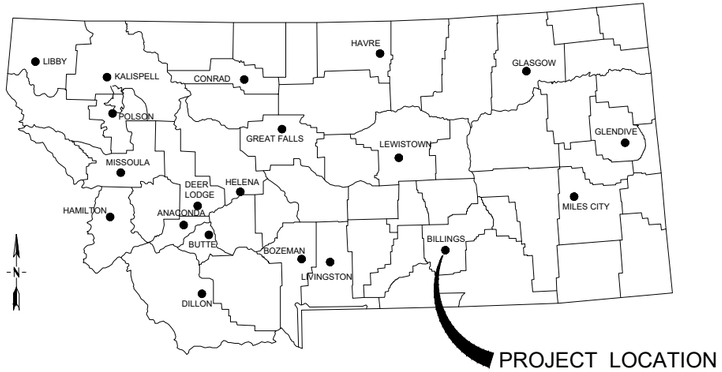
100% CD DRAWINGS FOR

CITY OF BILLINGS
AVIATION AND TRANSIT DEPARTMENT
BILLINGS LOGAN INTERNATIONAL AIRPORT

WEST SHUTTLE PARKING LOT CONSTRUCTION
APRIL 2026



LOCATION MAP
NO SCALE

PREPARED BY:
Morrison Maierle
engineers ▪ surveyors ▪ planners ▪ scientists

315 N. 25th Street, Suite 102, Billings, MT 59101
Phone: 406.656.6000 | Fax: 406.237.1201

VICINITY MAP
NO SCALE

811 Know what's below. Call before you dig.

APPROVED BY: _____
MONTANA DYLAN C. MAHONEY 108789 PE LICENSED PROFESSIONAL ENGINEER
DYLAN C. MAHONEY, P.E.
Project Manager

100% CD
APRIL 2026
SET NO. _____
MMI PROJECT NO. 2447.150.25

P:\2447-BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\COVER SHEET.DWG PLOTTED BY:KENT KUEHN ON Apr/03/2026

EXISTING LEGEND

- EXISTING BOLLARD
- EXISTING CLEANOUT
- EXISTING CURB STOP
- EXISTING CABLE TV PEDESTAL
- EXISTING RETROREFLECTIVE MARKER
- EXISTING ELECTRICAL JUNCTION BOX
- EXISTING ELECTRICAL PEDESTAL
- EXISTING ELECTRICAL METER
- EXISTING FIRE HYDRANT
- EXISTING NATURAL GAS METER
- EXISTING NATURAL GAS VALVE
- EXISTING GUY WIRE
- EXISTING HYDRANT VALVE
- EXISTING IRRIGATION CONTROL VALVE
- EXISTING LIGHT POLE
- EXISTING ELECTRICAL MANHOLE
- EXISTING FIBER OPTIC MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM DRAIN MANHOLE
- EXISTING TELEPHONE MANHOLE
- EXISTING WATER MANHOLE
- EXISTING MONITORING WELL
- EXISTING POWER POLE
- EXISTING BASE MOUNTED RUNWAY/TAXIWAY LIGHT
- EXISTING FLUSH MOUNTED RUNWAY LIGHT
- EXISTING STORM DRAIN INLET
- EXISTING SIGN POST
- EXISTING SPRINKLER HEAD
- EXISTING SPRINKLER VALVE
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- EXISTING TELEPHONE POLE
- EXISTING TRANSFORMER
- EXISTING TELEPHONE PEDESTAL
- EXISTING TAXIWAY LIGHT
- EXISTING WATER METER
- EXISTING WATER VALVE
- BORE HOLE

- EXISTING CULVERT
- EXISTING FLOWLINE
- EXISTING BARBED WIRE FENCE
- EXISTING CHAIN LINE FENCE
- EXISTING WOODEN FENCE
- EXISTING IRRIGATION LINE
- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER
- EXISTING BURIED FIBER OPTIC
- EXISTING NATURAL GAS LINE
- EXISTING BURIED POWER
- EXISTING BURIED TELEPHONE
- EXISTING BURIED TELEVISION
- EXISTING OVERHEAD POWER
- EXISTING OVERHEAD TELEPHONE
- EXISTING BURIED PETROLEUM LINE
- EXISTING WATER MAIN
- EXISTING CONDUIT WITH EXISTING CABLE(S)
  CROSS HATCH DENOTES NUMBER OF CABLES IN CONDUIT
- EXISTING CURB AND GUTTER
- EXISTING ASPHALT
- EXISTING GRAVEL
- EXISTING BUILDING

PROPOSED LEGEND

- ACCESS ROAD PAVEMENT SECTION
- PARKING LOT PAVEMENT SECTION
- MILLINGS ROAD PAVEMENT SECTION
- ADDITIVE ALTERNATE NO. 1 FILL AREA
  SEE DRAWING C-7
- NEW RCP CULVERT WITH F.E.T.S.
- NEW DITCH FLOWLINE
- NEW POST AND CHAIN FENCE - SEE DETAILS 4/D-1 6/D-1
- 6" BOLLARD - SEE DETAIL 5/D-1

INDEX OF SHEETS

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APRIL 2026

VERIFY SCALE AND COLOR!
THIS SHEET MAY BE REDUCED AND IS INTENDED TO BE IN COLOR. THE BAR BELOW WILL MEASURE ONE INCH AT ORIGINAL DESIGN SCALE AND RED, GREEN, AND BLUE WILL BE VISIBLE IF REPRODUCED CORRECTLY.
MODIFY SCALE ACCORDINGLY!

REVISIONS

NO.	DESCRIPTION	BY	DATE

PLOTTED BY:KENT KUEHN ON Apr/03/2026

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108769 PE
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: KDK
DSGN. BY: DCM
APPR. BY: DCM
DATE: 04/2026
Q.C. REVIEW
BY: HEM
DATE: 04/2026

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

GENERAL LEGEND AND INDEX OF SHEETS

PROJECT NUMBER 2447.150.25
SHEET NUMBER 2
DRAWING NUMBER G-1

P:\2447.BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\LEGEND AND INDEX OF SHEETS.DWG

GENERAL NOTES

1. LOCATION OF EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND WERE TAKEN FROM THE BEST AVAILABLE RECORDS. PRIOR TO EXCAVATION THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL PROTECT ALL UTILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL SUPPORT OR TUNNEL UNDER EXISTING UTILITIES IN A MANNER THAT THE EXISTING UTILITIES ARE NOT DAMAGED OR DISTURBED. UNLESS OTHERWISE NOTED, ANY DISTURBANCE OR REPLACEMENT OF EXISTING UTILITIES SHALL BE INCIDENTAL TO THE PROJECT. IF REQUIRED, CONTRACTOR SHALL COORDINATE RELOCATION OF UTILITY WITH THE UTILITY OWNER. ALL UTILITIES ARE TO BE ADJUSTED AND/OR RELOCATED BY THE RESPECTIVE UTILITY COMPANIES UNLESS OTHERWISE INDICATED IN THESE DRAWINGS.
2. PRIOR TO BEGINNING OF CONSTRUCTION AND AFTER INSTALLATION, CONTRACTOR SHALL PLACE TEMPORARY EROSION CONTROL AT ALL PIPE AND MANHOLE INLETS THAT WILL BE AFFECTED BY THE CONSTRUCTION WORK AREA. GENERAL CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP) CHAPTER 6, BMP SELECTION AND IMPLEMENTATION, OF THE STORMWATER MANAGEMENT MANUAL FOR BILLINGS, MONTANA, MAY 2015. TEMPORARY BMP UNTIL VEGETATION IS ESTABLISHED AND PERMANENT BMP FUNCTIONAL.
3. ACCESS TO CAR WASH FACILITY AND TSA OFFICE SHALL BE MAINTAINED AT ALL TIMES.
4. THE AIRPORT IS HOSTING AN AIRSHOW AUGUST 20-23. THE PROJECT SHALL NOT BEGIN UNTIL AUGUST 24 FOLLOWING THE AIRSHOW.
5. ALL ELECTRICAL AND ICT INFRASTRUCTURE SHALL BE INSTALLED PRIOR TO PAVING.

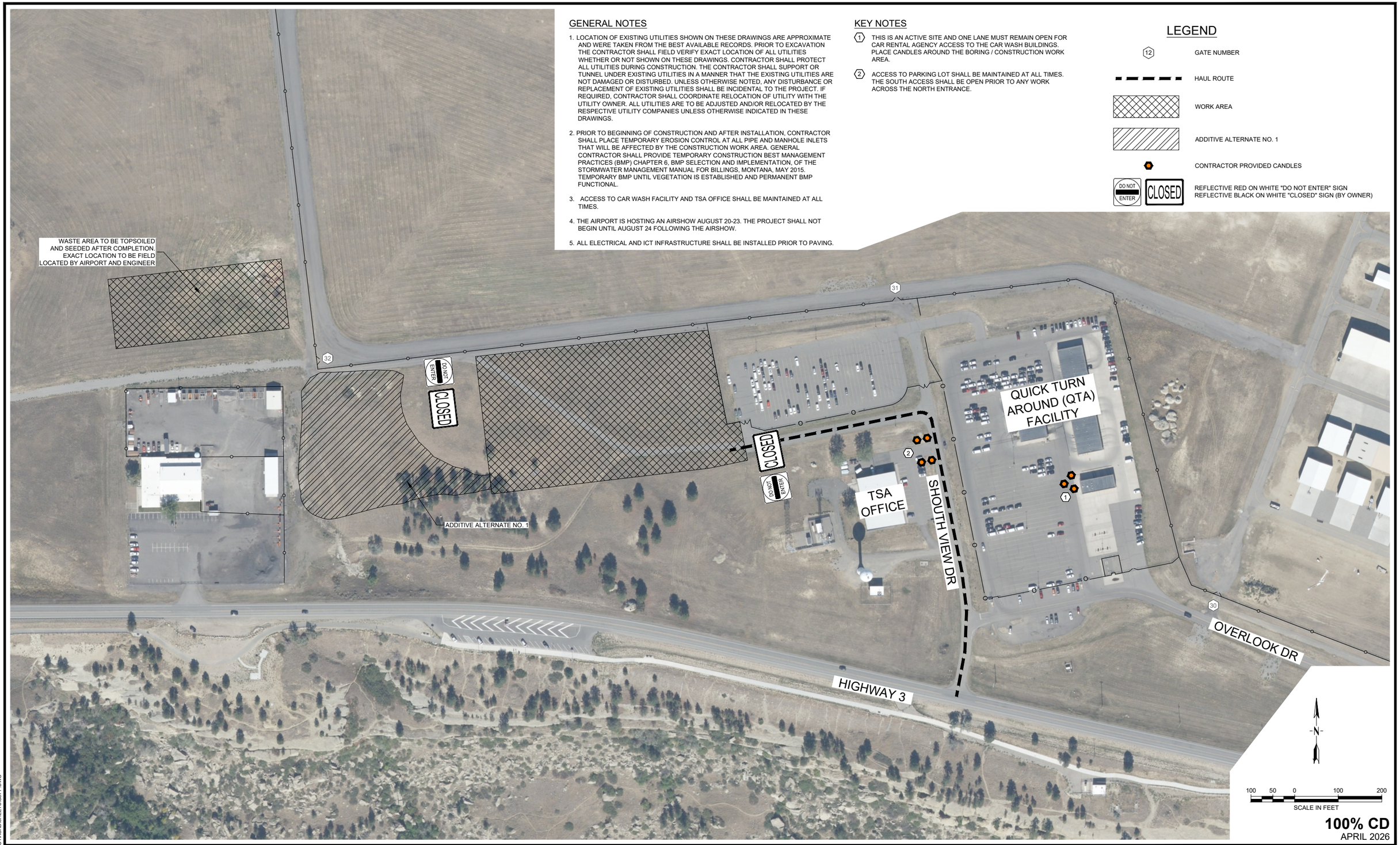
KEY NOTES

(1) THIS IS AN ACTIVE SITE AND ONE LANE MUST REMAIN OPEN FOR CAR RENTAL AGENCY ACCESS TO THE CAR WASH BUILDINGS. PLACE CANDLES AROUND THE BORING / CONSTRUCTION WORK AREA.

(2) ACCESS TO PARKING LOT SHALL BE MAINTAINED AT ALL TIMES. THE SOUTH ACCESS SHALL BE OPEN PRIOR TO ANY WORK ACROSS THE NORTH ENTRANCE.

LEGEND

- (12) GATE NUMBER
- HAUL ROUTE
- WORK AREA
- ADDITIVE ALTERNATE NO. 1
- CONTRACTOR PROVIDED CANDLES
- DO NOT ENTER / CLOSED — REFLECTIVE RED ON WHITE "DO NOT ENTER" SIGN; REFLECTIVE BLACK ON WHITE "CLOSED" SIGN (BY OWNER)



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DATE: 04/2026
Q.C. REVIEW BY: HEM
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BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

CONSTRUCTION SAFETY PHASING PLAN

PROJECT NUMBER 2447.150.25
SHEET NUMBER 3
DRAWING NUMBER G-2

P:\2447-BILL\50.25 - SHUTTLE LOT\ACAD\SHEETS\CSPP.DWG

PROJECT SCOPE OF WORK

1. WEST SHUTTLE PARKING LOT CONSTRUCTION
2. ADDITIVE ALTERNATE NO. 1

LEGEND

- 12 — GATE NUMBER
- HAUL ROUTE
- WORK AREA
- ADDITIVE ALTERNATE NO. 1

ASPHALT MILLINGS STOCKPILE

WASTE AREA

2. ADDITIVE ALTERNATE NO. 1

1. WEST SHUTTLE PARKING LOT CONSTRUCTION

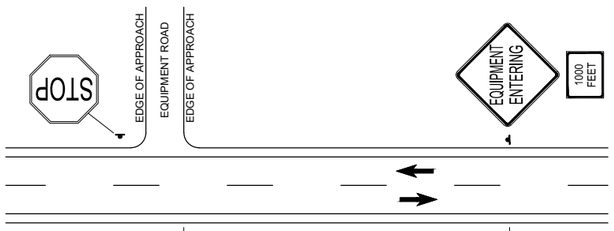
HIGHWAY 3

OVERLOOK DR

TW-OFA(III)

RIMTOP DR

HIGHWAY 318



NOTE:
SET UP THIS SIGN LAYOUT IN EACH TRAFFIC DIRECTION, AS NEEDED.

1 — TYPICAL ACCESS SIGNING DETAIL

NOT TO SCALE

N

600 300 0 600 1,200

SCALE IN FEET

100% CD

APRIL 2026

VERIFY SCALE!

THESE PRINTS MAY BE REDUCED. LINE BELOW MEASURES ONE INCH ON ORIGINAL DRAWING.

MODIFY SCALE ACCORDINGLY!

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Q.C. REVIEW BY: HEM
DATE: 04/2026

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION

BILLINGS MONTANA

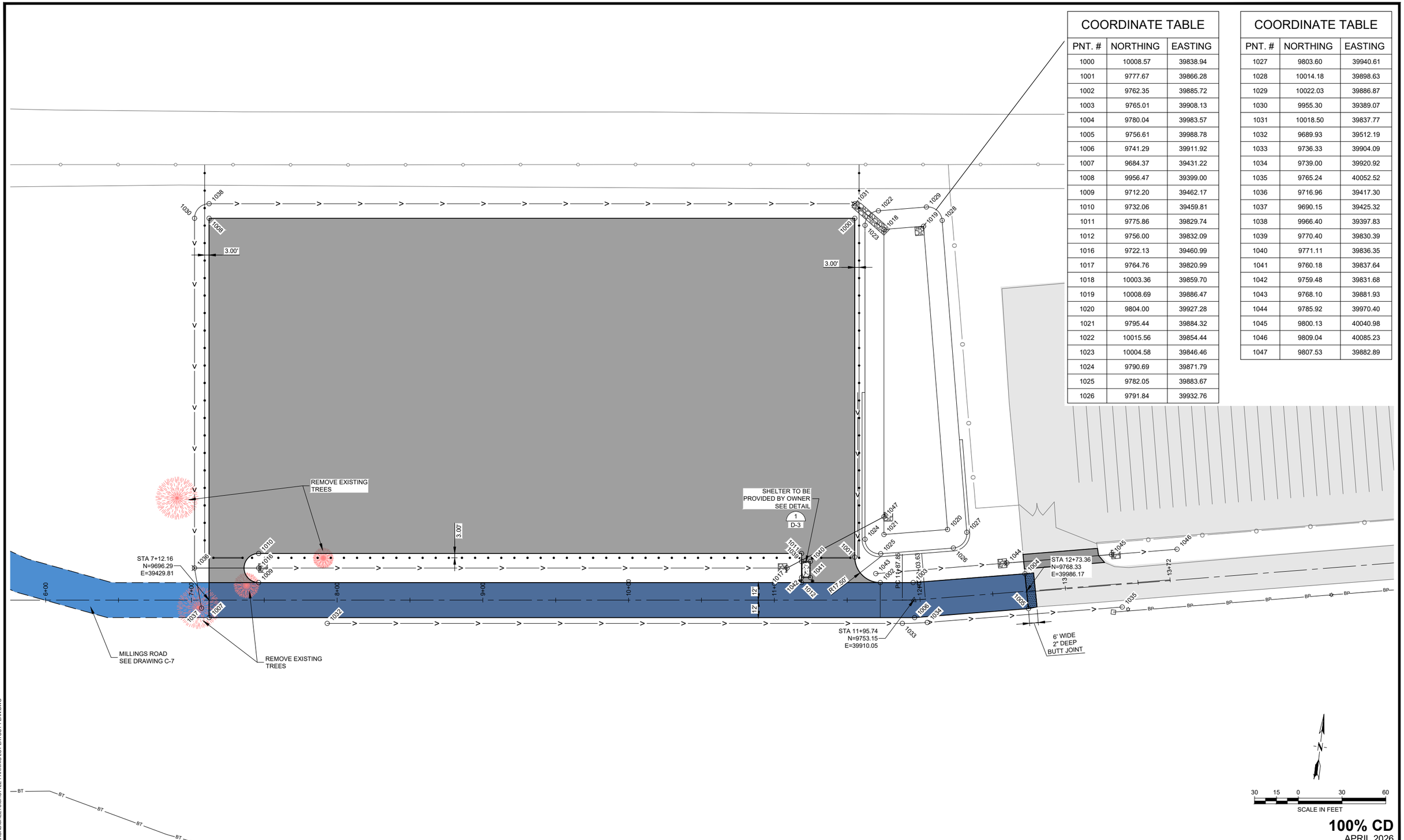
SITE PLAN

PROJECT NUMBER 2447.150.25
SHEET NUMBER 4
DRAWING NUMBER G-3

P:\2447-BIL\150.25 - SHUTTLE LOT\ACADSHEETS\SITE PLAN.DWG

COORDINATE TABLE		
PNT. #	NORTHING	EASTING
1000	10008.57	39838.94
1001	9777.67	39866.28
1002	9762.35	39885.72
1003	9765.01	39908.13
1004	9780.04	39983.57
1005	9756.61	39988.78
1006	9741.29	39911.92
1007	9684.37	39431.22
1008	9956.47	39399.00
1009	9712.20	39462.17
1010	9732.06	39459.81
1011	9775.86	39829.74
1012	9756.00	39832.09
1016	9722.13	39460.99
1017	9764.76	39820.99
1018	10003.36	39859.70
1019	10008.69	39886.47
1020	9804.00	39927.28
1021	9795.44	39884.32
1022	10015.56	39854.44
1023	10004.58	39846.46
1024	9790.69	39871.79
1025	9782.05	39883.67
1026	9791.84	39932.76

COORDINATE TABLE		
PNT. #	NORTHING	EASTING
1027	9803.60	39940.61
1028	10014.18	39898.63
1029	10022.03	39886.87
1030	9955.30	39389.07
1031	10018.50	39837.77
1032	9689.93	39512.19
1033	9736.33	39904.09
1034	9739.00	39920.92
1035	9765.24	40052.52
1036	9716.96	39417.30
1037	9690.15	39425.32
1038	9966.40	39397.83
1039	9770.40	39830.39
1040	9771.11	39836.35
1041	9760.18	39837.64
1042	9759.48	39831.68
1043	9768.10	39881.93
1044	9785.92	39970.40
1045	9800.13	40040.98
1046	9809.04	40085.23
1047	9807.53	39882.89



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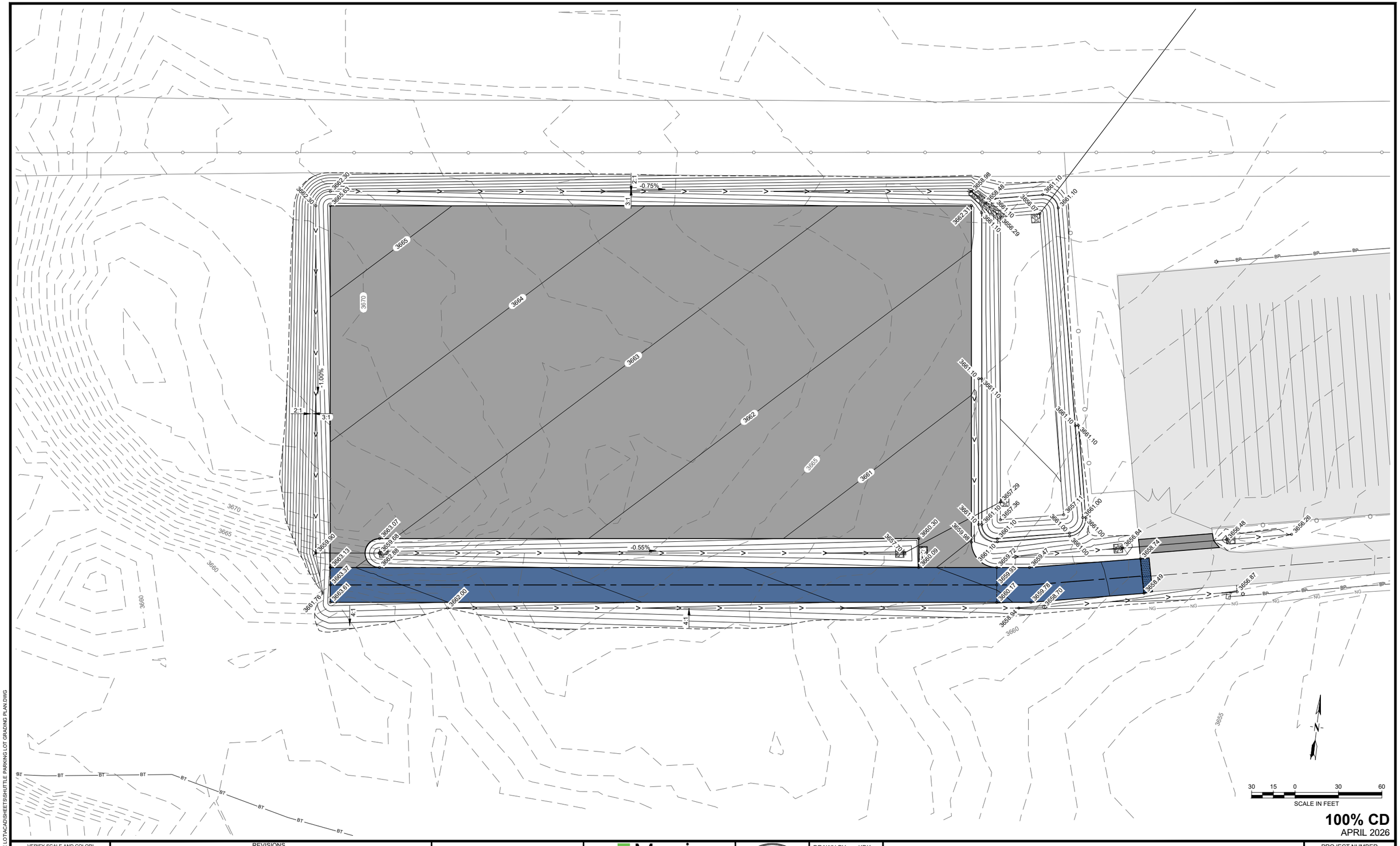
BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

PARKING LOT LAYOUT PLAN

PROJECT NUMBER 2447.150.25
SHEET NUMBER 5
DRAWING NUMBER C-1

P:\2447-BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\SHUTTLE PARKING LOT LAYOUT PLAN.DWG



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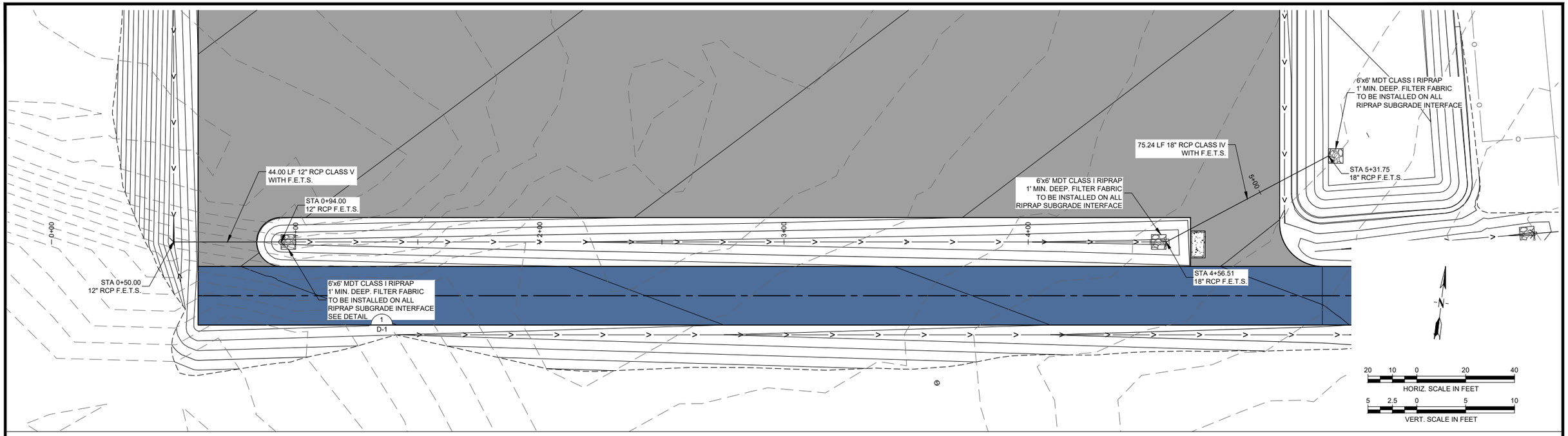
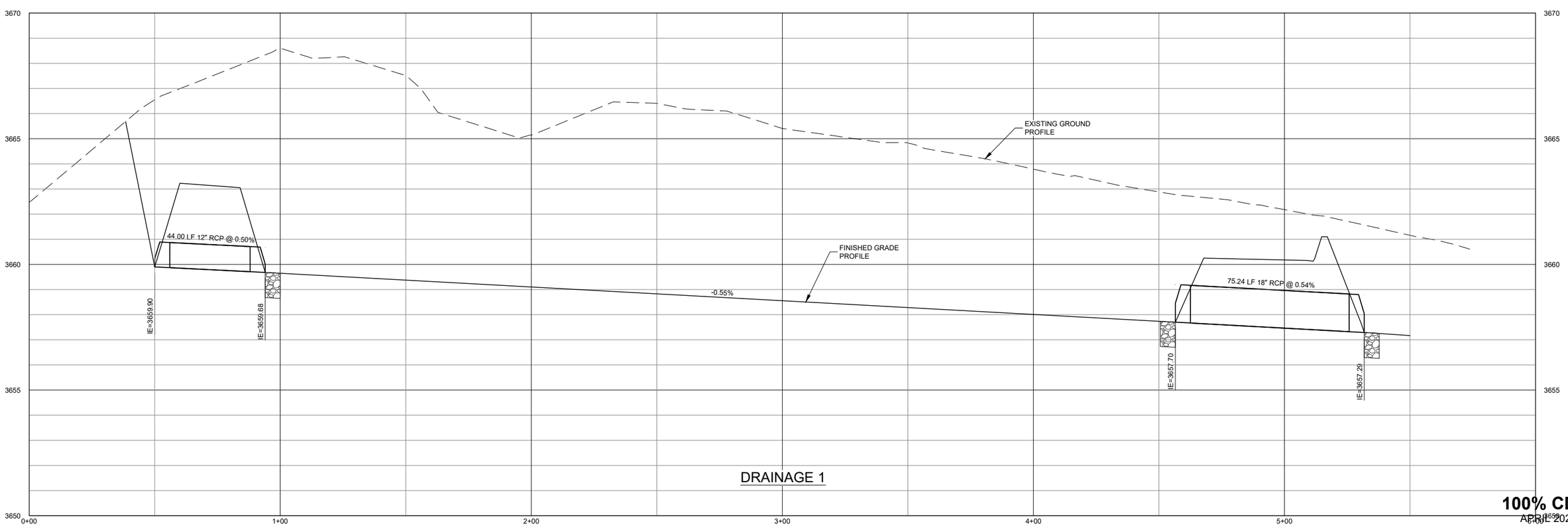
BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

PARKING LOT GRADING PLAN

PROJECT NUMBER 2447.150.25
SHEET NUMBER 6
DRAWING NUMBER C-2

P:\2447-BIL\150.25 - SHUTTLE LOT\ACADSHEETS\SHUTTLE PARKING LOT GRADING PLAN.DWG





DRAINAGE 1

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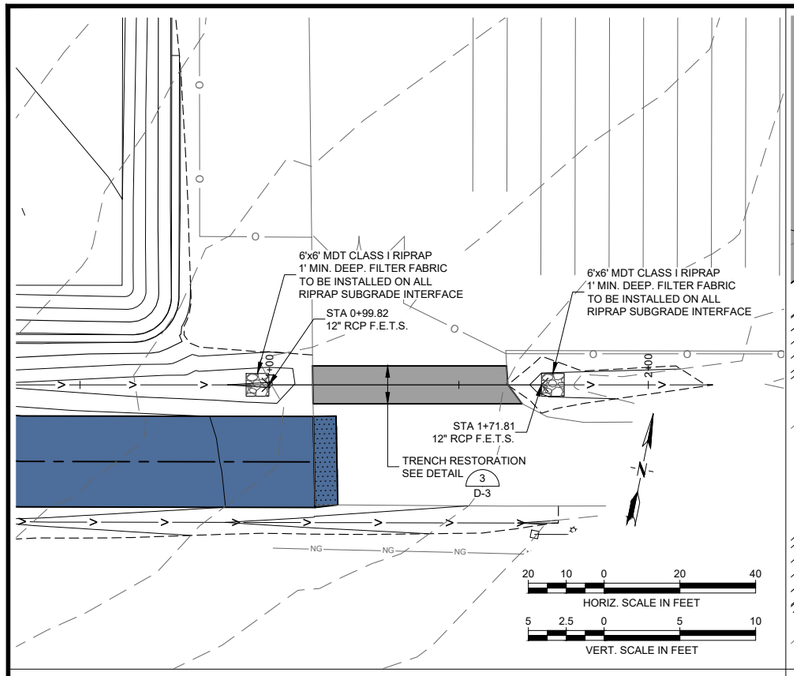
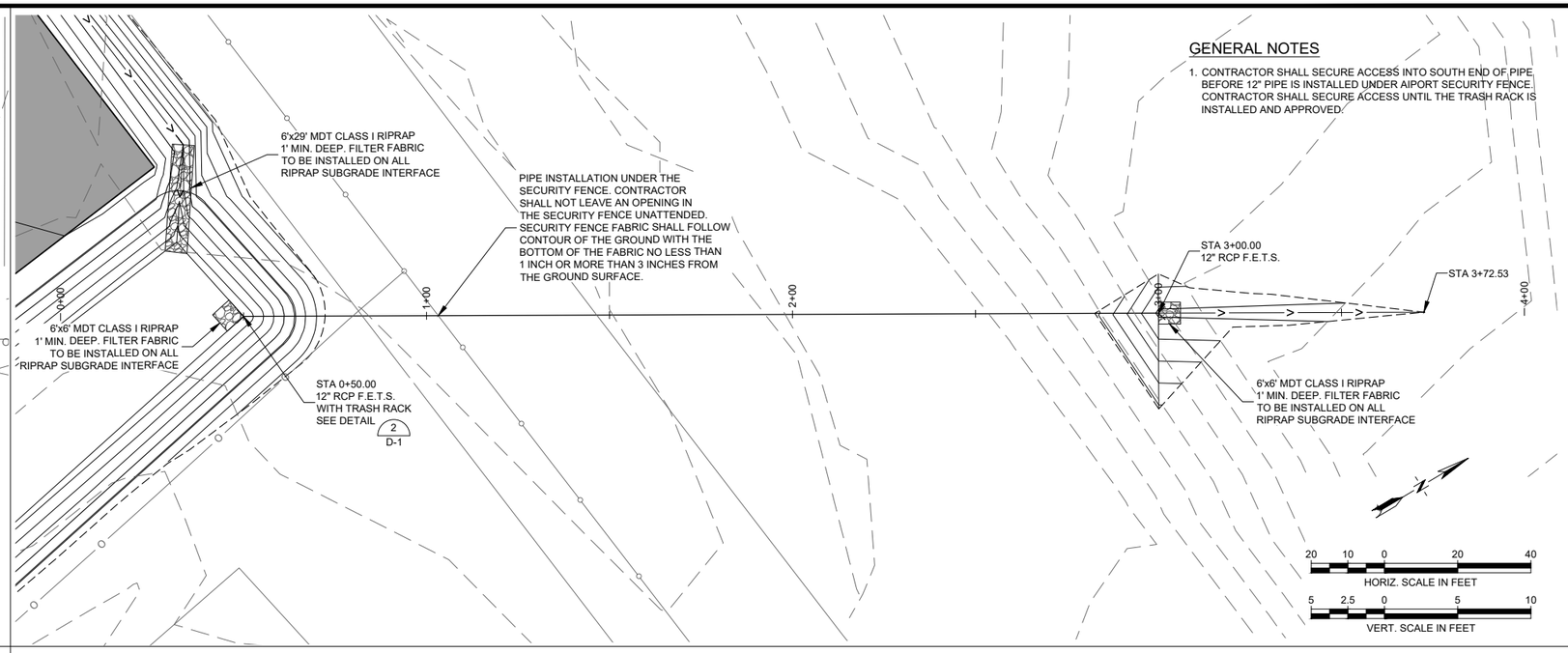
BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

DRAINAGE 1 PLAN AND PROFILE

PROJECT NUMBER 2447.150.25
SHEET NUMBER 7
DRAWING NUMBER C-3

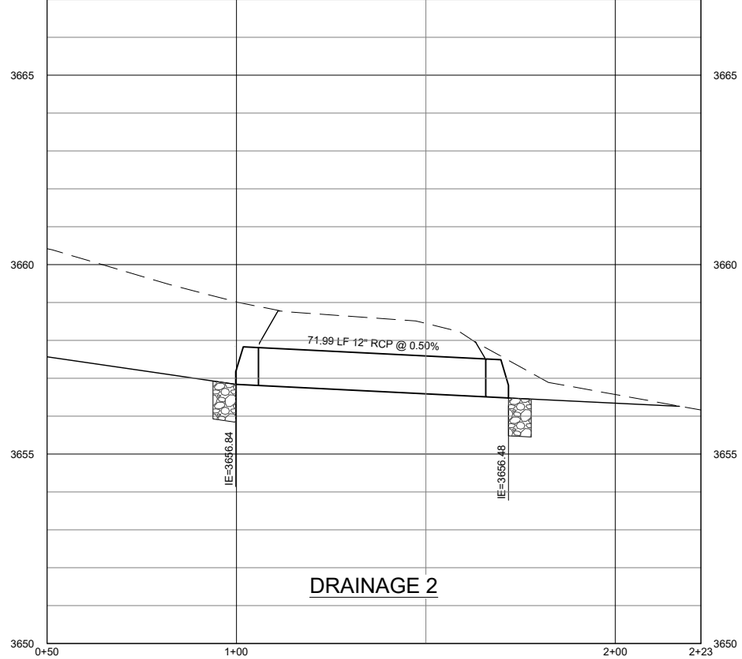
P:\2447.BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\PARKING LOT DRAINAGE PLAN AND PROFILE.DWG



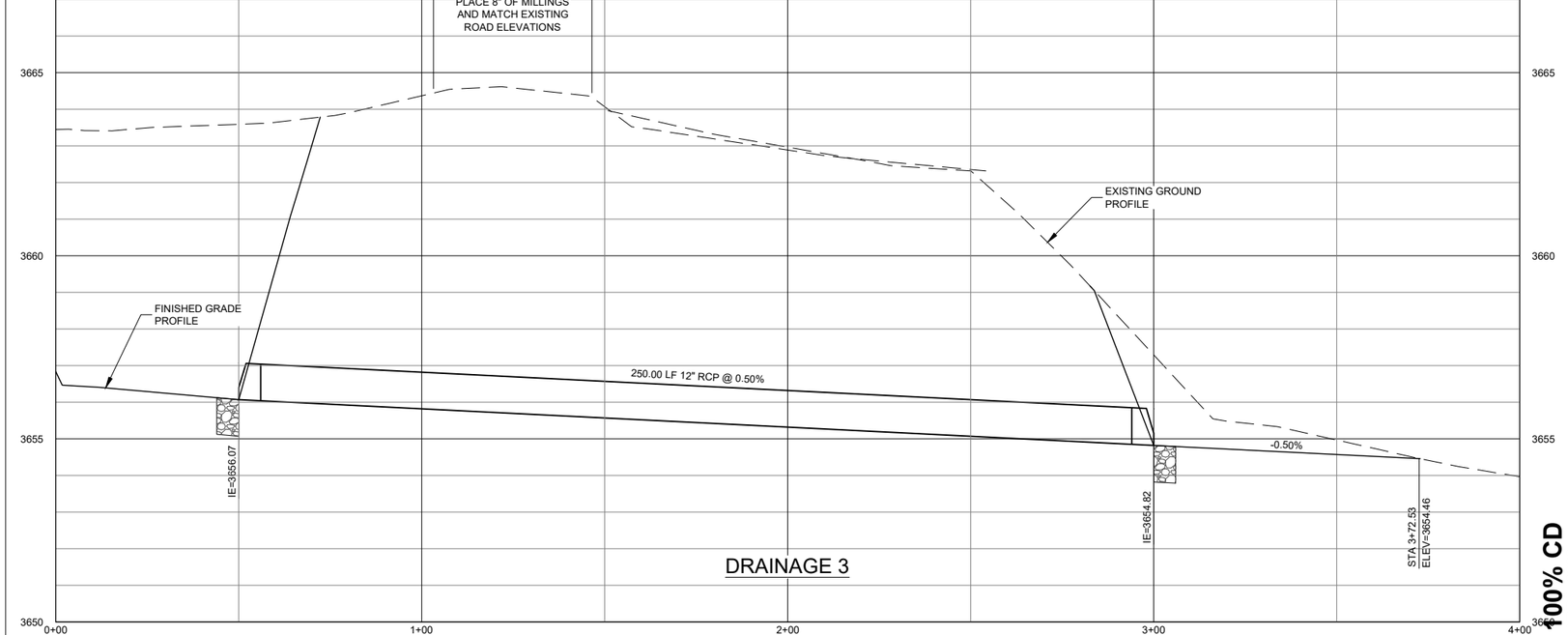


GENERAL NOTES

1. CONTRACTOR SHALL SECURE ACCESS INTO SOUTH END OF PIPE BEFORE 12" PIPE IS INSTALLED UNDER AIPORT SECURITY FENCE. CONTRACTOR SHALL SECURE ACCESS UNTIL THE TRASH RACK IS INSTALLED AND APPROVED.



DRAINAGE 2



DRAINAGE 3

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APRIL 2026

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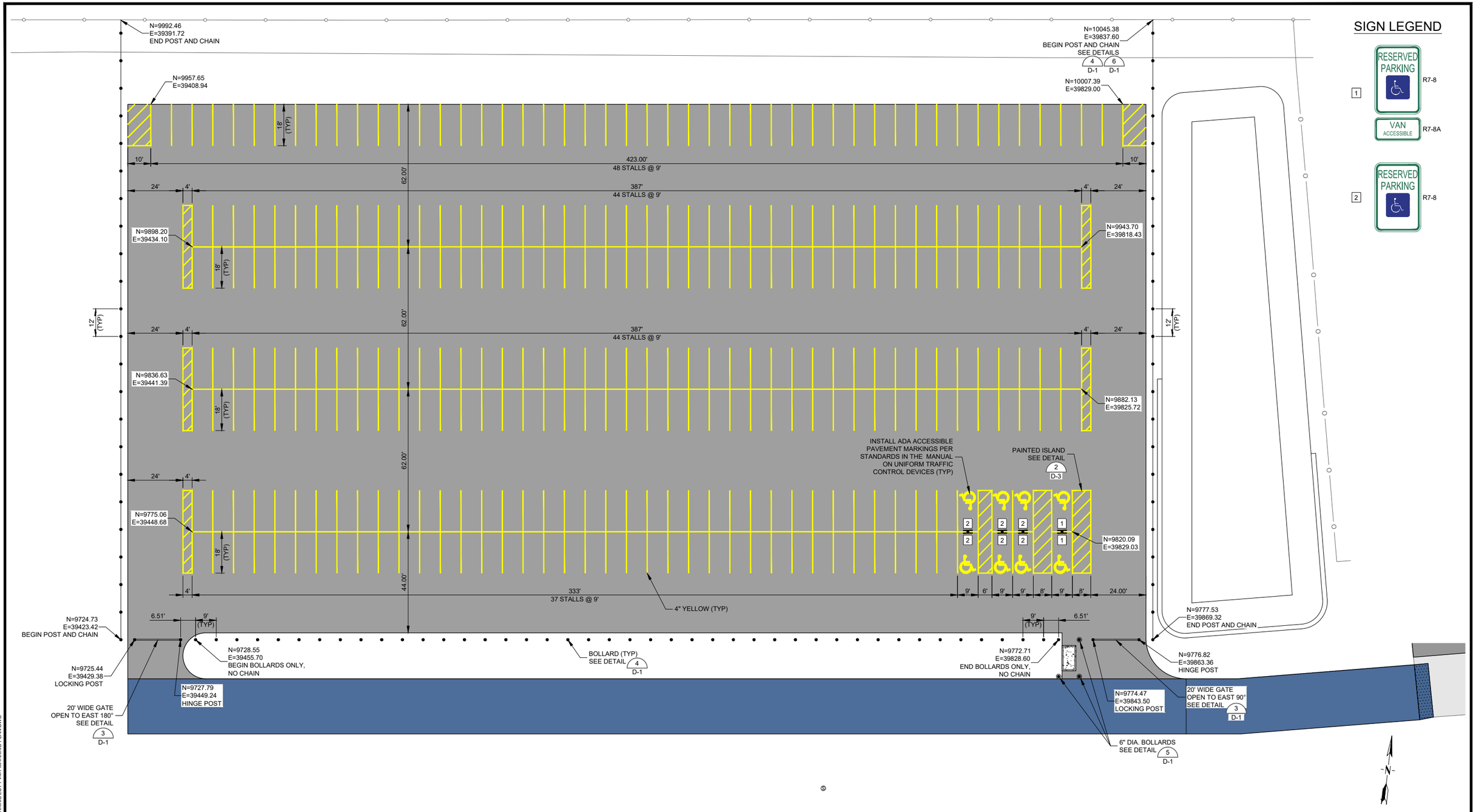
BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

DRAINAGE 2 AND 3 PLAN AND PLOT

PROJECT NUMBER 2447.150.25
SHEET NUMBER 8
DRAWING NUMBER C-4

P:\2447.BILL\150.25 - SHUTTLE LOT\ACAD\SHEET\SPOND OUTLET PLAN AND PROFILE.DWG



SIGN LEGEND

1 — RESERVED PARKING — R7-8
VAN ACCESSIBLE — R7-8A

2 — RESERVED PARKING — R7-8

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BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

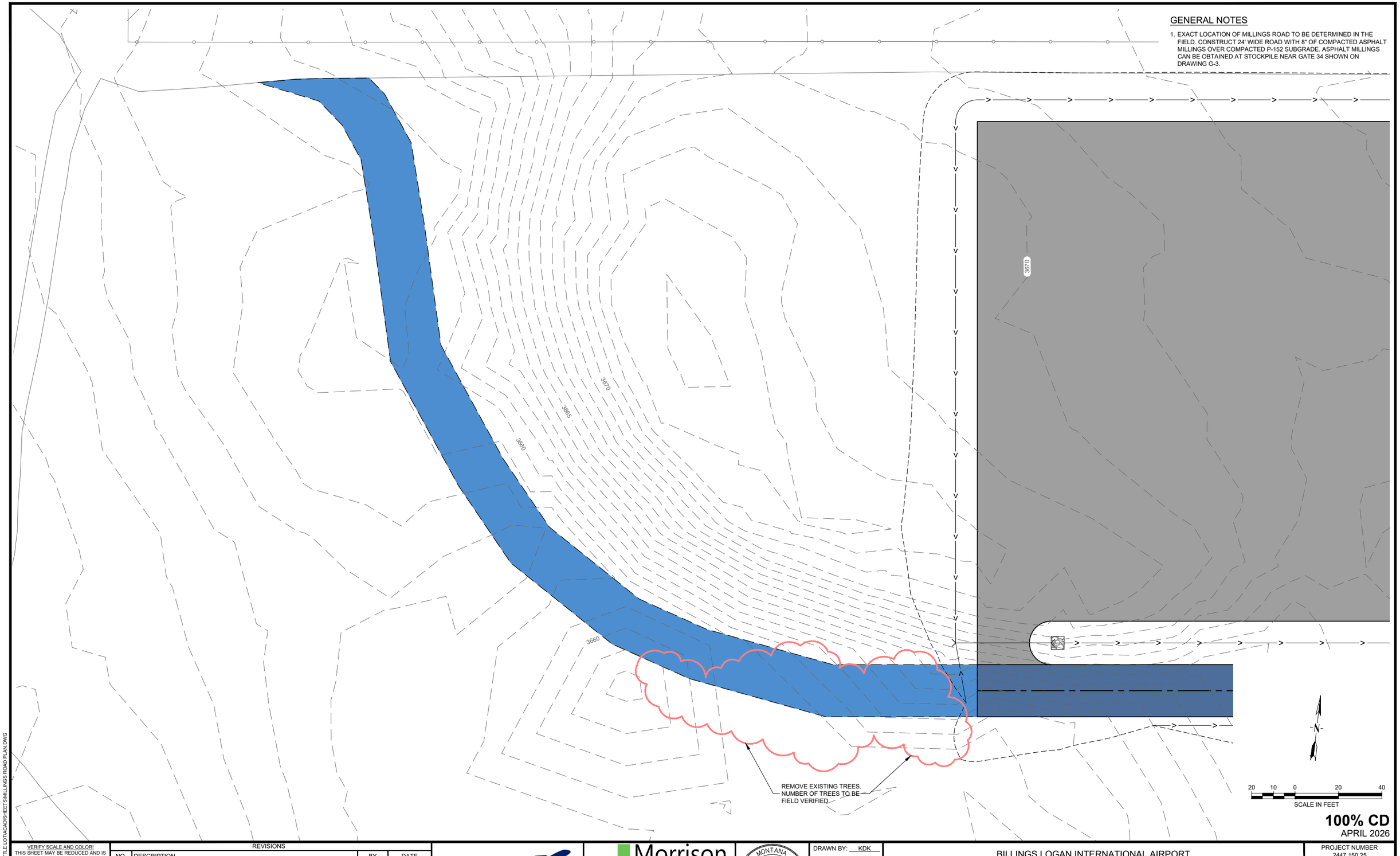
PARKING LOT SIGNING, STRIPING, AND FENCING PLAN

PROJECT NUMBER 2447.150.25
SHEET NUMBER 9
DRAWING NUMBER C-5

P:\2447-BIL\150.25 - SHUTTLE LOT\CAD\SHEETS\SHUTTLE PARKING LOT PVMT MARKING PLAN.DWG

GENERAL NOTES

1. EXACT LOCATION OF MILLINGS ROAD TO BE DETERMINED IN THE FIELD. CONSTRUCT 24' WIDE ROAD WITH 8" OF COMPACTED ASPHALT MILLINGS OVER COMPACTED P-152 SUBGRADE. ASPHALT MILLINGS CAN BE OBTAINED AT STOCKPILE NEAR GATE 34 SHOWN ON DRAWING G-3.



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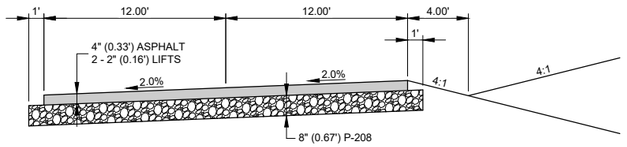
BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

MILLINGS ROAD PLAN

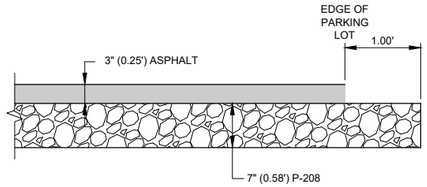
PROJECT NUMBER 2447.150.25
SHEET NUMBER 10
DRAWING NUMBER C-6

P:\2447.BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\MILLINGS ROAD PLAN.DWG

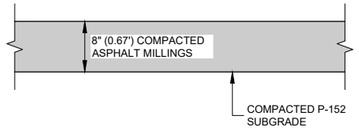


ACCESS ROAD TYPICAL SECTION

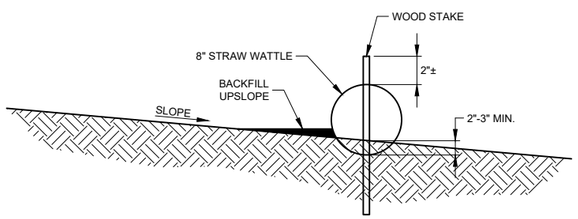
STA 7+12.16 TO STA 12+73.36



TYPICAL PARKING LOT PAVEMENT SECTION

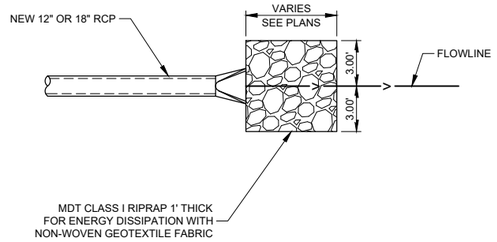


MILLING ROAD PAVEMENT SECTION

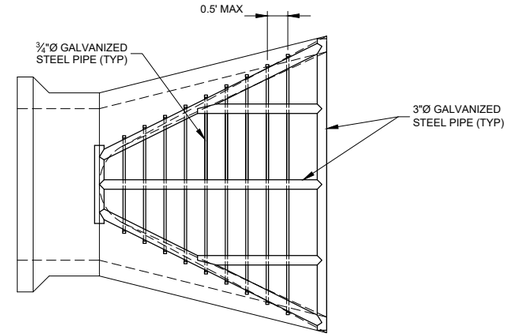


NOTE:
PRIOR TO BEGINNING OF CONSTRUCTION AND AFTER INSTALLATION, CONTRACTOR SHALL PLACE TEMPORARY EROSION CONTROL AT ALL PIPE AND MANHOLE INLETS THAT WILL BE AFFECTED BY THE CONSTRUCTION WORK AREA. CONTRACTOR SHALL BE RESPONSIBLE TO USE BEST MANAGEMENT PRACTICE IN PLACING EROSION CONTROL AS CONSTRUCTION ACTIVITIES DICTATE. CONTRACTOR'S LAYOUT SHALL BE APPROVED BY ENGINEER.

3 C-3 C-4 — STRAW WATTLE DETAIL
NOT TO SCALE

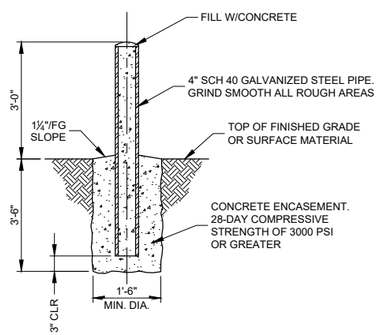


1 C-3 C-4 — RIPRAP DETAIL
NOT TO SCALE

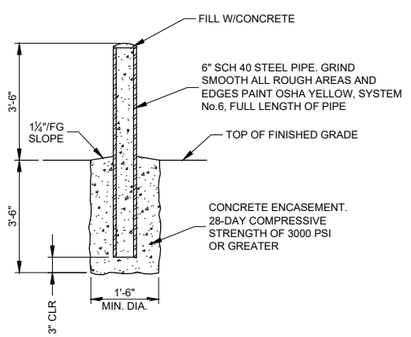


NOTES:
1. WELD JOINTS OF 3" PIPE, CLEAN WELD AND SPRAY WITH GALVANIZED PAINT.
2. CAP ENDS OF ¾" PIPES.
3. ATTACH PANELS TO CONCRETE WALL WITH ¼"x2" GALVANIZED STRAPS, SHAPED TO FIT 3" PIPE, ANCHOR BOLTS EACH END OF STRAP.

2 C-4 — 12" FLARED END TERMINAL SECTION TRASH RACK DETAIL
NOT TO SCALE



4 C-5 — 4" BOLLARD DETAIL
NOT TO SCALE



5 C-5 — 6" BOLLARD DETAIL
NOT TO SCALE

GENERAL NOTES

1. CHAIN SHALL BE 5/16" GALVANIZED LIGHT LOAD BEARING CHAIN OR APPROVED EQUAL. THREADED CHAIN LINK TO BE WELDED ON BOLLARD SHALL BE SAME SIZE AS CHAIN.
2. WELDED AREA SHALL BE PAINTED WITH APPROVED GALVANIZED COLORED PAINT.

6 C-5 — POST AND CHAIN DETAIL
NOT TO SCALE

100% CD
APRIL 2026

VERIFY SCALE!
THESE PRINTS MAY BE REDUCED. LINE BELOW MEASURES ONE INCH ON ORIGINAL DRAWING.
MODIFY SCALE ACCORDINGLY!

REVISIONS

NO.	DESCRIPTION	BY	DATE

PLOTTED BY:KENT KUEHN ON Apr/03/2026

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DRAWN BY: KDK
DSGN. BY: DCM
APPR. BY: DCM
DATE: 04/2026
Q.C. REVIEW BY: HEM
DATE: 04/2026

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

DETAILS

PROJECT NUMBER 2447.150.25
SHEET NUMBER 11
DRAWING NUMBER D-1

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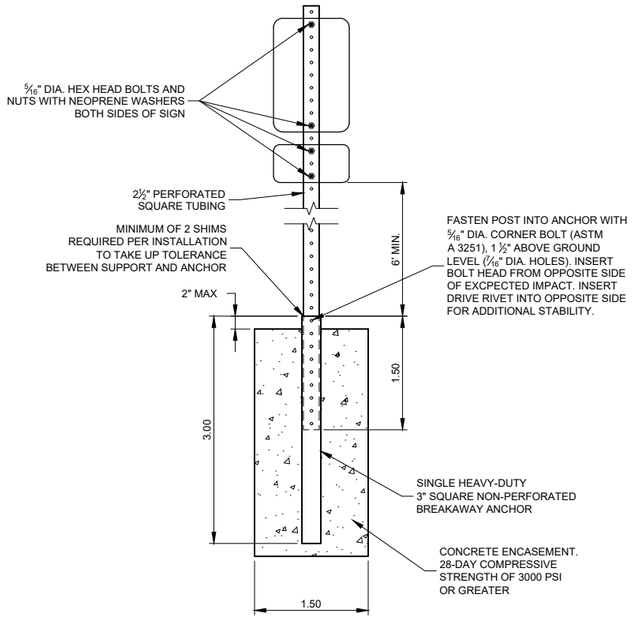
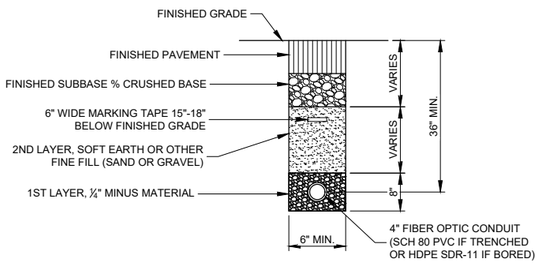


1 C-5 SIGN POST DETAIL

SCALE: 1" = 1'

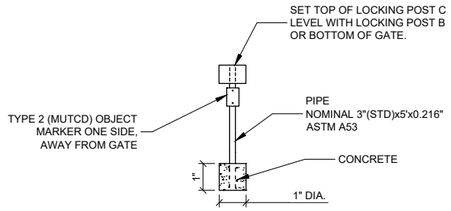


2 T-2 COMMUNICATION TRENCH DETAIL

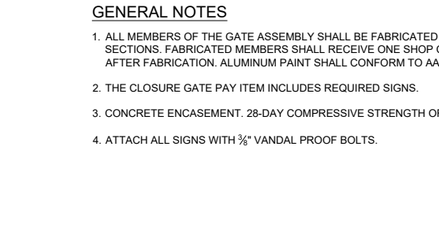
NOT TO SCALE

GENERAL NOTES

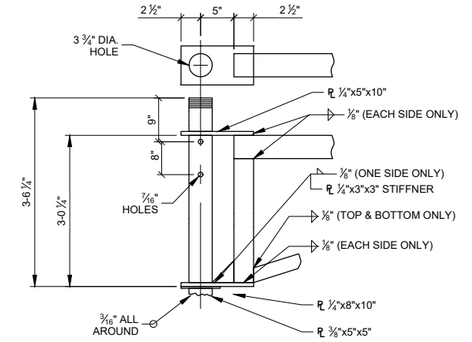
1. ALL MEMBERS OF THE GATE ASSEMBLY SHALL BE FABRICATED FROM STANDARD STEEL SECTIONS. FABRICATED MEMBERS SHALL RECEIVE ONE SHOP COAT OF ALUMINUM PAINT AFTER FABRICATION. ALUMINUM PAINT SHALL CONFORM TO AASHTO M69, TYPE II.
2. THE CLOSURE GATE PAY ITEM INCLUDES REQUIRED SIGNS.
3. CONCRETE ENCASEMENT. 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI OR GREATER.
4. ATTACH ALL SIGNS WITH ⅜" VANDAL PROOF BOLTS.



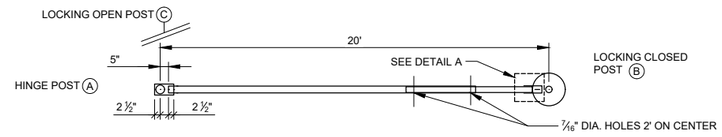
LOCKING OPEN POST ©



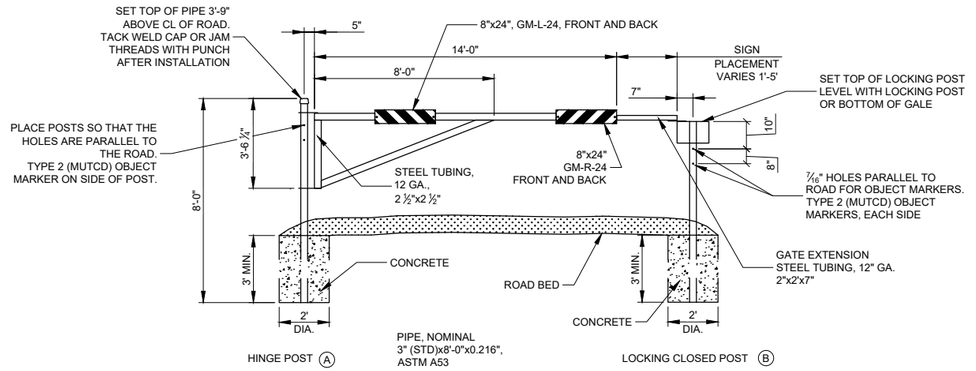
DETAIL A



HINGE DETAIL



PLAN VIEW



ELEVATION VIEW

3 C-5 GATE DETAIL

NOT TO SCALE

100% CD
APRIL 2026

VERIFY SCALE!

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MODIFY SCALE ACCORDINGLY!

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NO.	DESCRIPTION	BY	DATE

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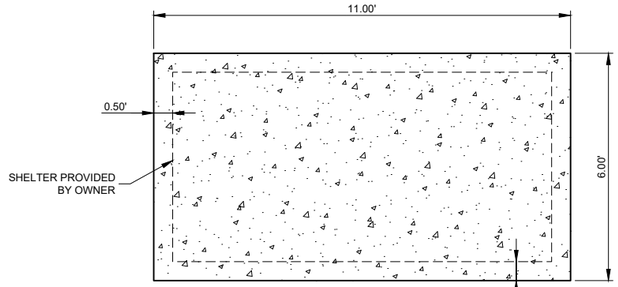
APPR. BY: DCM
DATE: 04/2026
Q.C. REVIEW BY: HEM
DATE: 04/2026

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

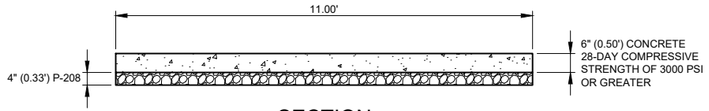
DETAILS

PROJECT NUMBER 2447.150.25
SHEET NUMBER 12
DRAWING NUMBER D-2

P:\2447.BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\DETAILS.DWG



PLAN

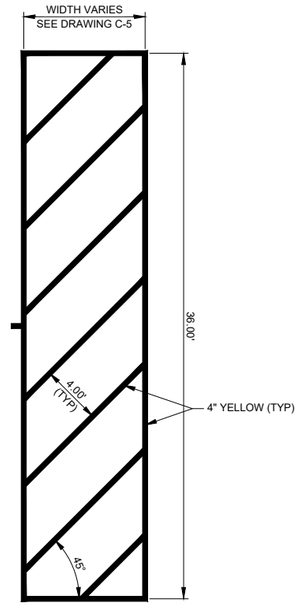


SECTION

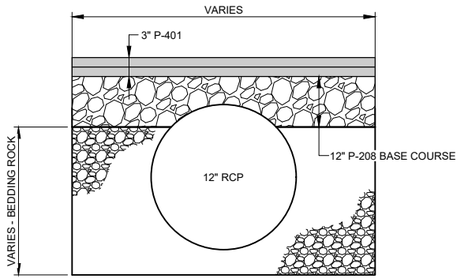
GENERAL NOTES

1. CONCRETE SHALL BE 4,000 PSI COMPRESSIVE 28-DAY STRENGTH, EXTERIOR MIX WITH 6% ± 2% AIR ENTRAINMENT.
2. REINFORCEMENT SHALL BE 3" X 3" X 10 GAUGE WELDED WIRE MESH OR APPROVED EQUAL.
3. BASE SHALL BE BROOM FINISHED.
4. SHELTER WILL BE MOVED TO PARKING LOT CONSTRUCTION SITE BY THE AIRPORT. SHELTER SHALL BE REMOVED FROM EXISTING CONCRETE BASE AND BOLTED TO THE NEW BASE USING EXISTING OR APPROVED CONCRETE ANCHORS.

1 / C-1 SHELTER DETAIL
NOT TO SCALE



2 / C-5 PAINTED ISLAND DETAIL
SCALE: 1" = 5'



3 / C-4 ASPHALT RESTORATION DETAIL
NOT TO SCALE

100% CD
APRIL 2026

VERIFY SCALE!
THESE PRINTS MAY BE REDUCED. LINE BELOW MEASURES ONE INCH ON ORIGINAL DRAWING.
MODIFY SCALE ACCORDINGLY!

REVISIONS

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WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

DETAILS

PROJECT NUMBER 2447.150.25
SHEET NUMBER 13
DRAWING NUMBER D-3

P:\2447.BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\DETAILS.DWG

GENERAL NOTES

1. ADDITIVE ALTERNATIVE WILL INCLUDE PLACING AND COMPACTING EXCAVATED MATERIAL FROM SCHEDULE 1 IN AREA SHOWN BELOW INSTEAD OF DESIGNATED WASTE AREA. ANY MATERIAL NOT USED IN ADDITIVE ALTERNATIVE #1 WILL BE PLACED IN WASTE AREA.
2. ADDITIVE ALTERNATE AREA SHALL BE TREATED AS EMBANKMENT PER SPECIFICATION SECTION P-152. TOPSOIL SHALL BE REMOVED PRIOR TO ANY MATERIAL PLACEMENT IN ADDITIVE ALTERNATE NO. 1.
3. UPON COMPLETION OF EMBANKMENT IN ADDITIVE ALTERNATE AREA, ALL DISTURBED GROUND SHALL BE TOPSOILED, SEEDED AND HYDROMULCHED PER THE SPECIFICATIONS.

GRADING LIMITS (TYP)

GRADING LIMITS (TYP)

GRADING LIMITS (TYP)

GRADING LIMITS (TYP)

REMOVE EXISTING TREES. NUMBER OF TREES TO BE FIELD VERIFIED

3656 3657 3658 3659 3660 3661 3662 3663 3664 3665 3666 3670

N

20 10 0 20 40
SCALE IN FEET

100% CD
APRIL 2026

VERIFY SCALE AND COLOR!
THIS SHEET MAY BE REDUCED AND IS INTENDED TO BE IN COLOR. THE BAR BELOW WILL MEASURE ONE INCH AT ORIGINAL DESIGN SCALE AND RED, GREEN, AND BLUE WILL BE VISIBLE IF REPRODUCED CORRECTLY.
MODIFY SCALE ACCORDINGLY!

REVISIONS

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DATE: 04/2026

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

ADDITIVE ALTERNATE NO. 1

PROJECT NUMBER 2447.150.25
SHEET NUMBER 14
DRAWING NUMBER C-7

P:\2447.BIL\150.25 - SHUTTLE LOT\ACAD\SHEETS\ADDITIVE ALTERNATE NO 1.DWG

ABBREVIATIONS AND SYMBOLS GENERAL NOTES

A. THE ABBREVIATIONS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL ABBREVIATIONS APPEAR ON THIS PROJECT.
B. THE SYMBOLS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL SYMBOLS APPEAR ON THIS PROJECT.
C. ALL MOUNTING HEIGHTS ARE TO CENTER OF DEVICE ABOVE FINISHED FLOOR, UNLESS NOTED OTHERWISE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS, MAKING ADJUSTMENTS AS REQUIRED TO AVOID INTERFERENCE WITH EQUIPMENT SUCH AS BASEBOARD FIN-TUBE, CABINET UNIT HEATERS, ETC. ARCHITECT/ENGINEER SHALL BE NOTIFIED OF ALL SUCH HEIGHT ADJUSTMENTS. MOUNTING HEIGHTS INDICATED ON ARCHITECTURAL WALL ELEVATIONS OR AS NOTED SPECIFICALLY ON THE DRAWINGS OR IN THE SPECIFICATIONS SHALL TAKE PRECEDENCE OVER MOUNTING HEIGHTS LISTED.

ELECTRICAL ABBREVIATIONS LEGEND

A, AMP	AMPERES
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONING
AF	AMP FUSE
AFC	AVAILABLE FAULT CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AS	AMP SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
BAS	BUILDING AUTOMATION SYSTEM
BKR	BREAKER
BOF	BOTTOM OF FIXTURE
C	RACEWAY/CONDUIT
CB	CIRCUIT BREAKER
CCT	COLOR RENDERING TEMPERATURE
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
C.O.	RACEWAY/CONDUIT ONLY, WITH PULL STRING
COD	CENTER OF DEVICE
CNTRL	CONTROL
CU	COPPER
(D)	EXISTING TO BE DEMOLISHED
DISC	DISCONNECT
DIST	DISTRIBUTION
DPDT	DOUBLE POLE DOUBLE THROW
DWG	DRAWING
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRIC
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
EX, EXIST	EXISTING
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FD	FUSED DISCONNECT
FLR	FLOOR
FO	FIBER OPTIC
FSD	FIRE SMOKE DAMPER RELAY, CONTROLLED BY ASSOCIATED SMOKE DETECTOR AND CIRCUITED BACK TO FACP
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GEC	GROUNDED ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HVAC	HEATING, VENTILATION & AIR CONDITIONING
HZ	HERTZ
J-BOX	JUNCTION BOX
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
LCP	LIGHTING CONTROL PANEL
LPW	LUMENS PER WATT
LTG	LIGHTING
LM	LUMENS
LV	LOW VOLTAGE
MAG	MAGNETIC STARTER
MAN	MANUAL
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MH	METAL HALIDE
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MSS	MOTOR STARTER SWITCH WITH THERMAL OVERLOADS
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFD	NON-FUSED DISCONNECT
NL	NIGHT LIGHT, UN-SWITCHED 24/7 OPERATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
#	NUMBER
OAE	OR APPROVED EQUAL
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OH	OVERHEAD
P	POLE
PB	PUSHBUTTON
PC	PLUMBING CONTRACTOR
PH	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE CONDUIT
PWR	POWER
(R)	EXISTING TO REMAIN
RCPT	RECEPTACLE
RECEPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RVNR	REDUCED VOLTAGE NON-REVERSING
RVR	REDUCED VOLTAGE REVERSING
SP	SINGLE POLE TOGGLE SWITCH
SPD	SURGE PROTECTIVE DEVICE (TVSS)
SPEC	SPECIFICATION
SPST	SINGLE POLE SINGLE THROW
SSPB	START-STOP PUSHBUTTON
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TELEPHONE BOARD
TC	TIME CLOCK
TD	TIME DELAY
TEL	TELEPHONE
TR	TAMPER RESISTANT
TSP	TWISTED SHIELDED PAIR
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WAO	WORK AREA OUTLET
WP	WEATHERPROOF
WPI	WEATHERPROOF WHILE-IN-USE
WR	WEATHER RESISTANT
W/O	WITHOUT
XFMR	TRANSFORMER
Y	WYE-CONNECTED
Δ	DELTA-CONNECTED
ø	PHASE

ELECTRICAL LEGEND

- POLE MOUNTED FIXTURE
- UTILITY ELECTRIC METER AND BASE (BASE BY CUSTOMER)
- LIGHTNING ARRESTER, TYPE 1 SPD, MOUNTED ON EXTERIOR OF MAIN SWITCHGEAR
- A-1 (X): PANEL AND CIRCUIT DESIGNATION ARE NEXT TO EACH DEVICE (PANEL - CIRCUIT). SEE NOTE 1.
  "X" INDICATES TYPE:
  GFI - GROUND FAULT INTERRUPTER
  WPI - WEATHERPROOF WHILE-IN-USE COVER
- (J) JUNCTION BOX
- PNL A 208Y/120V 3PH, 4W: PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED
- - - - - RACEWAY BELOW GRADE

NOTE1: MINIMUM BRANCH CIRCUIT WIRE SIZE IS #10, UNO. A SINGLE INSULATED GREEN GROUND CONDUCTOR SHALL BE PROVIDED WITH EACH HOME RUN. PROVIDE A SEPARATE NEUTRAL FOR EACH CIRCUIT. HOME RUNS SHALL HAVE NO MORE THAN THREE CIRCUITS. LINE VOLTAGE AND LOW VOLTAGE WIRING IS NOT SHOWN ON PLANS.

ELECTRICAL PROJECT GENERAL NOTES

A. PRIOR TO BID CONTRACTOR SHALL VISIT THE SITE. NOT ALL WORK REQUIRED TO COMPLETE THE PROJECT IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL BECOME THOROUGHLY FAMILIAR WITH ALL THE WORK REQUIRED TO COMPLETE THE PROJECT IN ADDITION TO THE LOCAL CONDITIONS AND INCLUDE SAID WORK IN THE BID.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL ELECTRICAL SERVICE WORK WITH UTILITY. OWNER PAYS ALL FEES, CONTRACTOR DOES ALL SCHEDULING AND COORDINATION OF WORK. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ALL SCHEDULES ARE MET.
C. GENERAL WORK PRACTICES FOR ELECTRICAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NECA 1, "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING." THIS PUBLICATION IS AVAILABLE FROM NECA BY TELEPHONE AT 301-657-3110 OR ON-LINE AT WWW.NECANET.ORG.
D. CONDUCTORS ARE SIZED PER THE 75 DEGREE C RATING COLUMN OF NEC TABLE 310.16. IF THE TERMINAL USED FOR A TERMINATION OF A PARTICULAR CONDUCTOR IS NOT MARKED, OR THE TERMINAL IS MARKED FOR 60 DEGREE C CONDUCTORS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EITHER ADJUST THE AMPACITY OF THE CONDUCTOR TO MATCH THE 60 DEGREE COLUMN OF TABLE 310.16, OR REPLACE THE TERMINAL WITH ONE RATED FOR AT LEAST 75 DEGREES C.
E. BASED ON ACTUAL HOMERUN LENGTHS REQUIRED IN THE FIELD, THE CONTRACTOR SHALL CALCULATE AND INCREASE THE WIRE SIZES AS REQUIRED TO LIMIT BRANCH CIRCUIT VOLTAGE DROP TO 3%. FOR 20A BRANCH CIRCUITS THE MINIMUM CONDUCTOR SIZES SHALL BE AS FOLLOWS: #10 AWG CU FOR RUNS BETWEEN 100 AND 200 LINEAR FEET, #8 AWG CU FOR RUNS BETWEEN 200 AND 325 LINEAR FEET, AND AS CALCULATED BY THE CONTRACTOR FOR CIRCUITS EXTENDING BEYOND 325 LINEAR FEET. IN ALL CASES WHERE WIRE SIZES INCREASE, THE CONTRACTOR SHALL PROVIDE LARGER CONDUITS AS REQUIRED.
F. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH 120V BRANCH CIRCUIT.

LUMINAIRE SCHEDULE

NOTES:
1. PRIOR SUBMITTAL NOT REQUIRED. ALL ALTERNATE FIXTURE SHOP DRAWINGS WILL BE REVIEWED AFTER THE PROJECT IS AWARDED.
2. PRIOR SUBMITTAL IS REQUIRED.
3. ALTERNATE FIXTURE IS NOT ACCEPTED FOR SUBSTITUTIONS.
4. FIXTURE CONTAINS INTEGRAL PHOTOCELL AND MOTION SENSOR. MOTION SENSOR SHALL PROVIDE CONTROL OF FIXTURE TO ALLOW RAMPING UP AND DOWN OF LUMEN OUTPUT FROM 100%, DURING SENSING OF OCCUPANCY, AND DOWN TO 30% (APPROXIMATELY) DURING TIME OF NO OCCUPANCY.
5. ANY COUPLER THAT IS NOT UTILIZED ON THE POLE SHALL BE FIELD PLUGGED WITH A PLUG THAT FEATURES A DARK BRONZE FINISH THAT MATCHES POLE FINISH. PLUG FINISH SHALL BE FACTORY PAINTED OR POWDER COATED.

GENERAL NOTES:
A. ALL LUMINAIRES SHALL BE TESTED AND LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) SUCH AS UL OR ETL.
B. ALL LUMINAIRES SHALL HAVE DESIGN LIGHTS CONSORTIUM (DLC) CERTIFICATION AND/OR ENERGY STAR RATING.
C. ALL LIGHTS UTILIZED ON PROJECT SHALL MEET BAA REQUIREMENTS. LIGHTS LISTED ARE BASIS OF DESIGN AND SUPPLYING MANUFACTURER SHALL ENSURE COMPLIANCE WITH BAA REQUIREMENT.

TYPE	LAMPS	LOAD (W)	OUTPUT (LM, NOMINAL)	EFFICACY (LM/W)	CCT (K)	DESCRIPTION	MFR	CATALOG NO. OR SERIES	FINISH	MOUNTING	VOLTAGE	NOTES
E1	LED	165 W	20,845	126	4,000	SINGLE HEAD, TYPE 4 OPTIC LED SITE LIGHT FIXTURE WITH HOUSE SIDE SHIELD MOUNTED ON A 30' TAPERED POLE WITH INTEGRAL VIBRATION DAMPER. FIXTURE SHALL HAVE INTEGRAL PHOTOCELL AND MOTION SENSOR FOR CONTROL. POLE SHALL HAVE A FACTORY 1" COUPLER LOCATED ON IT AT 12' ABOVE POLE BASE THAT IS LOCATED 90 DEGREES FROM THE FIXTURE HEAD.	LITHONIA	HEAD: DS1X LED P6 40K 70CRI T4M MVOLT RPA PIR HS BAA DDBXD POLE: RTS 30' 6-6B DM19AS VD CPL1/12-0A BAA DDBXD	DARK BRONZE	POLE/ SURFACE	240 V	2,4,5
E2	LED	333 W	41,690	126	4,000	DOUBLE HEAD, TYPE 4 OPTIC LED SITE LIGHT FIXTURE MOUNTED BACK TO BACK ON A 30' TAPERED POLE WITH INTEGRAL VIBRATION DAMPER. FIXTURES HAVE INTEGRAL PHOTOCELL AND MOTION SENSOR FOR CONTROL. POLE SHALL HAVE A FACTORY 1" COUPLER LOCATED ON IT AT 12' ABOVE POLE BASE THAT IS LOCATED 90 DEGREES FROM THE FIXTURE HEADS.	LITHONIA	HEAD: DS1X LED P6 40K 70CRI T4M MVOLT RPA PIR BAA DDBXD POLE: RTS 30' 6-6B DM28AS VD CPL1/12-0A BAA DDBXD	DARK BRONZE	POLE/ SURFACE	240 V	2,4,5
E5	LED	165 W	20,845	126	4,000	SINGLE HEAD, TYPE 4 OPTIC LED SITE LIGHT FIXTURE MOUNTED ON A 30' TAPERED POLE WITH MAST ARM AND INTEGRAL VIBRATION DAMPER. FIXTURE HAS INTEGRAL PHOTOCELL AND MOTION SENSOR FOR CONTROL. POLE SHALL HAVE A FACTORY 1" COUPLER LOCATED ON IT AT 12' ABOVE POLE BASE THAT IS LOCATED 90 DEGREES FROM THE FIXTURE HEAD.	LITHONIA	HEAD: DS1X LED P6 40K 70CRI T4M MVOLT MA PIR BAA DDBXD POLE: RTSLT 30' 7-5B MSMP US12 VD CPL1/12-0A BAA DDBXD	DARK BRONZE	POLE/ SURFACE	240 V	2,4,5

Branch Panel: SL

Equipment Notes:
MANUFACTURER/ TYPE: SQ D, NQ

Location: SITE
Supply From: METER
Mounting: Surface
Enclosure: NEMA 3R
Volts: 120/240 Single
Phases: 1
Wires: 3
A.F.C.: 2,480
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 200 A

CKT	Circuit Description	Circuit Notes	Load Classification	Trip	Poles	A	B	Poles	Trip	Load Classification	Circuit Notes	Circuit Description	CKT
1	LTG - PARKING_SOUTH		Lighting	20 A	2	413		2	20 A	--		SPARE	2
3							413						4
5	LTG - PARKING_CENTER		Lighting	20 A	2	825		2	20 A	--		SPARE	6
7							825						8
9	LTG - PARKING_NORTH		Lighting	20 A	2	413		2	20 A	--		SPARE	10
11							413						12
13	RCPT - UNDER PANEL		Receptacle	20 A	1	180		1	20 A	--		SPARE	14
15	RCPT - NORTH "H" RACK		Receptacle	20 A	1		180	1	20 A	--		SPARE	16
17	NORTH "H" RACK_ICT EQUIPMENT		Power	20 A	1	1000		1	20 A	--		SPARE	18
19	SOUTH "H" RACK_ICT EQUIPMENT		Power	20 A	1		1000	1	20 A	--		SPARE	20
21	RCPT - SOUTH "H" RACK		Receptacle	20 A	1	180		1	20 A	--		SPARE	22
23	SPARE		--	20 A	1		0	1	20 A	--		SPARE	24
25	SPARE		--	20 A	1	0		1	20 A	--		SPARE	26
27	SPARE		--	20 A	1		0	1	20 A	--		SPARE	28
29	SPARE		--	20 A	1	0		1	20 A	--		SPARE	30
31	SPARE		--	20 A	1		0	1	20 A	--		SPARE	32
33	SPACE		--	--	1	--		1	--	--		SPACE	34
35	SPACE		--	--	1		--	1	--	--		SPACE	36
37	SPACE		--	--	1	--		1	--	--		SPACE	38
39	SPACE		--	--	1		--	1	--	--		SPACE	40
41	SPACE		--	--	1	--		1	--	--		SPACE	42
				Total Load:		3010 VA	2830 VA						
				Total Amps:		25 A	24 A						

Circuit Notes:
A: ARC FAULT
Q: 30mA GFCI FOR EQUIPMENT
P: 6mA GFCI FOR PERSONNEL
S: SHUNT-TRIP
L: LOCKABLE
H: HASP

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	3300 VA	125.00%	4125 VA		
Power	2000 VA	100.00%	2000 VA	**Total Conn. Load:**	5840 VA
Receptacle	540 VA	100.00%	540 VA	**Total Est. Demand:**	6665 VA
				Total Conn.:	24 A
				Total Est. Demand:	28 A

ELECTRICAL SHEET INDEX

100% CD
APRIL 2026

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JEFFREY L. MAIER No. 12720 PE LICENSED PROFESSIONAL ENGINEER MONTANA 4-2-26

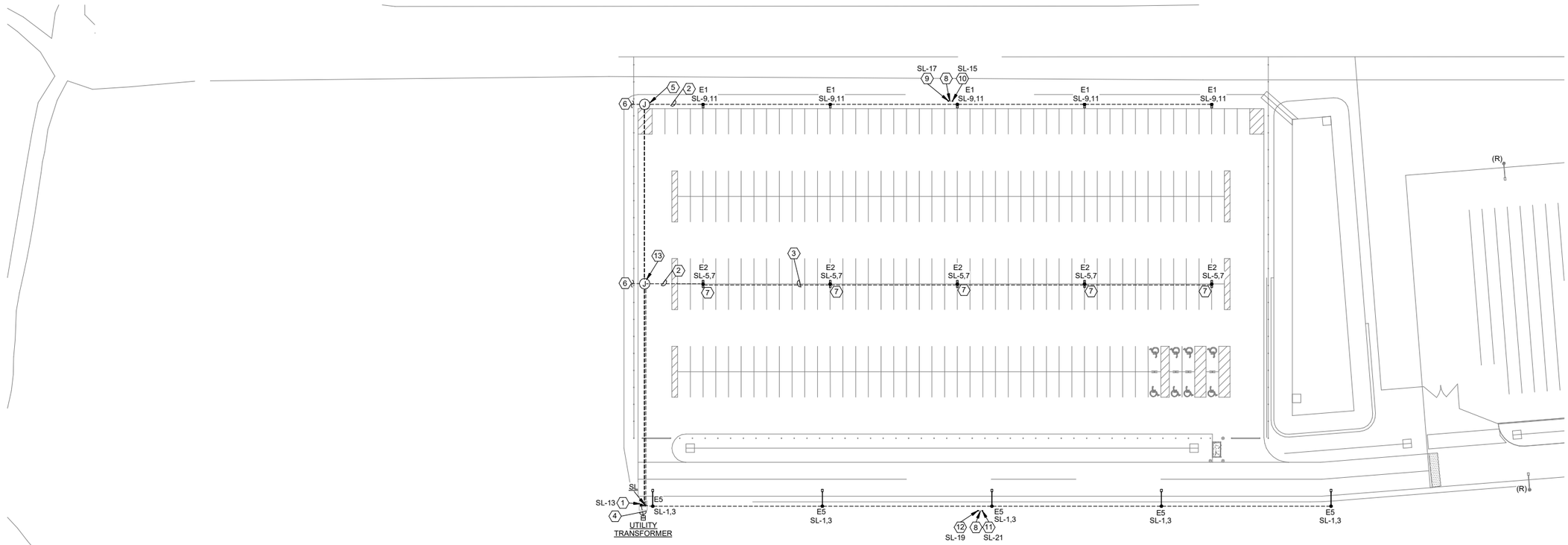
DRAWN BY: TMJ
DSGN. BY: TMJ
APPR. BY: JLK
DATE: 04/2026
Q.C. REVIEW BY: GLS
DATE: 3/23/26

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

ELECTRICAL SYMBOLS, ABBREVIATIONS & SCHEDULES

PROJECT NUMBER 2447.150.25
SHEET NUMBER 15
DRAWING NUMBER E-1

Autodesk Docs://2447.150.25 - BIL - West Shuttle Parking Lot Construction/2447.150.25 - BIL - West Shuttle Parking Lot_MEPICT_V24.rvt



1 ELECTRICAL LIGHTING PLAN – PARKING LOT
1" = 40'-0"

ELECTRICAL SITE PLAN GENERAL NOTES

A. IT IS ABSOLUTELY NECESSARY FOR ALL TRADES INVOLVED TO COORDINATE WITH EACH OTHER AND VERIFY THAT THERE ARE NO CONFLICTS IN LOCATION OF CONDUITS, BOXES, AND OTHER ITEMS THROUGHOUT THIS PROJECT BEFORE FINAL PLACEMENT OF MATERIALS.
B. ALL BURIED ELECTRICAL RACEWAYS ROUTED ON SITE SHALL HAVE A MINIMUM OF 24" OF CLEAN, PROPERLY COMPACTED COVER LOCATED OVER THEM WITH CONTINUOUS WARNING TAPE ABOVE AT 15 TO 18 INCHES BELOW FINISHED GRADE.
C. LINES SHOWN ON THE PLAN FROM ELECTRICAL BASED DEVICES TO THE RACK MOUNTED PANELBOARD REPRESENT THE PROPOSED ROUTING PATH FOR RACEWAYS. EC TO SELECT BEST PATH WHEN ROUTING FOR THE LEAST IMPACT ON SITE.
D. SEE E-3 FOR DETAILS REGARDING SITE LIGHTS, INCLUDING CONCRETE POLE BASE CONSTRUCTION DETAIL.
E. EC TO PROVIDE A CIRCUIT CONSISTING OF #10'S THROUGHOUT IN 1" PVC FOR ALL SITE LIGHTS AND POWER CONSUMING DEVICES, UNO.
F. ANY UN-USED FACTORY OPENING PROVISION IN THE LIGHT POLES SHALL BE PLUGGED AT PROJECT CLOSE. SEE NOTES IN THE LUMINAIRE SCHEDULE, ON SHEET E-1 FOR ADDITIONAL INFORMATION.
G. COORDINATE ALL POLE LIGHT LOCATIONS WITH CIVIL DRAWINGS, UTILITY MAPS AND GRADING PLANS, INCLUDING ANY/ALL CONTRACTUAL CLARIFICATIONS OR CHANGES. LIGHTING FIXTURES ON SITE PLANS ARE SHOWN IN SCHEMATIC FORM AND ARE NOT TO SCALE. VERIFY FINISH GRADE HEIGHT PRIOR TO SETTING BASES. POLE LIGHT LOCATIONS ARE BASED ON ACCURATE LIGHTING CALCULATIONS, BUT MAY NEED TO BE SHIFTED SLIGHTLY TO PROPERLY ALIGN THE FIXTURES AESTHETICALLY AND TO AVOID ENCROACHMENT ON TRAVEL LANES, PARKING SPOTS, CURBS, SIDEWALKS, OVERHEAD UTILITY LINES, ETC.
H. EC SHALL REVIEW A FULL SET OF CIVIL PLANS AND COORDINATE WITH THE CIVIL CONTRACTOR TO IDENTIFY ALL UNDERGROUND, EXISTING AND PROPOSED UTILITIES TO BE ROUTED ON THE SITE. EC SHALL VERIFY ALL UTILITY ROUTING PRIOR TO ANY DIGGING OR TRENCHING ON THE SITE. THE EC SHALL HAVE COORDINATION MEETINGS WITH ALL SITE BASED UTILITIES TO INSURE ALL PARTIES ARE IN AGREEANCE WITH PROJECT NEEDS AND SUPPORT ITEMS TO PROVIDE A FULLY FUNCTIONAL PROJECT.

KEY NOTES:

1 SEE PANELBOARD/METER BASE DETAIL ON E-3 FOR CONSTRUCTION OF THE ELECTRICAL CONTRACTOR BUILT, FREE-STANDING UNI-STRUT RACK THAT SHALL SUPPORT: METER, PANELBOARD AND SERVICE RECEPTACLE. CIRCUIT NOTED IS FOR POWERING OF THE RECEPTACLE LOCATED UNDER THE PANEL, AS SHOWN IN THE DETAIL.

2 HOME RUN CIRCUIT FROM THIS FIXTURE TO THE PANEL SHALL BE COMPRISED OF: 2 #4 AWG CU + #10 GND IN 1 1/2" CONDUIT.

3 CIRCUIT BETWEEN THESE LIGHT POLES OR POLE TO PANEL SHALL BE COMPRISED OF: 2 #8 AWG CU + #10 GND IN 1" CONDUIT.

4 PROPOSED ROUTING PATH FROM SECONDARY SIDE OF TRANSFORMER TO THE METER SOCKET. FINAL ROUTING SHALL BE COORDINATED WITH NORTHWESTERN ENERGY.

5 EC TO PROVIDE A TYPE 1 PULL BOX WITH TRAFFIC RATED LID THAT READS "LIGHTING". BOX SHALL BE USED TO ACCEPT CONDUCTORS FOR NORTH SITE LIGHTS NOW AND BE THE PULLING LOCATION FROM THE SITE PANEL TO FUTURE NORTH, WEST SITE LIGHTS. EC TO ROUTE 2-1 1/2" CONDUITS TO THE BOX, ONE WILL BE USED FOR POWER OF LIGHTS NOW AND OTHER SHALL BE A SPARE AND USED WITH FUTURE LIGHTS. PROVIDE A PULL STRING IN SPARE CONDUIT ITS ENTIRE DISTANCE TO PANEL. SEE HANDHOLE DETAIL ON E-3 FOR BOX STYLE DESCRIPTION.

6 ELECTRICAL CONTRACTOR SHALL STUB A 1 1/2" CONDUIT OUT OF IN-GRADE PULL BOX A DISTANCE OF 5' INTO UN-DISTURBED EARTH OR PAST THE EDGE OF CURRENT PROJECT PAVING, WHICHEVER IS LESS. POINT IN THE DIRECTION OF THE "FUTURE LOT" TO THE WEST TO ALLOW FOR EASE OF EXTENDING CIRCUITRY IN THE FUTURE. CAP CONDUIT AND MARK THE END WITH A ½" REBAR IN 6" LENGTH THAT IS LOCATED ON TOP OF THE CONDUIT HORIZONTALLY TO ALLOW FOR EASE OF LOCATING THE CONDUIT IN THE FUTURE.

7 EC SHALL PAINT THE EXPOSED PORTION OF THE POLE BASE LOCATED ABOVE GRADE SAFETY YELLOW AFTER A MINIMUM OF 14 DAYS OF CURE HAS LAPSED.

8 LOCATION OF ICT CONTRACTOR CONSTRUCTED "H" FRAME RACK TO ALLOW ICT CONTRACTOR TO MOUNT ALL REQUIRED SECURITY CAMERA GEAR UPON IN AN ICT CONTRACTOR-PROVIDED ENCLOSURE. ELECTRICAL CONTRACTOR SHALL PROVIDE A DOUBLE DUPLEX RECEPTACLE MOUNTED INSIDE THE EQUIPMENT ENCLOSURE AS WELL AS A 3/4"X10' CU CLAD GROUND ROD DROVE INTO EARTH AT THE BASE OF THE H FRAME. CONNECT ROD TO THE GROUND BAR, PROVIDED IN ENCLOSURE BY THE ICT CONTRACTOR WITH A #6 COPPER CONDUCTOR. SEE DETAIL ON T-3 FOR ADDITIONAL INFORMATION AND PROPOSED ARRANGEMENT OF EQUIPMENT IN THE ENCLOSURE.

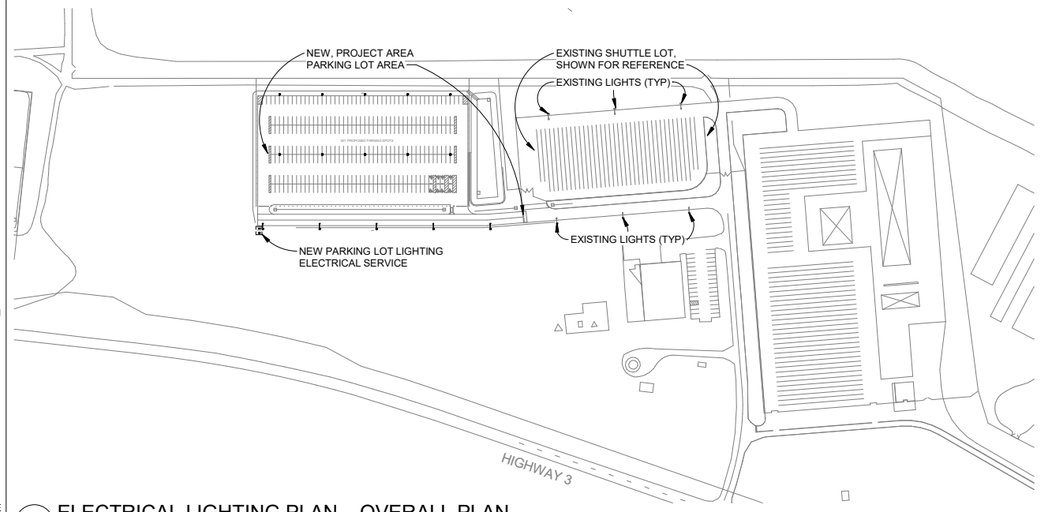
9 UTILIZE #8 AWG CU CONDUCTORS IN 1" CONDUIT THROUGHOUT THE ENTIRE SERVING CIRCUIT FOR POWERING OF SECURITY CAMERA GEAR. CONDUIT TO PANEL NOT SHOWN, SHARE TRENCH WITH LIGHTING CIRCUIT FOR ROUTING.

10 GFI RECEPTACLE WITH WEATHERPROOF, IN-USE COVER MOUNTED ON ICT CONTRACTOR BUILT "H" FRAME RACK. LOCATE RECEPTACLE ON RACK FOR BEST FIT WITH ICT CONTRACTOR EQUIPMENT, AT 12" BELOW THE EQUIPMENT ENCLOSURE. RECEPTACLE SHALL BE FED WITH A #8 AWG HOME RUN IN 1" CONDUIT. PIG TAIL CONDUCTORS IN BOX WITH #12'S TO SUPPORT CONNECTION. CONDUIT TO PANEL NOT SHOWN, SHARE TRENCH WITH LIGHTING CIRCUIT FOR ROUTING.

11 UTILIZE #10 AWG CU CONDUCTORS IN 1" CONDUIT THROUGHOUT THE ENTIRE SERVING CIRCUIT FOR POWERING OF SECURITY CAMERA GEAR. CONDUIT TO PANEL NOT SHOWN, SHARE TRENCH WITH LIGHTING CIRCUIT FOR ROUTING.

12 GFI RECEPTACLE WITH WEATHERPROOF, IN-USE COVER MOUNTED ON ICT CONTRACTOR BUILT "H" FRAME RACK. LOCATE RECEPTACLE ON RACK AT 12" BELOW THE EQUIPMENT ENCLOSURE AND ADJUST FOR BEST FIT WITH ICT CONTRACTOR EQUIPMENT. RECEPTACLE SHALL BE FED WITH A #10 AWG HOME RUN IN 1" CONDUIT. PIG TAIL CONDUCTORS IN BOX WITH #12'S TO SUPPORT CONNECTION. CONDUIT TO PANEL NOT SHOWN, SHARE TRENCH WITH LIGHTING CIRCUIT FOR ROUTING.

13 EC TO PROVIDE A TYPE 2 PULL BOX WITH TRAFFIC RATED LID THAT READS "LIGHTING". BOX SHALL BE USED TO ACCEPT CONDUCTORS FOR CENTER SITE LIGHTS NOW AND BE THE PULLING LOCATION FROM THE SITE PANEL TO FUTURE CENTER, WEST SITE LIGHTS. EC TO ROUTE 2-1 1/2" CONDUITS TO THE BOX, ONE WILL BE USED FOR POWER OF LIGHTS NOW AND THE OTHER SHALL BE A SPARE AND USED WITH FUTURE LIGHTS. PROVIDE A PULL STRING IN SPARE CONDUIT ITS ENTIRE DISTANCE TO PANEL. OTHER CONDUITS SHOWN IN PLAN THAT ROUTE TO THE PROJECT NORTH, UNDER THE BOX SHALL PASS THROUGH. LOCATE BOX ON THE WEST EDGE OF CURRENT LOT SUCH TO MINIMIZE FUTURE IMPACT WHEN PAVING OF WEST "FUTURE" PARKING LOT IS UNDERTAKEN. SEE HANDHOLE DETAIL ON E-3 FOR BOX STYLE DESCRIPTION.



2 ELECTRICAL LIGHTING PLAN – OVERALL PLAN
1" = 160'-0"

100% CD
APRIL 2026

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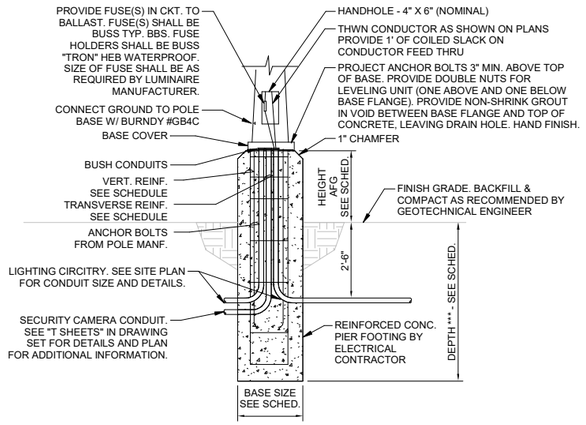
DSGN. BY: TMJ
APPR. BY: JLK
DATE: 04/2026
Q.C. REVIEW BY: GLS
DATE: 3/23/26

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

ELECTRICAL PARKING LOT LIGHTING PLAN

PROJECT NUMBER 2447.150.25
SHEET NUMBER 16
DRAWING NUMBER E-2

Autodesk Docs://2447.150.25 - BIL - West Shuttle Parking Lot Construction/2447.150.25 – BIL -West Shuttle Parking Lot_MEP/CT_V24.rvt



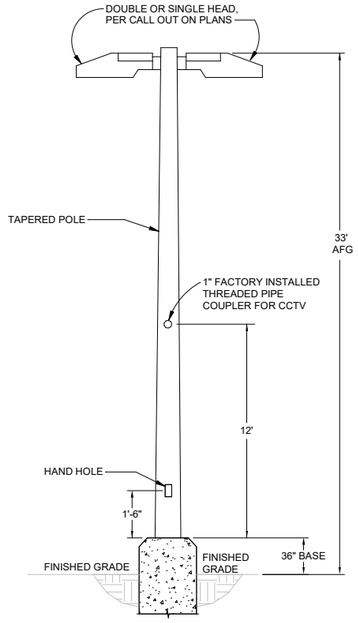
NOTE:

- CONTRACTOR SHALL GRIND EXPOSED CONCRETE SMOOTH AS REQUIRED TO REMOVE ANY FORMWORK MARKINGS.
- EXPOSED POLE BASE ABOVE GRADE SHALL BE PAINTED WITH HIGH VISIBLE, SAFETY YELLOW FOR LOCATIONS IN DIRECT CONTACT WITH PARKING SPACES. SEE E-2 PLAN FOR REQUIRED LOCATIONS.

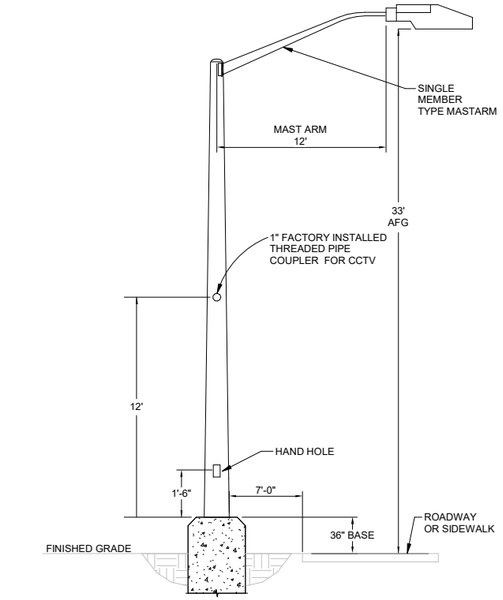
CONCRETE BASE SCHEDULE *****					
POLE HT.	BASE SIZE	VERT. REINF.	TRANSVERSE REINF.**	DEPTH ***	HEIGHT AFG
14' TO 30'	24" RND.	(6) #6 ****	#3@8" O.C.	7'-0"	3'-0"

* PROVIDE VERTICAL BARS AT EACH CORNER OF SQ. PIER.
** PROVIDE SPACING OF 3#3 WITHIN THE TOP 6" OF PIER.
*** DEPTH BELOW FINISHED GRADE.
**** SPACE VERTICAL BARS EVENLY AROUND PERIMETER.
***** PROVIDE REINF. CLEARANCE AND COVER PER ACI 318.

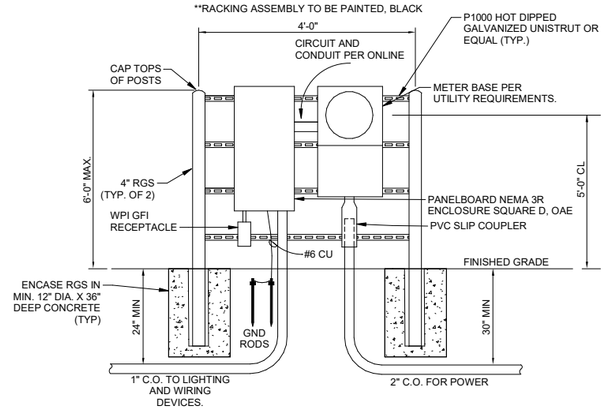
1 POLE LIGHT BASE DETAIL
N.T.S.



2 POLE LIGHT - TAPERED
N.T.S.



3 POLE LIGHT TAPERED - EXTENDED MAST ARM
N.T.S.



4 UNISTRUT MOUNTING DETAIL - PANELBOARD, METER BASE
N.T.S.

FEEDER SCHEDULE - COPPER

SCHEDULE IS BASED ON 75 DEGREE C. COPPER CONDUCTORS IN NEC 310.16 TABLE.

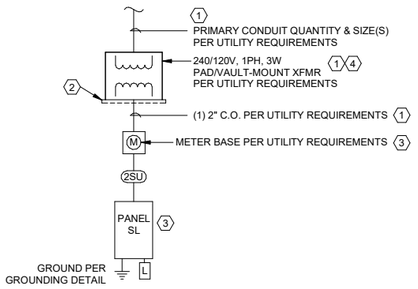
FEEDER NUMBER KEY:
A = ALUMINUM CONDUCTORS
N = INCLUDES NEUTRAL CONDUCTOR
S = SINGLE PHASE
U = UTILITY SECONDARY WITH NO GROUND CONDUCTOR

NOTE: GROUNDING CONDUCTOR IS SIZED ACCORDING TO NEC 250.122 TABLE, UNLESS FEEDER NUMBER IS FOLLOWED BY AN ASTERISK (*) INDICATING THAT THE GROUNDING CONDUCTOR IS SIZED ACCORDING TO NEC 250.66 TABLE.

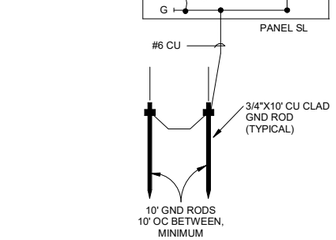
FEEDER NUMBER	AMPS	WIRE QTY PER CONDUIT	SETS IN PARALLEL	75 DEG COPPER			
				CONDUIT	PHASE QTY AND AWG	NEUTRAL AWG	GROUND AWG
2SU	200	3W	1	2"	2#3/0	#3/0	-

KEY NOTES:

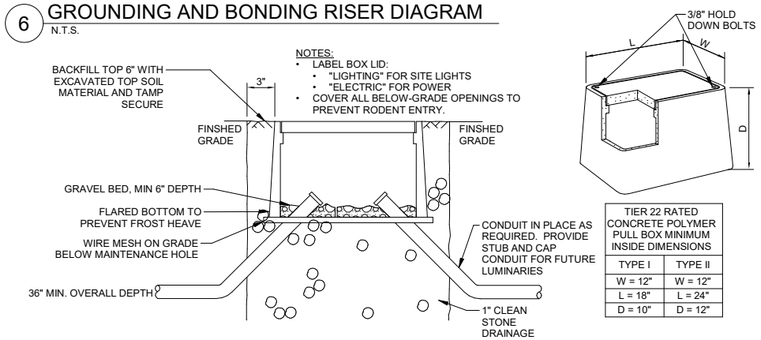
1. CONFIRM ALL REQUIREMENTS WITH LOCAL ELECTRICAL UTILITY FOR TRANSFORMER PADS, CONDUITS, & LOCATIONS PRIOR TO WORK STARTING.
2. SITE AREA SHALL BE PROPERLY PREPARED TO PREVENT SKEWING OR SETTLING OF ELECTRICAL GEAR ONCE SET.
3. MOUNT EQUIPMENT ON A ELECTRIC CONTRACTOR, FIELD CONSTRUCTED "H" FRAME. SEE DETAIL 4 THIS SHEET AND E-2 FOR ADDITIONAL INFORMATION.
4. FAULT CALC BASED ON TRANSFORMER WITH CHARACTERISTICS OF: 50KVA, 1.97% IMPEDANCE. TRANSFORMER WITH DIFFERENT VALUES THAN THIS SHALL REQUIRE EC/ SUPPLIER TO SELECT PROPER ELECTRICAL SERVICE GEAR TO MEET ON SITE AVAILABLE FAULT.



5 ONE LINE DIAGRAM
N.T.S.

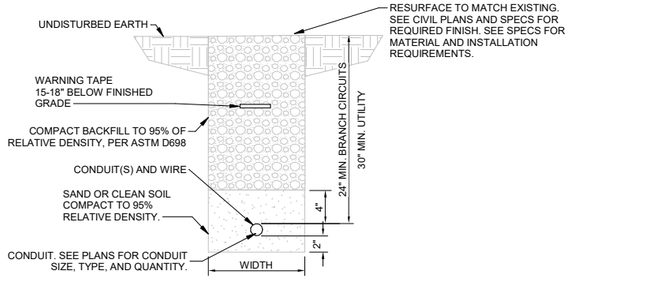


6 GROUNDING AND BONDING RISER DIAGRAM
N.T.S.



TIER 22 RATED CONCRETE POLYMER PULL BOX MINIMUM INSIDE DIMENSIONS	
TYPE I	TYPE II
W = 12"	W = 12"
L = 18"	L = 24"
D = 10"	D = 12"

7 HANDHOLE DETAIL
N.T.S.



NOTES:
1. WIDTH: MINIMUM 6"
2. WHERE POSSIBLE PUSH CONDUIT UNDER DRIVES TO AVOID EXCAVATION.
3. CONTRACTOR MAY USE BORING MACHINE IN LIEU OF TRENCHING WHERE CONDITIONS PERMIT. EQUIPMENT AND CONDUIT SHALL BE PRE-APPROVED BY ENGINEER.
4. PROVIDE PRIMARY CONDUIT QUANTITY & SIZE(S) PER UTILITY REQUIREMENTS.
5. WHEN TRENCH IS SHARED WITH OTHER UTILITIES, SUCH AS ICT, WATER OR GAS, ENSURE 12" MINIMUM SPACING BETWEEN POWER/ LIGHTING CONDUITS TO ICT AND 24" FOR GAS OR WATER.

8 TRENCH DETAIL - LIGHTING AND POWER
N.T.S.

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Q.C. REVIEW BY: GLS
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BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

ELECTRICAL DETAILS

PROJECT NUMBER 2447.150.25
SHEET NUMBER 17
DRAWING NUMBER E-3

ICT ABBREVIATIONS LEGEND

AFC	ABOVE FINISHED CEILING
ACT	ACOUSTICAL CEILING TILE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AP	ACCESS POINT (WIRELESS, TYP.)
AV	AUDIO-VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
C.	CONDUIT
CAT	CATEGORY
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED
CMP	COMMUNICATIONS PLENUM (RATED)
CMR	COMMUNICATIONS RISER (RATED)
CU	COPPER
(D)	DEMOLISHED
DIM	DIMENSION
DMARC	DEMARCATION
DPS	DOOR POSITION SWITCH
(E), EX.	EXISTING
EA	EACH
EC	ELECTRICAL CONTRACTOR (DIV 26)
EF	ENTRANCE FACILITY
E.L.	ELECTRIFIED LATCH
EMT	ELECTRICAL METALLIC TUBING
EPT	ELECTRIC POWER TRANSFER
ER	EQUIPMENT ROOM
FACP	FIRE ALARM CONTROL PANEL
FLR	FLOOR
GND	GROUND
HT	HEIGHT/HIGH
I/O	INDOOR/OUTDOOR
ICT	INFORMATION AND COMMUNICATIONS TECHNOLOGY
IDS	INTRUSION DETECTION SYSTEM
IMC	INTERMEDIATE METAL CONDUIT
ISP	INTERNET SERVICE PROVIDER
J-BOX	JUNCTION BOX
MFR	MANUFACTURER
MH	MAINTENANCE HOLE
MIN	MINIMUM
MMF	MULTI-MODE FIBER
MUTOA	MULTI-USER TELECOMMUNICATIONS OUTLET ASSEMBLY
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O.C.	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OVERHEAD
OSP	OUTSIDE PLANT CABLE
PB	PULLBOX
PBB	PRIMARY BONDING BUSBAR
PEX	PRESS TO EXIT
PoE	POWER OVER ETHERNET
PP	PATCH PANEL
QEL	QUIET ELECTRIFIED LATCH
QTY	QUANTITY
REQ	REQUIREMENT
RM	ROOM
REX	REQUEST TO EXIT
SBB	SECONDARY BONDING BUSBAR
SMF	SINGLE-MODE FIBER
SP	SERVICE PROVIDER
SPEC	SPECIFICATION
STP	SHIELDED TWISTED PAIR
TR	TELECOM ROOM
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
UNO	UNLESS NOTED OTHERWISE
UTP	UNSHIELDED TWISTED PAIR
VIF	VERIFY IN FIELD
W/	WITH
W/O	WITHOUT
WAO	WORK AREA OUTLET
WAP	WIRELESS ACCESS POINT
WP	WEATHERPROOF

ABBREVIATIONS AND SYMBOLS GENERAL NOTES

A. THE ABBREVIATIONS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL ABBREVIATIONS APPEAR ON THIS PROJECT.
B. THE SYMBOLS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL SYMBOLS APPEAR ON THIS PROJECT.
C. ALL MOUNTING HEIGHTS ARE TO CENTER OF DEVICE ABOVE FINISHED FLOOR, UNLESS NOTED OTHERWISE. MOUNTING HEIGHTS INDICATED ON ARCHITECTURAL WALL ELEVATIONS OR AS NOTED SPECIFICALLY ON THE DRAWINGS OR IN THE SPECIFICATIONS SHALL TAKE PRECEDENCE OVER MOUNTING HEIGHTS LISTED.

ICT PROJECT GENERAL NOTES

1. THIS PROJECT IS TO CONFORM TO THE LATEST LOCALLY ADOPTED VERSION OF THE NATIONAL ELECTRICAL CODE AND THE LATEST REVISION OF:
   ANSI/TIA-526-7-A, Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant, and its published addenda.
   ANSI/TIA-526-14-C, Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant, and its published addenda.
   ANSI/TIA-568.0-E, Generic Telecommunications Cabling for Customer Premises, and its published addenda.
   ANSI/TIA-568.1-E, Commercial Building Telecommunications Infrastructure Standard, and its published addenda.
   ANSI/TIA-568.2-E, Balanced Twisted-Pair Telecommunications Cabling and Components Standard, and its published addenda.
   ANSI/TIA-568.3-E, Optical Fiber Cabling and Components Standard, and its published addenda.
   ANSI/TIA-569-E, Telecommunications Pathways and Spaces, and its published addenda
   ANSI/TIA-598-D Optical Fiber Cable Color Coding
   ANSI/TIA-606-D, Administration Standard for Telecommunications Infrastructure, and its published addenda
   ANSI/TIA-607-D, Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises, and its published addenda.
   ANSI/TIA-758-C, Customer Owned Outside-Plant Telecommunications Infrastructure Standard, and its published addenda.
2. SEE SPECIFICATIONS FOR ADDITIONAL CONTRACTOR QUALIFICATIONS, PRODUCT INSTALLATION, AND QUALITY REQUIREMENTS.
3. ALL DIMENSIONS MUST BE VERIFIED IN THE FIELD AND ANY DEVIATIONS CAUSING CHANGES EXCEEDING 6 INCHES TO THE INTENDED LOCATION OF MAJOR TELECOMMUNICATIONS INFRASTRUCTURE COMPONENTS MUST BE COORDINATED WITH THE ARCHITECT AND DESIGNER PRIOR TO INSTALLATION.
4. ALL ICT DEVICES SHALL BE SECURELY MOUNTED PLUMB AND STRAIGHT TO WALLS, FLOORS, OR RACKS, PER THE MANUFACTURER'S RECOMMENDED MOUNTING PRACTICE, UNLESS OTHERWISE INDICATED IN THE ICT DRAWINGS.
5. ALL CABLES SHALL BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.
6. INSTALL FIRESTOP ASSEMBLIES IN ALL THROUGH-SLAB AND THROUGH-WALL PENETRATIONS FOR THE INSTALLATION OF ICT CABLING AS REQUIRED TO MAINTAIN FIRE RATING OF PENETRATED SLAB OR WALL. REVIEW DRAWINGS FOR PARTITION TYPE RATINGS. FIRESTOPPING SYSTEMS USED FOR ALL PENETRATIONS SHALL BE A UL LISTED ASSEMBLY AND APPROVED BY APPLICABLE AUTHORITIES HAVING JURISDICTION PRIOR TO INSTALLATION.
7. THE METHOD OF INSTALLATION FOR ALL ICT RELATED BACK BOXES IN WALLS AND THE METHOD FOR PASSAGE OF CONDUIT AND WIREWAYS THROUGH ACOUSTICALLY SENSITIVE WALLS SHALL BE COORDINATED WITH THE ACOUSTICAL CONSULTANT OR OWNER PRIOR TO INSTALLATION.
8. BOND ALL CONDUITS, CABLE TRAYS, AND JUNCTION BOXES PER ANSI/TIA-607-D IN ADDITION TO ANY APPLICABLE CODE REQUIREMENTS.
9. ALL ICT RELATED FLOOR BOXES, POKE THRU DEVICES, JUNCTION BOXES AND BACK BOXES SHOULD BE PROVIDED WITH AN EMPTY CONDUIT TO THE APPLICABLE TELECOMMUNICATIONS ROOM, CABLE TRAY PATHWAY OR PULL BOX. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS.
10. CONDUIT ROUTES ON THE ICT DRAWINGS SHOW ONLY INTERCONNECTION BETWEEN THE TERMINATION POINTS AND APPROXIMATE ROUTES. THE EXACT ROUTE OF CONDUIT AND CABLE PATHWAYS ARE DETERMINED BY FIELD CONDITIONS AND VERIFIED BY INSTALLING CONTRACTOR.
11. NOTIFY THE DESIGNER OF ANY DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE "T" (ICT) DRAWINGS. OBTAIN CLARIFICATION BEFORE PROCEEDING WITH WORK.
12. ALL PATHWAY AND RACEWAY INCLUDING CONDUIT SLEEVES, FLOOR BOXES, OUTLET BOXES AND CONDUIT BY ELECTRICAL, UNO.
13. ALL CABLES SHALL BE SUPPORTED EVERY 48" O.C. MAX. BY J-HOOKS, CABLE TRAY, OR IN CONDUIT.
14. ALL CABLES RUN IN CONDUIT UNDER SLAB SHALL BE INDOOR/OUTDOOR RATED CATEGORY 6A.
15. CABLE GAUGE AND NUMBER OF CONDUCTORS ARE SHOWN IN THE FORMAT: AWG/# (EX. 16/2 = 16 AWG / 2 CONDUCTOR)
16. CALL 811 PRIOR TO PERFORMING ANY EXCAVATION.

CABLE ROUTING LEGEND

- HORIZONTAL CABLE PATHWAY
- BACKBONE CABLE PATHWAY
- BELOW GRADE
- CONDUIT OR CONDUIT SLEEVE. EMT, UNO.
- LADDER RACK OR CABLE TRAY, SEE PLANS FOR ADDITIONAL INFORMATION.
- VERTICAL TRANSITION BETWEEN FLOORS OR GRADE
- HORIZONTAL TRANSITION BETWEEN SHEETS AND/OR DETAILS
- (J) JUNCTION BOX. SEE PLANS FOR SIZING, UNO.

SECURITY LEGEND

360 C — INDICATES SIMPLEX **STANDARD** CATEGORY 6 OUTLET FOR IP CAMERA. ALL CABLING TO BE CONTINUOUS BETWEEN H-FRAME MOUNTED COMMUNICATIONS ENCLOSURE AND CAMERA LOCATION. SEE PLANS FOR PATHWAYS. PROVIDE AVIGILON CAMERA (PART #32C-H5A-4MH). PROVIDE AXIS SURGE PROTECTOR AT EACH END PART # 5801-641. PLACE SURGE PROTECTORS IN COMMUNICATIONS NEMA ENCLOSURE AND IN HANDHOLES BY EACH CAMERA.

360 C1 — INDICATES SIMPLEX **EXTENDED REACH** CATEGORY 6 OUTLET FOR IP CAMERA. ALL CABLING TO BE CONTINUOUS BETWEEN H-FRAME MOUNTED COMMUNICATIONS ENCLOSURE AND CAMERA LOCATION. SEE PLANS FOR PATHWAYS. PROVIDE AVIGILON CAMERA (PART #32C-H5A-4MH). PROVIDE AXIS SURGE PROTECTOR AT EACH END PART # 5801-641. PLACE SURGE PROTECTORS IN COMMUNICATIONS NEMA ENCLOSURE AND IN HANDHOLES BY EACH CAMERA.

ICT SHEET INDEX

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Bicsi
Pete Weber
BICSI ID # 338372
EXPIRES 12-31-26
RCDD

100% CD
APRIL 2026

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REVISIONS

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MONTANA LICENSED 85420 PE 4-2-26 PROFESSIONAL ENGINEER

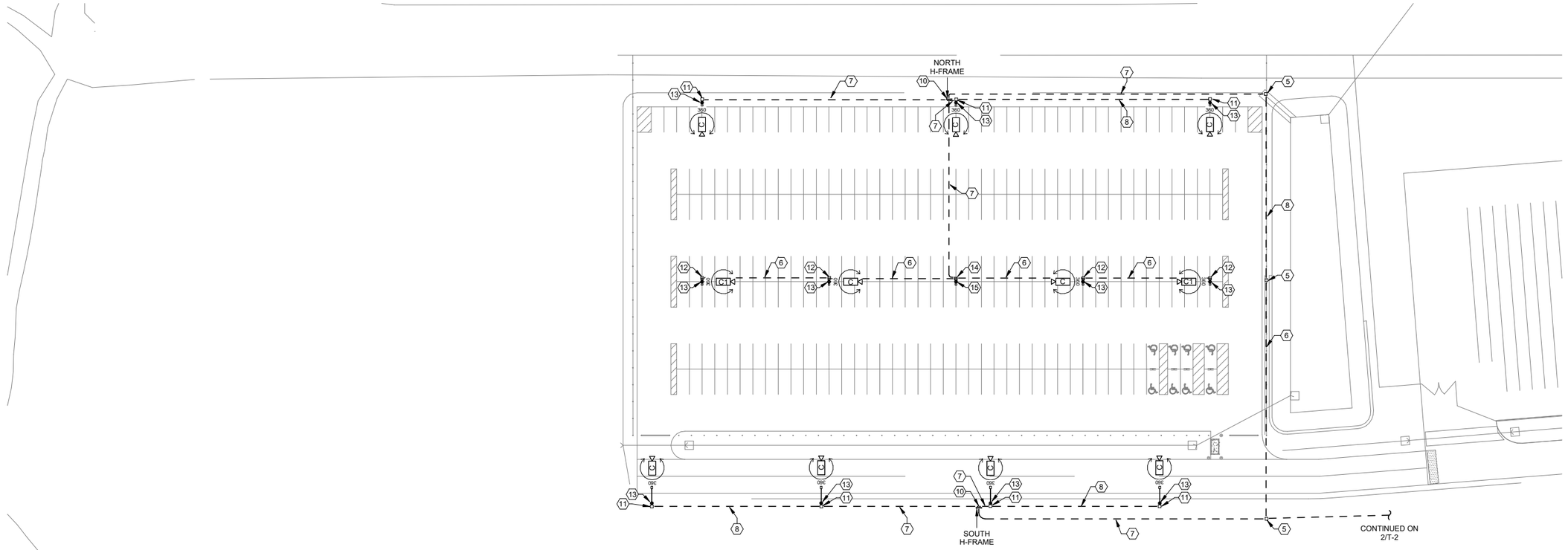
DRAWN BY: CCO
DSGN. BY: PJW
APPR. BY: PJW
DATE: 04/2026
Q.C. REVIEW BY: PMH
DATE: 3/30/26

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

ICT SYMBOLS AND ABBREVIATIONS

PROJECT NUMBER 2447.150.25
SHEET NUMBER 18
DRAWING NUMBER T-1

Autodesk Docs://2447.150.25 - BIL - West Shuttle Parking Lot Construction/2447.150.25 - BIL -West Shuttle Parking Lot_MEPICT_V24.rvt



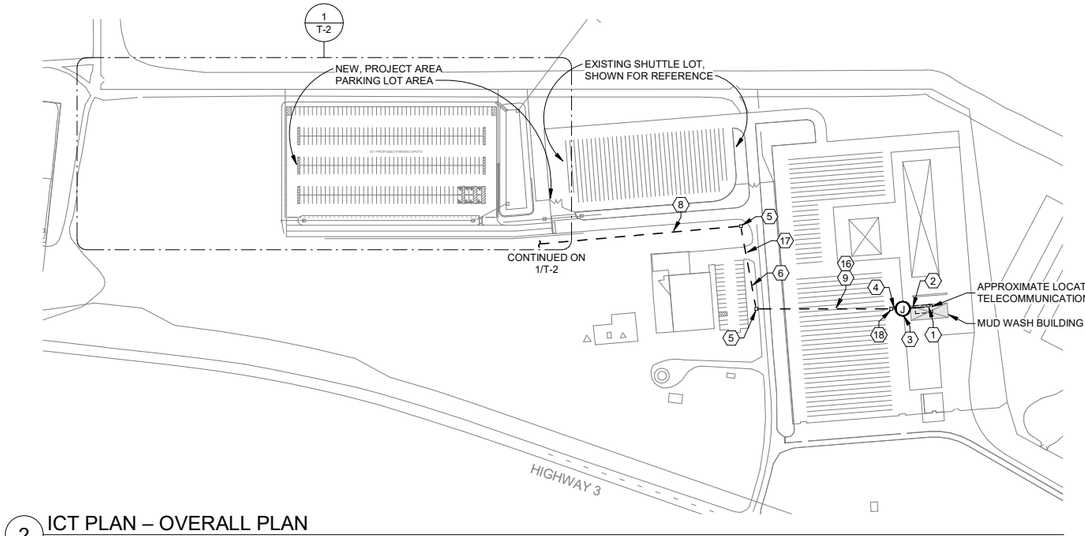
1 ICT PLAN – PARKING LOT
1" = 40'-0"

GENERAL ICT SITE NOTES

A. IT IS ABSOLUTELY NECESSARY FOR ALL TRADES INVOLVED TO COORDINATE WITH EACH OTHER.
B. CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING OF SIDEWALKS, PAVEMENT, FLOORS, WALLS, CEILINGS, ROOFS, ETC. TO PERFORM THE REQUIRED WORK DEPICTED IN THESE DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR ALL PATCHING OF HOLES TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.
C. ALL CONDUITS SHALL HAVE A MAXIMUM COMBINED BEND RADIUS OF 180 DEGREES BETWEEN PULL POINTS.
D. ALL CONDUIT ENDS SHALL BE FURNISHED WITH PLASTIC BUSHINGS FOR CABLE PROTECTION.
E. PROVIDE PULL STRINGS FOR ALL CONDUITS INSTALLED GREATER THAN 10'.
F. LINES SHOWN ON THE PLAN FROM ICT BASED DEVICES TO THE BUILDING REPRESENT THE PROPOSED ROUTING PATH FOR PATHWAYS. CONTRACTOR SHALL SELECT BEST PATH WHEN ROUTING FOR THE LEAST IMPACT ON SITE OR BUILDING.
G. PRIOR TO ANY TRENCHING, CONTACT 811 'CALL BEFORE YOU DIG' AND COORDINATE WITH OWNER AND UTILITIES TO LOCATE ALL BURIED POWER, COMMUNICATIONS, GAS, WATER, SEWER, IRRIGATION PIPING, ETC. FROM THIS INFORMATION, ESTABLISH THE BEST ROUTING AND PLAN FOR AREAS THAT WILL REQUIRE HAND DIGGING.
H. ALL PATHWAYS ON SITE SHALL HAVE A MINIMUM OF 36" OF CLEAN, PROPERLY COMPACTED COVER.
I. CAREFULLY CUT AND RETAIN SOD ALIVE FOR REINSTALLATION. SAW CUT, REMOVE, AND LEGALLY DISPOSE OF CONCRETE AND ASPHALT.
J. INSTALL MOLDED PLASTIC INTERMEDIATE (HORIZONTAL) SPACERS EVERY SIX FEET WHENEVER TWO OR MORE CONDUITS ARE INSTALLED IN A TRENCH. MAINTAIN A MINIMUM 12-INCH SEPARATION BETWEEN POWER AND COMMUNICATIONS CONDUITS. WHERE TRENCH IS SHARED WITH OTHER UTILITIES, A MINIMUM 24-INCH SEPARATION SHALL BE MAINTAINED FROM WATER, GAS, OR SEWER LINES. ALL CONDUIT SEPARATIONS ARE MEASURED SURFACE-TO-SURFACE AND NOT CENTER-TO-CENTER.
K. FILL TRENCH AND COMPACT TO MATCH ADJACENT UNDISTURBED SOIL. REPLACE SOD TO MATCH EXISTING. POUR CONCRETE AND REPLACE ASPHALT TO MATCH ADJACENT SURFACES.
L. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGE TO EXISTING BURIED POWER, COMMUNICATIONS, GAS, WATER, SEWER, IRRIGATION PIPING, ETC. AND SHALL HIRE TRAINED AND CERTIFIED CRAFTSMEN TO PERFORM THE REPAIRS AND BRING THEM BACK TO 'LIKE EXISTING CONDITIONS'. REPAIR WORK WILL NOT BE CONSIDERED COMPLIETE UNTIL ALL SYSTEMS ARE ONCE AGAIN FUNCTIONING PROPERLY AND OWNER IS SATISFIED WITH THE REPAIRS.
M. EXISTING UTILITIES AND SITE CONDITIONS ARE NOT SHOWN ON THESE DRAWINGS. REFER TO CIVIL DRAWINGS FOR LOCATION OF EXISTING UTILITIES AND SITE INFORMATION.

KEY NOTES:

1. EXISTING WALL MOUNTED TELECOMMUNICATIONS CABINET LOCATION. PROVIDE RACK MOUNTED FIBER OPTIC PATCH PANEL. PROVIDE (4) 1 GIGABIT LC SFPs FOR EXISTING VIGITRON SWITCH. SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.
2. RUN (2) 1-1/2" INNERDUCT FROM NEMA 3R JUNCTION BOX TO WALL MOUNTED COMMUNICATIONS CABINET IN TELECOMMUNICATIONS ROOM. WEATHERPROOF BUILDING PENETRATION.
3. (16" x 16" x 8") NEMA 3R JUNCTION BOX. WALL MOUNT AT HEIGHT OF INTERIOR BAR JOISTS. AVOID CONFLICT WITH INTERIOR UNIT HEATER. WEATHERPROOF ALL CONDUIT PENETRATIONS.
4. RUN 3" SCHEDULE 40 PVC CONDUIT FROM COMMUNICATIONS HANDHOLE TO WALL MOUNTED NEMA 3R JUNCTION BOX. RUN CONDUIT BELOW GRADE TO EXTERIOR WALL. RUN CONDUIT TIGHT TO WALL.
5. PROVIDE TYPE I COMMUNICATIONS HANDHOLE. SEE DETAIL 5/T-3 FOR ADDITIONAL INFORMATION.
6. TRENCH 2" SCHEDULE 80 PVC CONDUIT BETWEEN COMMUNICATION HANDHOLES AS SHOWN. SEE DETAIL 2/T-3 FOR ADDITIONAL INFORMATION.
7. TRENCH 2" SCHEDULE 40 PVC CONDUIT BETWEEN COMMUNICATION HANDHOLE AND H-FRAME MOUNTED COMMUNICATIONS ENCLOSURE AS SHOWN. SEE DETAIL 2/T-3 FOR ADDITIONAL INFORMATION.
8. TRENCH 2" SCHEDULE 40 PVC CONDUIT BETWEEN COMMUNICATION HANDHOLES AS SHOWN. SEE DETAIL 2/T-3 FOR ADDITIONAL INFORMATION.
9. RUN (1) 12-STRAND SINGLE MODE FIBER OPTIC CABLE FROM TELECOMMUNICATIONS RACK (KEYNOTE 1) TO EACH H-FRAME MOUNTED COMMUNICATIONS ENCLOSURE (KEYNOTE 10). USE PATHWAY SHOWN.
10. COMMUNICATIONS NEMA ENCLOSURE MOUNTED TO H-FRAME. SEE DETAILS 3/T-3 AND 4/T-3 FOR ADDITIONAL DETAILS.
11. PROVIDE TYPE III COMMUNICATIONS HANDHOLE. SEE DETAIL 6/T-3 FOR ADDITIONAL INFORMATION.
12. PROVIDE TYPE IV COMMUNICATIONS HANDHOLE. SEE DETAIL 6/T-3 FOR ADDITIONAL INFORMATION.
13. LIGHT POLE LOCATION. SEE DETAIL 1/T-3 AND ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
14. PROVIDE TYPE II COMMUNICATIONS HANDHOLE. SEE DETAIL 5/T-3 FOR ADDITIONAL INFORMATION.
15. LIGHT POLE LOCATION.
16. BORE A SINGLE 3" HDPE SDR 11 CONDUIT BETWEEN COMMUNICATION HANDHOLES AS SHOWN.
17. PROVIDE SURFACE RESTORATION FOR ROADWAY CROSSING. SEE CIVIL DETAIL 2/D-2 FOR ADDITIONAL INFORMATION.
18. PROVIDE TYPE I COMMUNICATIONS HANDHOLE. ALL AREAS DISTURBED BY INSTALLATION SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS. SEE DETAIL 5/T-3 FOR ADDITIONAL INFORMATION.



2 ICT PLAN – OVERALL PLAN
1" = 160'-0"

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Pete Weber
BICSI ID # 338572
EXPIRES 12-31-28
RCDD

N

40' 20' 0 40' 80'
SCALE IN FEET
160' 80' 0 160' 320'
SCALE IN FEET

100% CD
APRIL 2026

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PETER J. PARKINS 85920 PE MONTANA LICENSED PROFESSIONAL ENGINEER
4-2-26

DRAWN BY: CCO
DSGN. BY: PJW
APPR. BY: PJW
DATE: 04/2026
Q.C. REVIEW BY: PMH
DATE: 3/30/26

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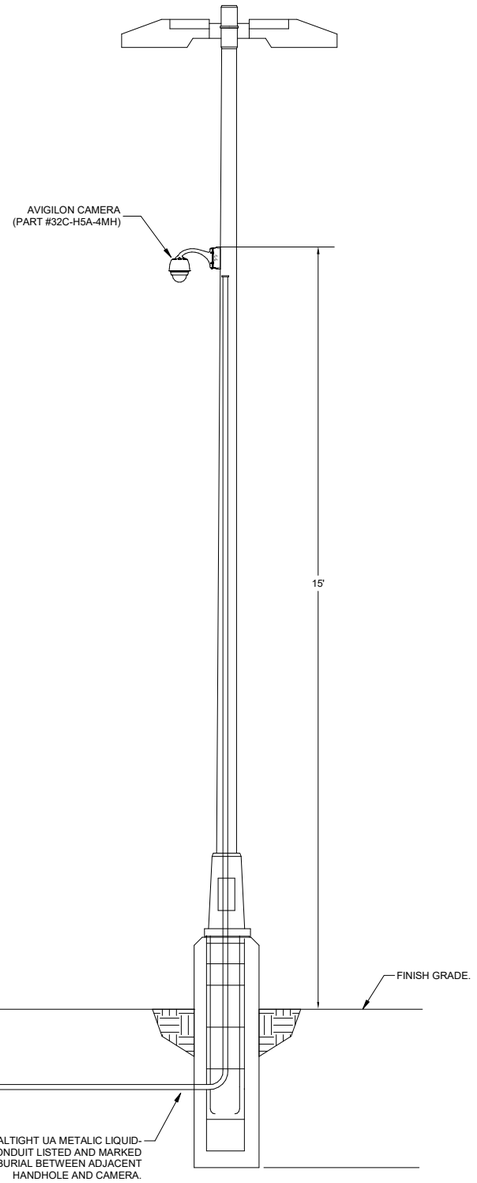
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

ICT PARKING LOT PLAN

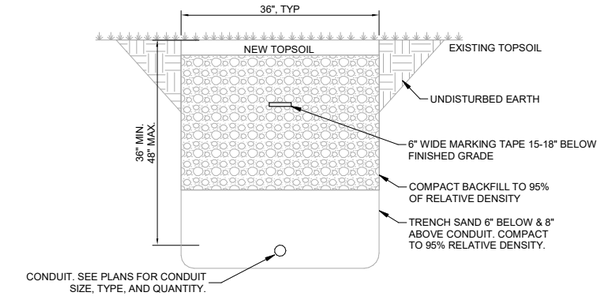
PROJECT NUMBER 2447.150.25
SHEET NUMBER 19
DRAWING NUMBER T-2

Autodesk Docs://2447.150.25 - BIL - West Shuttle Parking Lot Construction/2447.150.25 - BIL -West Shuttle Parking Lot_MEP/CT_V24.rvt



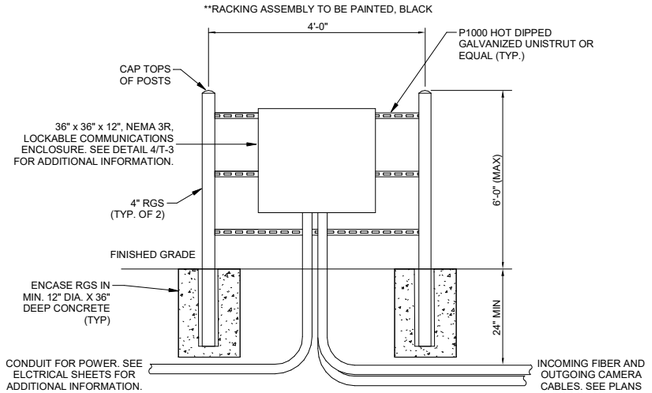
NOTE:
- WEATHERPROOF ALL LIGHT POLE PENETRATIONS AND APPLY RUST INHIBITOR. MATCH POLE COLOR.
- SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INSTALLATION INFORMATION ON LIGHTING POLE.

1 POLE LIGHT BASE DETAIL
N.T.S.

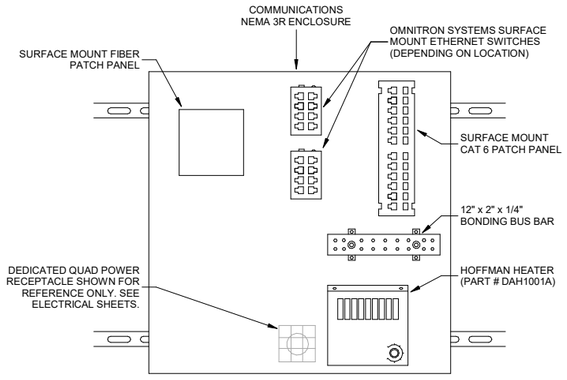


NOTE:
- EDGE OF TRENCH TO BE 36" MIN FROM EDGE OF WATER OR SEWER LINE
- WHEN TRENCH IS SHARED WITH OTHER UTILITIES, SUCH AS POWER OR GAS, ENSURE 12" MINIMUM SPACING BETWEEN ICT CONDUITS AND OTHER UTILITIES.
- PROVIDE 18 AWG STRANDED LOCATE WIRE WITHIN CONDUIT.

2 COMMUNICATIONS - TRENCH DETAIL
N.T.S.



3 UNISTRUT MOUNTING DETAIL
N.T.S.

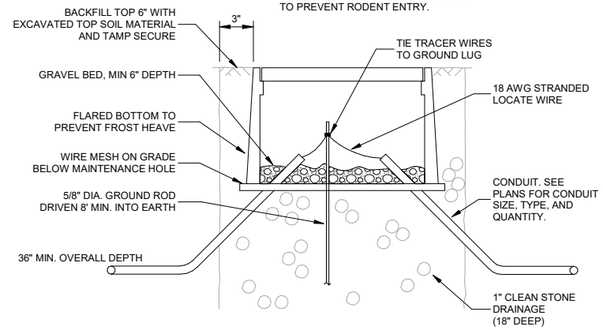


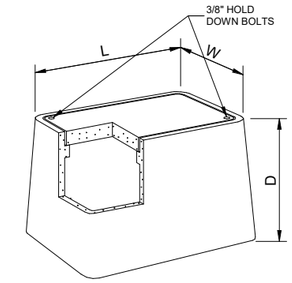
NORTH ENCLOSURE:
- PROVIDE (2) OMNITRON SYSTEMS SURFACE MOUNT ETHERNET SWITCHES ((1) PART # 3119B-0-14-1W AND (1) PART # 3119B-0-24-1W)
- PROVIDE (3) 1 GIG LC SFP MODULES.

SOUTH ENCLOSURE:
- PROVIDE (1) OMNITRON SYSTEMS SURFACE MOUNT ETHERNET SWITCHES (PART # 3119B-0-14-1W)
- PROVIDE (1) 1 GIG LC SFP MODULES.

4 COMMUNICATIONS ENCLOSURE DETAIL
N.T.S.

NOTES:
- LABEL BOX LID: "COMMUNICATIONS"
- COVER ALL BELOW-GRADE OPENINGS TO PREVENT RODENT ENTRY.

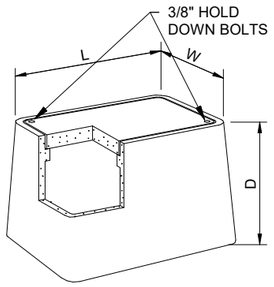




TYPE I: TIER 15 RATED CONCRETE POLYMER PULL BOX MINIMUM INSIDE DIMENSIONS
W = 17"
L = 30"
D = 24"

TYPE II: TIER 22 RATED CONCRETE POLYMER PULL BOX MINIMUM INSIDE DIMENSIONS
W = 17"
L = 30"
D = 24"

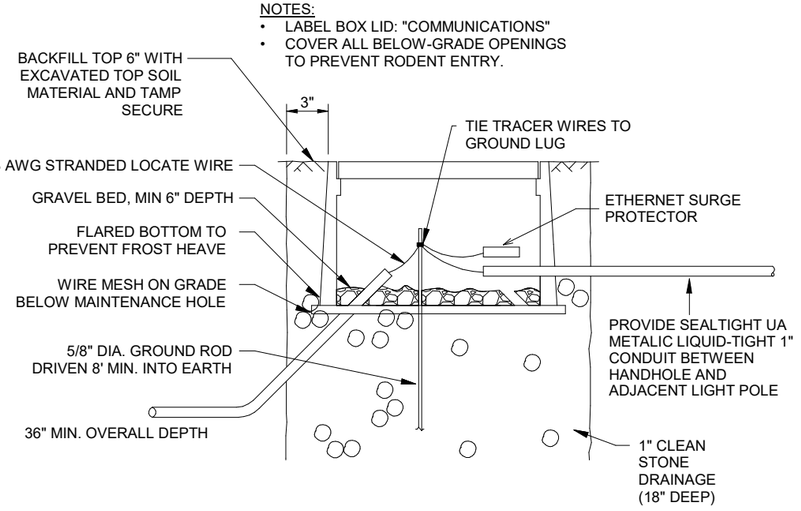
5 COMMUNICATIONS - HANDHOLE DETAIL TYPE I AND II
N.T.S.



TYPE III: TIER 15 RATED CONCRETE POLYMER PULL BOX MINIMUM INSIDE DIMENSIONS
W = 12"
L = 12"
D = 24"

TYPE IV: TIER 22 RATED CONCRETE POLYMER PULL BOX MINIMUM INSIDE DIMENSIONS
W = 12"
L = 12"
D = 24"

NOTES:
- LABEL BOX LID: "COMMUNICATIONS"
- COVER ALL BELOW-GRADE OPENINGS TO PREVENT RODENT ENTRY.



6 COMMUNICATIONS - HANDHOLE DETAIL TYPE III AND IV
N.T.S.

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REVISIONS			
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DRAWN BY: CCO
DSGN. BY: PJW
APPR. BY: PJW
DATE: 04/2026
Q.C. REVIEW BY: PMH
DATE: 3/30/26

BILLINGS LOGAN INTERNATIONAL AIRPORT
WEST SHUTTLE PARKING LOT CONSTRUCTION
BILLINGS MONTANA

ICT DETAILS

PROJECT NUMBER 2447.150.25
SHEET NUMBER 20
DRAWING NUMBER T-3

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