Gerald R. Ford International Airport

GRFIA Medium Voltage Loop

5500 44th SE
Grand Rapids, MI 49512

Bids and Permit January 20th, 2025
Fishbeck Project Number 241208
GRFIA Project Number C-419

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fishbeck.com
800.456.3824

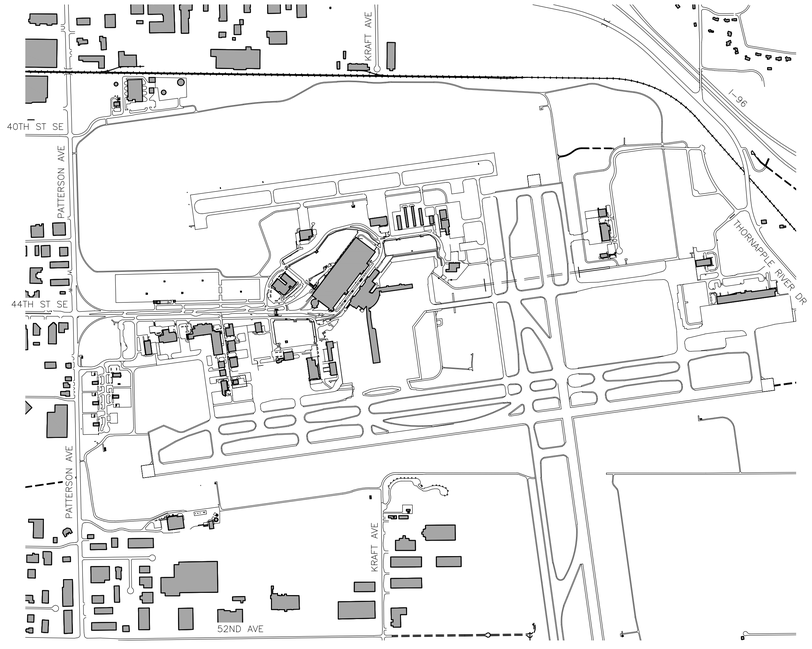
1515 Arboretum Drive
Grand Rapids, Michigan

GENERAL

CIVIL

ELECTRICAL

LOCATION MAP



BUILDING CODE INFORMATION

SEAL

PLOT INFO: Z:\2024\241208\CAD\CIVIL\100\241208.DWG LAYOUT: G100 DATE: 1/20/2025 TIME: 2:01:16 PM USER: CMACE

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Gerald R. Ford International Airport
Grand Rapids, Michigan
Medium Voltage Loop

REVISIONS

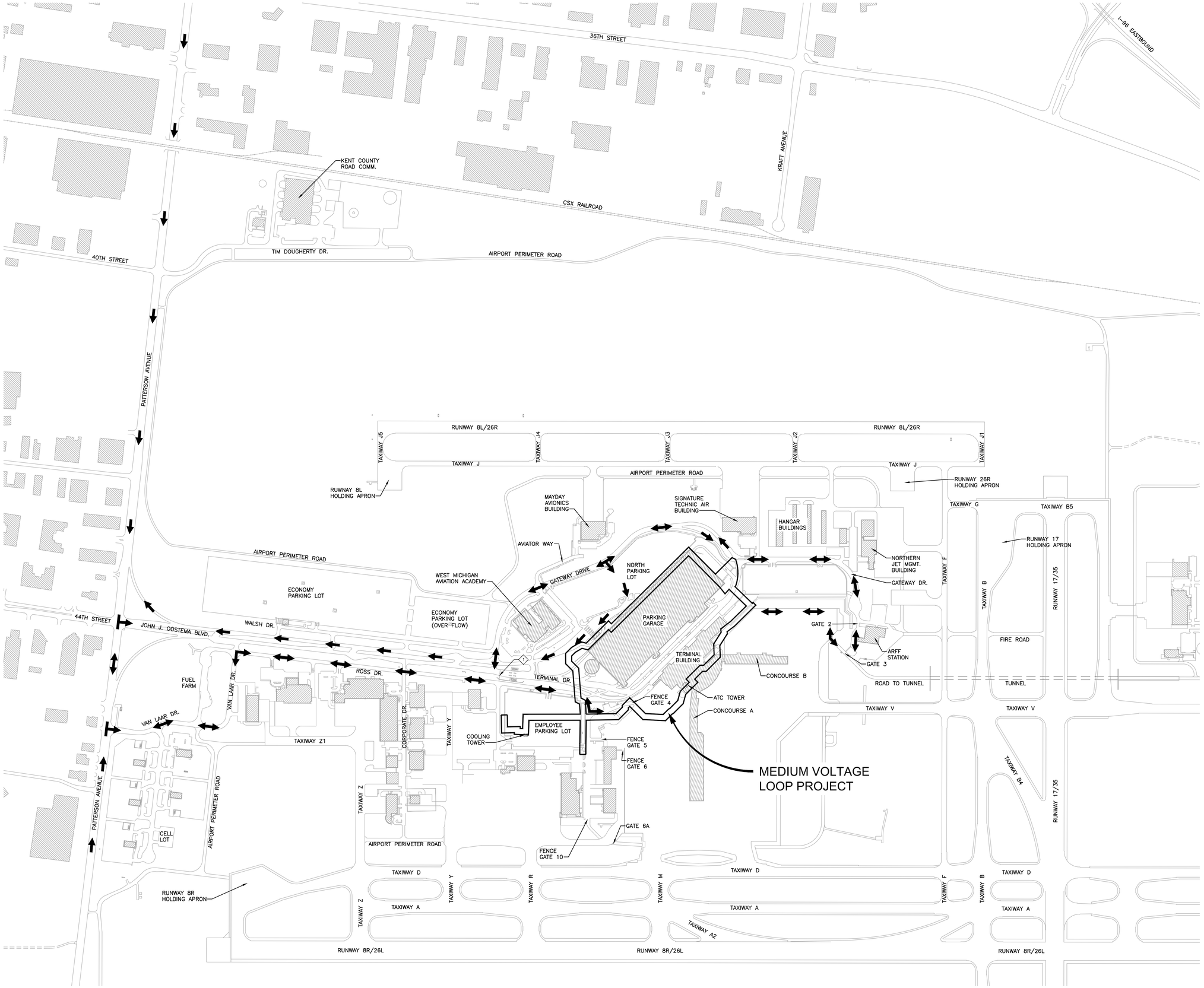
1/20/2025 | BIDS AND PERMIT

Drawn By
Designer
Reviewer
Manager AMEEKER

Hard copy is intended to be 30"x42" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

PROJECT NO.
241208

SHEET NO.
G100



PROJECT SITE ACCESS PLAN

SCALE: 1" = 300'

NORTH

0 150 300 600

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on the web at www.missdig.org

GENERAL NOTES

1. AT NO TIME SHALL CONSTRUCTION TRAFFIC BE ALLOWED ALONG JOHN J. OOSTEMA DRIVE EAST OF THE DESIGNATED CROSSOVER TO GATEWAY DRIVE OR ALONG ANY PORTION OF TERMINAL DRIVE.
2. CONTRACTOR SHALL FURNISH AT MINIMUM ONE (1) VAC TRUCK TO BE AVAILABLE AT ALL TIMES FOR THE DURATION OF CONSTRUCTION ACTIVITIES TO CONTINUALLY REMOVE DIRT, SEDIMENT, DEBRIS AND ALL OTHER CONSTRUCTION WASTE GENERATED ON AND/OR ALONG THE CONSTRUCTION ACCESS ROUTES.

KEY NOTES

1. NO CONSTRUCTION TRAFFIC BEYOND THIS POINT. ALL ASSOCIATED TRAFFIC SHALL ACCESS THE SITE VIA GATEWAY, VAN LAAR, ROSS, AND FREIGHT DRIVE(S). THE USE OF JOHN J. OOSTEMA BOULEVARD AND TERMINAL DRIVE BEYOND THE AREA INDICATED ON THIS PLAN IS STRICTLY PROHIBITED.

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Gerald R. Ford International Airport

Grand Rapids, Michigan

Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	NBARTON
Designer	NBARTON
Reviewer	ASMOURAND
Manager	AMEEKER

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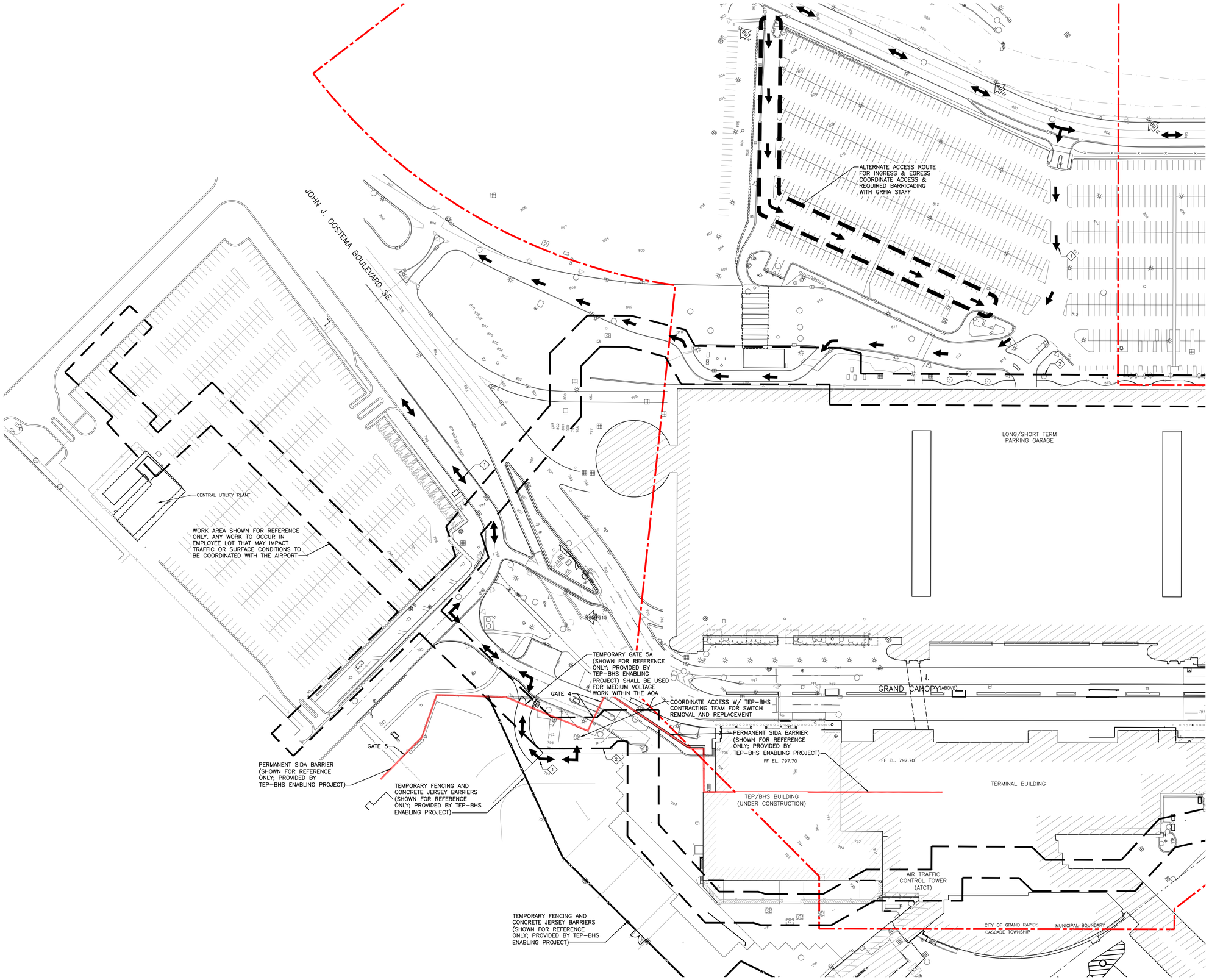
PROJECT NO.
241208

SHEET NO.
CP001

PLOT INFO: Z:\2024\241208\CAD\CD\CP001\241208.DWG LAYOUT: CP001 DATE: 1/20/2025 TIME: 8:59:00 AM USER: KGIBSON



WEST AIRSIDE ACCESS ROUTE & WORK AREA

CONSTRUCTION SAFETY AND PHASING PLAN

MICHIGAN 811
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1-800-482-7171
on the web at www.miss811.org

GENERAL NOTES

1. AT NO TIME SHALL CONSTRUCTION TRAFFIC BE ALLOWED ALONG JOHN J. OOSTEMA DRIVE EAST OF THE DESIGNATED CROSSOVER TO GATEWAY DRIVE OR ALONG ANY PORTION OF TERMINAL DRIVE WITHOUT PRIOR WRITTEN PERMISSION FROM THE AIRPORT PROJECT MANAGER OR OWNER'S PROJECT REPRESENTATIVE. PROVIDE MINIMUM 3 DAYS NOTICE FOR ANY DEVIATION FROM THE ACCESS PLAN PROVIDED HEREIN.
2. CONTRACTOR SHALL FURNISH AT MINIMUM ONE (1) VAC TRUCK TO BE AVAILABLE AT ALL TIMES FOR THE DURATION OF CONSTRUCTION ACTIVITIES TO CONTINUALLY REMOVE DIRT, SEDIMENT, DEBRIS AND ALL OTHER CONSTRUCTION WASTE GENERATED ON AND/OR ALONG THE CONSTRUCTION ACCESS ROUTES.
3. ACCESS ROUTE TO WORK AREA SHALL BE AS DEPICTED ON SHEET CP001.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY PEDESTRIAN AND VEHICULAR ACCESS MEASURES INCLUDING WAYFINDING AND WARNING SIGNAGE, PAVEMENT MARKINGS, AND TEMPORARY PAVEMENTS TO MAINTAIN ACCESS TO ALL SECURE GATES, THE ARFF BUILDING AND ALL LEASE PROPERTIES ADJACENT TO THE WORK. ALL MEASURES SHALL BE IN ACCORDANCE WITH ADA, MDOT AND MUTCD STANDARDS.
5. MAINTAIN 10' SEPARATION FROM ALL SIDA BARRIERS FOR MATERIAL AND EQUIPMENT STORAGE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING MAINTENANCE OF TRAFFIC INCLUDING REQUIRED CONTROLS AND PERSONNEL PER MDOT AND MUTCD STANDARDS DURING ALL TIMES OF THE CONSTRUCTION WORK.
7. CONTRACTOR SHALL COORDINATE ALL ROAD AND DRIVEWAY CLOSURES WITH AIRPORT STAFF AND ADJACENT LEASE PROPERTIES TWO WEEKS IN ADVANCE OF SCHEDULED CLOSURES AND/OR WORK THAT WILL IMPACT TRAVEL.

KEY NOTES

1. CONTRACTOR ACCESS AND HAULING ROUTE
2. LIMITS OF WORK AREA

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Grand Rapids, Michigan
Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	NBARTON
Designer	NBARTON
Reviewer	ASMOURAND
Manager	AMEEKER

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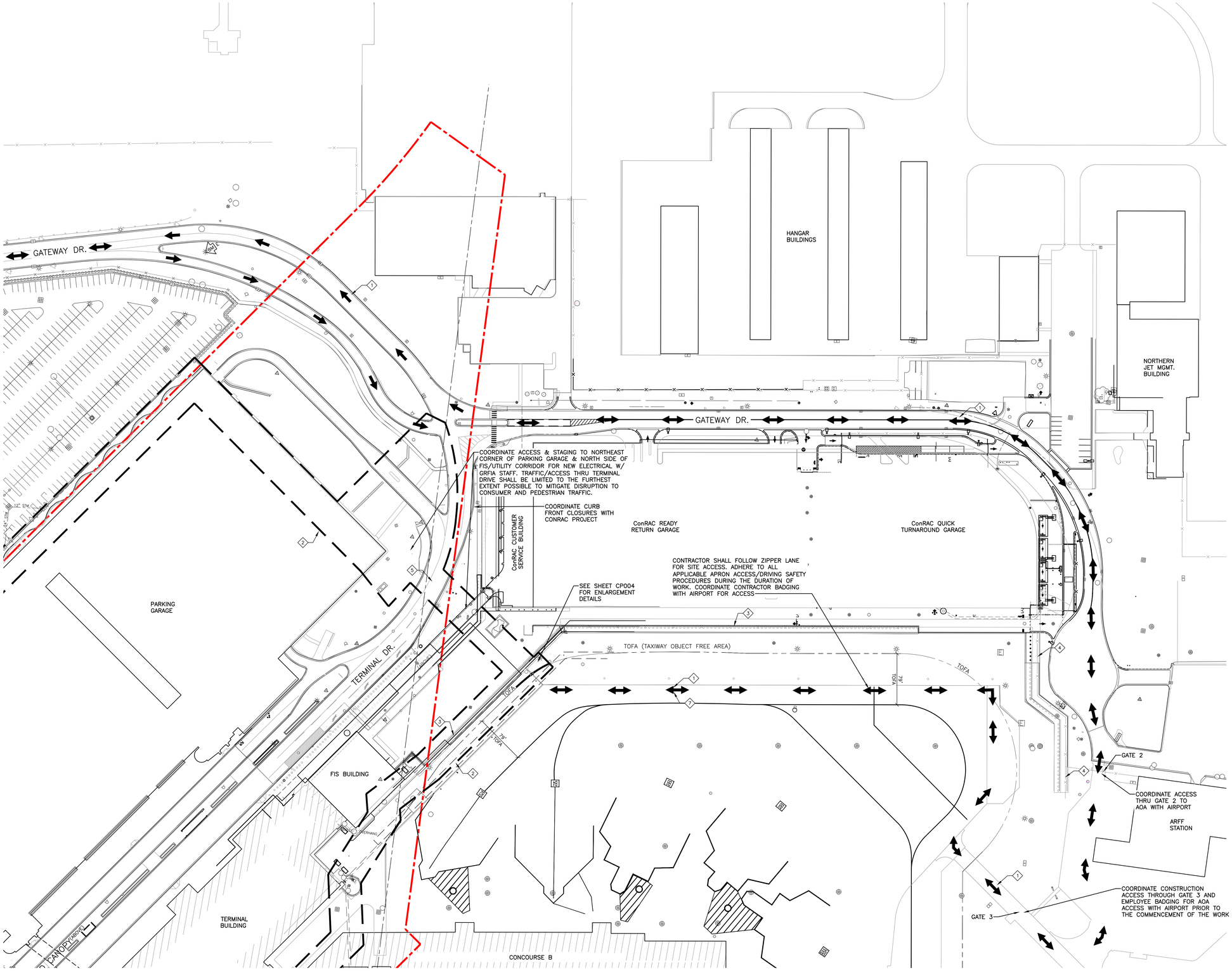
PROJECT NO.
241208

SHEET NO.
CP002

PLOT INFO: Z:\2024\241208\CAD\CIVIL\CP002\241208.DWG LAYOUT: CP002 DATE: 1/20/2025 TIME: 9:58:42 AM USER: KGIBSON



EAST AIRSIDE ACCESS ROUTE & WORK AREA

CONSTRUCTION SAFETY AND PHASING PLAN

SCALE: 1" = 60'

0 30 60 120

NORTH

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GENERAL NOTES

1. AT NO TIME SHALL CONSTRUCTION TRAFFIC BE ALLOWED ALONG JOHN J. GOSTEMA DRIVE EAST OF THE DESIGNATED CROSSOVER TO GATEWAY DRIVE OR ALONG ANY PORTION OF TERMINAL DRIVE WITHOUT PRIOR WRITTEN PERMISSION FROM THE AIRPORT PROJECT MANAGER OR OWNER'S PROJECT REPRESENTATIVE. PROVIDE MINIMUM 3 DAYS NOTICE FOR ANY DEVIATION FROM THE ACCESS PLAN PROVIDED HEREIN.
2. CONTRACTOR SHALL FURNISH AT MINIMUM ONE (1) VAC TRUCK TO BE AVAILABLE AT ALL TIMES FOR THE DURATION OF CONSTRUCTION ACTIVITIES TO CONTINUALLY REMOVE DIRT, SEDIMENT, DEBRIS AND ALL OTHER CONSTRUCTION WASTE GENERATED ON AND/OR ALONG THE CONSTRUCTION ACCESS ROUTES.
3. ACCESS ROUTE TO WORK AREA SHALL BE AS DEPICTED ON SHEET CP001.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY PEDESTRIAN AND VEHICULAR ACCESS MEASURES INCLUDING WAYFINDING AND WARNING SIGNAGE, PAVEMENT MARKINGS, AND TEMPORARY PAVEMENTS TO MAINTAIN ACCESS TO ALL SECURE GATES, THE ARFF BUILDING AND ALL LEASE PROPERTIES ADJACENT TO THE WORK. ALL MEASURES SHALL BE IN ACCORDANCE WITH ADA, MDOT AND MUTCD STANDARDS.
5. MAINTAIN 10' SEPARATION FROM ALL SIDA BARRIERS FOR MATERIAL AND EQUIPMENT STORAGE.

KEY NOTES

1. CONTRACTOR ACCESS AND HAULING ROUTE
2. LIMITS OF WORK AREA
3. EXISTING BLAST WALL
4. EXISTING BLAST FENCE
5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING MAINTENANCE OF TRAFFIC INCLUDING REQUIRED CONTROLS AND PERSONNEL PER MDOT AND MUTCD STANDARDS DURING ALL TIMES OF THE CONSTRUCTION WORK, AS REQUIRED.
6. CONTRACTOR SHALL COORDINATE ALL ROAD AND DRIVEWAY CLOSURES WITH AIRPORT STAFF AND ADJACENT LEASE PROPERTIES TWO WEEKS IN ADVANCE OF SCHEDULED CLOSURES AND/OR WORK THAT WILL IMPACT TRAVEL.
7. ACCESS ROUTE SHALL BE CONTINUOUSLY CLEANED BY THE CONTRACTOR DURING ALL WORK HOURS.

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Gerald R. Ford International Airport
Grand Rapids, Michigan

Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	NBARTON
Designer	NBARTON
Reviewer	ASMOURAND
Manager	AMEEKER

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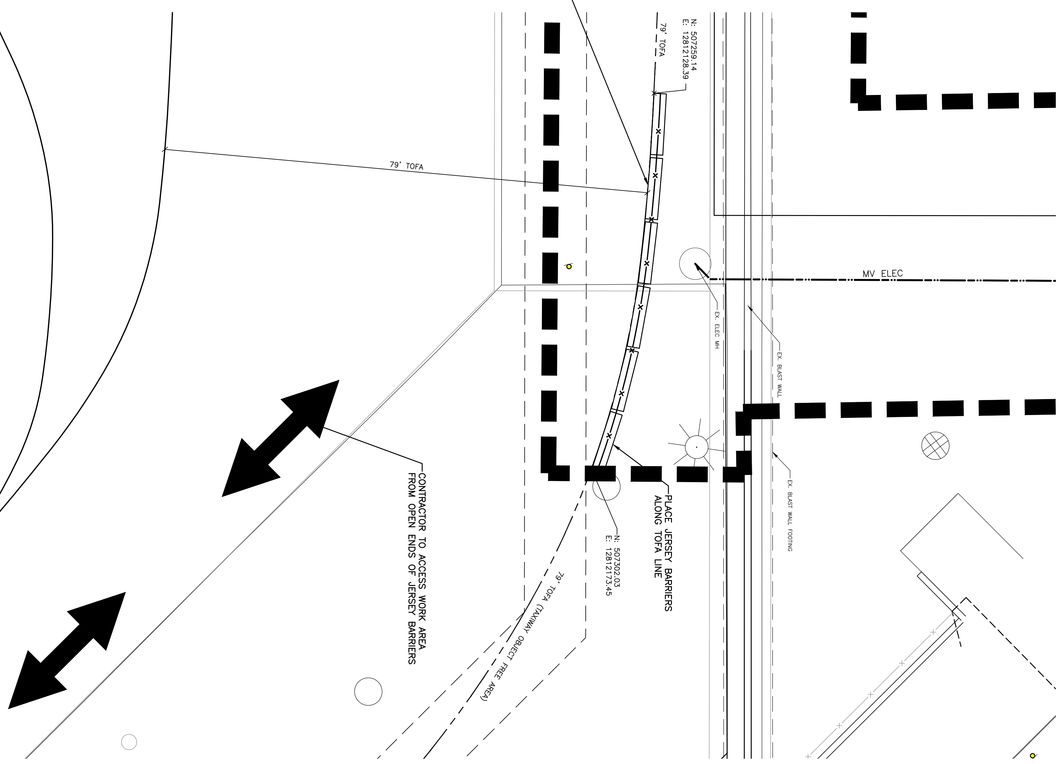
PROJECT NO.
241208

SHEET NO.
CP003

PLOT INFO: Z:\2024\241208\CAD\CIVIL\CP003\241208.DWG LAYOUT: CP003 DATE: 1/20/2025 TIME: 11:10:48 AM USER: KGIBSON

EAST AIRSIDE WORK AREA ENLARGEMENT



Gerald R. Ford International Airport

Grand Rapids, Michigan

Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT
Drawn By	MBARTON
Designer	MBARTON
Reviewer	ASMOGRAND
Manager	AMEEKER

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PROJECT NO.
241208

SHEET NO.
CP004

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EXISTING CONDITIONS

SCALE: 1" = 60'
0 30 60 120
NORTH

SYMBOL LEGEND

- BENCH MARK
- PROPERTY LINE
- ANNEXATION BOUNDARY
- EASEMENT LINE
- SOIL BORING
- SHRUBS
- CONIFEROUS TREE
- DECIDUOUS TREE
- TREE LINE
- WETLAND
- EDGE OF WATER
- CONTOUR MAJOR
- CONTOUR MINOR
- LIGHT
- UTILITY POLE
- SIGN
- FENCE LINE
- PAVED SURFACE
- EXISTING CURB & GUTTER
- BARRIER FREE MARKING
- SANITARY SEWER & MANHOLE
- STORM SEWER & MANHOLE
- CATCH BASIN CURB AND LAWN TYPE
- VALVE
- HYDRANT
- WATER MAIN
- PLUG
- GAS MAIN
- UNDERGROUND ELECTRIC
- UNDERGROUND TCOM/FIBER OPTICS
- TELEPHONE PEDESTAL

SURVEY NOTES

1. EXISTING CONDITIONS SURVEY IS A COMBINATION OF TOPOGRAPHIC SURVEYS COMPLETED BY FISHBECK FROM 2019 TO 2024 AND REFLECTS CONDITIONS AT THAT TIME. THE SURVEY HAS BEEN SUPPLEMENTED WITH AIRPORT GIS INFORMATION, AS-BUILT AND RECORD DRAWINGS FOR THE CONTRACTOR'S CONVENIENCE. THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE PRIOR TO BIDDING TO CONFIRM EXISTING CONDITIONS AS SHOWN ON THE PLANS. REPORT ALL DISCREPANCIES TO THE ENGINEER.
2. THE HORIZONTAL AND VERTICAL INFORMATION PROVIDED IS BASED ON THE MICHIGAN STATE PLANE COORDINATE SYSTEM (SOUTH ZONE, INTERNATIONAL FEET) WITH NAD83 HORIZONTAL AND NAVD88 VERTICAL DATUM, RESPECTIVELY.
3. UNDERGROUND UTILITIES ARE SHOWN BASED ON SURFACE MANHOLE AND VALVE LOCATIONS, RECORD DRAWINGS, AND OWNER PROVIDED UTILITY MAPS AND MAY NOT BE ACCURATE. CONTRACTOR SHALL CONTACT MISS DIG PRIOR TO ANY EXCAVATION. CONTACT ENGINEER IF UTILITIES ARE FOUND IN DIFFERENT CONDITIONS THAN SHOWN ON THESE PLANS.

BENCH MARKS

BENCH MARK M ELEVATION: 796.95
MAG NAIL SET IN NORTHERLY SIDE CONCRETE LIGHT POLE BASE. BETWEEN PARKING LOT AND APRON FENCE, OFF NORTHEAST CORNER OF VALET BUILDING

BENCH MARK N ELEVATION: 797.94
MAG NAIL SET IN SOUTHEASTERLY CORNER OF CONCRETE PAD FOR ELECTRIC TRANSFORMER. NEAR SOUTHEASTERLY CORNER OF LONG TERM PARKING DECK.

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Grand Rapids, Michigan

Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT
Drawn By	AODDO
Designer	KGIBSON
Reviewer	ASMOURAND
Manager	AMEEKER

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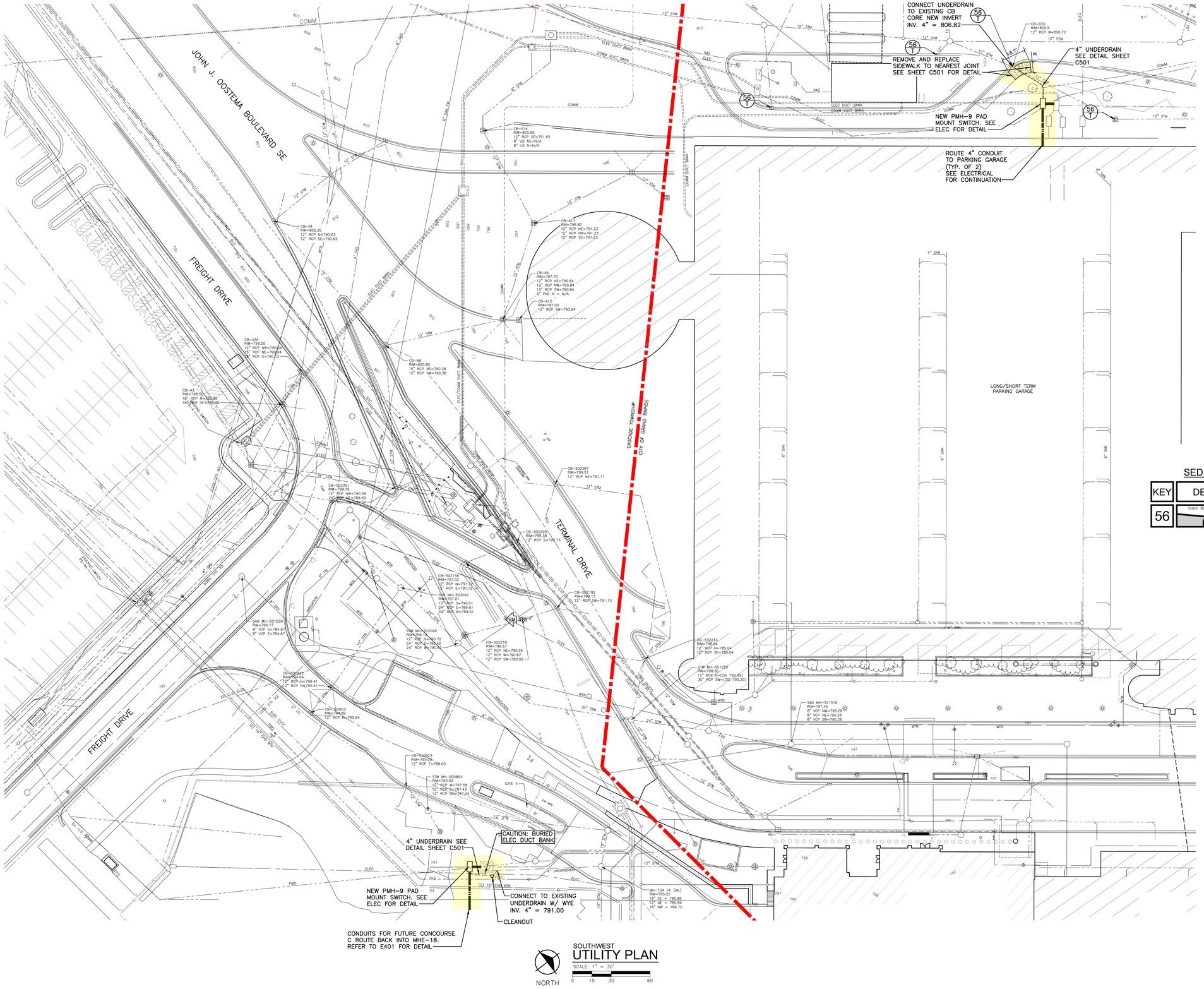
PROJECT NO.
241208

SHEET NO.
C100

PLOT INFO: Z:\2024\241208\CAD\CIV\241208.DWG LAYOUT: EXISTING CONDITIONS DATE: 1/20/2025 TIME: 10:03:59 AM USER: KGIBSON



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BENCH MARKS

BENCH MARK 515 ELEVATION: 799.68
CHISELED SQUARE ON TOP OF SOUTH SIDE OF CONCRETE LIGHT POLE BASE, NORTH SIDE OF FREIGHT DRIVE, 180 FEET WEST OF MERGE WITH TERMINAL DRIVE, NORTHWEST OF GATE 4

BENCH MARK 516 ELEVATION: 800.51
TOP OF SOUTHEASTERLY CORNER OF CONCRETE PLANTER BOX IN MEDIAN OF TERMINAL DRIVE, SOUTHERLY SIDE OF CROSSWALK AT SOUTHERLY END OF TERMINAL BUILDING

SYMBOL LEGEND

- LIMITS OF DISTURBANCE
- 4" THICK CONCRETE SIDEWALK
- UNDERDRAIN
- ELECTRIC

NOTES

1. DIMENSIONS ARE TO BACK OF CURB, OUTSIDE FACE OF BUILDING, AND EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
2. KEEP THE APPROVED AND/OR MOST CURRENT SET OF PROJECT DRAWINGS ON SITE AT ALL TIMES. CONTRACTOR TO CONFIRM THEY ARE IN POSSESSION OF THE MOST CURRENT DRAWING FILES.
3. EXISTING UTILITIES LOCATIONS SHOWN ARE APPROXIMATE.
4. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES PRIOR TO EXCAVATION WHERE NECESSARY.
5. PROTECT AND MAINTAIN SERVICE OF OTHER UTILITIES AT CROSSINGS. PROVIDE TEMPORARY SUPPORT TO EXISTING UTILITIES AS NECESSARY.
6. DO NOT CONNECT ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER SERVICES TO THE SANITARY SEWER.
7. PROVIDE AND MAINTAIN INLET FILTERS AT ALL CATCH BASIN INLETS, DURING CONSTRUCTION.
8. MAINTAIN A MINIMUM OF EIGHTEEN (18) INCHES OF VERTICAL SEPARATION AND TEN (10) FEET OF HORIZONTAL SEPARATION BETWEEN THE WATER MAIN AND ALL SANITARY AND STORM SEWERS.
9. ADJUST ALL CASTINGS, HANDHOLES, PULL BOXES, ETC. TO FINISH GRADE.
10. PIPE LENGTHS ARE TO CENTER OF STRUCTURES UNLESS NOTED OTHERWISE. ALL PIPE LENGTHS ARE FOR THE CONVENIENCE OF THE CONTRACTOR.
11. UTILITY ELEVATIONS INDICATED REPRESENT INVERT ELEVATIONS UNLESS OTHERWISE NOTED.

EGLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

KEY	DETAIL	CHARACTERISTICS
56	Catch Basin, Filter Bag	Manufactured filter bag inserted under casting. Collects sediment at catch basin inlet.

(56 T) TEMPORARY MEASURE (56 P) PERMANENT MEASURE

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1/20/2025	BIDS AND PERMIT

Drawn By	AODDO
Designer	KGIBSON
Reviewer	ASMOURAND
Manager	AMEEKER

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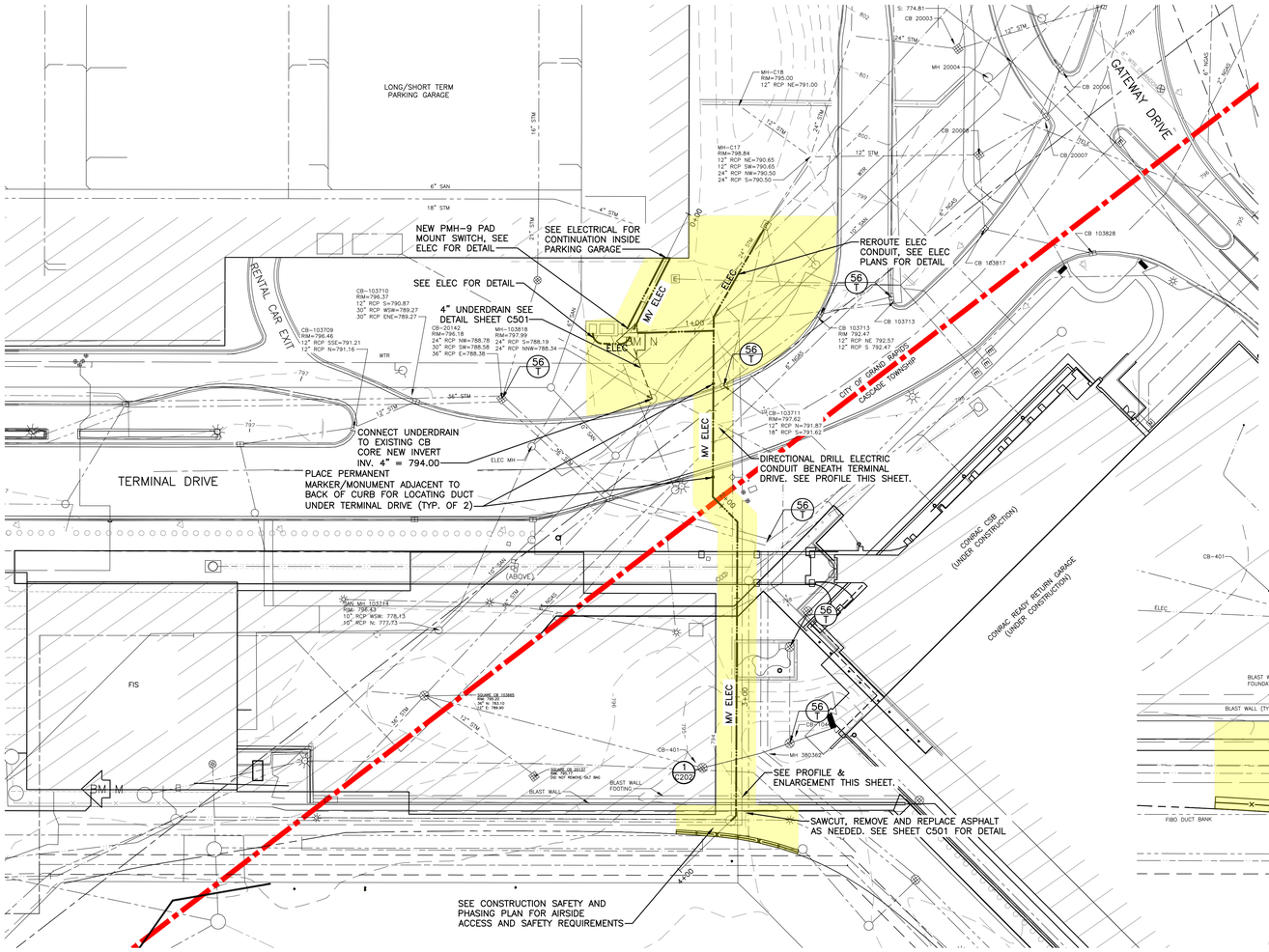
PROJECT NO.
241208

SHEET NO.
C201

PLOT INFO: Z:\2024\241208\CAD\CIV\C201241208.DWG LAYOUT: UTILITY PLAN - SOUTHWEST DATE: 1/20/2025 TIME: 10:02:54 AM USER: KGIBSON

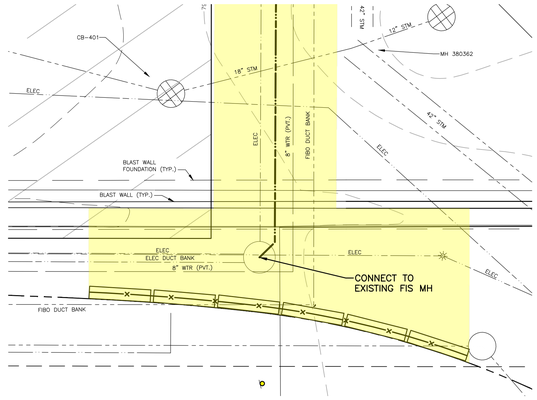


NORTHEAST UTILITY PLAN

SCALE: 1" = 30'

0 15 30 60

NORTH

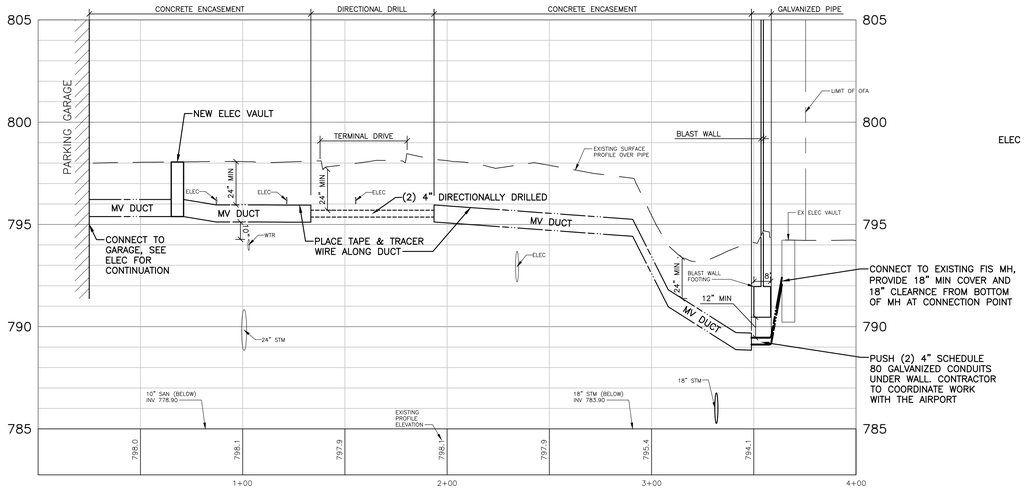


FIS CONNECTION ENLARGEMENT

SCALE: 1" = 10'

0 15 30 60

NORTH



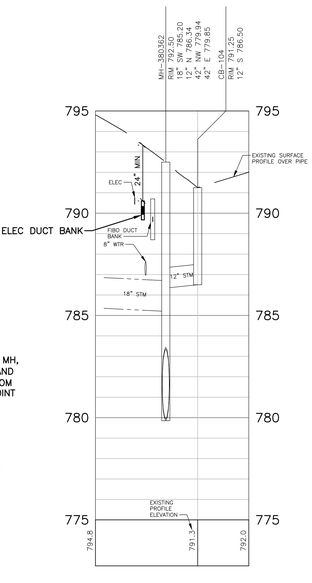
STA. 0+00 TO 4+00

UTILITY DUCT PROFILE

SCALE: 1" = 30'

0 15 30 60

VERT: 1" = 3'



SECTION CUT 1

SCALE: 1" = 30'

0 15 30 60

VERT: 1" = 3'

EGLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

KEY	DETAIL	CHARACTERISTICS
56	Catch Basin, Filter Bag	Manufactured filter bag inserted under casting. Collects sediment at catch basin inlet.

(T) TEMPORARY MEASURE

(P) PERMANENT MEASURE

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on the web at www.miss811.org

BENCH MARKS

BENCH MARK M ELEVATION: 796.95
MAG NAIL SET IN NORTHERLY SIDE CONCRETE LIGHT POLE BASE, BETWEEN PARKING LOT AND APRON FENCE, OFF NORTHEAST CORNER OF VALET BUILDING

BENCH MARK N ELEVATION: 797.94
MAG NAIL SET IN SOUTHEASTERLY CORNER OF CONCRETE PAD FOR ELECTRIC TRANSFORMER. NEAR SOUTHEASTERLY CORNER OF LONG TERM PARKING DECK.

SYMBOL LEGEND

- LIMITS OF DISTURBANCE
- 4" THICK CONCRETE SIDEWALK
- UNDERDRAIN
- ELECTRIC

NOTES

1. DIMENSIONS ARE TO BACK OF CURB, OUTSIDE FACE OF BUILDING, AND EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
2. KEEP THE APPROVED AND/OR MOST CURRENT SET OF PROJECT DRAWINGS ON SITE AT ALL TIMES. CONTRACTOR TO CONFIRM THEY ARE IN POSSESSION OF THE MOST CURRENT DRAWING FILES.
3. EXISTING UTILITIES LOCATIONS SHOWN ARE APPROXIMATE.
4. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES PRIOR TO EXCAVATION WHERE NECESSARY.
5. PROTECT AND MAINTAIN SERVICE OF OTHER UTILITIES AT CROSSINGS. PROVIDE TEMPORARY SUPPORT TO EXISTING UTILITIES AS NECESSARY.
6. DO NOT CONNECT ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER SERVICES TO THE SANITARY SEWER.
7. PROVIDE AND MAINTAIN INLET FILTERS AT ALL CATCH BASIN INLETS, DURING CONSTRUCTION.
8. MAINTAIN A MINIMUM OF EIGHTEEN (18) INCHES OF VERTICAL SEPARATION AND TEN (10) FEET OF HORIZONTAL SEPARATION BETWEEN THE WATER MAIN AND ALL SANITARY AND STORM SEWERS.
9. ADJUST ALL CASTINGS, HANDHOLES, PULL BOXES, ETC. TO FINISH GRADE.
10. PIPE LENGTHS ARE TO CENTER OF STRUCTURES UNLESS NOTED OTHERWISE. ALL PIPE LENGTHS ARE FOR THE CONVENIENCE OF THE CONTRACTOR.
11. UTILITY ELEVATIONS INDICATED REPRESENT INVERT ELEVATIONS UNLESS OTHERWISE NOTED.

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REVISIONS

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Reviewer	ASMOURAND
Manager	AMEEKER

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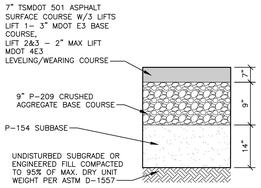
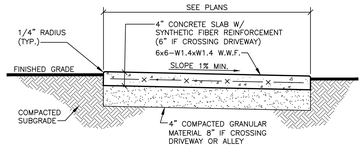
PROJECT NO.
241208

SHEET NO.
C202

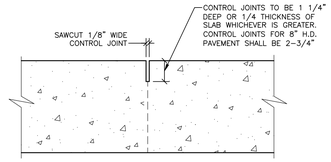
PLOT INFO: Z:\2024\241208\CAD\CIV\C202241208.DWG LAYOUT: UTILITY PLAN - NORTHEAST DATE: 1/20/2025 TIME: 11:20:32 AM USER: KGIBSON



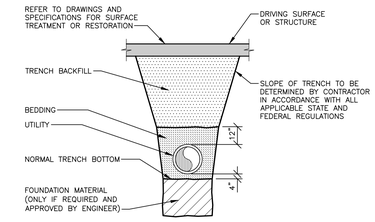
HEAVY DUTY ASPHALT DETAIL
NO SCALE



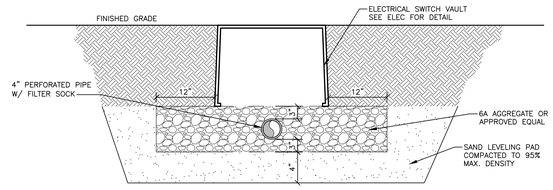
SIDEWALK DETAIL
NO SCALE CP-002



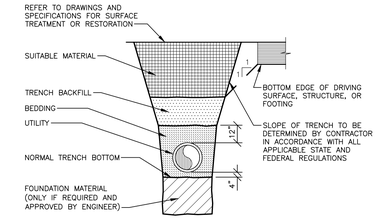
CONTROL JOINT SECTION
NO SCALE CP-004



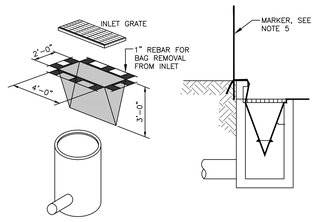
TRENCH BELOW DRIVING SURFACE OR STRUCTURE
NO SCALE UT-003



PMH SWITCH VAULT DRAINAGE DETAIL
NO SCALE



TRENCH ADJACENT TO DRIVING SURFACE OR STRUCTURE
NO SCALE UT-002

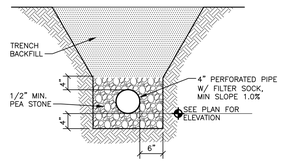


ISOMETRIC VIEW INSTALLATION DETAIL

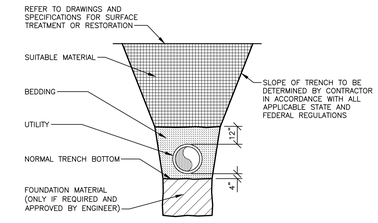
NOTES:

1. PLACE FILTER FABRIC BAG INSIDE THE INLET BENEATH THE GRATE.
2. REPLACE GRATE, WHICH WILL HOLD BAG IN PLACE.
3. ANCHOR FILTER BAG SO IT WILL NOT DROP INTO CATCH BASIN.
4. EXTEND FLAPS OF BAG BEYOND THE BAG. BURY IN SOIL IN EARTH AREAS.
5. IF CATCH BASIN IS IN A LOW DEPRESSION - MARK CB LOCATION WITH A MARKER TO ASSIST LOCATING CATCH BASIN IF FLOODING OCCURS.
6. INSPECT DROP INLET FILTERS ROUTINELY AND AFTER EACH RAIN EVENT.
7. REPLACE DAMAGED FILTER BAGS IMMEDIATELY.
8. CLEAN AND/OR REPLACE FILTER BAG WHEN 1/2 FULL. REPLACE CLOGGED FABRIC IMMEDIATELY.
9. VACUUM OUT CATCH BASIN SUMP IF FILTER BAG TEARS.
10. REMOVE ENTIRE PROTECTIVE MECHANISM WHEN UP GRADIENT AREAS ARE STABILIZED AND STREETS HAVE BEEN SWEPT AND/OR DIRECTLY DETECTED BY ENGINEER/OWNER.

56 INLET PROTECTION - FABRIC DROP
NO SCALE SE-056



UNDERDRAIN DETAIL
NO SCALE SI-016



TRENCH NOT ADJACENT TO DRIVING SURFACE OR STRUCTURE
NO SCALE UT-001

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Grand Rapids, Michigan

Medium Voltage Looage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	KGIBSON
Designer	KGIBSON
Reviewer	ASMOURAND
Manager	AMEEKER

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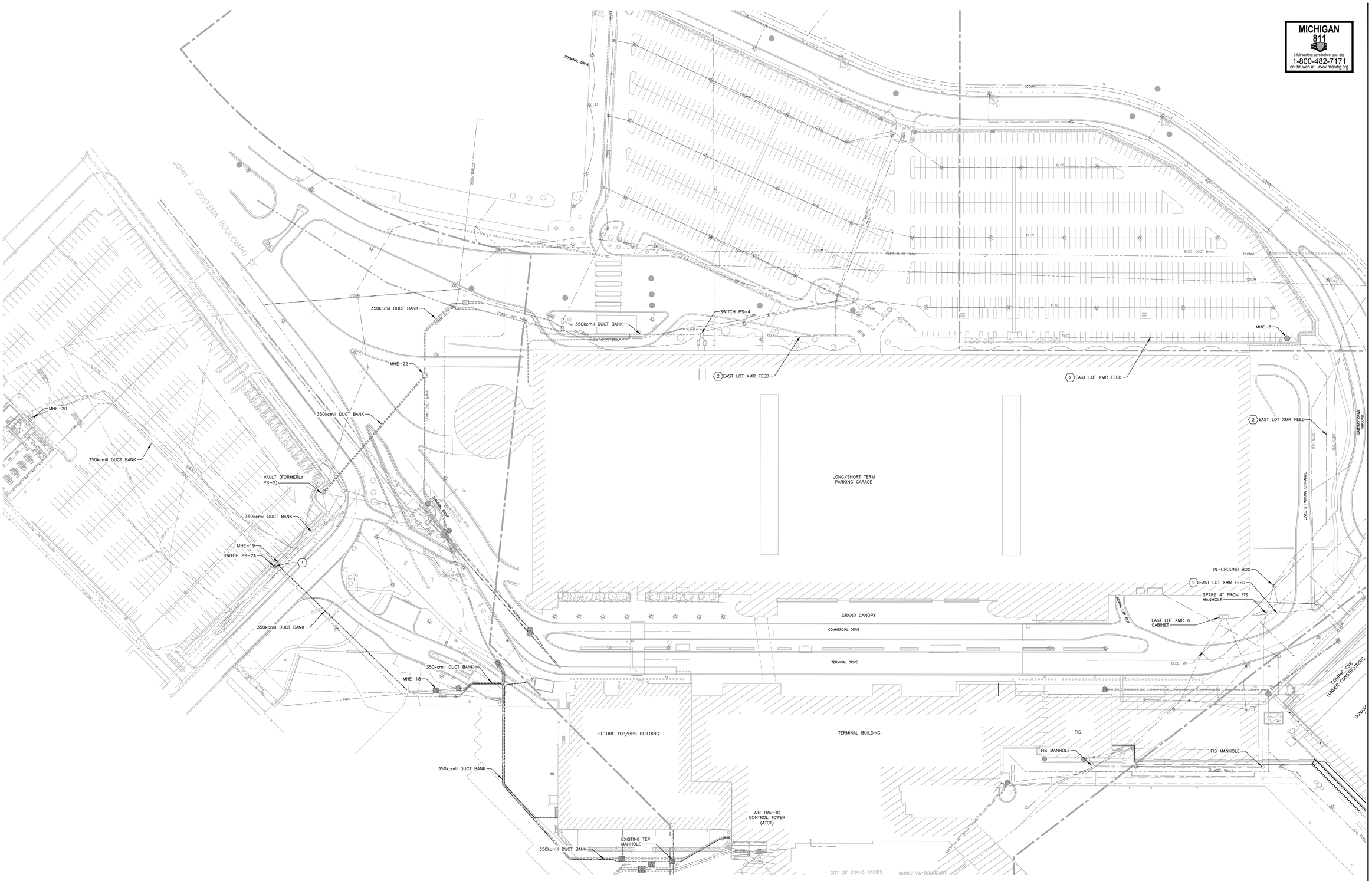
PROJECT NO.
241208

SHEET NO.
C501

PLOT INFO: Z:\2024\241208\CAD\CIVIL\241208.DWG LAYOUT: DETAILS DATE: 1/20/2025 TIME: 10:00:02 AM USER: KGIBSON



OVERALL
EXISTING ELECTRICAL & DEMOLITION SITE PLAN
SCALE: 1" = 60'
NORTH
0 30 60 120

NOTES

1. REFER TO GENERAL NOTES, SHEET E001 FOR ADDITIONAL REQUIREMENTS.
2. POWER OUTAGES TO BE COORDINATED WITH THE AIRPORT AND UTILITY AS REQUIRED.
3. COORDINATE AND SCHEDULE ALL WORK FOR THIS PROJECT WITH THE AIRPORT, CM, AND EC ASSOCIATED WITH THE TERMINAL EXPANSION PROJECT.
4. CONTACT MISS DIG 811 AT LEAST 3 BUSINESS DAYS PRIOR TO ANY SITE EXCAVATION TO IDENTIFY AND MARK UTILITIES. ENSURE ALL UTILITY LOCATIONS ARE VERIFIED BEFORE PROCEEDING WITH WORK.

(#) DEMOLITION KEY NOTES

1. EXISTING PS-2A SWITCH, CURRENTLY AN S&C PMH-12, TO BE REMOVED AND TURNED OVER TO OWNER. COORDINATE TRANSITION WITH OWNER.
2. REMOVE EXISTING FEEDER TO EAST LOT XMR FROM PS-4 ONCE NEW FEED FROM PS-12 IS READY TO BE OPERATIONAL. REFER TO E100 AND E401 FOR ADDITIONAL DETAILS. COORDINATE ALL NECESSARY SHUTDOWNS WITH OWNER IN ADVANCE.

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Grand Rapids, Michigan
Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	LBGARRISON
Designer	LBGARRISON/STKAM
Reviewer	JMILOCH
Manager	AMEEKER

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PROJECT NO.
241208

SHEET NO.
D700

PLOT INFO: Z:\2024\241208\CAD\CD\D100\241208.DWG LAYOUT: D100 DATE: 1/20/2025 TIME: 1:53:45 PM USER: LBGARRISON

NOTES

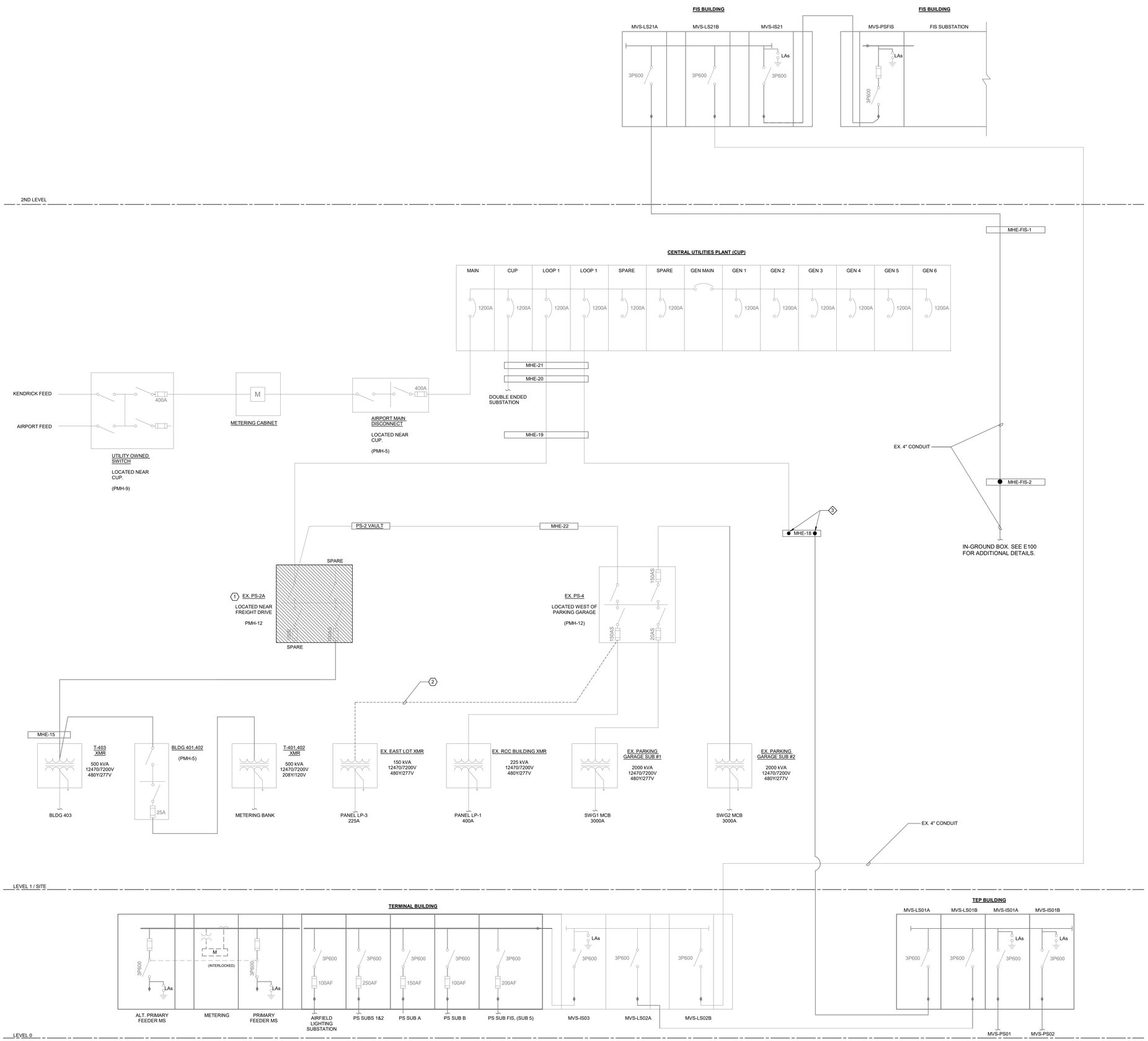
1. REFER TO GENERAL NOTES, SHEET E001 FOR ADDITIONAL REQUIREMENTS.
2. WORK THAT IS SHADED IS SHOWN FOR REFERENCE ONLY AND IS NOT INCLUDED IN THIS BID PACKAGE.
3. CONDUCTORS SHOULD BE REMOVED FROM RUNS THAT ARE NO LONGER BEING UTILIZED. CAP EMPTY CONDUITS AND MARK SPARE.
4. PROVIDE CABLE MARKING IDENTIFICATION FOR ALL CABLES IN VAULTS. REFER TO IDENTIFICATION SPECIFICATION 26 05 53 FOR ADDITIONAL INFORMATION.
5. POWER OUTAGES TO BE COORDINATED WITH THE AIRPORT AND UTILITY AS REQUIRED.
6. VERIFY PHASE ROTATION OF EXISTING CIRCUITS BEFORE DISCONNECTION.

(#) KEY NOTES

1 REMOVE THE EXISTING PS-2A (PMH-12) SWITCH AND TURN IT OVER TO THE OWNER. REPLACE WITH A NEW PMH-9 STYLE SWITCH; REFER TO E100 AND E401 FOR ADDITIONAL DETAILS. COORDINATE ALL NECESSARY SHUTDOWNS WITH THE OWNER IN ADVANCE.

2 REMOVE FEEDER TO SWITCH PS-4. CAP AND MARK CONDUIT AS SPARE. RE-FEED SWITCH PS-4 FROM NEW SWITCH AS SHOWN ON E401.

3 THE CABLES HAVE BEEN CAPPED IN MHE-18 FOR FUTURE SPLICING INTO THE NEW CIRCUITS AS SHOWN ON E401.



EXISTING & DEMOLITION ONE LINE DIAGRAM - MEDIUM VOLTAGE LOOP

12.74Y/7.2 kV-3PH-3W

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Grand Rapids, Michigan
Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	LBGARRISON
Designer	LBGARRISON/STKAM
Reviewer	JMILOCH
Manager	AMEEKER

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PROJECT NO.
241208

SHEET NO.
D701

PLOT INFO: 1/20/2025 1:47:00 PM Autodesk Docs://241208/2024_E_241208.rvt

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
⊕	GROUND ROD
- - - - - - - -	CONDUIT UNDER FLOOR
————	CONDUIT ABOVE FLOOR

GENERAL ELECTRICAL ABBREVIATIONS

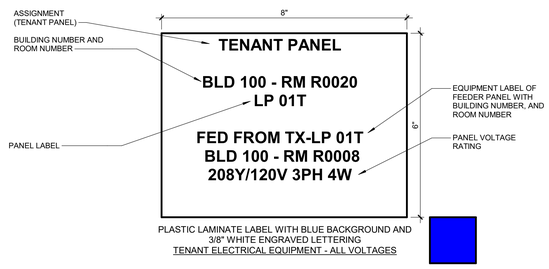
A, AMP	AMPERES
AC	ALTERNATING CURRENT
ACP	ACOUSTICAL CEILING PANEL
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE-INTERRUPTING CURRENT
AL	ALUMINUM
ATM	AUTOMATIC TELLER MACHINE
ATS	AUTOMATIC TRANSFER SWITCH
BMS	BUILDING MANAGEMENT SYSTEM
BRKR	BREAKER
C	CONDUIT OR CELSIUS
CB	CIRCUIT BREAKER
CATV	CABLE TELEVISION
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CKT	CIRCUIT
CLG	CEILING
CM	CONSTRUCTION MANAGER
CMU	CONCRETE MASONRY UNIT
COAX	COAXIAL
CONC	CONCRETE
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
CU	COPPER
Cx	COMMISSIONING
CxA	COMMISSIONING AGENT
DB	DECIBEL
DC	DIRECT CURRENT
DEM	DEMOLISH
DEMO	DEMOLISH OR DEMOLITION
DF	DRINKING FOUNTAIN
DISC	DISCONNECT
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
EC	ELECTRICAL CONTRACTOR
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATOR OR ELEVATION
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
F	FUSE OR FAHRENHEIT
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FF&E	FIXTURES, FURNISHINGS & EQUIPMENT
FIXT	FIXTURE
FLA	FULL LOAD AMPERES
FM	FACTORY MUTUAL
FMC	FLEXIBLE METAL CONDUIT
FO	FIBER OPTIC
FRT	FIRE RETARDANT
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND, G	GROUND
GYP BD	GYPSUM BOARD
HH	HANDHOLE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HV	HIGH VOLTAGE
ID	INSIDE DIAMETER
JB	JUNCTION BOX
KO	KNOCKOUT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWHR	KILOWATT-HOUR
LED	LIGHT-EMITTING DIODE
LS	LIGHT SWITCH OR LIMIT SWITCH
LT	LIGHT OR LEVEL TRANSDUCER
LTFMC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHTING
LV	LOW VOLTAGE
M	METER
MANUF	MANUFACTURER
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MH	MANHOLE
MLO	MAIN LUGS ONLY
MT	MOUNT
MTD	MOUNTED
MV	MEDIUM VOLTAGE
N, NEUT	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OHD	OVERHEAD DOOR
OL	OVERLOAD
PA	PUBLIC ADDRESS
PB	PULL BOX OR PUSHBUTTON
PFC	POWER FACTOR CORRECTION
PH	PHASE
PNL	PANEL OR PANELBOARD
PT	POTENTIAL TRANSFORMER
PTZ	PAN-TILT-ZOOM
PWR	POWER
RCP	REFLECTED CEILING PLAN
REBAR	REINFORCING BAR
RECEPT	RECEPTACLE
RM	ROOM
RNMC	RIGID NON-METALLIC CONDUIT
ROW	RIGHT-OF-WAY
RMC	RIGID METAL CONDUIT
SEC	SECONDARY
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPECS	SPECIFICATIONS
SPST	SINGLE POLE SINGLE THROW
SQ	SQUARE
SS	STAINLESS STEEL
SV	SOLENOID VALVE
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TCC	TEMPERATURE CONTROL CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TRANS	TRANSFORMER
TS	TIME SWITCH
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT-AMPERE
VAC	VOLTS-ALTERNATING CURRENT
VDC	VOLTS-DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WH	WATER HEATER
WP	WEATHERPROOF

GENERAL NOTES

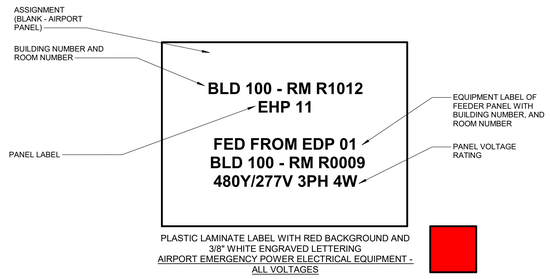
1. SYMBOLS AND GENERAL DESCRIPTIONS IN SYMBOL LEGENDS ARE INDICATED FOR GENERAL REFERENCE ONLY. NOT ALL SYMBOLS ARE USED ON THIS PROJECT. SEE SCHEDULES, SPECIFICATIONS, AND PLANS FOR ADDITIONAL INFORMATION INCLUDING MOUNTING HEIGHTS.
2. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND REPRESENT ELECTRICAL DESIGN INTENT. PROVIDE ALL WORK AND MATERIALS REQUIRED FOR COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEMS THAT FULLY MEET ELECTRICAL DESIGN INTENT. ELECTRICAL WORK TO CONFORM TO LATEST EDITION OF NEC AS ADOPTED BY AUTHORITY HAVING JURISDICTION. SEE SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS AND ITEMS THAT MAY BE REQUIRED ABOVE AND BEYOND MINIMUM REQUIREMENTS THAT ARE OUTLINED IN NATIONAL ELECTRICAL CODE (NEC).
3. THOROUGHLY AND CAREFULLY REVIEW ALL DRAWINGS, SPECIFICATIONS, AND WORK SCOPES IN CONTRACT DOCUMENTS PRIOR TO BIDS AND CONSTRUCTION. WHERE THERE ARE CONFLICTS AMONG DRAWINGS, SPECIFICATIONS, AND WORK SCOPES, MORE STRINGENT OR GREATER QUANTITY REQUIREMENTS APPLY.
4. ALL ELECTRICAL EQUIPMENT TO BE UL LISTED.
5. SEE INDIVIDUAL SPECIFICATION SECTIONS FOR SPECIFIC REQUIREMENTS RELATED TO TESTING, MANUFACTURER STARTUP, TRAINING, ETC. ALL APPLICABLE TESTING AND MANUFACTURER STARTUP REPORTS TO BE SUBMITTED AND APPROVED PRIOR TO DEVELOPMENT OF ELECTRICAL PUNCH LISTS.
6. ALL CONDUCTORS, INCLUDING GROUNDED CONDUCTORS (NEUTRALS), TO BE LABELED AT ALL ENDS AND JOINTS WITH CORRESPONDING PANELBOARD NAME AND CIRCUIT NUMBER, OR OTHERWISE IDENTIFIED TO CORRESPOND WITH ASSOCIATED EQUIPMENT MANUFACTURER'S IDENTIFICATION SYSTEM.
7. AT A MINIMUM, PROVIDE 1#12, 1#12N, 1#12G FOR 20A BRANCH CIRCUITING, UNO. MINIMUM CONDUIT SIZE IS 3/4", UNO. NO MORE THAN NINE CURRENT CARRYING CONDUCTORS ALLOWED IN A RACEWAY, UNO. EQUIPMENT GROUNDING CONDUCTORS TO BE SIZED IN ACCORDANCE WITH NEC AND MAY BE SHARED. ALL GROUNDED CONDUCTORS (NEUTRALS) TO BE TREATED AS CURRENT CARRYING CONDUCTORS.
8. PROVIDE A DEDICATED GROUNDED CONDUCTOR (NEUTRAL) FOR EACH BRANCH CIRCUIT. SHARED NEUTRALS ARE NOT ALLOWED.
9. INSTALL GREEN, INSULATED, COPPER EQUIPMENT GROUNDING CONDUCTORS IN RACEWAYS INCLUDING FLEXIBLE METAL CONDUITS AND NON-METALLIC RACEWAYS. GREEN, INSULATED, COPPER EQUIPMENT GROUNDING CONDUCTORS TO BE INSTALLED WITH ALL FEEDERS AND BRANCH CIRCUITS.
10. PROVIDE FIRESTOPPING FOR ALL CONDUIT AND OTHER ELECTRICAL EQUIPMENT PENETRATIONS THROUGH FLOORS, WALLS, AND CEILINGS TO MAINTAIN FIRE RATINGS.
11. LIMIT VOLTAGE DROP IN CONDUCTORS TO 2% FOR FEEDERS AND 3% FOR BRANCH CIRCUITS ASSUMING FULL LOAD CONDITIONS. VOLTAGE DROP NOT TO EXCEED 5% FROM ELECTRICAL SERVICE TO FURTHEST ELECTRICAL DEVICE.
12. PROVIDE THERMAL SEALS IN ALL CONDUITS THAT RUN FROM CONDITIONED SPACES TO UNCONDITIONED SPACES.
13. ALL JUNCTION BOXES SERVING BRANCH CIRCUIT WIRING TO BE LABELED TO IDENTIFY CIRCUIT(S) ROUTED THROUGH EACH RESPECTIVE JUNCTION BOX BY UTILIZING BRADY LABELS.
14. CONDUCTORS INSTALLED IN WIREWAYS THAT CONTAIN MORE THAN 30 CURRENT CARRYING CONDUCTORS TO BE DERATED IN ACCORDANCE WITH NEC.
15. DO NOT USE LOAD CENTERS, PANELBOARDS, SWITCHBOARDS, MOTOR CONTROL CENTERS, AND OTHER POWER DISTRIBUTION EQUIPMENT AS RACEWAYS.
16. SEE SPECIFICATION SECTION 26 05 34, RACEWAYS FOR ELECTRICAL SYSTEMS, FOR PROJECT SPECIFIC RACEWAY INSTALLATION REQUIREMENTS.
17. SEE SPECIFICATION SECTION 26 05 53, IDENTIFICATION FOR ELECTRICAL SYSTEMS, FOR PROJECT SPECIFIC IDENTIFICATION REQUIREMENTS.
18. NEMA 4X EQUIPMENT, WHERE IDENTIFIED, TO BE 304 STAINLESS STEEL UNLESS NOTED OTHERWISE.
19. EXISTING ELECTRICAL ITEMS INDICATED IN DRAWINGS ARE BASED ON OWNER'S LIMITED RECORD DRAWINGS AND ENGINEER'S LIMITED FIELD OBSERVATIONS. VISIT SITE TO UNDERSTAND COMPLETELY CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE DEMOLITION WORK OF OTHER TRADES AT NO ADDITIONAL COST TO OWNER.
20. DRAWINGS DO NOT INDICATE ALL ELECTRICAL EQUIPMENT AND DEVICES INTENDED TO BE REMOVED OR MODIFIED. DRAWINGS INDICATE MAJOR ELECTRICAL EQUIPMENT, FIXTURES, AND DEVICES THAT ARE REQUIRED TO BE REMOVED OR MODIFIED. REMOVE, OR RELOCATE ELECTRICAL EQUIPMENT, FIXTURES, AND DEVICES AS NECESSARY FOR A COMPLETE AND PROFESSIONAL INSTALLATION. SEE LIGHTING, POWER, SYSTEMS, ARCHITECTURAL, PLUMBING, [PROCESS], AND MECHANICAL PLANS FOR ADDITIONAL REQUIREMENTS.
21. UNLESS NOTED OTHERWISE, DISPOSE OF ALL REMOVED MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. DISPOSAL OF MATERIALS TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS INCLUDING TCLP TESTING.

GENERAL DEMOLITION NOTES

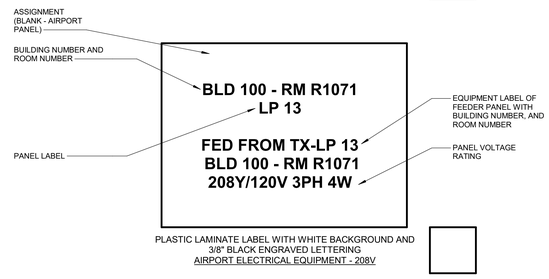
1. EXISTING ELECTRICAL ITEMS INDICATED IN DRAWINGS ARE BASED ON OWNER'S LIMITED RECORD DRAWINGS AND ENGINEER'S LIMITED FIELD OBSERVATIONS. VISIT SITE TO UNDERSTAND COMPLETELY CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE DEMOLITION WORK OF OTHER TRADES AT NO ADDITIONAL COST TO OWNER.
2. DRAWINGS DO NOT INDICATE ALL ELECTRICAL EQUIPMENT AND DEVICES INTENDED TO BE REMOVED OR MODIFIED. DRAWINGS INDICATE MAJOR ELECTRICAL EQUIPMENT, FIXTURES, AND DEVICES THAT ARE REQUIRED TO BE REMOVED OR MODIFIED. REMOVE, OR RELOCATE ELECTRICAL EQUIPMENT, FIXTURES, AND DEVICES AS NECESSARY FOR A COMPLETE AND PROFESSIONAL INSTALLATION. SEE LIGHTING, POWER, SYSTEMS, ARCHITECTURAL, PLUMBING, PROCESS, AND MECHANICAL PLANS FOR ADDITIONAL REQUIREMENTS.
3. ALL ELECTRICAL DEMOLITION WORK MAY NOT NECESSARILY BE INDICATED ON ELECTRICAL DRAWINGS. REVIEW DEMOLITION DRAWINGS OF OTHER TRADES (ARCHITECTURAL, PROCESS, AND MECHANICAL) FOR EQUIPMENT TO BE DEMOLISHED.
4. FIELD VERIFY EXISTING CONDITIONS TO DETERMINE EXTENT OF WORK AND INCLUDE ALL COSTS ASSOCIATED WITH DEMOLITION IN BASE BID.
5. COORDINATE DEMOLITION WORK WITH OTHER TRADES (ARCHITECTURAL, PROCESS, AND MECHANICAL). DISCONNECT AND REMOVE ALL CONDUIT, CONDUCTORS, AND DEVICES ASSOCIATED WITH EQUIPMENT BEING DEMOLISHED. EXPOSED CONDUIT, JUNCTION BOXES, AND DEVICES TO BE DISCONNECTED AND REMOVED. CONCEALED CONDUIT, JUNCTION BOXES, AND DEVICES MAY BE ABANDONED IN PLACE. ALL CONDUCTORS TO BE COMPLETELY REMOVED BACK TO SOURCE OR LAST ACTIVE DEVICE. PROVIDE BLANK COVERS FOR ANY BOXES ABANDONED IN PLACE.
6. COORDINATE AND SEQUENCE DEMOLITION WORK SUCH THAT PLANT REMAINS IN CONTINUOUS OPERATION THROUGHOUT CONSTRUCTION. PLAN ALL INTERRUPTIONS TO ELECTRICAL SERVICE WITH OWNER A MINIMUM OF 72 HOURS IN ADVANCE.
7. PROVIDE TEMPORARY POWER, LIGHTING, AND CONTROLS AS REQUIRED TO KEEP EXISTING EQUIPMENT TO REMAIN IN SERVICE.
8. FOR ELECTRICAL EQUIPMENT TO BE REUSED, FIELD VERIFY EQUIPMENT CONFIGURATION AND ADVISE ENGINEER IF CIRCUITING REQUIREMENTS ARE DIFFERENT FROM THAT INDICATED ON PLANS. RECIRCUIT EQUIPMENT AS REQUIRED TO FACILITATE REUSE.
9. ELECTRICAL EQUIPMENT NOT SPECIFICALLY IDENTIFIED TO BE DISCONNECTED AND REMOVED IS TO MAINTAINED.
10. CROSSHATCHING IDENTIFIES DEVICES/EQUIPMENT TO BE DISCONNECTED AND REMOVED. DEMOLISH ASSOCIATED CONDUIT AND CONDUCTORS BACK TO SOURCE OR LAST ACTIVE DEVICE, UNLESS NOTED OTHERWISE.
11. SEE SUGGESTED SEQUENCE OF CONSTRUCTION ON DRAWINGS FOR SEQUENCING OF DEMOLITION AND INSTALLATION. COORDINATE SEQUENCING WITH OTHER TRADES. SEQUENCING IS ONLY A SUGGESTION, ADJUST SEQUENCE AS REQUIRED FOR FIELD CONDITIONS WHILE MAINTAINING REQUIRED OWNER OPERATIONS.



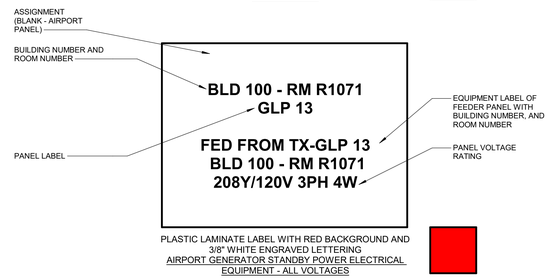
PLASTIC LAMINATE LABEL WITH BLUE BACKGROUND AND 3/8" WHITE ENGRAVED LETTERING
TENANT ELECTRICAL EQUIPMENT - ALL VOLTAGES



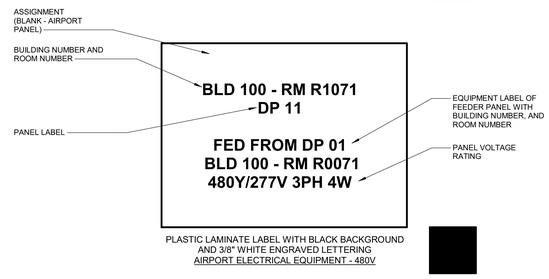
PLASTIC LAMINATE LABEL WITH RED BACKGROUND AND 3/8" WHITE ENGRAVED LETTERING
AIRPORT EMERGENCY POWER ELECTRICAL EQUIPMENT - ALL VOLTAGES



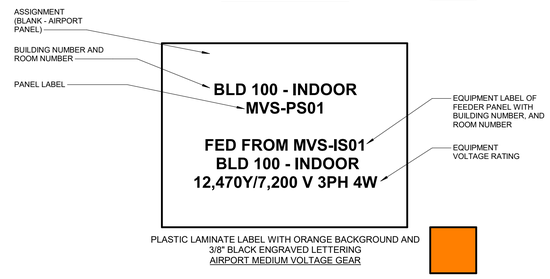
PLASTIC LAMINATE LABEL WITH WHITE BACKGROUND AND 3/8" BLACK ENGRAVED LETTERING
AIRPORT ELECTRICAL EQUIPMENT - 208V



PLASTIC LAMINATE LABEL WITH RED BACKGROUND AND 3/8" WHITE ENGRAVED LETTERING
AIRPORT GENERATOR STANDBY POWER ELECTRICAL EQUIPMENT - ALL VOLTAGES



PLASTIC LAMINATE LABEL WITH BLACK BACKGROUND AND 3/8" WHITE ENGRAVED LETTERING
AIRPORT ELECTRICAL EQUIPMENT - 480V



PLASTIC LAMINATE LABEL WITH ORANGE BACKGROUND AND 3/8" BLACK ENGRAVED LETTERING
AIRPORT MEDIUM VOLTAGE GEAR

GFIAA STANDARD - ELECTRICAL DISTRIBUTION EQUIPMENT / TRANSFORMER - TYPICAL LABEL EXAMPLES

SCALE: 6" = 1'-0"

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Gerald R. Ford International Airport
Grand Rapids, Michigan

Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	LBGARRISON
Designer	LBGARRISON/STKAM
Reviewer	JMILOCH
Manager	AMEEKER

Hard copy is intended to be 30"x42" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

PROJECT NO.
241208

SHEET NO.
E001

PLOT INFO: 1/20/2025 2:09:22 PM
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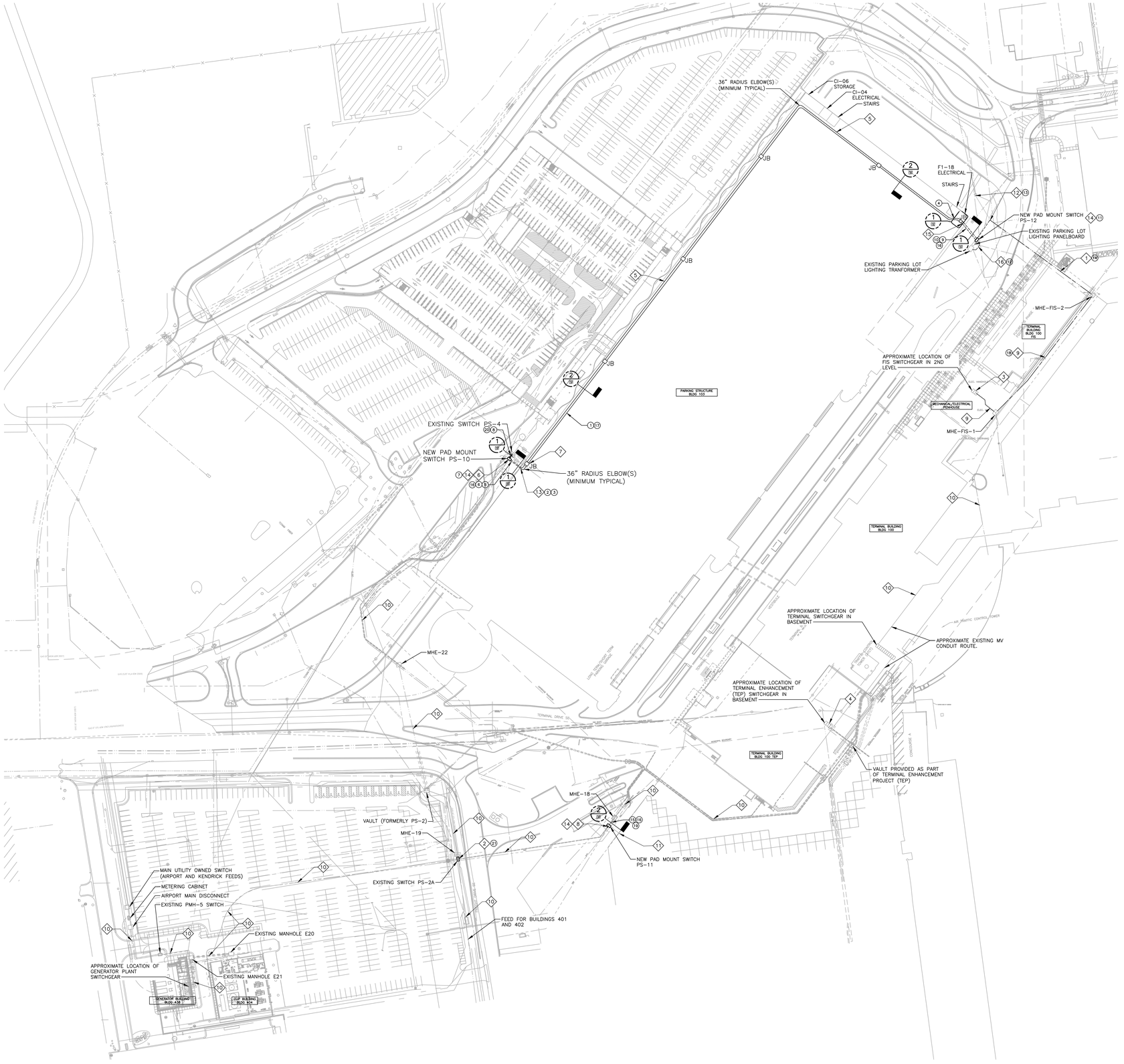

OVERALL
ELECTRICAL SITE PLAN - MEDIUM VOLTAGE LOOP

SCALE: 1" = 80'

NORTH 0 25 50 100

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3 full working days before you dig:
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on the web at: www.missdig.org

NOTES

1. REFER TO GENERAL NOTES, SHEET E001 FOR ADDITIONAL REQUIREMENTS.
2. WORK THAT IS SHADED IS SHOWN FOR REFERENCE ONLY AND IS NOT INCLUDED IN THIS BID PACKAGE.
3. CABLE AND/OR CONDUCTORS RUNNING THROUGH MANHOLES SHALL MAKE A LOOP AROUND THE ENTIRE INSIDE SURFACE OF THE MANHOLE. PROVIDE RACKING AND WALL SUPPORTS ON ALL 4 SIDES OF VAULT FOR A COMPLETE SUPPORT SYSTEM.
4. PROVIDE CABLE MARKING IDENTIFICATION FOR ALL CABLES IN VAULTS. REFER TO IDENTIFICATION SPECIFICATION 26 05 53 FOR ADDITIONAL INFORMATION.
5. SWITCH AND FEEDER NOMENCLATURE ARE PROVIDED FOR REFERENCE ONLY. THE AIRPORT WILL PROVIDE FINAL NOMENCLATURE AT A LATER DATE.
6. POWER OUTAGES TO BE COORDINATED WITH THE AIRPORT AND UTILITY AS REQUIRED.
7. REFER TO CONCRETE ENCASED DUCT BANK DETAIL ON SHEET E501 FOR ALL NEW FEEDERS.
8. COORDINATE AND SCHEDULE ALL WORK FOR THIS PROJECT WITH THE AIRPORT, CM, AND EC ASSOCIATED WITH THE TERMINAL EXPANSION PROJECT.
9. CONTACT MISS DIG 811 AT LEAST 3 BUSINESS DAYS PRIOR TO ANY SITE EXCAVATION TO IDENTIFY AND MARK UTILITIES. ENSURE ALL UTILITY LOCATIONS ARE VERIFIED BEFORE PROCEEDING WITH WORK.

KEY NOTES

1. DIRECT BORE (1) 4" CONDUIT FROM EXISTING MANHOLE E4 TO EXISTING MANHOLE. KEEP NEW CONDUIT AS TIGHT AS POSSIBLE TO EXISTING DUCT BANK TO ALLOW FOR CONSTRUCTION OF FUTURE FIS PHASE II. REFER TO CIVIL SHEETS FOR ROUTE DETAILS.
2. REPLACE EXISTING PS-2A PMH-12 SWITCH WITH NEW PMH-9 SWITCH. TURNOVER PMH-12 SWITCH TO OWNER.
3. ISOLATION AND LOOP SWITCHES INSTALLED IN 2ND FLOOR FIS MECHANICAL ELECTRICAL ROOM AS PART OF THE TERMINAL EXPANSION PROJECT.
4. ISOLATION AND LOOP SWITCHES INSTALLED IN NEW BHS MV ELECTRICAL ROOM AS PART OF THE TERMINAL EXPANSION PROJECT.
5. PROVIDE (2) 4" RMC (ONE WITH FEEDER AND ONE SPARE) OVERHEAD IN PARKING GARAGE TO CONNECT TO NEW PMH-9 SWITCH NEAR EXISTING PARKING LOT LIGHTING TRANSFORMER. INCLUDE EXPANSION COUPLINGS AT BUILDING EXPANSION JOINTS AND AS REQUIRED TO COMPENSATE FOR THERMAL EXPANSION, DEFLECTION, AND CONTRACTION.
6. INTERCEPT EXISTING FEEDER TO PS-4 AND REDIRECT TO THE NEW PS-10 SWITCH.
7. PROVIDE NEC CODE SIZED JUNCTION BOX. BOX SHOULD BE 14 GAUGE STAINLESS STEEL WITH COVER AND WEEP HOLES. THIS IS TYPICAL FOR ALL JUNCTION BOXES IN THE CONDUIT RUN.
8. CONNECT TO THE EXISTING FEED IN MHE-18 FROM THE TERMINAL EXPANSION PROJECT. EXTEND INTO THE NEW PS-11 SWITCH.
9. INSTALL NEW 350kcmil MV FEEDER IN SPARE CONDUIT FROM FIS SWITCHGEAR, ROUTING THROUGH EXISTING MANHOLES TO NEW PS-12 SWITCH.
10. EXISTING 350kcmil DUCT BANK ROUTE IS SHOWN FOR GENERAL REFERENCE ONLY AND IS NOT INCLUDED IN THE SCOPE OF WORK.
11. PROVIDE (2) 4" CONDUITS FROM PS-11 TO MHE-18, WITH PULL CORDS, FOR FUTURE INFRASTRUCTURE ASSOCIATED WITH CONCOURSE C.
12. REDIRECT THE EXISTING 4" SPARE CONDUIT, CURRENTLY STUBBED SHORT OF THE IN-GROUND BOX, TO CONNECT TO THE NEW PS-12 SWITCH AS INDICATED.
13. REFER TO WALL PENETRATION DETAIL #3 ON SHEET E501.
14. PROVIDE MV SWITCH VAULT UNDER SWITCH SIMILAR OR EQUAL TO ELECTRI-GLASS INC., SG-6270. REFER TO DETAIL #4 E501 AND CIVIL SHEETS FOR ADDITIONAL DETAILS.
15. TRANSITION CONDUITS FROM OVERHEAD TO UNDERGROUND. REFER TO DETAIL #2 ON E502 FOR ADDITIONAL INFORMATION.
16. PROVIDE (1) 4" CONDUIT FROM EXISTING PARKING LOT TRANSFORMER TO NEW SWITCH. REFER TO E401 FOR ADDITIONAL INFORMATION.

SEQUENCE OF OPERATIONS

1. INSTALL RIGID OVERHEAD CONDUIT IN THE GARAGE. FOLLOW THE INTENDED PATH ABOVE THE SIDEWALK ON THE NORTH SIDE, ALONG THE CAR RENTAL RETURN LANE, AND CLOSE TO COLUMN LINE 27.8 ON THE EAST SIDE.
2. CORE DRILL THE WALL ON THE NORTH SIDE. SCAN FOR REBAR AND SUBMIT A REPORT FOR ENGINEER APPROVAL PRIOR TO DRILLING.
3. EXTEND CONDUIT THROUGH THE WALL AND CAP IT UNTIL EXCAVATION BEGINS.
4. ROUTE CONDUITS INTO THE FI-18 ELECTRICAL ROOM AS INDICATED ON ES02. CUT THE SLAB, EXCAVATE THE PATH, AND EXTEND CONDUITS BEYOND THE GARAGE FOOTER.
5. BEGIN EXCAVATION ON THE NORTH SIDE OF THE GARAGE. LOCATE EXISTING UTILITIES AND CONFIRM THE SCHEDULE WITH THE AIRPORT.
6. INSTALL CONDUITS. ENSURE CONDUITS SLOPE AWAY FROM THE BUILDING STRUCTURE.
7. EXCAVATE FOR PS-10 UNDER DRAINAGE AND SWITCH VAULT. REFER TO CIVIL AND ELECTRICAL DETAILS FOR FURTHER GUIDANCE.
8. CAREFULLY EXCAVATE AND INSTALL CONDUITS INTO THE EXISTING SWITCH PS-4. COMPLETE ALL EXCAVATION AND BACKFILL IN ACCORDANCE WITH THE CIVIL DRAWINGS.
9. BEGIN EXCAVATION ON THE SOUTH SIDE OF THE GARAGE. LOCATE EXISTING UTILITIES AND CONFIRM THE SCHEDULE WITH THE AIRPORT.
10. INSTALL CONDUITS. ENSURE CONDUITS SLOPE AWAY FROM THE BUILDING STRUCTURE.
11. EXCAVATE FOR PS-12 UNDER DRAINAGE AND SWITCH VAULT. REFER TO CIVIL AND ELECTRICAL DETAILS FOR FURTHER GUIDANCE.
12. CAREFULLY EXCAVATE AND INSTALL CONDUITS INTO THE EXISTING PARKING LOT LIGHTING TRANSFORMER.
13. EXCAVATE AND EXPOSE THE EXISTING 4" SPARE CONDUIT STUBBED SHORT OF THE IN-GROUND BOX. EXTEND THE CONDUIT TO THE NEW PS-12 SWITCH.
14. DIRECT BORE NEW 4" CONDUIT FROM PS-12 TO EXISTING MHE-FIS-2. THIS CONDUIT WILL SERVE AS A SPARE. COMPLETE ALL EXCAVATION AND BACKFILL IN ACCORDANCE WITH THE CIVIL DRAWINGS.
15. EXCAVATE BETWEEN EXISTING MHE-18 AND THE NEW PS-11 SWITCH. INSTALL CONDUITS. ENSURE CONDUITS SLOPE TOWARDS MHE-18.
16. ONCE NEW CONDUIT PATHWAYS HAVE BEEN ESTABLISHED, WORK TO INSTALL FEEDER CABLES CAN BEGIN. CABLE INSTALLATION CAN BEGIN BEFORE NEW SWITCHES ARRIVE IF PROPER PROTECTION OF THE CABLES AND SWITCH VAULTS IS PROVIDED TO KEEP THE CABLES DRY AND SECURED FROM THE PUBLIC. COVER SWITCH VAULTS WITH ¼" PLYWOOD SECURED UNTIL SWITCHES CAN BE INSTALLED.
17. PULL NEW FEEDER CABLES FROM PS-10 TO PS-12. SEAL ALL CONDUCTORS WITH HEAT SHRINK CAPS TO PREVENT MOISTURE INTRUSION INTO CABLE INSULATION (TYPICAL FOR ALL FEEDER CABLE PULLS).
18. PULL NEW FEEDER CABLES FROM PS-12 TO FIS SWITCHGEAR THROUGH MHE-FIS-2 AND MHE-FIS-1.
19. PULL NEW FEEDER CABLES FROM MHE-18 TO PS-11.
20. PULL NEW FEEDER CABLES FROM THE EXISTING PS-4 SWITCH TO PS-10.
21. SCHEDULE A SHUTDOWN WITH THE AIRPORT FOR REPLACING THE EXISTING PS-2A SWITCH. REPLACE THE SWITCH AND TURN OVER THE OLD SWITCH TO THE OWNER.
22. INSTALL THE REMAINING SWITCHES, PS-10, PS-11, AND PS-12 (NOTE NOT SHOWN ON SHEET).
23. FINALIZE CABLE TERMINATIONS IN NEW SWITCHES (NOTE NOT SHOWN ON SHEET).
24. SIZE FUSES AND ADJUST BREAKER SETTINGS. FOLLOW E401, SELECTIVE COORDINATION, AND MANUFACTURER RECOMMENDATIONS. SUBMIT A COORDINATION STUDY FOR REVIEW (NOTE NOT SHOWN ON SHEET).
25. SCHEDULE SHUTDOWNS WITH THE AIRPORT FOR EACH INDIVIDUAL SWITCH (NOTE NOT SHOWN ON SHEET).
26. ENERGIZE THE NEW SWITCHES AS APPLICABLE. COORDINATE WITH THE CM OF THE TLP BHS PROJECT FOR PS-11 AND PS-12 SWITCH ACTIVATION (NOTE NOT SHOWN ON SHEET).
27. PROVIDE IDENTIFICATION ON SWITCHES. FOLLOW SPECIFICATIONS AND OWNER RECOMMENDATIONS (NOTE NOT SHOWN ON SHEET).
28. CONDUCT TRAINING FOR AIRPORT PERSONNEL ON THE OPERATION OF THE NEW SWITCHES (NOTE NOT SHOWN ON SHEET).

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Gerald R. Ford International Airport
Grand Rapids, Michigan

Medium Voltage Loop

REVISIONS

1/20/2025	BIDS AND PERMIT

Drawn By	LBGARRISON
Designer	LBGARRISON/STKAM
Reviewer	JMILOCH
Manager	AMEEKER

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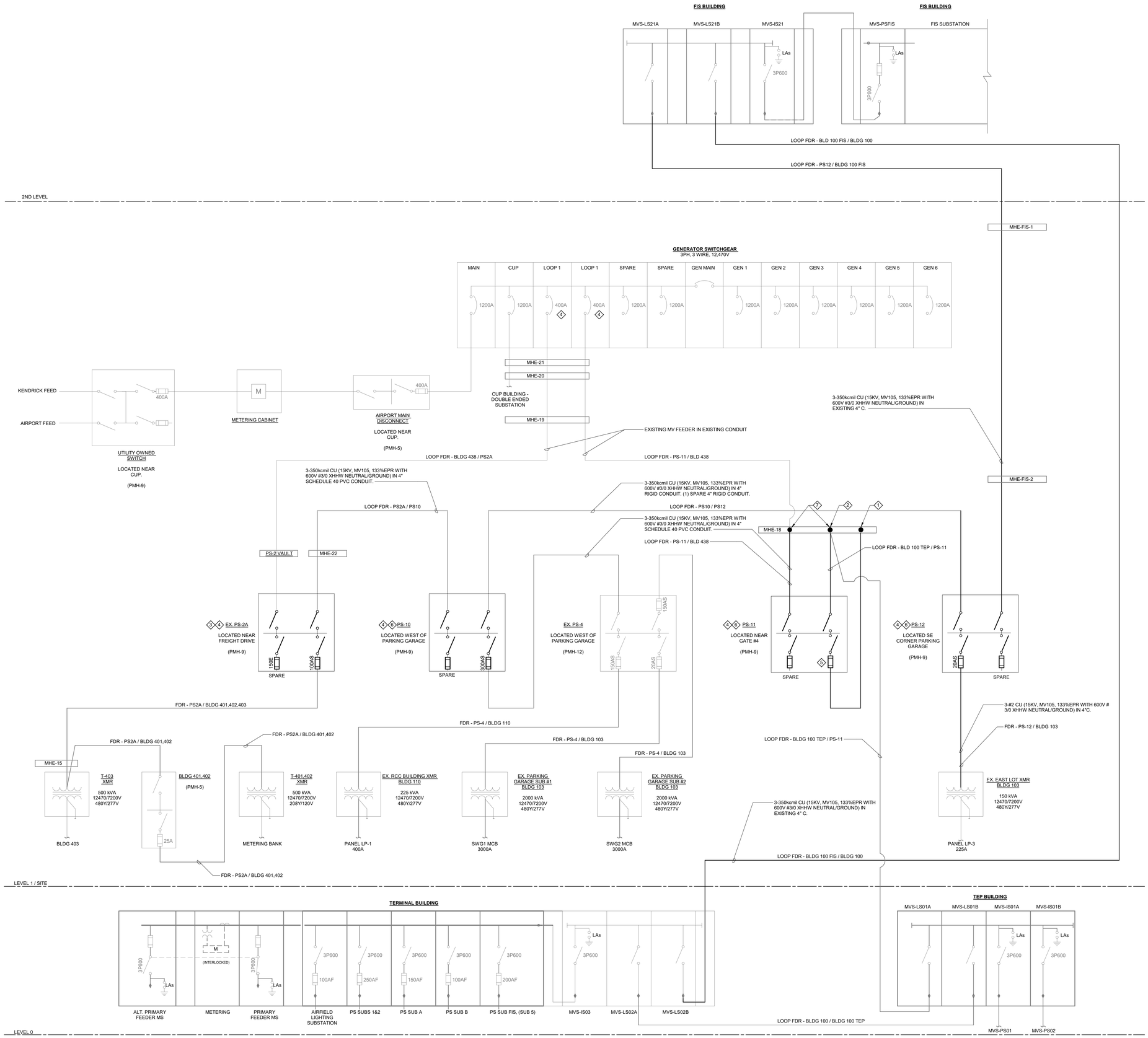
PROJECT NO.
241208

SHEET NO.
E100

PLOT INFO: Z:\2024\241208\CAD\CIDE\E100241208.DWG LAYOUT: E100 DATE: 1/20/2025 TIME: 1:53:13 PM USER: LBGARRISON



ONE LINE DIAGRAM - MEDIUM VOLTAGE LOOP

12.74Y/7.2 kV-3PH-3W

NOTES

1. REFER TO GENERAL NOTES, SHEET E001 AND CIVIL SHEETS FOR ADDITIONAL REQUIREMENTS.
2. CABLE AND/OR CONDUCTORS RUNNING THROUGH MANHOLES NEED TO MAKE A LOOP AROUND THE ENTIRE INSIDE SURFACE OF THE MANHOLE. PROVIDE RACKING AND WALL SUPPORTS ON ALL 4 SIDES OF VAULT FOR A COMPLETE SUPPORT SYSTEM.
3. PROVIDE CABLE MARKING IDENTIFICATION FOR ALL CABLES IN VAULTS AND POINTS OF TERMINATION. REFER TO IDENTIFICATION SPECIFICATION 26 05 53 FOR ADDITIONAL INFORMATION.
4. SWITCH AND FEEDER NOMENCLATURE ARE PROVIDED FOR REFERENCE ONLY. THE AIRPORT WILL PROVIDE FINAL NOMENCLATURE AT A LATER DATE.
5. POWER OUTAGES TO BE COORDINATED WITH THE AIRPORT AND UTLITY AS REQUIRED.
6. PROVIDE FUSES IN ACCORDANCE WITH NEC AND MANUFACTURERS EQUIPMENT NAMEPLATE DATA.
7. REFER TO CONCRETE ENCASED DUCT BANK DETAIL ON SHEET E501 FOR ALL NEW FEEDERS.
8. EXISTING LOOP FEEDERS ARE 350 kcmil UNLESS OTHERWISE NOTED.
9. VERIFY PHASE ROTATION AT THE EXISTING CIRCUIT BEFORE CONNECTING NEW EQUIPMENT. ENSURE ALL ELECTRICAL EQUIPMENT IN THE LOOP CIRCUIT MAINTAINS THE SAME PHASE SEQUENCE.

KEY NOTES

1. PROVIDE (2) 4" CONDUITS FROM PS-11 TO MHE-18, WITH PULL CORDS, FOR FUTURE INFRASTRUCTURE ASSOCIATED WITH CONCOURSE C.
2. CONNECT TO THE EXISTING FEED IN MHE-18 FROM THE TERMINAL EXPANSION PROJECT. EXTEND INTO THE NEW PS-11 SWITCH.
3. REPLACE EXISTING PS-2A (PMH-12) SWITCH WITH NEW PMH-9 SWITCH. TURNOVER PMH-12 SWITCH TO OWNER.
4. COORDINATE FUSE SIZES AND BREAKER SETTINGS IN ALL MEDIUM VOLTAGE SWITCHGEAR TO ENSURE PROPER PROTECTION AND SELECTIVE COORDINATION WITH UPSTREAM AND DOWNSTREAM DEVICES. FUSE SIZING MUST COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS, SYSTEM DESIGN PARAMETERS, AND APPLICABLE NEC STANDARDS. VERIFY THAT THE SELECTED FUSE RATINGS ALIGN WITH SYSTEM FAULT CURRENT LEVELS, EQUIPMENT RATINGS, AND LOAD REQUIREMENTS. SUBMIT FUSE COORDINATION STUDY RESULTS FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT.
5. FUSING FOR CONCOURSE C TO BE PROVIDED AT A LATER DATE.
6. INSTALL A GROUND LOOP AROUND THE PERIMETER OF THE SWITCH. REFER TO SPECIFICATIONS AND DETAIL E501 FOR ADDITIONAL INFORMATION.
7. SPLICE NEW CABLING INTO EXISTING CABLING PROVIDED AS PART OF THE ENABLING PROJECT. REFER TO SPECIFICATIONS FOR ADDITIONAL SPLICE REQUIREMENTS AND CABLE IDENTIFICATION. ENSURE SPLICES ARE ELEVATED AS HIGH AS POSSIBLE WITHIN THE MANHOLE AND ARE ADEQUATELY SUPPORTED ON EACH SIDE TO MINIMIZE THE RISK OF WATER INTRUSION.

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Grand Rapids, Michigan

Medium Voltage Loop

REVISIONS

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Drawn By	LBGARRISON
Designer	LBGARRISON
Reviewer	JMILOCH
Manager	AMEEKER

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PROJECT NO.
241208

SHEET NO.
E401

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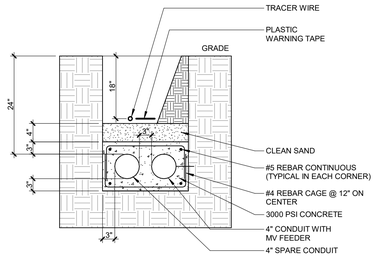

1 CONCRETE ENCASED DUCT BANK - 2 CONDUITS
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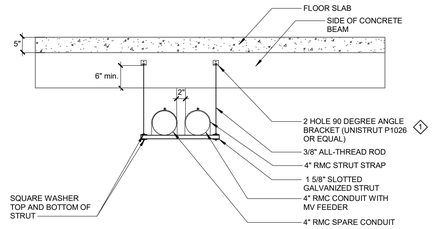

2 OVERHEAD CONDUIT RACK - 2 CONDUITS
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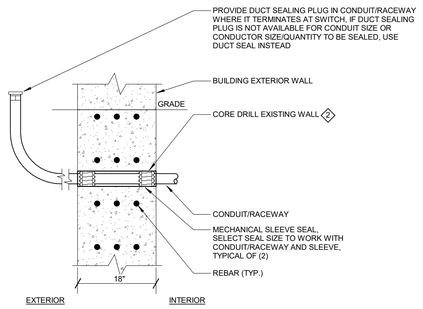
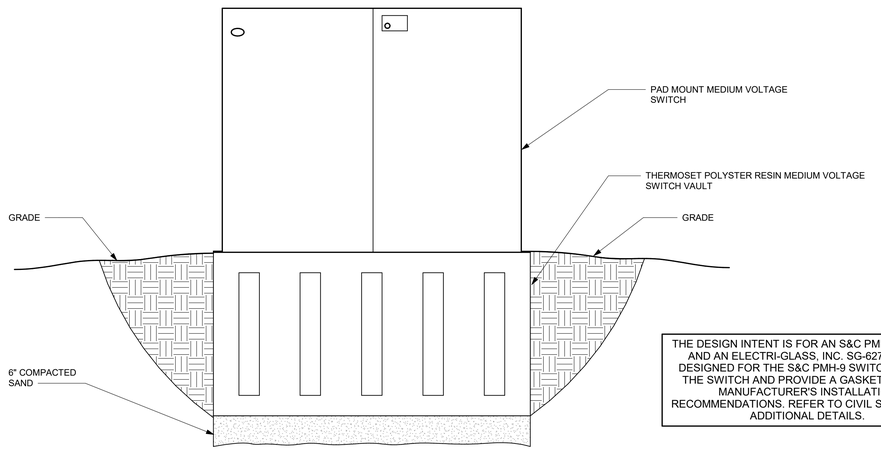
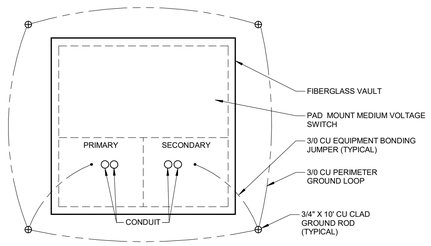


3 BELOW GRADE CONDUIT WALL PENETRATION
SCALE: NOT TO SCALE



THE DESIGN INTENT IS FOR AN S&C PMH-9 SWITCH AND AN ELECTRI-GLASS, INC. SG-6270 VAULT DESIGNED FOR THE S&C PMH-9 SWITCH. MOUNT THE SWITCH AND PROVIDE A GASKET PER THE MANUFACTURER'S INSTALLATION RECOMMENDATIONS. REFER TO CIVIL SHEETS FOR ADDITIONAL DETAILS.

4 PAD MOUNT MEDIUM VOLTAGE SWITCH VAULT DETAIL
SCALE: NOT TO SCALE



PLAN VIEW

5 PAD MOUNT SWITCH GROUNDING DETAIL
SCALE: NOT TO SCALE

NOTES

1. REFER TO GENERAL NOTES, SHEET E001 AND CIVIL SHEETS FOR ADDITIONAL REQUIREMENTS.
2. THE MAXIMUM ANCHOR DEPTH FOR DROP-IN STYLE EXPANSION ANCHORS IN THE CONCRETE STRUCTURE IS 1.5".

KEY NOTES

1 MAXIMUM ANCHOR DEPTH INTO CONCRETE STRUCTURE IS 1.5".

2 SIZE CORE DRILL TO WORK WITH MECHANICAL SLEEVE SEAL. SCAN AND LOCATE REBAR PRIOR TO DRILLING. LOCATE REINFORCEMENT AND PLACE CORES BETWEEN BARS. ENGINEER APPROVAL IS REQUIRED PRIOR TO CUTTING ANY BARS.

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PROJECT NO.
241208

SHEET NO.
E501

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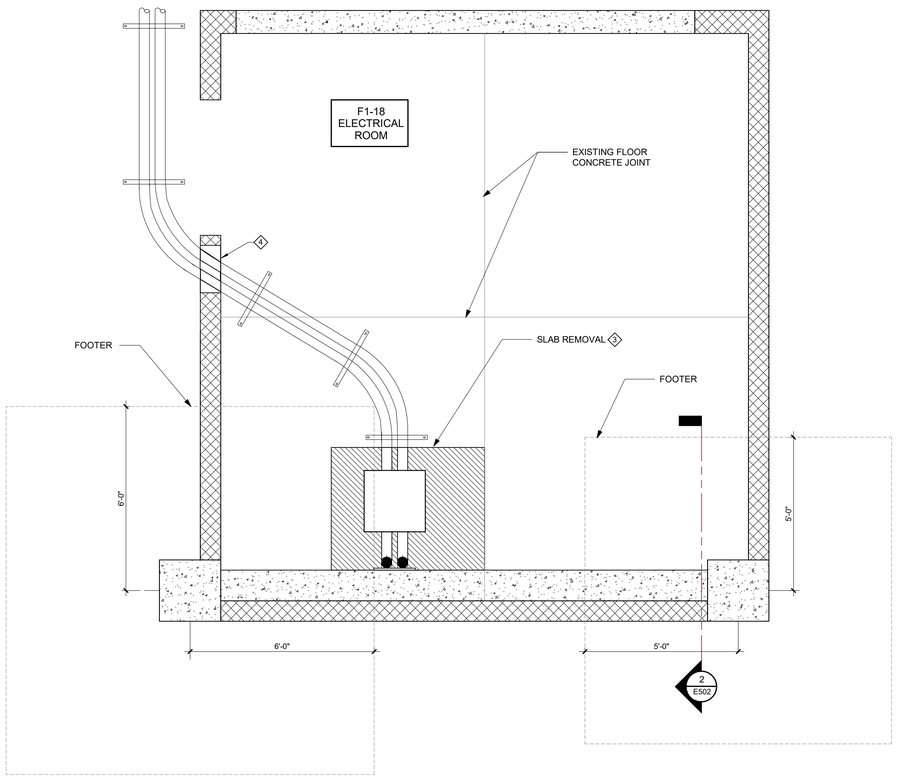
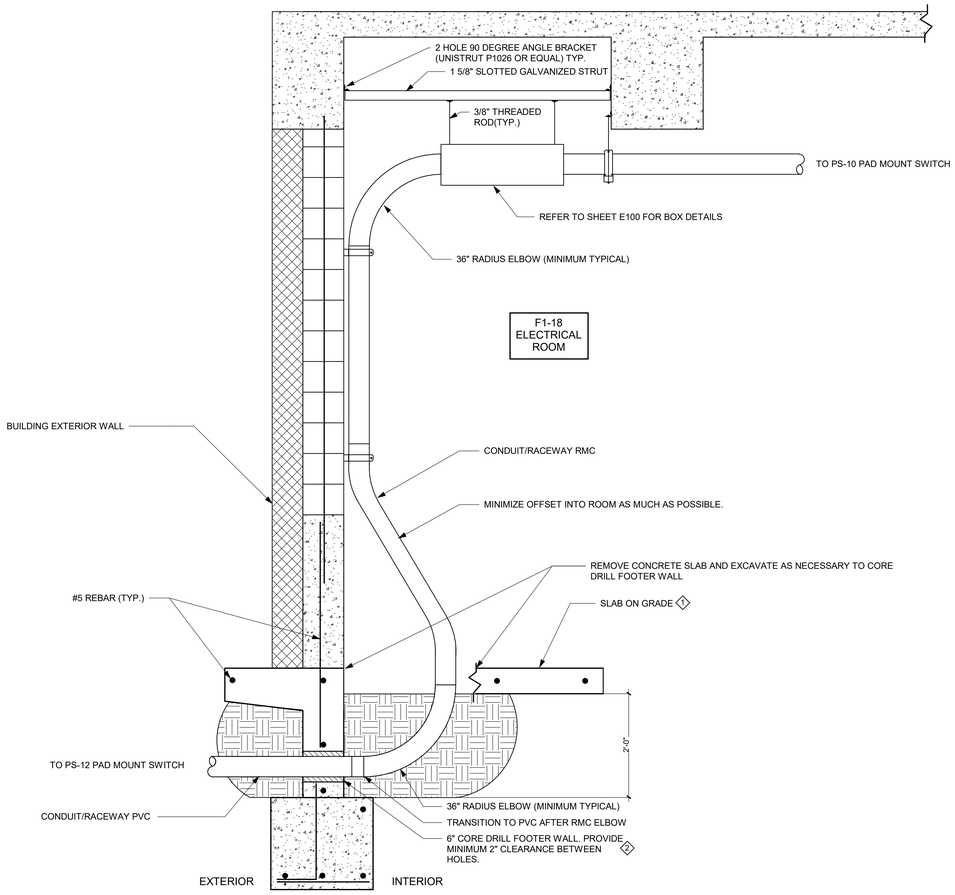


1 F1-18 ELECTRICAL ROOM - ENLARGED

SCALE: NOT TO SCALE



2 FOOTER PENETRATION DETAIL

SCALE: NOT TO SCALE

NOTES

1. REFER TO GENERAL NOTES, SHEET E001 AND CIVIL SHEETS FOR ADDITIONAL REQUIREMENTS.
2. THE MAXIMUM ANCHOR DEPTH FOR DROP-IN STYLE EXPANSION ANCHORS IN THE CONCRETE STRUCTURE IS 1.5".

KEY NOTES

1. REPLACE SLAB WITH #3 REBAR AT 18" O.C. EACH WAY IN NEW SLAB (MINIMUM 2 EACH DIRECTION). EPOXY ANCHOR BARS INTO EXISTING SLAB AT MID DEPTH. DO NOT ANCHOR SLAB TO WALL. CONCRETE TO BE A MINIMUM 4500 PSI WITH 6.5 AIR ENTRAINMENT.
2. LOCATE REINFORCEMENT AND PLACE CORES BETWEEN BARS. ENGINEER APPROVAL IS REQUIRED PRIOR TO CUTTING ANY BARS.
3. SIZE SLAB REMOVAL TO AVOID UNDERMINING SLAB DURING EXCAVATION. SAWCUT REMOVAL BUT DO NOT CUT CORNERS.
4. REMOVE AND REPLACE CMU BLOCKS AS NECESSARY TO ALLOW CONDUIT ENTRY INTO THE F1-18 ELECTRICAL ROOM.

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PROJECT NO.

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SHEET NO.

E502

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