COUNTER EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET
	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET
X	TELECOMMUNICATION OUTLET "X" INDICATES TYPE
X	ABOVE COUNTER TELECOMMUNICATION OUTLET "X" INDICATES TYPE
X	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE
	TELECOMMUNICATION BACKBOARD
TGB	TELECOMMUNICATION GROUNDING BUS BAR
TMGB	TELECOMMUNICATION MAIN GROUNDING BUS BAR
IC	INTERCOM OUTLET
S	SPEAKER
S	SPEAKER – WALL MOUNTED
MIC	MICROPHONE
VC	VOLUME CONTROL/STATION SELECTOR
B	SIGNALING BELL
	SINGLE FACE CLOCK – CEILING MOUNTED
	SINGLE FACE CLOCK – WALL MOUNTED
	DOUBLE FACE CLOCK – CEILING MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED
	DOUBLE FACE CLOCK – WALL MOUNTED
S	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED
TC	TIME CLOCK
C	CONTACTOR
P	PHOTOCELL
TT	TWIST TIMER

SYMBOL	DESCRIPTION
	SECURITY CAMERA
MD	MOTION DETECTOR
K	SECURITY KEY SWITCH
DC	DOOR CONTACT
KP	KEY PAD
CR	ACCESS CONTROL STATION
DB	DURESS PUSH BUTTON STATION
DE	DELAYED EGRESS
REX	REQUEST TO EXIT STATION
	CIRCUIT BREAKER
	DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED
	DRAWOUT CIRCUIT BREAKER ELECTRICALLY/ OPERATED
	SWITCH
	AUTOMATIC OR MANUAL TRANSFER SWITCH
	FUSE
	TRANSFORMER
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	LIGHTNING ARRESTOR
X	PANELBOARD "X" INDICATES PANELBOARD NAME
	GROUND
	STRESS CONE TERMINATION
K	SECURITY KEY INTERLOCK
G	ENGINE GENERATOR
M	UTILITY METER
EMU	ELECTRONIC METERING UNIT
A	AMMETER
V	VOLTMETER
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
SPD	SURGE PROTECTIVE DEVICE
CR	CONTROL RELAY
TDR	TIME DELAY RELAY
	THERMAL OVERLOAD RELAY
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	N.O. PUSH BUTTON SINGLE CIRCUIT
	N.C. PUSH BUTTON SINGLE CIRCUIT
X-X	CABLE VAULT "X-X" INDICATES TYPE
	BRANCH CIRCUIT PANELBOARD
	LOAD CENTER
	MOTOR CONTROL CENTER
T	TRANSFORMER
	DISTRIBUTION PANEL
GB	GROUND BUS
PB	PLUG IN BUSWAY
FB	FEEDER BUSWAY

SYMBOL	DESCRIPTION
F	MANUAL FIRE ALARM BOX
SD	SMOKE DETECTOR
DD	DUCT SMOKE DETECTOR
CO	CARBON MONOXIDE DETECTOR
TD	THERMAL DETECTOR
BD	PROJECTED BEAM DETECTOR
F	FIRE ALARM BELL
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE
F XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F XX	FIRE ALARM COMBINATION VISUAL/ AUDIBLE NOTIFICATION APPLIANCE– CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
XX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
F	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE – CEILING MOUNTED
F	FIREFIGHTERS PHONE JACK
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
IM	ADDRESSABLE MONITORING MODULE
CM	ADDRESSABLE CONTROL MODULE
TS	TAMPER SWITCH
FS	FLOW SWITCH
DR	MAGNETIC DOOR RELEASE

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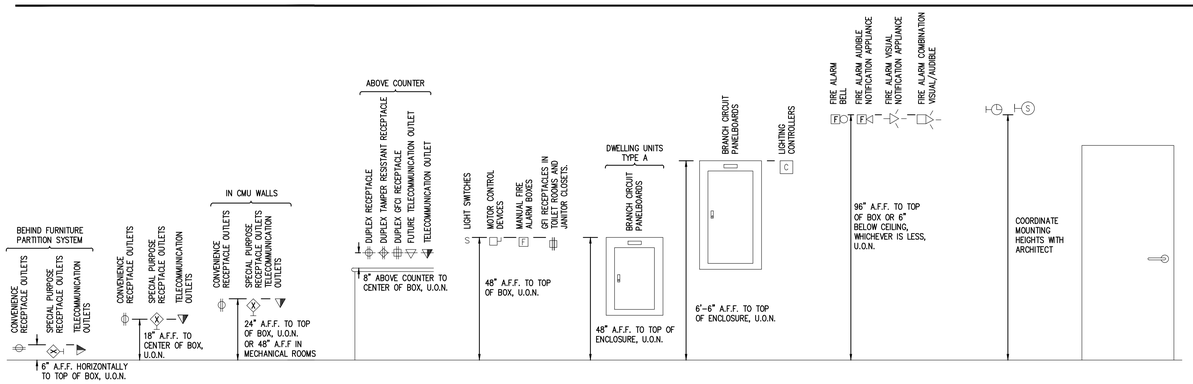
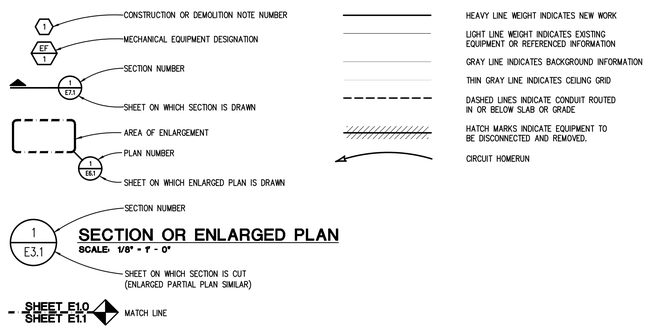
ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A	AMPERES
AF	AMPERES FRAME (BREAKER RATING)
A.F.F.	ABOVE FINISH FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AL	AUDIENCE LEFT
AR	AUDIENCE RIGHT
AT	AMPERES TRIP (BREAKER SETTING)
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
BKR	BREAKER
BPS	BOLTED PRESSURE SWITCH
C	CONDUIT
CB	CIRCUIT BREAKER
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
DEMO	DEMOLITION
DIM	DIMENSION
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DS	DOWNSTAGE
DWG	DRAWING
EBU	EMERGENCY BATTERY UNIT
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRICAL
EM/ EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EO	ELECTRICALLY OPERATED
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
FA	FIRE ALARM
FLA	FULL LOAD AMPS
FLR	FLOOR
FOH	FRONT OF HOUSE
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
FU	FUSE
G/GRD/EG	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HV	HIGH VOLTAGE
HZ	HERTZ
IG	ISOLATED GROUND
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT – AMPERES
KW	KILOWATT
KWH	KILOWATT – HOURS
LA	LIGHTNING ARRESTOR
LP	LIGHTING PANEL
LDP	LIGHTING DISTRIBUTION PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MIN	MINIMUM
MISC.	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MTR	MOTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSIBLE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
P	POLE
PB	PUSHBUTTON STATION
PH	PHASE
PT	POTENTIAL TRANSFORMER
PDP	POWER DISTRIBUTION PANEL
RECEPT.	RECEPTACLE
RDP	RECEPTACLE DISTRIBUTION PANEL
RP	RECEPTACLE PANEL
RSC	RIGID STEEL CONDUIT
SCHED	SCHEDULE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TERMINAL BOX
TELECOM	TELECOMMUNICATIONS
TR	TAMPER RESISTANT
TTB	TELEPHONE TERMINAL BACKBOARD
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
US	UPSTAGE
V	VOLTS
W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
(E)	EXISTING
(R)	RELOCATED

STANDARD MOUNTING HEIGHTS



STANDARD METHODS OF NOTATION



REVISION

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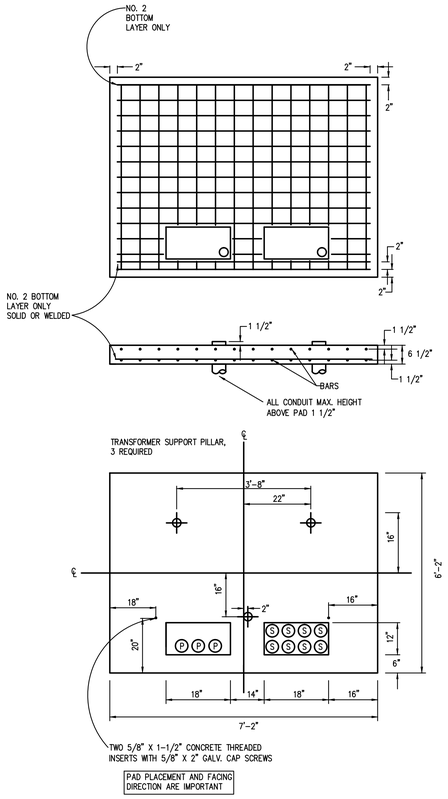
SHEET No.
E0.1

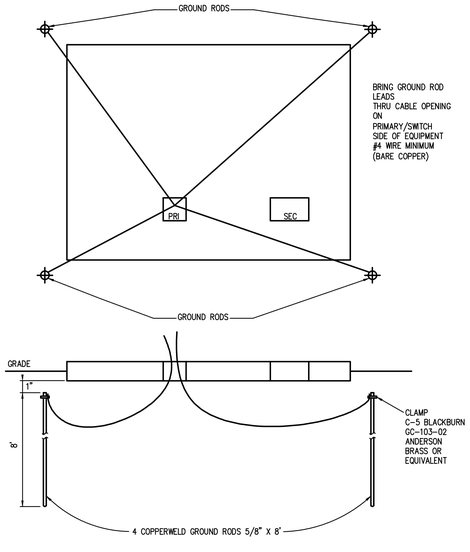


CONCRETE TRANSFORMER PAD (SECONDARY METERED)

NO SCALE

(#) KEYED NOTES:

1. SEE SIM-ESIG PAGES 3-6-9 & 3-6-10 FOR PAD AND GROUND ROD INSTALLATION DETAILS AND 3-7-11 FOR MINIMUM CLEARANCES TO OBSTRUCTIONS.
2. PRIMARY CONDUIT MUST BE POSITIONED AT THE FRONT OF THE PRIMARY WINDOW AS SHOWN.
3. NUMBER OF CONDUITS IS TO BE APPROVED BY DTE ELECTRIC PLANNER.
4. IF CONDUCTORS ARE NOT PULLED IN ALL SECONDARY SERVICE CONDUITS, THE UNUSED CONDUIT SHOULD BE AT THE FRONT POSITION.
5. SWEEPS MUST BE 4" WITH MINIMUM 36" RADIUS BENDS.
6. CONCRETE MIX 6 BAGS PER YARD.
7. MAINTAIN CONCRETE COVER CLEARANCES BETWEEN REINFORCEMENT RODS AND SURFACES AS SHOWN.
8. TRANSFORMER AND PAD SELECTION ON SECONDARY METERED INSTALLATIONS ARE DETERMINED BY DTE ELECTRIC PLANNER.
9. MINIMUM COMPRESSIVE STRENGTH 3500 PSI AT 28 DAYS.



GROUNDING FOR CUSTOMER INSTALLED 3 PHASE PAD (SECONDARY METERED)

NO SCALE

(#) KEYED NOTES:

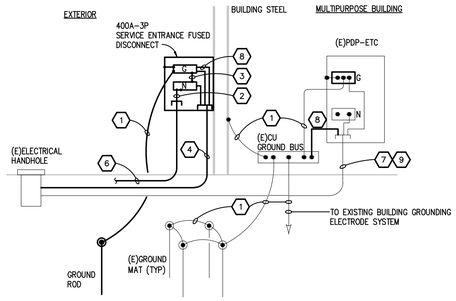
1. PREFERRED GROUND ROD INSTALLATION METHOD IS TO INSTALL ONE GROUND ROD NEAR EACH CORNER OF THE PAD.

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS

BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET)				
		120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	256	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

NOTES:

1. THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9.
2. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
3. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT.
4. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE 90.1 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

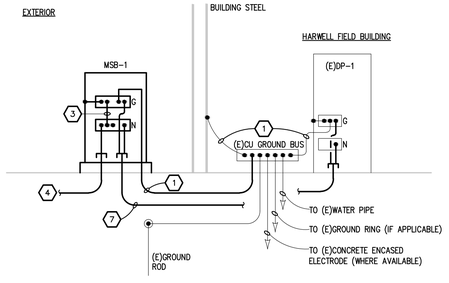


MULTIPURPOSE BUILDING SERVICE ENTRANCE GROUNDING (SECONDARY SERVICE)

NO SCALE

(#) KEYED NOTES:

1. GROUNDING ELECTRODE CONDUCTOR, #4/0 COPPER.
2. GROUNDED CONDUCTOR (NEUTRAL), SEE ONE LINE DIAGRAM.
3. MAIN BONDING JUMPER, PROVIDED BY MANUFACTURER AS PART OF LISTED EQUIPMENT SIZED PER 2011 NEC 250.28 AND 250.102.
4. SECONDARY SERVICE ENTRANCE PHASE CONDUCTORS AND GROUNDED CONDUCTOR IN PVC CONDUIT. SEE ONE LINE DIAGRAM.
5. PROVIDE ADDITIONAL CONNECTION FROM GROUNDED SERVICE CONDUCTOR TO GROUNDING ELECTRODE AT THE TRANSFORMER PER NEC 250.24. COORDINATE WITH UTILITY.
6. COORDINATE REQUIREMENTS WITH UTILITY COMPANY PRIOR TO INSTALLATION. PROVIDE ALL NECESSARY GROUND RODS AND CONDUCTORS NECESSARY TO MEET UTILITY COMPANY REQUIREMENTS.
7. EXISTING SECONDARY PHASE CONDUCTORS, NEUTRAL AND GROUNDED CONDUCTOR IN ONE OF THE EXISTING PVC CONDUIT.
8. #4/0 COPPER GROUNDING ELECTRODE CONDUCTOR.
9. ROUTE NEW #4/0 COPPER GROUNDING ELECTRODE CONDUCTOR IN SPARE 4"C FROM (E)ELECTRICAL HANDHOLE TO (E)PDP-ETC IN MULTIPURPOSE.



HARWELL FIELD BUILDING SERVICE ENTRANCE GROUNDING (SECONDARY SERVICE)

NO SCALE

(#) KEYED NOTES:

1. GROUNDING ELECTRODE CONDUCTOR, #4/0 COPPER.
2. GROUNDED CONDUCTOR (NEUTRAL), SEE ONE LINE DIAGRAM.
3. MAIN BONDING JUMPER, PROVIDED BY MANUFACTURER AS PART OF LISTED EQUIPMENT SIZED PER NEC 250.28 AND 250.102.
4. SERVICE ENTRANCE PHASE CONDUCTORS AND GROUNDED CONDUCTOR IN CONDUIT. SEE ONE LINE DIAGRAM.
5. PROVIDE ADDITIONAL CONNECTION FROM GROUNDED SERVICE CONDUCTOR TO GROUNDING ELECTRODE AT THE TRANSFORMER PER NEC 250.24. COORDINATE WITH UTILITY.
6. COORDINATE REQUIREMENTS WITH UTILITY COMPANY PRIOR TO INSTALLATION. PROVIDE ALL NECESSARY GROUND RODS AND CONDUCTORS TO MEET UTILITY COMPANY REQUIREMENTS.
7. FEEDER IN CONDUIT (3P,N,G). SEE ONE LINE DIAGRAM.

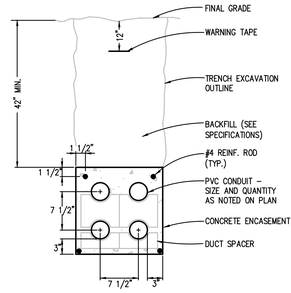
FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE

OVERCURRENT DEVICE RATING (AMPERES)	COPPER CONDUCTORS					
	WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE			
	PHASE & NEUTRAL	GROUND	SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G)	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)
15-20	12	12	3/4"	3/4"	3/4"	3/4"
25-30	10	10	3/4"	3/4"	3/4"	3/4"
35-40	8	10	3/4"	3/4"	3/4"	3/4"
* 45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"
* 60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	1" (1 1/4")
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"
* 80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"
* 90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"
* 110	2 (1)	6	–	1 1/4"	1 1/4"	1 1/4" (1 1/2")
* 125	1 (1/0)	6	–	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"
150	1/0	6	–	1 1/2"	1 1/2"	1 1/2"
175	2/0	6	–	2"	2"	2"
200	3/0	6	–	2"	2"	2 1/2"
225	4/0	4	–	2"	2"	2 1/2"
250	250	4	–	2 1/2"	2 1/2"	2 1/2"
300	350	4	–	2 1/2"	2 1/2"	3"
350	500	3	–	3"	3"	3"
400	500	3	–	3"	3"	3"
450	2-4/0	2-2	–	2-2"	2-2"	2-2 1/2"
500	2-250	2-2	–	2-2 1/2"	2-2 1/2"	2-2 1/2"
600	2-350	2-1	–	2-2 1/2"	2-2 1/2"	2-3"
700	2-500	2-1/0	–	2-3"	2-3"	2-3"
800	2-500	2-1/0	–	2-3"	2-3"	2-3 1/2"
1000	3-400	3-2/0	–	3-3"	3-3"	3-3"
1200	3-600	3-3/0	–	3-3 1/2"	3-3 1/2"	3-3 1/2"
1600	4-600	4-4/0	–	4-3 1/2"	4-3 1/2"	4-3 1/2"
2000	5-600	5-250	–	5-3 1/2"	5-3 1/2"	5-3 1/2"

* = SEE NOTE 4

NOTES:

1. CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
3. CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. LARGER THAN #4/0 ARE BASED ON TYPE XHHW.
4. CONDUCTORS ARE BASED ON 90°C, 600V, INSULATED COPPER WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.
5. CONDUIT SIZES ARE VALID FOR EMT OR RGS. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
6. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE REQUIRED WIRE SIZES TO ACCOMMODATE MECHANICAL EQUIPMENT LUG SIZES.
7. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.
8. OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY.
9. SPLICE FROM ALUMINUM TO COPPER PRIOR TO ENTERING EQUIPMENT LISTED FOR USE WITH COPPER CONDUCTORS ONLY OR USE COPPER CONDUCTORS FOR THE ENTIRE LENGTH OF FEEDER.

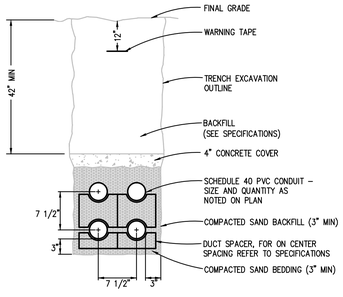


CONCRETE ENCASED DUCT BANK DETAIL

NO SCALE

NOTES:

1. QUANTITY AND CONFIGURATION OF DUCTS SHALL BE AS SHOWN ON PLAN DRAWINGS. PROVIDE CONDUIT TYPES AS SPECIFIED.
2. PROVIDE 3-COMPARTMENT INNERDUCTS WHERE INDICATED ON PLANS.

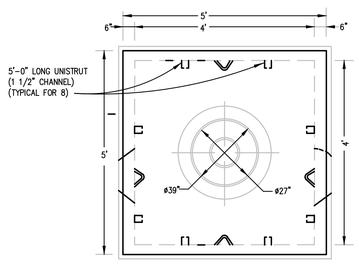


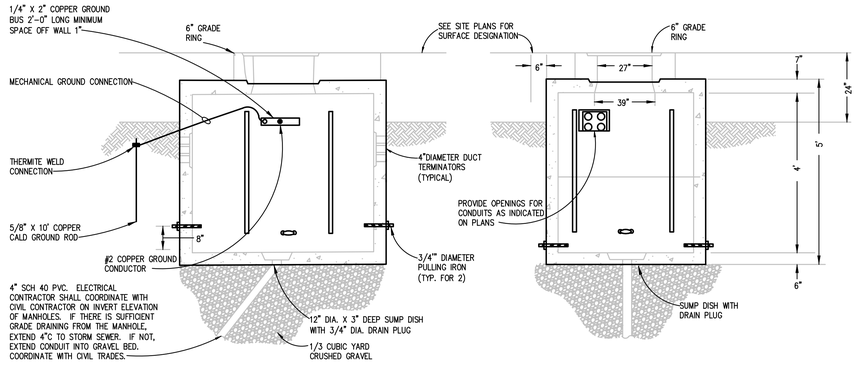
UNDERGROUND CONDUIT DETAIL

NO SCALE

NOTES:

1. QUANTITY AND CONFIGURATION OF DUCTS SHALL BE AS SHOWN ON PLAN DRAWINGS. 12" MINIMUM SEPARATION SHALL BE MAINTAINED BETWEEN ELECTRICAL AND COMMUNICATIONS DUCTS.





DETAIL OF CONCRETE MANHOLE

NO SCALE

NOTES:

1. COORDINATE EXACT MANHOLE LOCATIONS WITH CIVIL DRAWINGS.
2. FOR POWER MANHOLES, PROVIDE ALL SPLICING COMPONENTS AND FIRE TAPPING AS REQUIRED. CAST IRON COVER SHALL BE LABELED "PRIMARY CABLING".
3. FOR COMMUNICATION MANHOLES, PROVIDE INNERDUCT SLACK/TRANSITION AS DIRECTED BY THE TECHNOLOGY CONSULTANT. CAST IRON COVER SHALL BE LABELED "DATA CABLING".

RACEWAY APPLICATION SCHEDULE

RACEWAY		INTERMEDIATE METAL CONDUIT (IMC)	LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)	RIGID STEEL CONDUIT	RIGID NONMETALLIC CONDUIT (RNC) TYPE EPC-40	KEYED NOTES
OUTDOOR	EXPOSED	X		X		
	CONCEALED (ABOVE GROUND)	X		X		
	UNDERGROUND			X	X	
	CONNECTED TO VIBRATING EQUIPMENT		X			EQUIPMENT INCLUDING: TRANSFORMERS, HYDRAULIC PNEUMATIC, ELECTRIC SOLENOID, MOTOR DRIVEN EQUIPMENT

GENERAL NOTES

1. 'X' INDICATES ACCEPTABLE SELECTION.
2. REFER TO "CONDUCTORS AND CABLES" SPECIFICATION FOR APPLICATION LIMITATIONS OF AC/MC CABLE.

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

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CONSULTING ENGINEERS

WAYNE STATE UNIVERSITY

PROJECT TITLE
ATHLETIC MULTI-PURPOSE FACILITY
DTE-PLD ELECTRICAL CONVERSION
WSU PROJECT NO. 091-291627

SHEET TITLE
ELECTRICAL STANDARD SCHEDULES AND DETAILS

DATE
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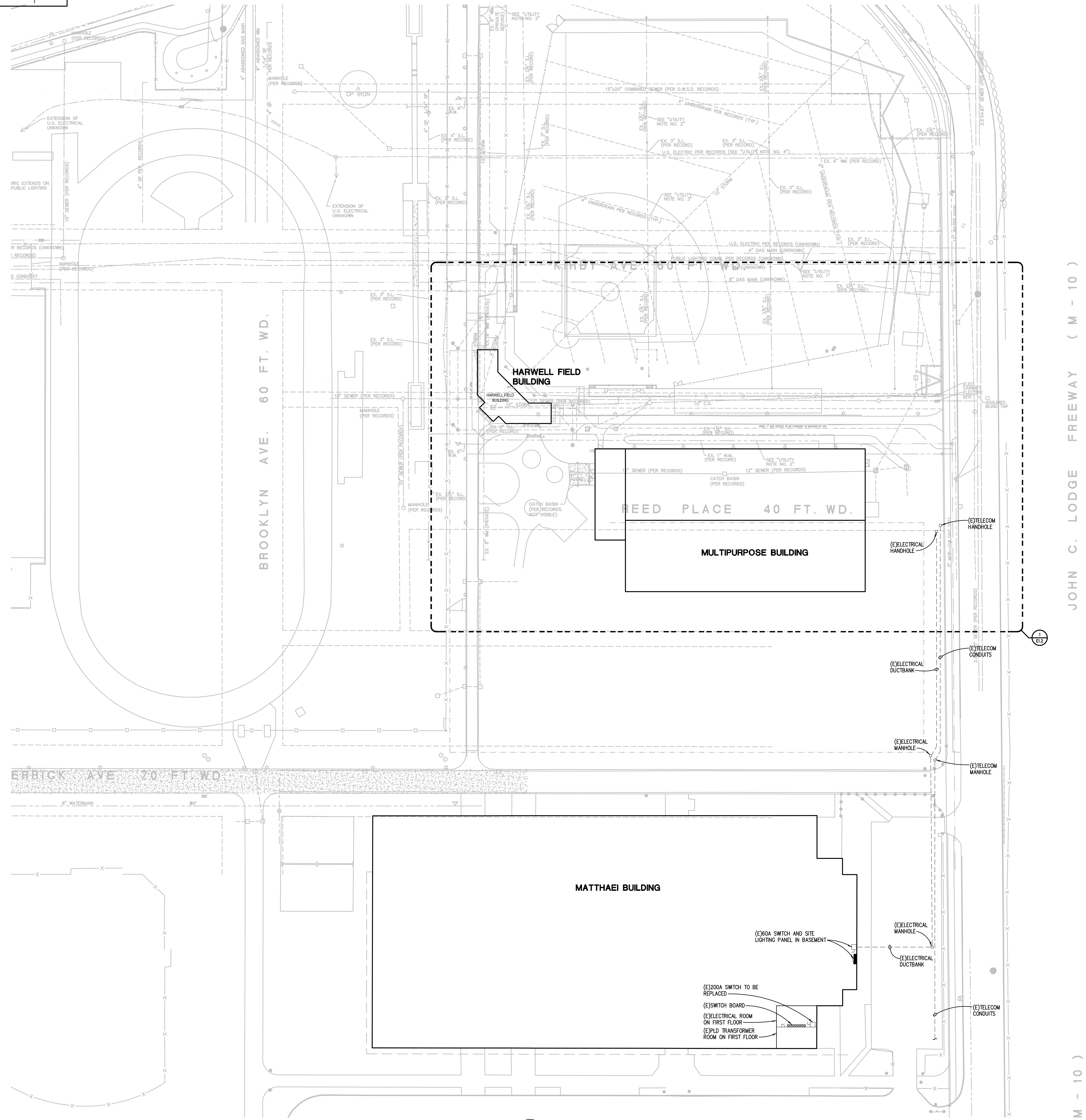
E0.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



ELECTRICAL SITE PLAN
SCALE: 1" = 40'

GENERAL NOTES:

1. THESE NOTES ARE GENERIC GUIDELINES ONLY. ELECTRICAL CONTRACTOR'S PERSONNEL ON SITE SHALL BE THOROUGHLY FAMILIAR WITH THE PUBLISHED SPECIFICATIONS FOR EXACT DESCRIPTIONS OF SCOPE, METHODS, AND MATERIAL.
2. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
3. CONDUCT A SURVEY TO IDENTIFY ALL UNDERGROUND UTILITIES. CALL 811 PRIOR TO EXCAVATION.
4. UTILITIES SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE EXACT LOCATION OF ALL EXISTING UTILITIES, AND ROUTING OF ALL NEW UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
5. DEWATER TRENCHES PRIOR TO INSTALLATION OF CONDUITS. PROVIDE WATER TIGHT FITTINGS ON ALL UNDERGROUND CONDUITS.
6. COORDINATE DEMOLITION WORK, AND ELECTRICAL AND TELEPHONE SERVICES TO THE SITE, WITH THE RESPECTIVE LOCAL UTILITY COMPANY REPRESENTATIVES PRIOR TO COMMENCEMENT OF WORK. INCLUDE ALL ASSOCIATED COST/FEES BY THE UTILITY COMPANIES IN THE BID PRICE.
7. INSTALL UNDERGROUND CONDUITS 42" BELOW FINISHED GRADE, MINIMUM, UNLESS NOTED OTHERWISE.
8. COORDINATE SERVICE SHUT-DOWNS WITH ALL TRADES INVOLVED ON SITE AND OBTAIN WRITTEN AUTHORIZATION FROM OWNER 72 HOURS PRIOR TO ANY ELECTRICAL AND/OR TELEPHONE SHUT-DOWN.
9. REMOVE ALL DE-ENERGIZED CONDUCTORS FROM SITE AT COMPLETION OF THE PROJECT.
10. OUTDOOR LIGHTING BRANCH CIRCUIT WIRING SHALL BE MINIMUM #8 AWG CONDUCTORS (XHHW), IN MINIMUM 1" DIA. CONDUIT, UNLESS NOTED OTHERWISE.
11. SPARE CONDUITS SHALL INCLUDE PULL STRING AND SHALL BE TERMINATED WITH A CAP.
12. EXCAVATE THE ENTIRE LENGTH OF TRENCH TO PROPERLY SET DUCT ELEVATIONS.

⟨#⟩ CONSTRUCTION KEY NOTES:

1. PROVIDE WALL MOUNTED 400A DTE CT CABINET.
2. NEW MULTIPURPOSE BUILDING DTE FEEDER. REFER TO ONE LINE FOR SIZING REQUIREMENTS.
3. NEW HARWELL FIELD BUILDING DTE SECONDARY SERVICE. REFER TO ONE LINE FOR SIZING REQUIREMENT. COORDINATE ROUTING WITH EXISTING UTILITIES. PROVIDE GROUND PENETRATING RADAR TO LOCATE EXISTING UNDERGROUND UTILITIES. REFER TO CIVIL REFERENCE DRAWINGS FOR EXISTING UTILITY INFORMATION.
4. EXTEND EXISTING SPARE 2"C TO NEW MSB-1 FOR EXISTING HARWELL DP-1 FEEDER AS REQUIRED.
5. INTERCEPT EXISTING MULTIPURPOSE BUILDING FEEDER AT EXISTING ELECTRICAL HANDHOLE.
6. TIE NEW MSB-1 GROUND TO EXISTING HARWALL BUILDING GROUND SYSTEM WITH 4/0 BARE COPPER. TEST RESISTANCE OF GROUNDING SYSTEM. PROVIDE ADDITION GROUND RODS TO MEET 5 OHMS RESISTANCE AS REQUIRED.
7. PROVIDE (6) 1 1/4"C SUBBED OUT FOR FUTURE CONNECTIONS. PROVIDE TWIST LOCK CAP AT END OF CONDUIT AND PULL STRING.
8. ALTERNATE 1. PROVIDE ALTERNATE BID PRICE FOR 2-5"C WITH PULL STRING FOR FUTURE 15KV DTE PRIMARY SERVICE TO ATHLETICS SUBSTATION. 2-5"C TO BE CONCRETE ENCASED ALONG THE TWO SECONDARY SERVICE CONDUITS IN A 2H X 2V DUCTBANK CONFIGURATION. THE 2-5"C FOR THE FUTURE 15KV DTE PRIMARY SERVICE TO BE CONNECTED TO THE DTE PSC 10 AND CAPPED AT OTHER END AT WEST SIDE OF HARWELL FIELD BUILDING.
9. 2-4"C STUB OUT FOR FUTURE 15KV DTE PRIMARY SERVICE TO ATHLETICS SUBSTATION.
10. 4' X 4' PRECAST CONCRETE MANHOLE FOR DTE SECONDARY SERVICE TO HARWELL FIELD BUILDING.
11. REMOVE AND REPLACE EXISTING CONCRETE PAVEMENT AS REQUIRED TO ACCOMMODATE NEW DUCTBANK.
12. REMOVE AND REPLACE EXISTING STEPS, RAIL, AND BOLLARD TO ACCOMODATE ELECTRICAL DUCTBANK.

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WAYNE STATE UNIVERSITY

PROJECT TITLE
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DTE-PLD ELECTRICAL CONVERSION

WSU PROJECT NO. 091-291627

SHEET TITLE
ELECTRICAL SITE PLAN

DATE
02/22/2017

ISSUE
BIDS

SHEET No.
E1.1

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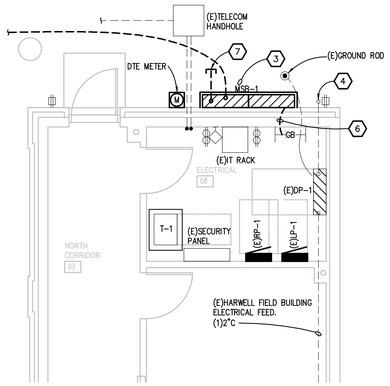
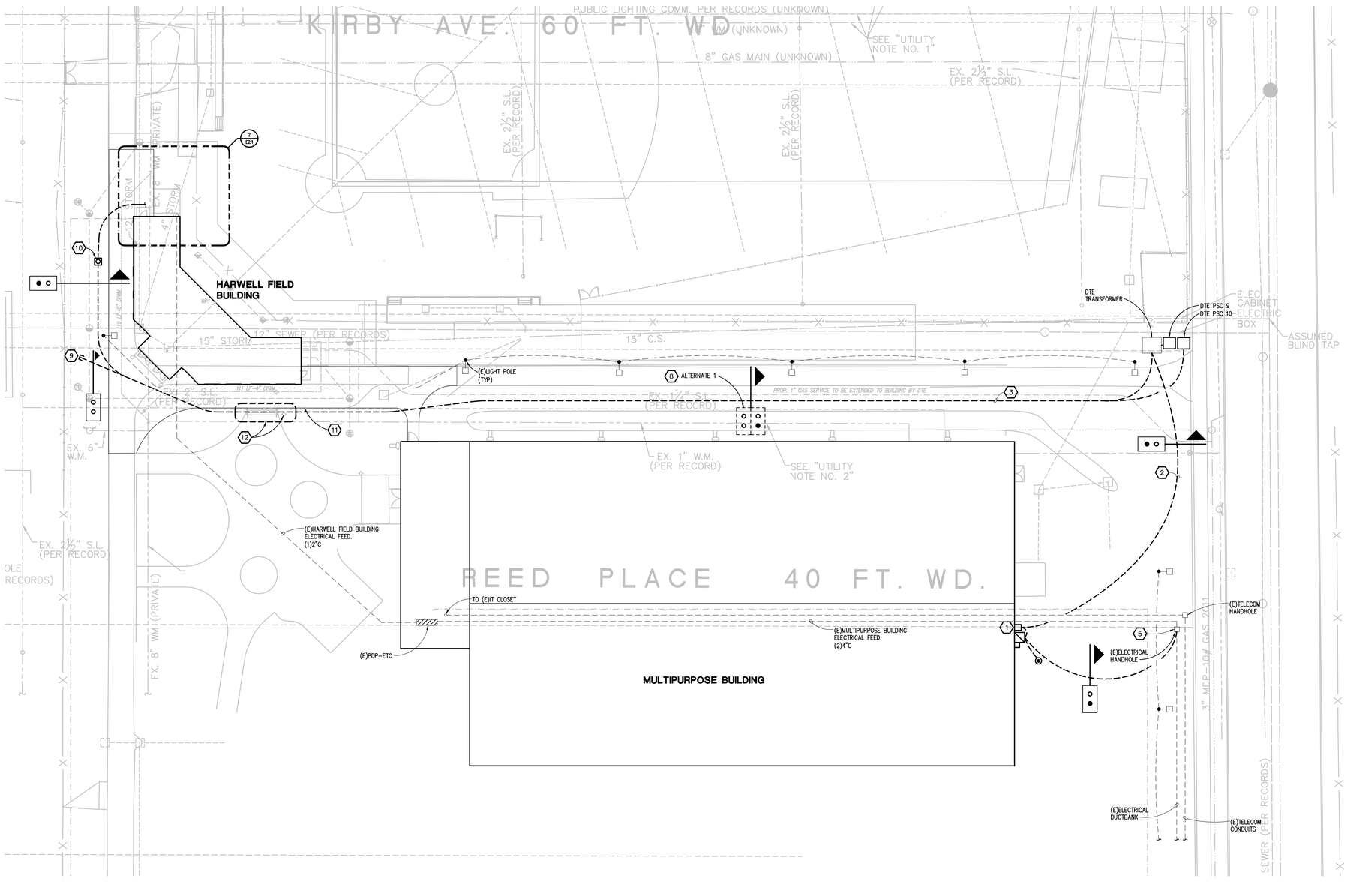
THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"



2 / E1.2 **ENLARGED ELECTRICAL PLAN**
SCALE: 1/4" = 1' - 0"



1 / E1.1 **ENLARGED ELECTRICAL PLAN**
SCALE: 1" = 20'

GENERAL NOTES:

1. THESE NOTES ARE GENERIC GUIDELINES ONLY. ELECTRICAL CONTRACTOR'S PERSONNEL ON SITE SHALL BE THOROUGHLY FAMILIAR WITH THE PUBLISHED SPECIFICATIONS FOR EXACT DESCRIPTIONS OF SCOPE, METHODS, AND MATERIAL.
2. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
3. CONDUCT A SURVEY TO IDENTIFY ALL UNDERGROUND UTILITIES. CALL 811 PRIOR TO EXCAVATION.
4. UTILITIES SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE EXACT LOCATION OF ALL EXISTING UTILITIES, AND ROUTING OF ALL NEW UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
5. DEWATER TRENCHES PRIOR TO INSTALLATION OF CONDUITS. PROVIDE WATER TIGHT FITTINGS ON ALL UNDERGROUND CONDUITS.
6. COORDINATE DEMOLITION WORK, AND ELECTRICAL AND TELEPHONE SERVICES TO THE SITE, WITH THE RESPECTIVE LOCAL UTILITY COMPANY REPRESENTATIVES PRIOR TO COMMENCEMENT OF WORK. INCLUDE ALL ASSOCIATED COST/FEES BY THE UTILITY COMPANIES IN THE BID PRICE.
7. INSTALL UNDERGROUND CONDUITS 42" BELOW FINISHED GRADE, MINIMUM, UNLESS NOTED OTHERWISE.
8. COORDINATE SERVICE SHUT-DOWNS WITH ALL TRADES INVOLVED ON SITE AND OBTAIN WRITTEN AUTHORIZATION FROM OWNER 72 HOURS PRIOR TO ANY ELECTRICAL AND/OR TELEPHONE SHUT-DOWN.
9. REMOVE ALL DE-ENERGIZED CONDUCTORS FROM SITE AT COMPLETION OF THE PROJECT.
10. OUTDOOR LIGHTING BRANCH CIRCUIT WIRING SHALL BE MINIMUM #8 AWG CONDUCTORS (XHHW), IN MINIMUM 1" DIA. CONDUIT, UNLESS NOTED OTHERWISE.
11. SPARE CONDUITS SHALL INCLUDE PULL STRING AND SHALL BE TERMINATED WITH A CAP.
12. EXCAVATE THE ENTIRE LENGTH OF TRENCH TO PROPERLY SET DUCT ELEVATIONS.

⟨#⟩ CONSTRUCTION KEY NOTES:

1. PROVIDE WALL MOUNTED 400A DTE CT CABINET.
2. NEW MULTIPURPOSE BUILDING DTE FEEDER. REFER TO ONE LINE FOR SIZING REQUIREMENTS.
3. NEW HARWELL FIELD BUILDING DTE SECONDARY SERVICE. REFER TO ONE LINE FOR SIZING REQUIREMENT. COORDINATE ROUTING WITH EXISTING UTILITIES. PROVIDE GROUND PENETRATING RADAR TO LOCATE EXISTING UNDERGROUND UTILITIES. REFER TO CIVIL REFERENCE DRAWINGS FOR EXISTING UTILITY INFORMATION.
4. EXTEND EXISTING SPARE 2"C TO NEW MSB-1 FOR EXISTING HARWELL DP-1 FEEDER AS REQUIRED.
5. INTERCEPT EXISTING MULTIPURPOSE BUILDING FEEDER AT EXISTING ELECTRICAL HANDHOLE.
6. TIE NEW MSB-1 GROUND TO EXISTING HARWALL BUILDING GROUND SYSTEM WITH 4/0 BARE COPPER. TEST RESISTANCE OF GROUNDING SYSTEM. PROVIDE ADDITION GROUND RODS TO MEET 5 OHMS RESISTANCE AS REQUIRED.
7. PROVIDE (6) 1 1/4"C SUBBED OUT FOR FUTURE CONNECTIONS. PROVIDE TWIST LOCK CAP AT END OF CONDUIT AND PULL STRING.
8. ALTERNATE 1. PROVIDE ALTERNATE BID PRICE FOR 2-5"C WITH PULL STRING FOR FUTURE 15KV DTE PRIMARY SERVICE TO ATHLETICS SUBSTATION. 2-5"C TO BE CONCRETE ENCASED ALONG THE TWO SECONDARY SERVICE CONDUITS IN A 2H X 2V DUCTBANK CONFIGURATION. THE 2-5"C FOR THE FUTURE 15KV DTE PRIMARY SERVICE TO BE CONNECTED TO THE DTE PSC 10 AND CAPPED AT OTHER END AT WEST SIDE OF HARWELL FIELD BUILDING.
9. 2-4"C STUB OUT FOR FUTURE 15KV DTE PRIMARY SERVICE TO ATHLETICS SUBSTATION.
10. 4' X 4' PRECAST CONCRETE MANHOLE FOR DTE SECONDARY SERVICE TO HARWELL FIELD BUILDING.
11. REMOVE AND REPLACE EXISTING CONCRETE PAVEMENT AS REQUIRED TO ACCOMMODATE NEW DUCTBANK.
12. REMOVE AND REPLACE EXISTING STEPS, RAIL, AND BOLLARD TO ACCOMODATE ELECTRICAL DUCTBANK.

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WAYNE STATE UNIVERSITY

PROJECT TITLE
ATHLETIC MULTI-PURPOSE FACILITY
DTE-PLD ELECTRICAL CONVERSION

WSU PROJECT NO. 091-291627

SHEET TITLE
ENLARGED ELECTRICAL PLAN

DATE
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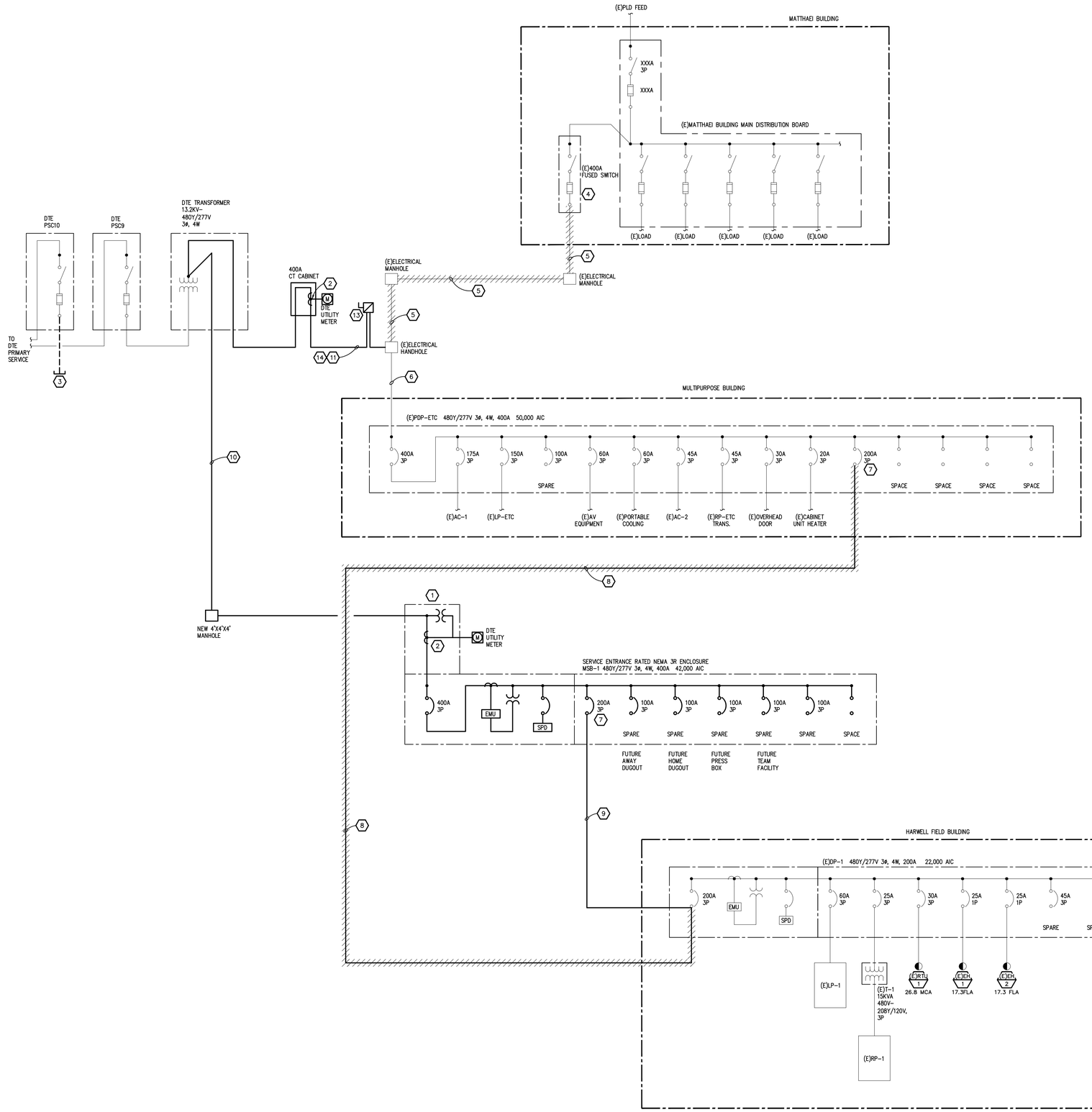

ONE LINE DIAGRAM
NO SCALE

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
3. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "TRANSFORMER CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
4. BASIS OF DESIGN IS SQUARE D DISTRIBUTION EQUIPMENT. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT FROM OTHER APPROVED MANUFACTURERS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING ELECTRICAL EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.
5. SELECTIVE COORDINATION (PER NEC ARTICLES 517.30, 700.28 AND 701.27) IS BASED ON SQUARE D DISTRIBUTION EQUIPMENT. ELECTRICAL CONTRACTOR SHALL SUBMIT SELECTIVE COORDINATION STUDY WITH TIME CURRENT CHARACTERISTIC CURVES (AND TABLES FOR TESTED PAIR INSTANTANEOUS COORDINATION) FOR THE EMERGENCY SYSTEMS. ELECTRICAL CONTRACTORS SHALL RECEIVE APPROVED SHOP DRAWINGS BACK FROM ENGINEER OF RECORD PRIOR TO PURCHASING OR INSTALLING ANY ELECTRICAL DISTRIBUTION EQUIPMENT. BREAKERS MUST BE COORDINATED WITH AUTOMATIC TRANSFER SWITCHES 3-CYCLE WITHSTAND RATING. ALTERNATE MANUFACTURERS SHALL MEET SELECTIVE COORDINATION CRITERIA AT NO ADDITIONAL COST TO THE PROJECT.
6. BRANCH CIRCUIT CONDUCTORS, FEEDERS, AND BRANCH CIRCUIT OVERCURRENT PROTECTION ARE SIZED AT 125% OF THE TOTAL CONTINUOUS AND NON CONTINUOUS LOAD FOR LIGHTING AND MOTOR LOADS THAT RUN CONTINUOUSLY FOR THREE HOURS OR MORE (NEC 210.19 A, 210.20 A, AND 215.2 A). DEMAND AND CONNECTED LOADS ARE CALCULATED PER NEC 220.

⬡ CONSTRUCTION KEY NOTES:

1. DTE METERING CABINET WITHIN NEW SWITCHBOARD. COORDINATE EXACT REQUIREMENTS WITH DTE.
2. (3) CTS BY DTE.
3. 2-5"C STUB OUT FOR FUTURE 15KV DTE PRIMARY SERVICE TO ATHLETICS SUBSTATION.
4. COORDINATE SHUTDOWN OF MULTIPURPOSE BUILDING FEEDER WITH OWNER PRIOR TO DEACTIVATION. OPEN (E)400A MULTIPURPOSE BUILDING FEEDER. DISCONNECT CONDUCTORS FROM (E)400A FUSED SWITCH. (E)400A FUSED SWITCH TO REMAIN. PROVIDE PERMANENT LABEL PER SPECIFICATIONS THAT READS "SPARE" FOR (E)400A FUSED SWITCH.
5. PULL BACK CONDUCTORS TO (E)ELECTRICAL HANDHOLE. EXISTING ELECTRICAL CONDUIT AND DUCT BANK TO REMAIN.
6. EXISTING CONDUCTORS AND CONDUIT TO REMAIN.
7. COORDINATE SHUTDOWN OF HARWELL FIELD BUILDING FEEDER WITH OWNER PRIOR TO DEACTIVATION. OPEN EXISTING 200A HARWELL FIELD BUILDING FEEDER. DISCONNECT CONDUCTORS FROM CIRCUIT BREAKER IN (E)PDP-ETC. PROVIDE PERMANENT LABEL PER SPECIFICATION THAT READS "SPARE" FOR CIRCUIT BREAKER.
8. DISCONNECT AND REMOVE EXISTING HARWELL FIELD BUILDING CONDUCTORS. EXISTING CONDUIT TO REMAIN.
9. UTILIZE AND EXTEND EXISTING SPARE 2"C OUT OF (E)DP-1 TO NEW MSB-1. PROVIDE CONDUCTORS PER SCHEDULE ON E0.2.
10. CONCRETE ENCASED DUCTBANK WITH (2)5"C FOR NEW HARWELL FIELD BUILDING FEEDER FROM DTE TRANSFORMER TO NEW MSB-1 LOCATED OUTSIDE HARWELL FIELD BUILDING. PROVIDE CONDUITS AS INDICATED AND CONDUCTORS PER SCHEDULE ON E0.2.
11. CONCRETE ENCASED DUCT BANK NEW MULTIPUROSE BUILDING FEEDER FROM DTE TRANSFORMER AND SWITCH CABINET TO (E)ELECTRICAL HANDHOLE. PROVIDE (2)4"C IN DUCT BANK. REUSE EXISTING CONDUCTORS PULLED BACK FROM MATTHAEI BUILDING. TERMINATE EXISTING CONDUCTORS AT NEW DTE SWITCH CABINET. ALTERNATE. PROVIDE NEW CONDUCTORS FROM DTE SWITCH CABINET TO (E)PDP-ETC.
12. BOND NEUTRAL AND GROUND.
13. 400A-3P NEMA 3R SERVICE ENTRANCE RATED FUSED DISCONNECT WITH 400A FUSES MOUNTED ON THE OUTSIDE OF MULTIPURPOSE BUILDING. COORDINATE EXACT LOCATION OF DISCONNECT WITH OWNER.
14. RETEST EXISTING CONDUCTORS PULLED BACK FROM MATTHAEI BUILDING PER SPECIFICATIONS.

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SHEET TITLE
ONE LINE DIAGRAM

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DEMOLITION NOTES

1. REMOVE EX. UTILITIES COMPLETE, WHERE NOTED. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. INCLUDE UTILITY STRUCTURES AS APPLICABLE. ALL UTILITIES OUTSIDE THE EXISTING OR PROPOSED BUILDING MAY BE ABANDONED IN-PLACE BY CONSTRUCTING A WATER TIGHT BULKHEAD IN THE END OF THE UTILITY AND FILL WITH FLOWABLE GROUT. CONTRACTOR TO CONFIRM THAT THERE IS NO UPSTREAM DRAINAGE. CONTACT ENGINEER IF DRAINAGE EXISTS. INSTALL NEW SEWER PRIOR TO ABANDONMENT OR REMOVAL OF EX. SEWER.
2. STORM SEWER TO BE ABANDONED IN-PLACE BY CONSTRUCTING A WATER TIGHT BULKHEAD IN THE END OF THE SEWER AND FILL WITH FLOWABLE GROUT. CONTRACTOR TO CONFIRM THAT THERE IS NO UPSTREAM DRAINAGE. CONTACT ENGINEER IF DRAINAGE EXISTS. INSTALL NEW SEWER PRIOR TO ABANDONMENT OR REMOVAL OF EX. SEWER. CUT OFF TOP OF MANHOLE AND REMOVE TO A DEPTH OF 5' AND FILL WITH GROUT.
3. CUT AND REMOVE EXISTING WM. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. CONTACT THE TO DPW 72 HOURS PRIOR TO WORK TO COORDINATE SHUTDOWN OF THE MAIN.
4. REMOVAL OF THE POLE BY ELECTRICAL
5. REMOVE ASPHALT PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. INCLUDE REMOVAL OF CONCRETE CURB AND GUTTER WHERE SHOWN.
6. REMOVE CONCRETE PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT.
7. REMOVE EXISTING CHAIN LINK FENCE, INCLUDING ALL GATES, POSTS, AND FOOTINGS.
8. REMOVE AND SALVAGE RECREATIONAL AND ATHLETIC EQUIPMENT, BENCHES, BLEACHERS, ETC. THAT FALL WITHIN THE CONSTRUCTION AREA. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER (UNLESS NOTED ON THE PLANS).
9. CHECK SEWER INVERTS TO CONFIRM THAT NEW INVERTS SHOWN ON C102 ARE APPROPRIATE. NOTIFY ENGINEER IF THERE ARE DISCREPANCIES.
10. EX. IRRIGATION IS LOCATED ALONG BACKSTOP. CONTRACTOR TO RELOCATE SPRINKLER HEADS TO NEW BACKSTOP LOCATION. PROVIDE NEW PIPING AND RECONNECT ALL HEADS AND VALVES TO PROVIDE FUNCTIONING SYSTEM.

(X) REMOVE EXISTING TREE (INCLUDING STUMPS AND ROOTS).

ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS II FILL MATERIAL, IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

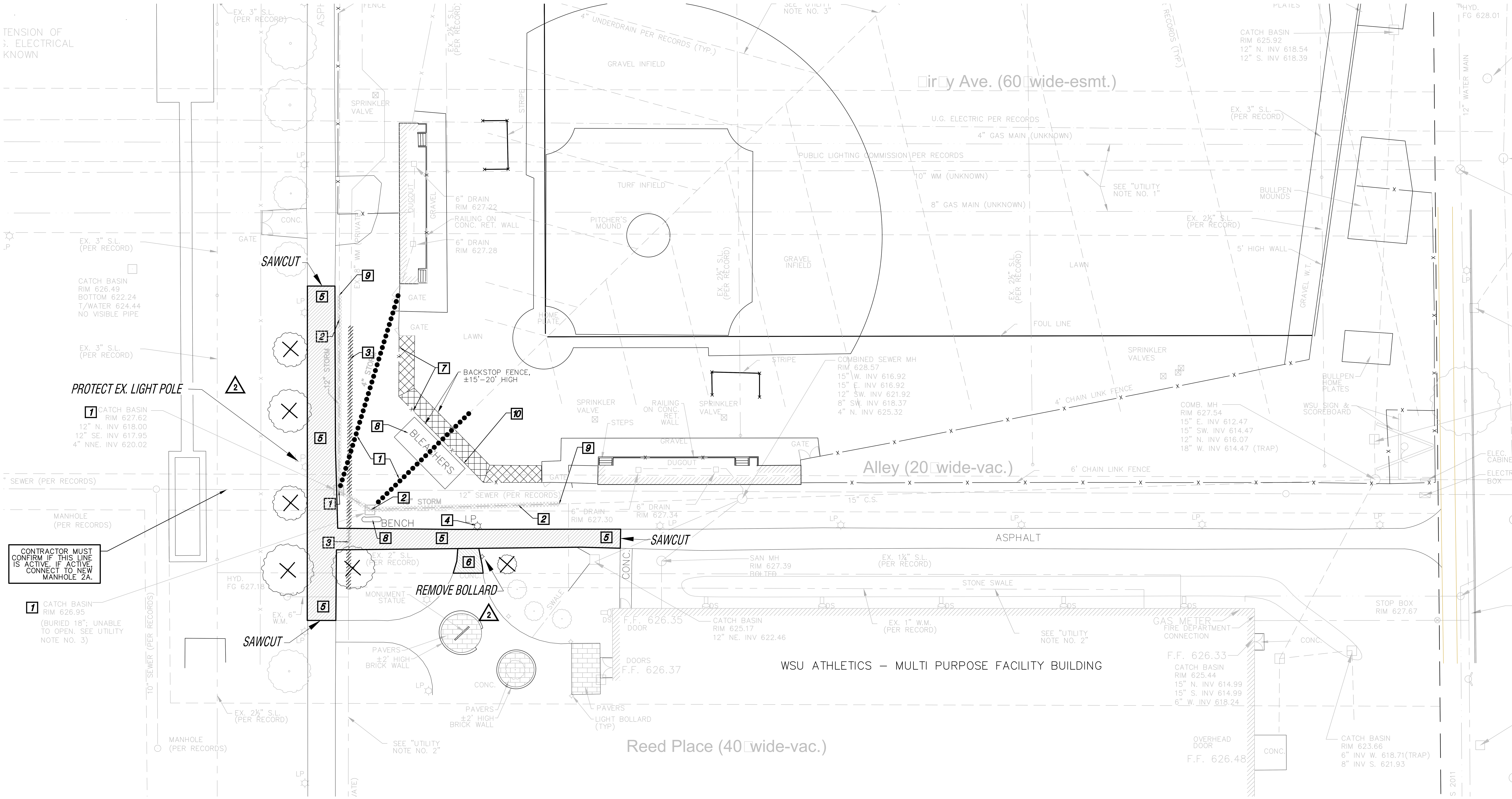
CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BID. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

CONTRACTOR TO PROVIDE UNIT PRICES ($/CYD) IN THE BID DOCUMENTS FOR UNDERCUT AND REPLACEMENT OF POOR SOILS. UNIT PRICE TO INCLUDE DISPOSAL OF POOR SOILS AND IMPORT AND PLACEMENT OF CLASS II ENGINEERED FILL, IN 8" LIFTS, COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

EXISTING SUPPORTED SLABS AT BUILDING ENTRY/DOORS TO REMAIN, UNLESS OTHERWISE DIRECTED. CONTRACTOR TO VERIFY LIMITS OF EXISTING SUPPORTED SLAB AND REMOVE ADJACENT WALKS AS SHOWN ON PLANS.

CONTRACTOR TO PROTECT EXISTING WALKS, PAVEMENT, CURBS, GUTTERS, WALLS, FENCES, GATES, LANDSCAPING AND TREES TO REMAIN DURING CONSTRUCTION.

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 inch = 20 ft.



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ISSUE	DATE
50% CD REVIEW	02-26-16
95% REVIEW	04-11-16
BIDS	04-29-16
ADDENDUM #2	06-03-16
CONSTRUCTION	0[illegible]-2[illegible]-16

SDA Job No. NP1404

PROJECT
Harwell Field Building
Wayne State University
Detroit, Michigan
000-232104

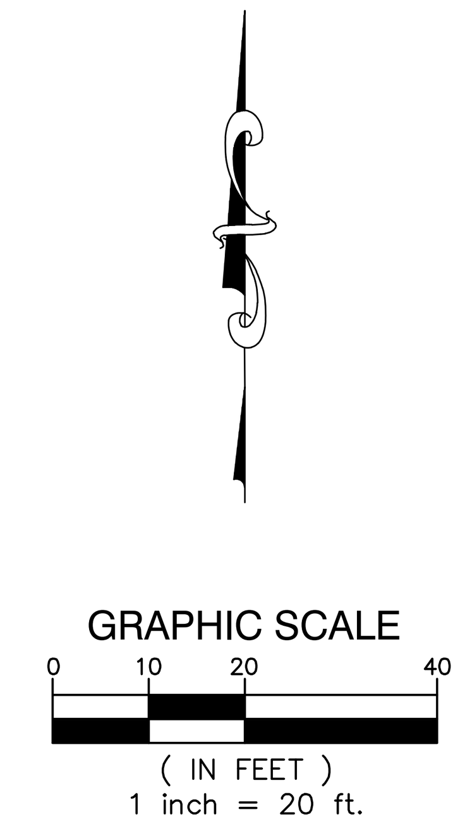
TITLE
Demolition Plan

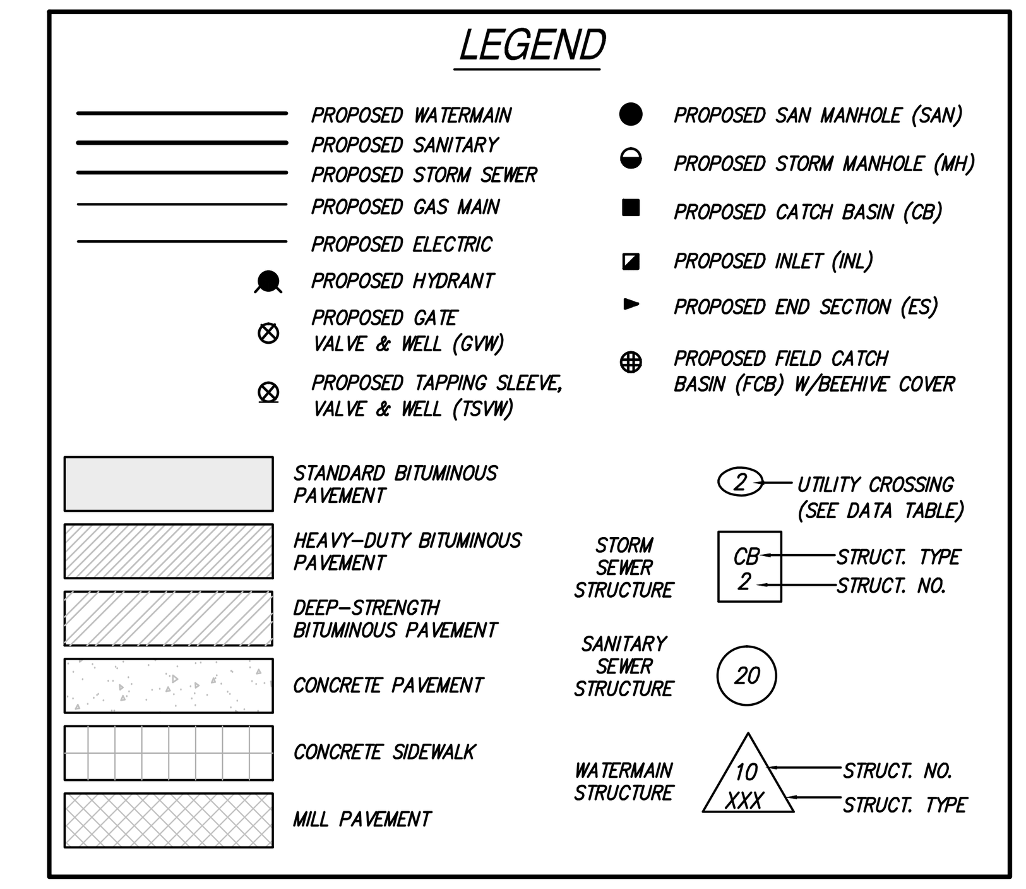
SHEET
C101

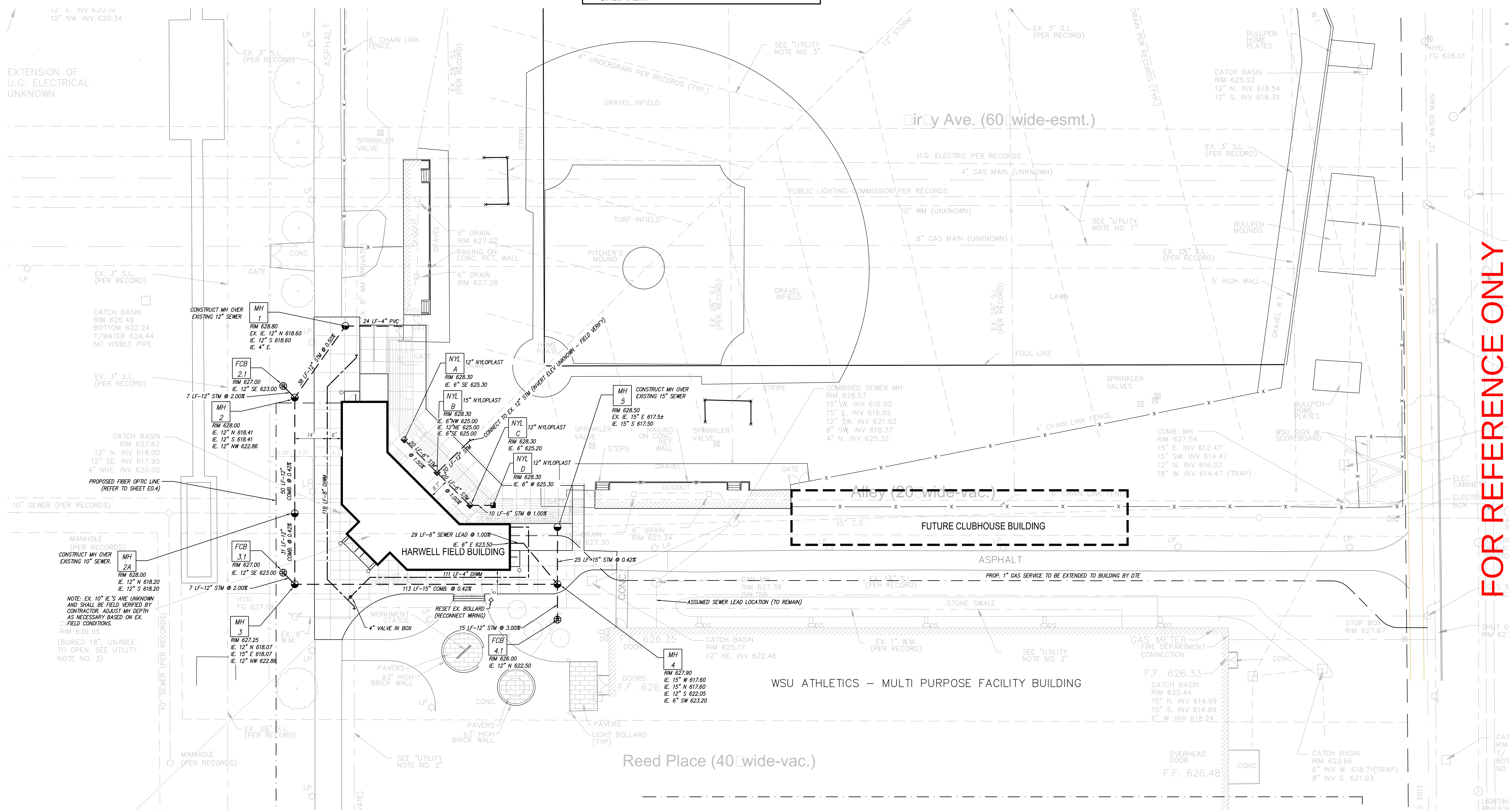
Plotted Jul 25, 2016, 1:5 PM by user262 - Saved 6/3/2016 by user262
N:\NP\NLD Projects\NP1404 - WSU - Harwell Field\DWG\NP1404 st.dwg

UTILITY NOTES

1. STORM SEWER 12" AND LARGER SHALL BE C76 CL IV (PREM.JT.) UNLESS OTHERWISE NOTED ON THE PLAN.
2. STORM SEWER 6" AND SMALLER SHALL BE PVC SDR 23.5. STORM SEWER GREATER THAN 6" THROUGH 10" SHALL BE PVC SDR 26.
3. ALL UTILITY TRENCHES THAT FALL WITHIN A 1-ON-1 INFLUENCE OF PAVEMENT AREAS SHALL BE BACKFILLED WITH CLASS 2 SAND AND COMPACTED TO 95% OF MAXIMUM DENSITY.
4. WATER MAIN SHALL BE CLASS 54 DUCTILE IRON. WATER MAINS SHALL BE LEAKAGE AND PRESSURE TESTED IN ACCORDANCE WITH AWWA STANDARD C600. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651 PRIOR TO BEING PUT INTO SERVICE.
5. ALL WATER MAIN SHALL BE BURIED WITH 6' OF COVER FROM PROPOSED GRADES. USE 22.5° BENDS TO LOWER WATER MAIN WHERE NOTED AT UTILITY CROSSING.
6. ALL UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF DETROIT.
7. ALL UTILITIES SHALL BE INSTALLED ON CLASS "B" BEDDING OR BETTER.
8. ALL HYDRANTS MUST BE AT LEAST 5' FROM THE BACK OF CURB OR EDGE OF PAVEMENT.
9. ALL UTILITIES SHALL BE PLACED AT LEAST 10' FROM OTHER UTILITIES, SIGNIFICANT TREES, AND FIXED STRUCTURES.
10. UNLESS OTHERWISE NOTED, ALL STORM SEWER STRUCTURES SHALL BE 4' DIAMETER (INLETS SHALL BE 2' DIAMETER). UNLESS OTHERWISE INDICATED ON THE STANDARD DETAIL SHEETS CASTINGS SHALL BE:
    PVMT. CATCH BASINS – EJIW 5105 – "M1" (FRAMES WITH CURB BOXES WILL NOT BE ALLOWED)
    YARD CATCH BASINS – EJIW 1040 – "02"
    MANHOLES – EJIW 1040 – "A"
11. ALL CATCH BASINS AND INLETS SHALL BE TRAPPED PER CITY OF DETROIT DETAILS.
12. PROVIDE TEMPORARY SHORING AS NECESSARY FOR UTILITY EXCAVATIONS, IN ORDER TO PROTECT EX. ITEMS TO REMAIN.







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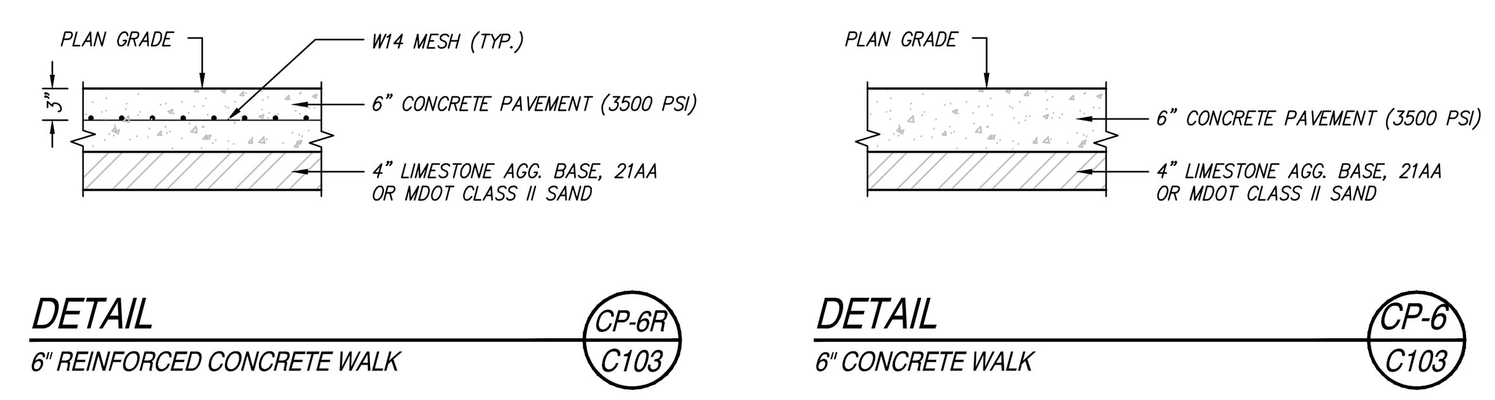
SDA Jo[illegible] No. NP1404[illegible]

PROJECT
Harwell Field Building
Wayne State University
Detroit, Michigan
000-232104

TITLE
Utility Plan

SHEET
C102



WALK CONSTRUCTION NOTES

1. EARTHWORK AND PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE FOLLOWING ITEMS.
2. REMOVE ANY EXISTING TOPSOIL, VEGETATION, TREES AND OTHER DELETERIOUS MATERIALS TO EXPOSE THE SUBGRADE SOIL. TREE ROOTS SHALL BE COMPLETELY REMOVED.
3. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
4. THE TOP 12 INCHES OF THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91).
5. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOFROLLED UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
6. PLACE EXPANSION JOINT AND JOINT SEALANT WHERE NEW CONCRETE PAVEMENT OR WALKS ABUT BUILDING WALLS (PROPOSED OR EXISTING), CURB, OR EXISTING CONCRETE PAVEMENT.
7. CONCRETE PAVEMENT SHALL MEET THE REQUIREMENTS FOR MDOT GRADE P1 CONCRETE PER THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

GRADING NOTE

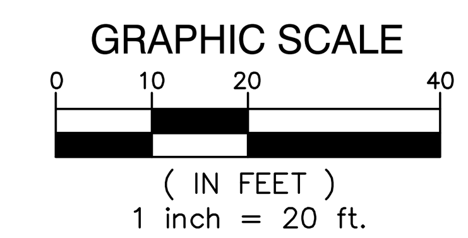
1. PROPOSED GRADES SHALL MATCH EXISTING UNLESS OTHERWISE NOTED ON THE PROJECT PLANS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING SUFFICIENT FIELD INFORMATION ON EXISTING GRADES PRIOR TO PAVEMENT DEMOLITION ACTIVITIES.
2. PROPOSED GRADES ARE SOMETIMES BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL ADVISE ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
3. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORMWATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

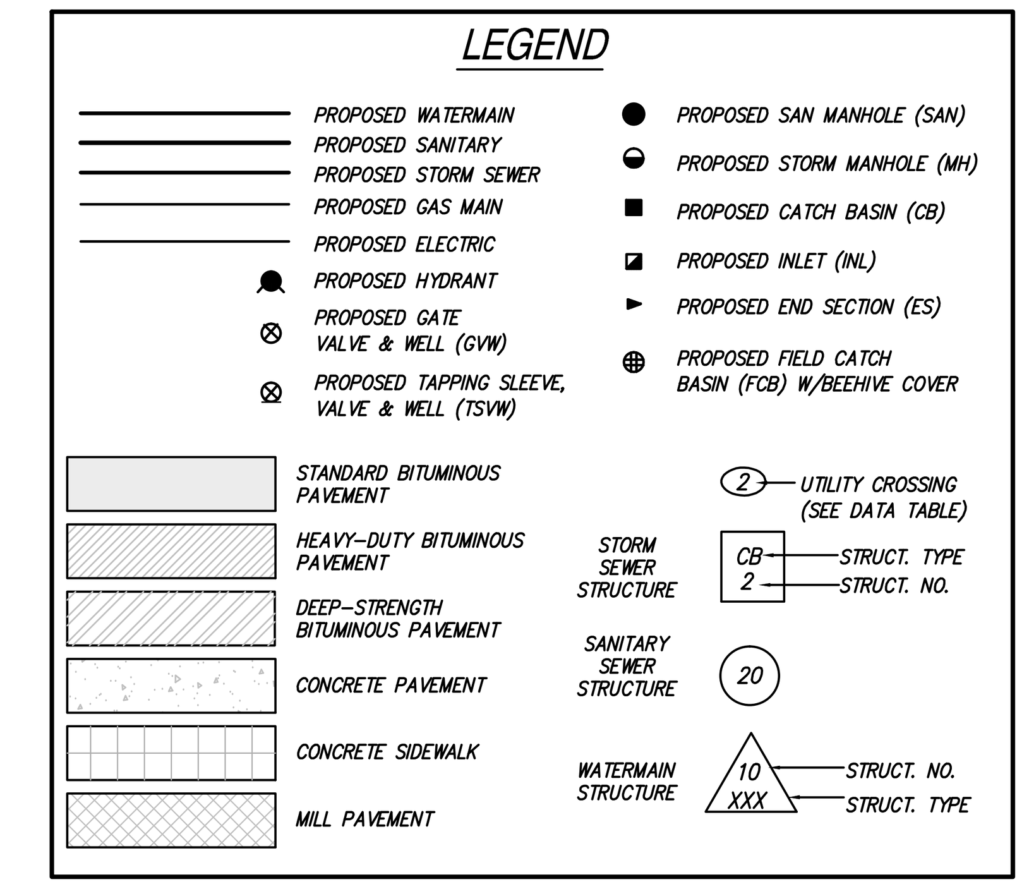
RESTORATION NOTE

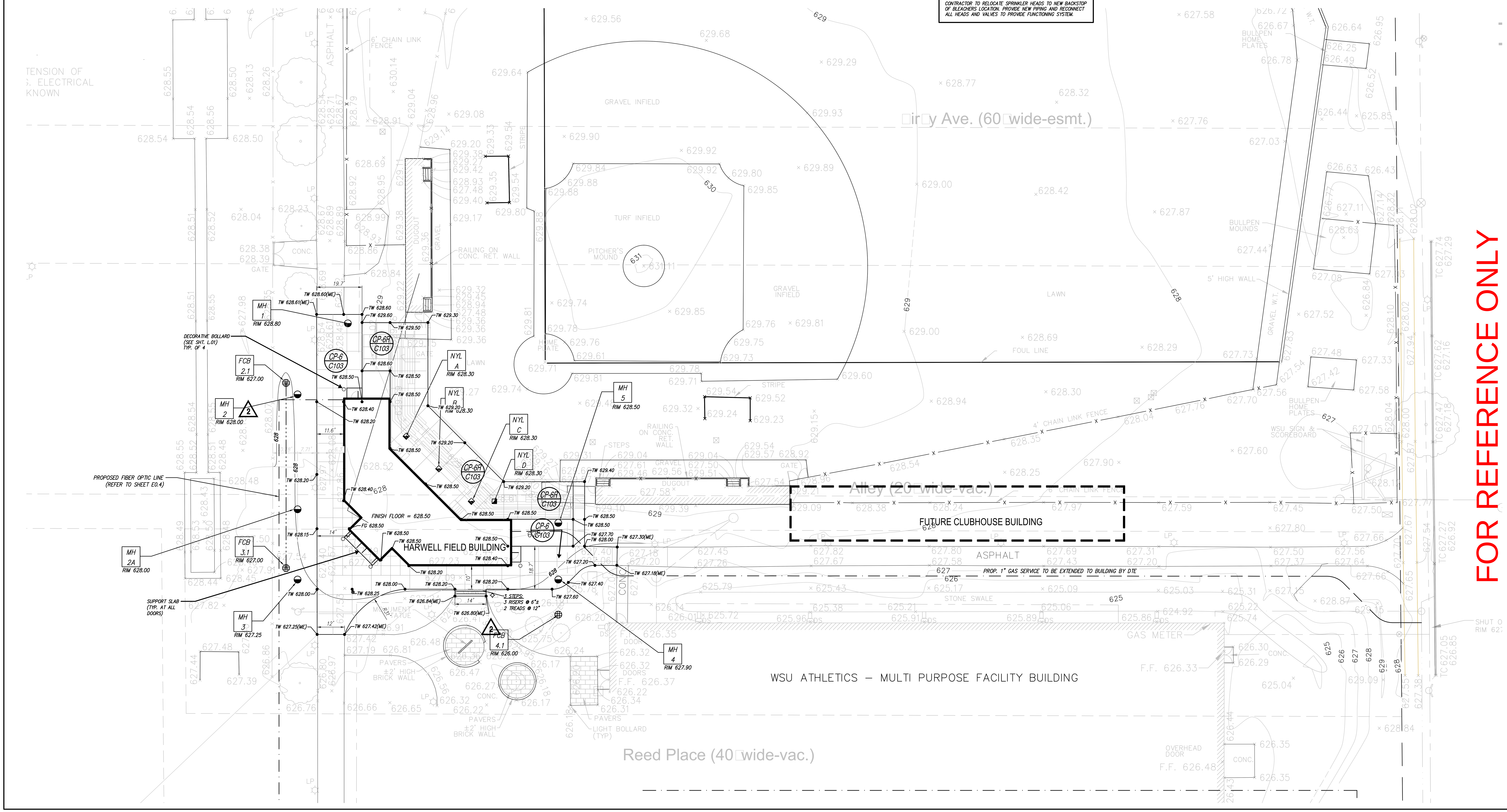
RESTORE ALL NON-PAVED AREAS WITH 3" OF CLEAN TOPSOIL AND SEED MIX (30% KENTUCKY BLUEGRASS, 20% PERENNIAL RYEGRASS, 50% CREEPING RED FESCUE). PLACE MULCH IN ALL SEEDED AREAS. ON SLOPES IN EXCESS OF 10 HORIZONTAL TO 1 VERTICAL PLACE NORTH AMERICAN GREEN DS150 MULCH BLANKET IMMEDIATELY AFTER SEEDING. USE METAL STAPLES PER MANUFACTURERS RECOMMENDATIONS TO HOLD MATTING IN PLACE.

IRRIGATION NOTE

EX. IRRIGATION IS LOCATED ALONG BACKSTOP OF BLEACHERS. CONTRACTOR TO RELOCATE SPRINKLER HEADS TO NEW BACKSTOP OF BLEACHERS LOCATION. PROVIDE NEW PIPING AND RECONNECT ALL HEADS AND VALVES TO PROVIDE FUNCTIONING SYSTEM.







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CONSTRUCTION	07-25-16

SDA Job No. NP1404

PROJECT
Harwell Field Building
Wayne State University
Detroit, Michigan
000-232104

TITLE
Grading / Layout Plan / Details

SHEET
C103

KEY

01 HOME PLATE
02 4" SHREDDED BARK MULCH
03 CONCRETE STEPS
04 STAINLESS STEEL HANDRAIL
05 EXISTING DUGOUT
06 EXISTING ASPHALT PAVEMENT
07 EXISTING CONCRETE PLAZA
08 LAWN
09 CONCRETE PAVEMENT
10 PREFABRICATED CONCRETE BOLLARD
11 GRAVEL MAINTENANCE STRIP- SEE DWG 4 / L.01
12 FROST SLAB
13 CONCRETE EXPANSION JOINT
50' OC MAXIMUM- SEE DWG 3 / L.01

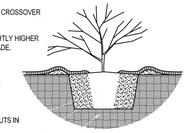
REVIEW BUILDING LAYOUT RELATIVE TO HOME PLATE AND DUGOUTS IN THE FIELD WITH OWNER REPRESENTATIVE PRIOR TO EXCAVATION.

BIKE RACK
SF-1

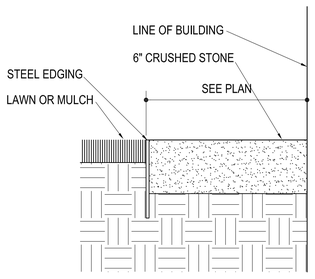
CONCRETE BOLLARD
SF-2

Site Furnishings

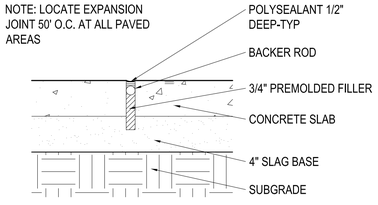
CODE	ITEM	MANUFACTURER	MODEL	SIZE	FINISH	NOTES
SF-1	BIKE RACK	LANDSCAPE FORMS	BOLA	32" HIGH, 28" LONG	ST. STEEL	IN-GROUND MOUNT
SF-2	BOLLARD	WAUSAU MADE	TF 6080	42" HIGH, 24" DIAMETER	A21 AW BUFF	MFR RECOMMENDED MOUNT



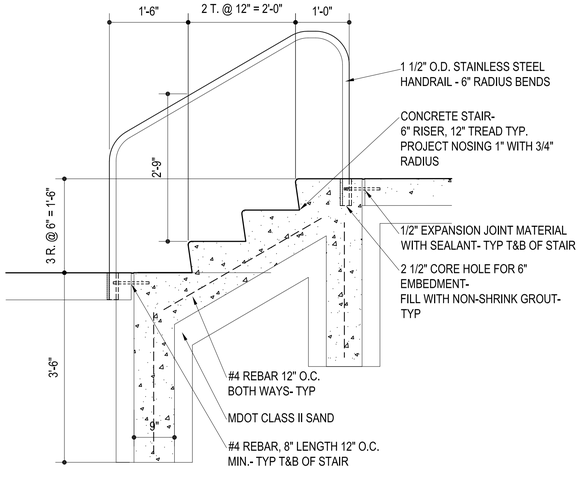
5 L.01 SHRUB PLANTING
NTS



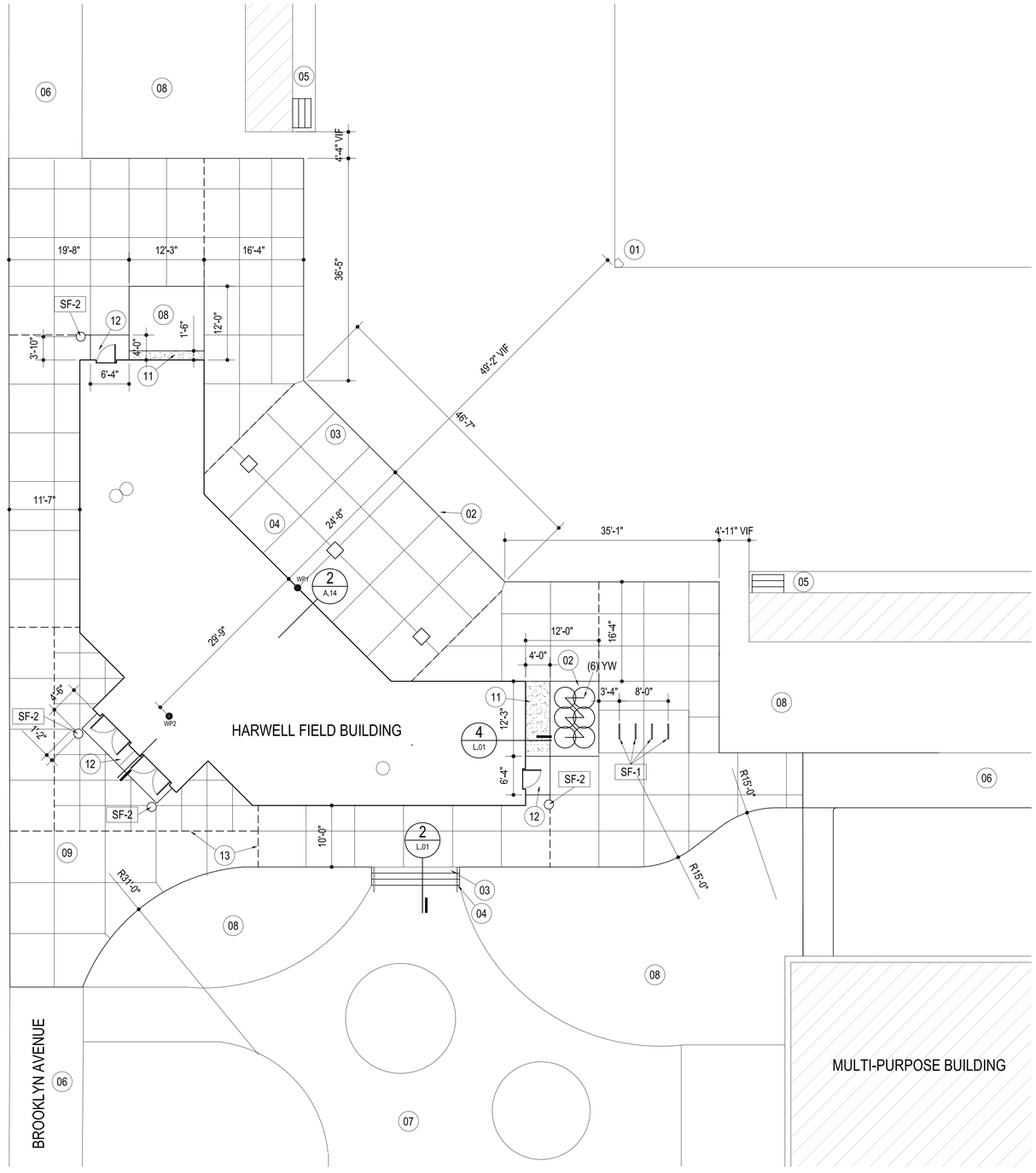
4 L.01 GRAVEL MAINTENANCE STRIP
1 1/2"=1'-0"
0 6"



3 L.01 CONCRETE EXPANSION JOINT
1 1/2"=1'-0"
0 6"



2 L.01 STAIR RAIL
3/4"=1'-0"
0 1'-0"



1 L.01 SITE PLAN
1"=10'-0"
0 10'-0"

PLANT SCHEDULE

CODE	QTY	COMMON NAME	SCIENTIFIC NAME	NOTES
YW	6	YEW	TAXUS X INTERMEDIA	30-36" HT., B&B

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080-232104

TITLE
SITE PLAN

SHEET
L.01