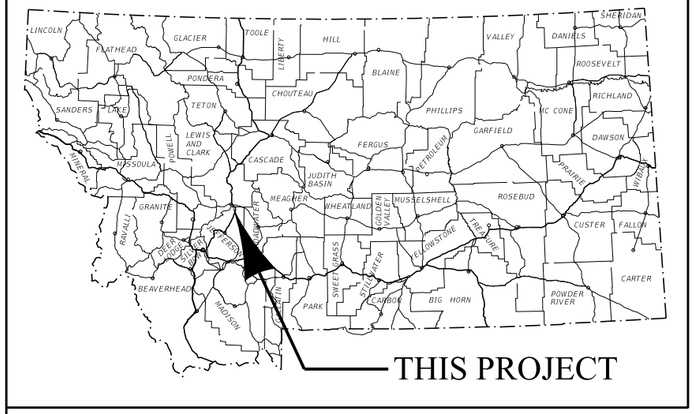
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AWARD COPY



MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT HSIP 108-1(4)0
ROADWAY AND ROADSIDE SAFETY IMPROVEMENTS
SF 189 PROSPECT AVE LIGHTING
LEWIS AND CLARK COUNTY

PROJECT DESIGN DATA

PROSPECT AVE.
RP 0.00 - RP 0.91

PRESENT 2021 A.D.T. = 13,690
LETTING 2023 A.D.T. = 13,970
DESIGN 2043 A.D.T. = 17,050
D.H.V. = 1760
TRUCKS = 2.0%
GROWTH RATE = 1.0%

LENGTH 0.91 *MILES*

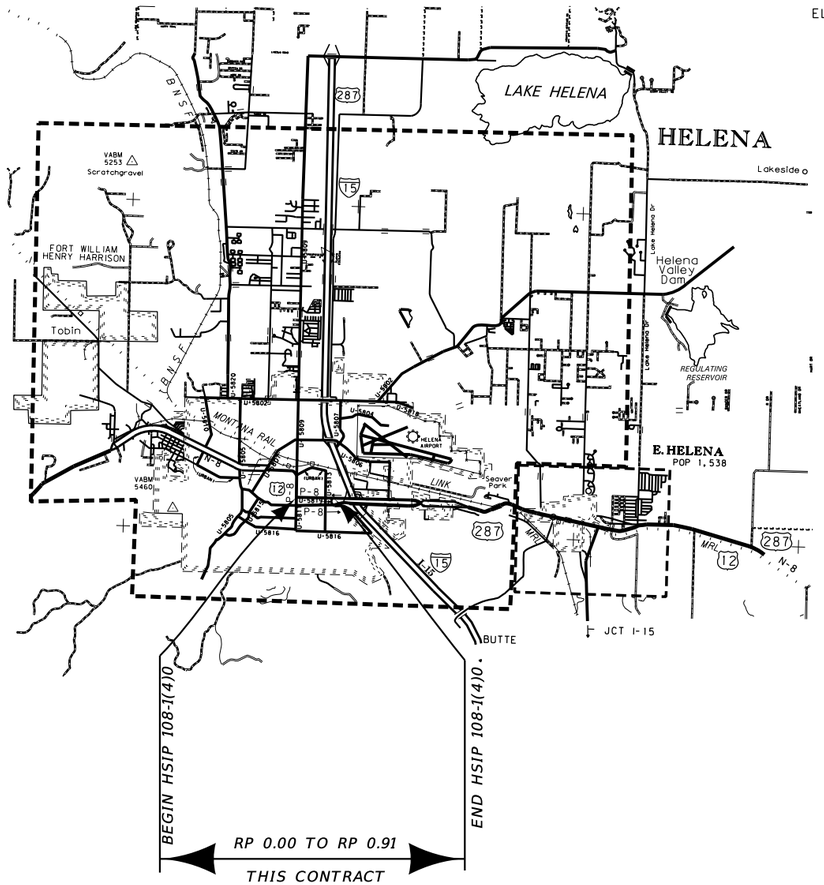


TABLE OF CONTENTS

PLANS	SHEET NO.
TITLE SHEET & TABLE OF CONTENTS	1
ELECTRICAL PLANS	E1 - E8
ELECTRICAL QUANTITY SUMMARY & DETAILS	E1 - E5
PLAN SHEETS	E6 - E8

MONTANA
DEPARTMENT OF TRANSPORTATION

APPROVED BY:

TRAFFIC AND SAFETY
ENGINEER

MONTANA
GABE B.
PRIEBE
13957PE
LICENSED
PROFESSIONAL ENGINEER

Signed by:
Gabe B. Priebe
4895FFA73587466...

3/14/2025
DATE

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	
I.C.	
P. E.	HSIP 108-1(3)0

3	MONTANA Department of Transportation	C:\DGN\9900000elttl001.dgn	DESIGNED BY	DAN CUNNINGHAM	11/2023	
2		10/25/2024	REVIEWED BY			
		6:54:55 AM CPS - U2593	CHECKED BY			UPN 9900000

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DETAILS

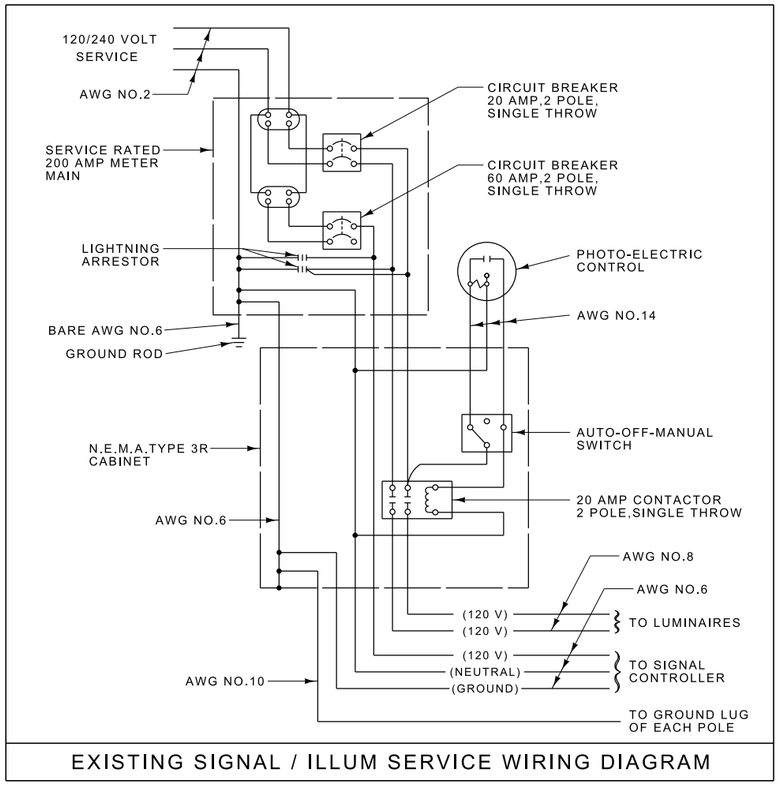
ELECTRICAL QUANTITY SUMMARY

	ITEM NO.	MATERIAL	TOTAL	UNIT
*	202 020 354	REMOVE SIDEWALK	180	SOYD
	608 010 020	SIDEWALK CONCRETE 4 IN	180	SOYD
	616 343 920	CONDUIT-PLASTIC 1.5 IN	4300	LNFT
	617 783 006	PULL BOX-COMPOSITE TYPE 1	1	EACH
	617 000 000	FOUNDATION-CONCRETE	20	CUYD
	617 123 108	CONDUCTOR-COPPER AWG8-600V	8600	LNFT
	617 123 110	CONDUCTOR-COPPER AWG10-600V	6280	LNFT
	617 183 056	STANDARD-STL TYPE 10-A-500-6	32	EACH
	617 303 300	HIGH EFFICACY LUMINAIRE LED	32	EACH
	617 781 000	REMOVE AND SALVAGE MISC ELECTRICAL	1	LS

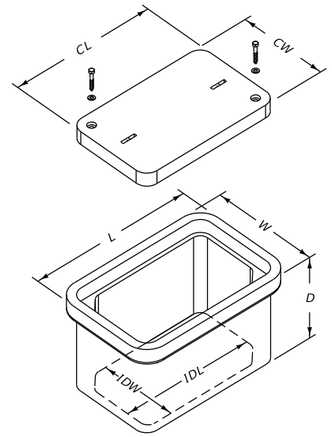
* FOR INFORMATION ONLY (NOT A BID ITEM)

QUANTITY SUMMARY

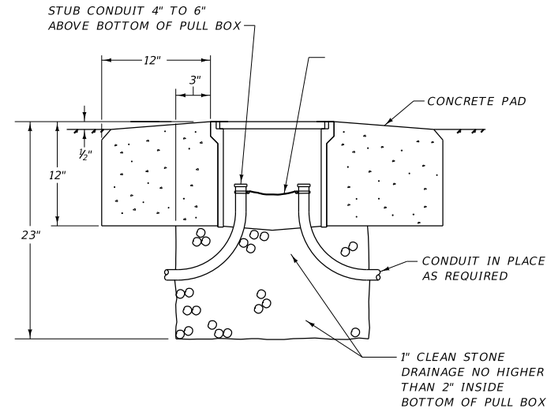
NO SCALE



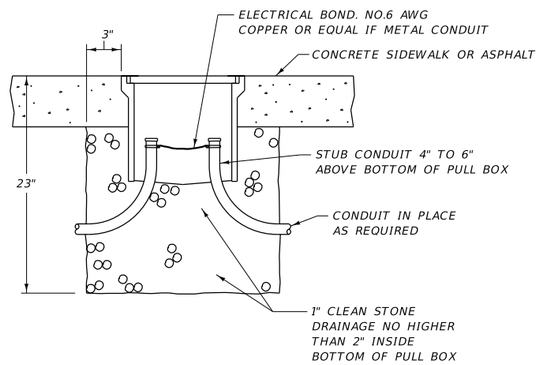
EXISTING SIGNAL / ILLUM SERVICE WIRING DIAGRAM



PULL BOX - COMPOSITE MINIMUM DIMENSIONS		
TYPE 1	TYPE 2	TYPE 3
L = 20"	L = 25"	L = 32"
W = 13"	W = 15"	W = 19"
D = 12"	D = 12"	D = 12"
I D L = 17"	I D L = 21"	I D L = 28"
I D W = 10"	I D W = 11"	I D W = 15"
C L = 18"	C L = 23"	C L = 30"
C W = 11"	C W = 13"	C W = 17"



PULL BOX INSTALLED IN DIRT



PULL BOX INSTALLED IN A SIDEWALK OR ASPHALT

PULL BOX-COMPOSITE

TYPE 1,2 & 3

NO SCALE

PB2

REVISED: 15-APR-2014

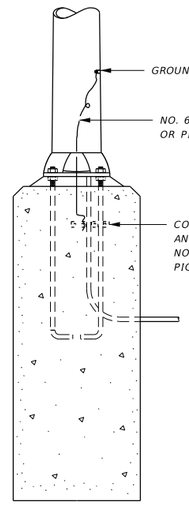
3	MONTANA Department of Transportation	C:\DGN\9900000eldet001.dgn	DESIGNED BY	Joe DeGroat	1/2024	ELECTRICAL PLANS	SF 189 Prospect Ave. Lighting	HSIP 108-1(4)0
2		12/17/2024	REVIEWED BY	Dan Cunningham	1/2024			
1		8:05:36 AM CPS - U7325	CHECKED BY			LEWIS AND CLARK COUNTY	UPN 9900000	SHEET E1

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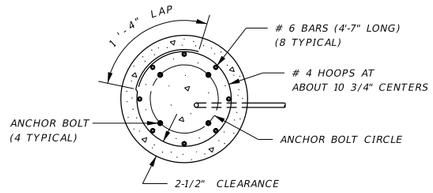
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DETAILS

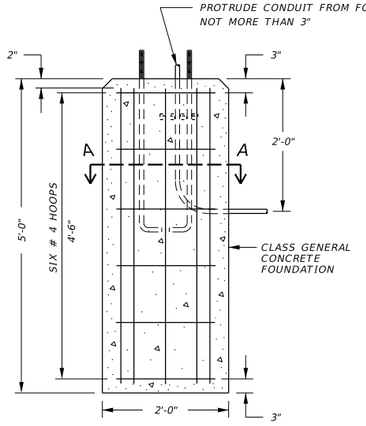
WELDING INSPECTION:
INSPECT PER APPLICABLE MDT STANDARD SPECIFICATIONS.



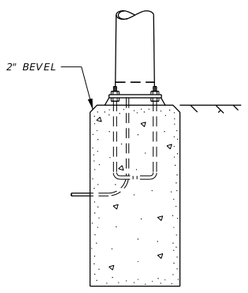
USE GRADE 60 REINFORCING STEEL



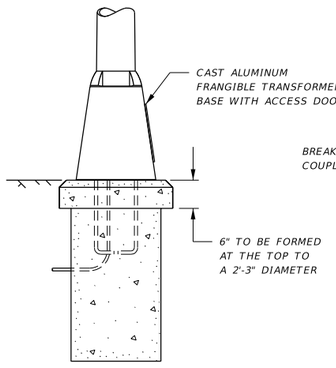
SECTION A-A



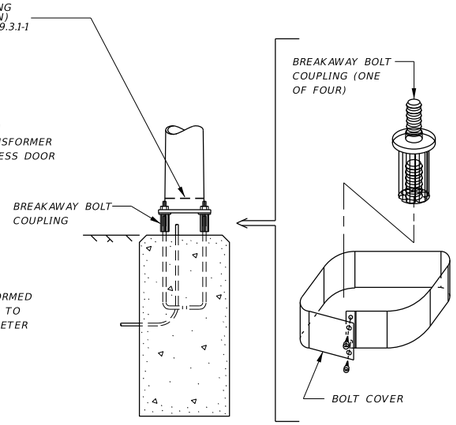
TYPICAL OF ALL FOUNDATIONS



ANCHOR
(DOUBLE NUT CONNECTION REQUIRED)



TRANSFORMER
(BREAKAWAY TYPE)

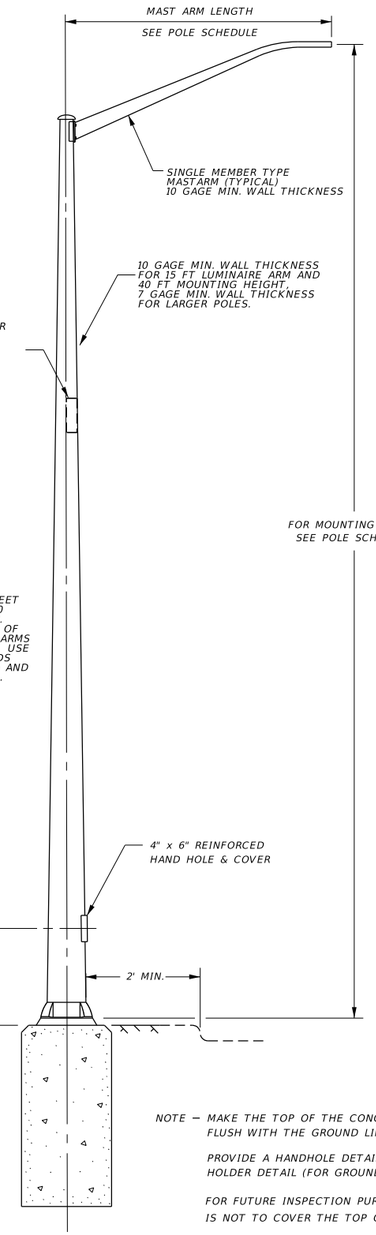


BOLT COUPLING
(BREAKAWAY TYPE)

BASE TYPES FOR LUMINAIRE STANDARDS

NOTE – INSTALL AND PRETENSION ABCHOR BOLTS PER THE STANDARD SPECIFICATIONS
MARK TOP OF ANCHOR BOLT WITH MATERIAL GRADE PER ASTM F 1554 S3

BASE PLATE REQUIREMENTS:
BASE PLATES TO BE 1" THICK AND MEET THE REQUIREMENTS OF AASHTO M270 GRADE 50. HOLES TO ACCEPT 1" DIA. ANCHOR BOLTS WITH A BOLT CIRCLE OF 13 1/2" FOR STANDARDS WITH 15 FT. ARMS AND A MOUNTING HEIGHT OF 40 FT. USE A BOLT CIRCLE OF 15" FOR STANDARDS WITH ARMS UP TO 25 FT. IN LENGTH AND MOUNTING HEIGHTS OF UP TO 45 FT.



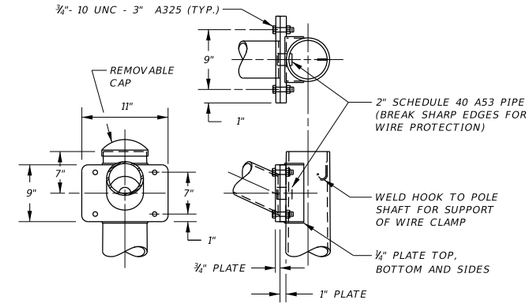
NOTE – MAKE THE TOP OF THE CONCRETE FOUNDATION FLUSH WITH THE GROUND LINE.

PROVIDE A HANDHOLE DETAIL AND A ½" NUT HOLDER DETAIL (FOR GROUNDING) .

FOR FUTURE INSPECTION PURPOSES, FILL MATERIAL IS NOT TO COVER THE TOP OF THE FOUNDATIONS

TYPE 10-A POLE

LUMINAIRE ARM CONNECTION
REQUIRES 4 BOLT DESIGN WITH A325 BOLTS, NUTS AND WASHERS (FULLY TENSIONED)
TUBE TO PLATE CONNECTION TO BE SOCKET TYPE CONNECTION WITH TWO FILLET WELDS PER 14.4.4.6 OF THE SPECIFICATIONS.



NOTE – FOR ARMS BETWEEN 16 FT. AND 25 FT. IN LENGTH, USE AN 11" SQUARE PLATE WITH A BOLT SPACING OF 9 IN. VERTICAL AND 9" HORIZONTAL

DESIGN, FABRICATE, ERECT, AND INSPECT STANDARDS IN ACCORDANCE WITH THE CURRENT EDITION AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (AND ANY AMENDMENTS THERETO).

DESIGN PARAMETERS:

DESIGN WEIGHT = DEAD LOAD, ICE.

DESIGN AREA = AREA WITH MAXIMUM WIND LOAD (WIND IS PERPENDICULAR TO STANDARD, AS SHOWN).

DIRECTIONAL FACTOR Kd = 0.95, GUST FACTOR = 1.14 DRAG COEFFICIENTS LFRD TABLE 3.8.7-1

HEIGHT AND EXPOSURE FACTOR Kz
zg = TAKEN AS 900 FEET FOR EXPOSURE C
α= 9.5
z = 16 FEET

DESIGN WIND VELOCITY 700 YEAR MRI BASIC WIND SPEED (115 MPH)

TYPE 10-A LUMINAIRE STANDARDS, POLE BASES & FOUNDATION DETAILS

NO SCALE

LS

REVISED 18-JAN-2022

3	MONTANA Department of Transportation	C:\DGN\9900000eldet001.dgn	DESIGNED BY	Joe DeGroat	1/2024	ELECTRICAL PLANS	SF 189 Prospect Ave. Lighting	HSIP 108-1(4)0
2		12/17/2024	REVIEWED BY	Dan Cunningham	1/2024			
1		8:05:39 AM CPS – U7325	CHECKED BY			LEWIS AND CLARK COUNTY	UPN 9900000	SHEET E2

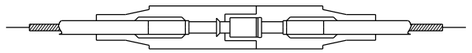
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DETAILS

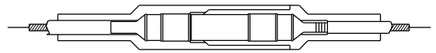
WATERTIGHT CONNECTORS

TYPES 1, 6, 11 & 16



NON-FUSED BREAKAWAY

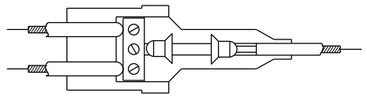
TYPES 2, 7, 12 & 17



FUSED BREAKAWAY

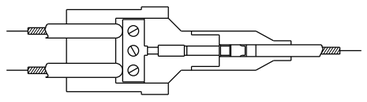
IDENTITY NO.	DESCRIPTIVE SYMBOL & WIRE SIZES
1	8 — 8
2	8 — 10
3	8, 8 — 10
4	8, 8 — 8
5	8, 8 — 8
6	6 — 6
7	6 — 10
8	6, 6 — 10
9	6, 6 — 6
10	6, 6 — 6
11	4 — 4
12	4 — 10
13	4, 4 — 10
14	4, 4 — 4
15	4, 4 — 4
16	10 — 10
17	10 — 10
18	10, 10 — 10
19	10, 10 — 10
20	10, 10 — 10
21	VARIES, VARIES — VARIES

TYPES 3, 8, 13 & 18



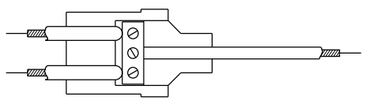
FUSED BREAKAWAY

TYPES 4, 9, 14 & 19



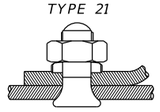
NON-FUSED BREAKAWAY

TYPES 5, 10, 15 & 20



NON-FUSED NON-BREAKAWAY

TYPE 21



COPPER SPLIT BOLT - MAKE WATERTIGHT USING SELF ADHERING MASTIC

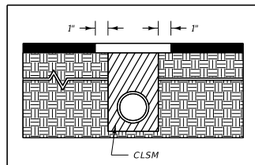
PROVIDE A PLUG AND RECEPTACLE HOUSED IN WATER-RESISTANT, SYNTHETIC RUBBER CAPABLE OF BURIAL IN THE GROUND OR INSTALLATION IN SUNLIGHT. THE HOUSING, CONSISTING OF 2 SECTIONS, PROVIDES A WATERTIGHT SEAL AROUND THE CABLE AND A WATERTIGHT SEAL BETWEEN THE TWO SECTIONS AT THE POINT OF DISCONNECTION. SUPPLY EACH KIT WITH SUFFICIENT SILICONE COMPOUND TO LUBRICATE METAL PARTS AND THE RUBBER HOUSINGS FOR EASY ASSEMBLY.

WHERE INDICATED, CRIMP A COPPER PIN AND A COPPER RECEPTACLE TO THE CABLE. THE RECEPTACLE IS TO ESTABLISH CONTACT PRESSURE WITH THE PIN THROUGH THE USE OF A COPPER BERYLLIUM SPRING AND BE EQUIPPED WITH A DISPOSABLE MOUNTING PIN. THE PIN IS TO BE CONSTRUCTED OF AT LEAST HALF-HARD MATERIAL. THE CRIMPING PORTION IS TO BE FULLY ANNEALED WHILE THE REST OF THE PIN IS MAINTAINED IN ITS ORIGINAL STATE OF HARDNESS. THE RECEPTACLE IS TO BE FULLY ANNEALED. THE PIN AND RECEPTACLE ARE TO LOCK TOGETHER SO THE CONNECTION IS MAINTAINED WHEN A MINIMUM FORCE OF 20 POUNDS TENSION IS APPLIED TO THE ATTACHED CABLES.

PROVIDE FUSED CONNECTOR KITS CONTAINING A PAIR OF SPRING LOADED 90% CONDUCTIVITY CONTACTS FOR GRIPPING A STANDARD MIDGET FERRULE TYPE FUSE. THE CONTACTS MUST BE FULLY ANNEALED AND ADAPTED TO BE CRIMPED TO THE CABLE.

WATERTIGHT CONNECTORS

NO SCALE



FURNISH EXCAVATABLE CLSM IN ACCORDANCE WITH THE SPECIAL PROVISIONS. IF A SPECIAL PROVISION IS NOT PROVIDED, FURNISH CLSM MEETING SUBSECTION 551.03.2(E) OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

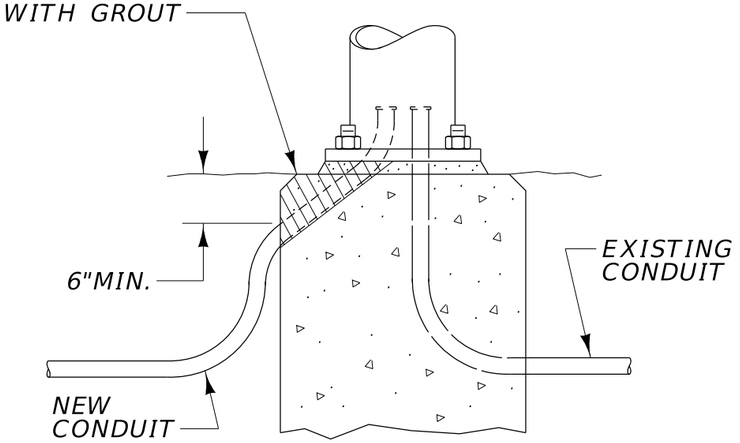
NOTE – COLD MIXED ASPHALT MAY BE USED FOR A TEMPORARY PATCH IF HOT MIX ASPHALT IS NOT AVAILABLE. USE A MINIMUM OF FOUR INCHES OR THE EXISTING PLANT MIX THICKNESS OF HOT ASPHALT FOR THE PERMANENT PATCH. CUT EXISTING ASPHALT 1" BEYOND TRENCH AND APPLY A TACK COAT PRIOR TO INSTALLING THE PERMANENT PATCH.

CONTROLLED LOW STRENGTH MATL FOR TRENCHES

CONTROLLED LOW STRENGTH MATL

NO SCALE

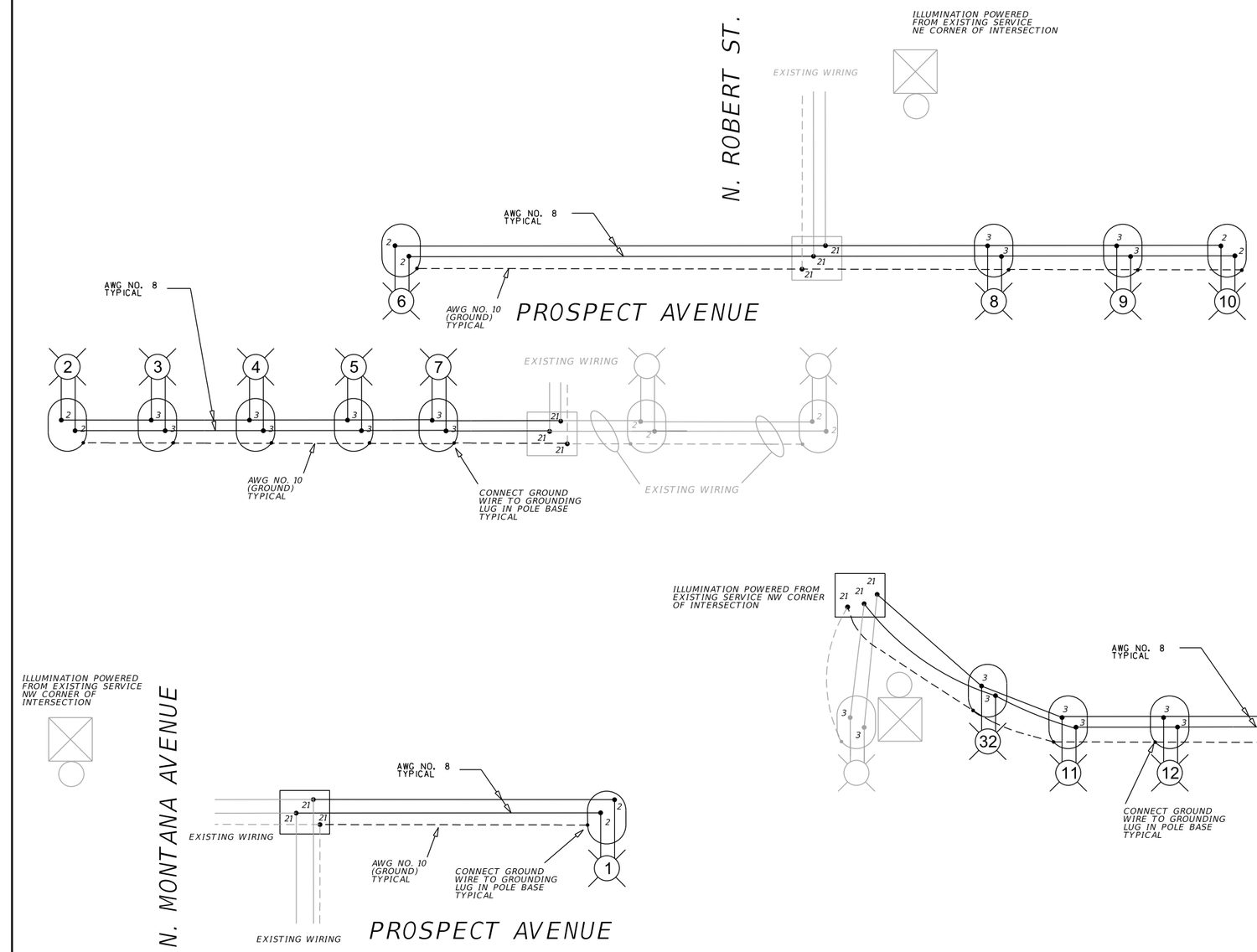
SHADED AREA OF FOUNDATION IS A SLOT CHIPPED OUT FOR INSTALLATION OF CONDUIT THEN FILLED WITH GROUT



INSTALLATION OF CONDUIT INTO EXISTING POLE BASE

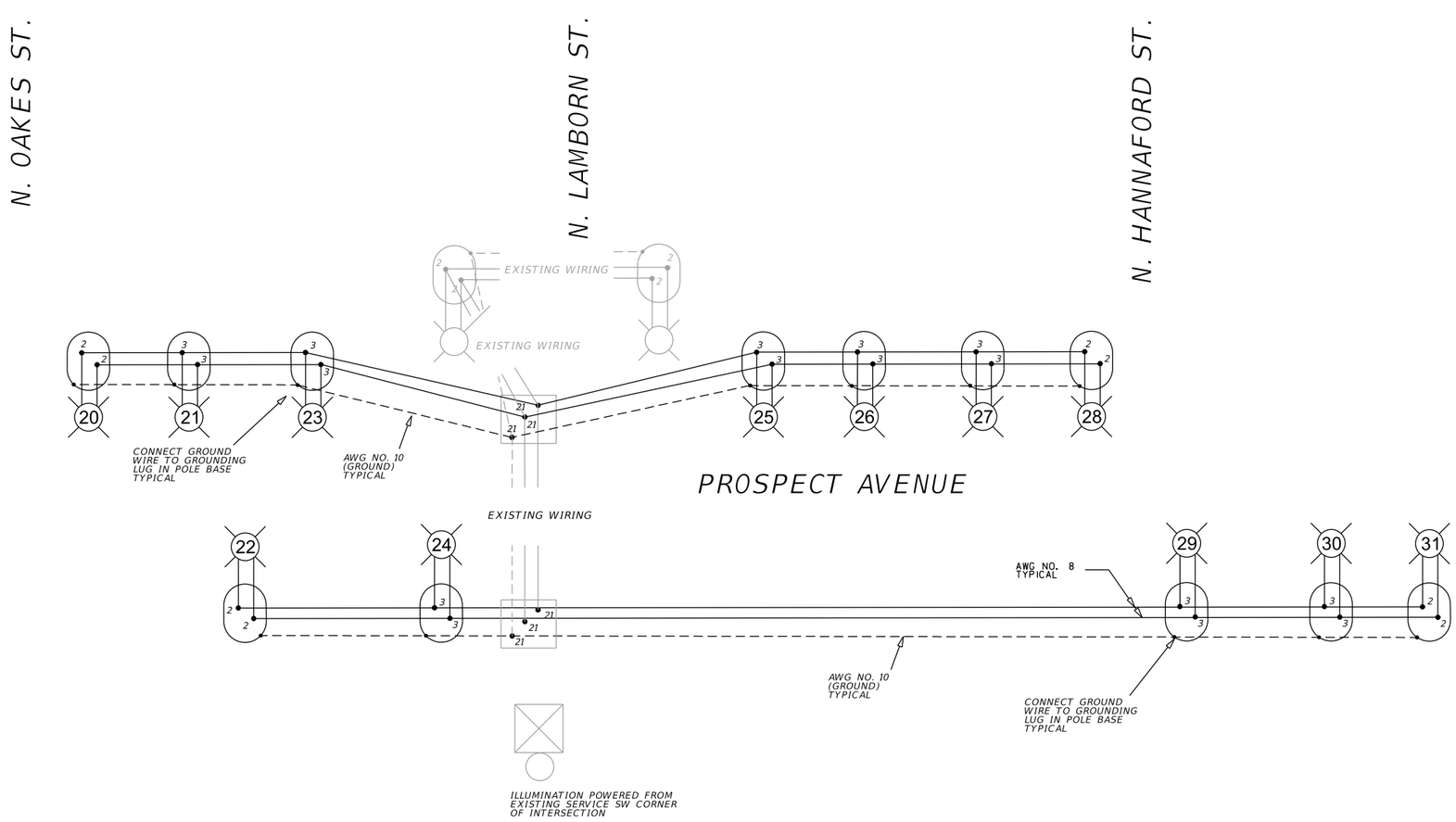
SEE SHEET E7

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3	MONTANA Department of Transportation	C:\DGN\9900000elpln001.dgn	DESIGNED BY	Joe DeGroat	1/2024	ELECTRICAL PLANS		SF 189 Prospect Ave. Lighting	HSIP 108-1(4)0
2		12/17/2024	REVIEWED BY	Dan Cunningham	1/2024				
		8:06:06 AM CPS - U732S	CHECKED BY			LEWIS AND CLARK COUNTY		UPN 9900000	SHEET E4

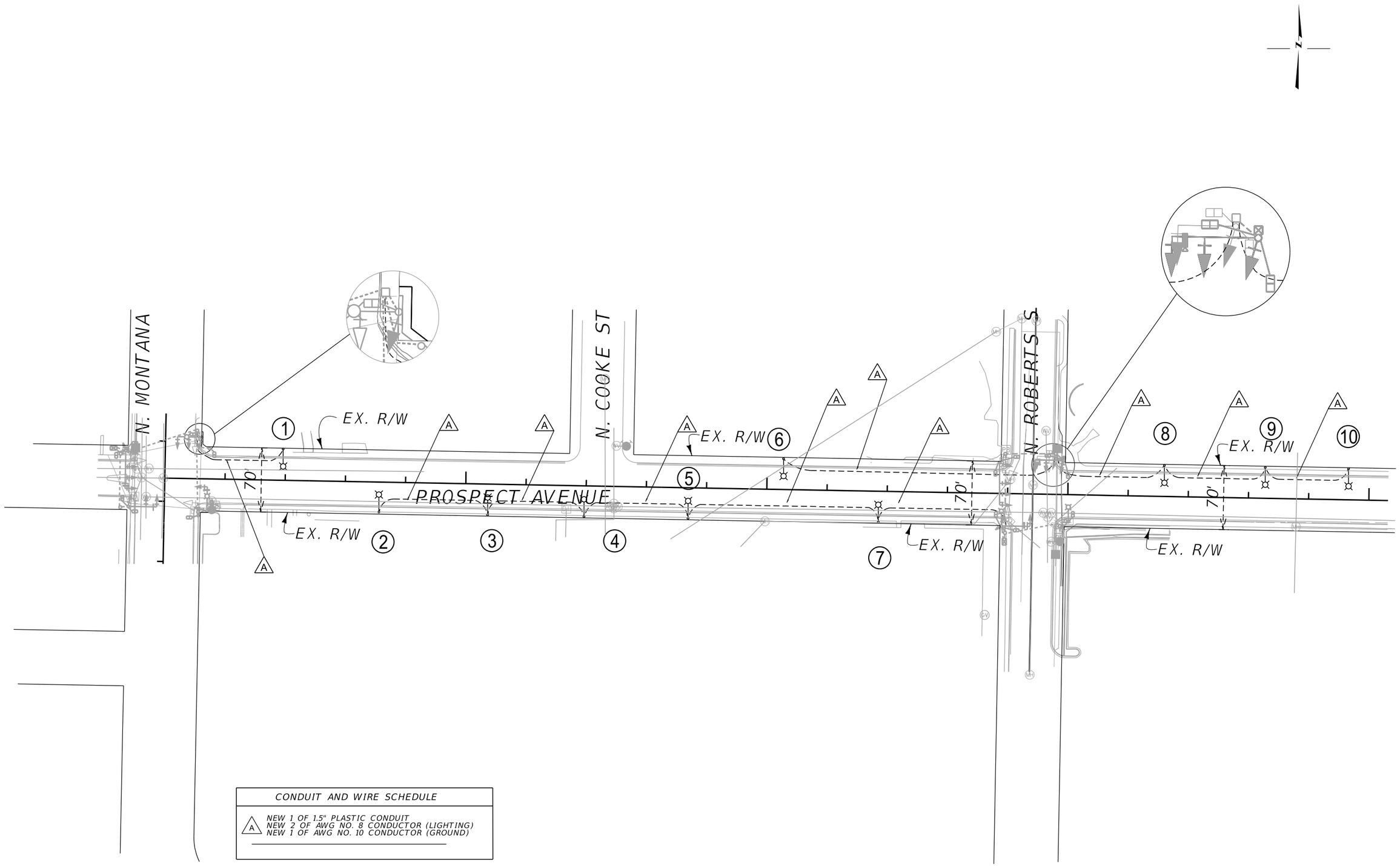
Docusign Envelope ID: E19E7D15-EA32-40FA-909B-FBF9B04B61D7



3 / 1	MONTANA Department of Transportation	C:\DGN\9900000elpln001.dgn	DESIGNED BY	Joe DeGroat	1/2024	ELECTRICAL PLANS	SF 189 Prospect Ave. Lighting	HSIP 108-1(4)0
		12/17/2024	REVIEWED BY	Dan Cunningham	1/2024			
		8:06:10 AM CPS - U732B	CHECKED BY			LEWIS AND CLARK COUNTY	UPN 9900000	SHEET E5

Docusign Envelope ID: E19E7D15-EA32-40FA-909B-FBF9B04B61D7

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CONDUIT AND WIRE SCHEDULE

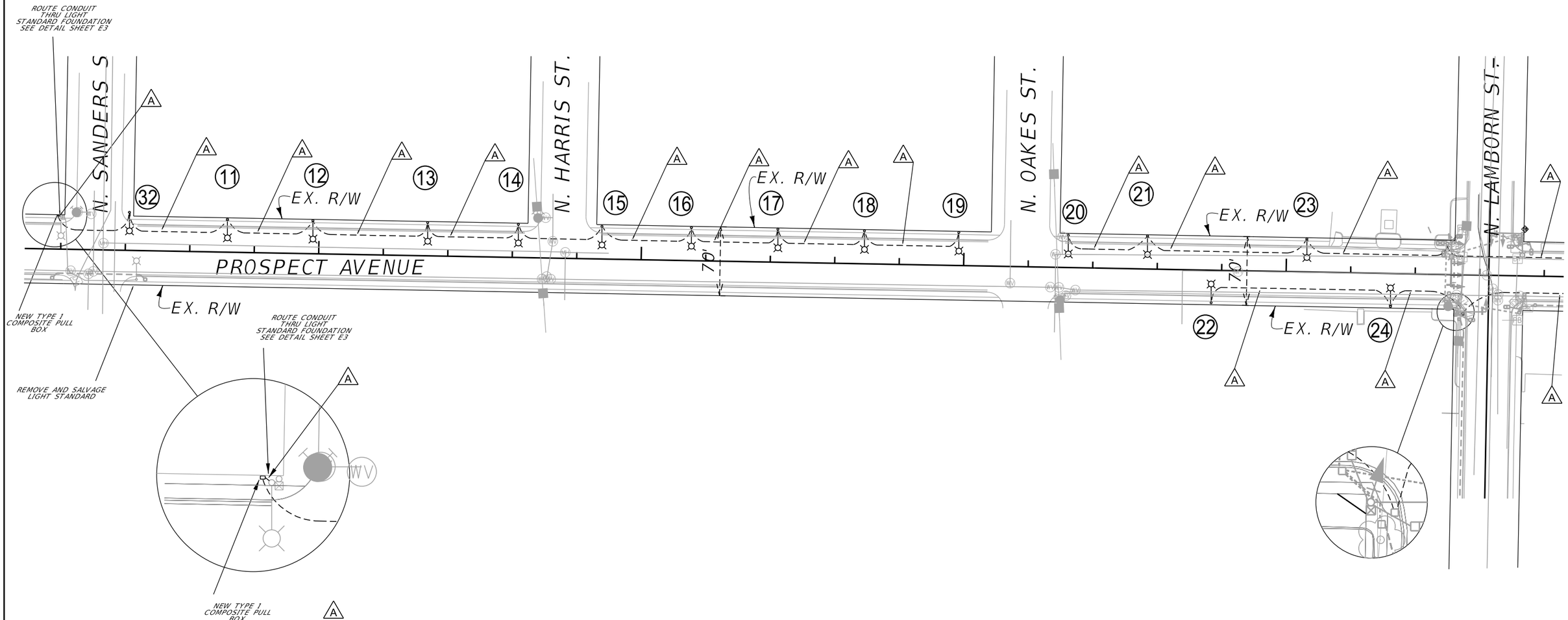
A — NEW 1 OF 1.5" PLASTIC CONDUIT
NEW 2 OF AWG NO. 8 CONDUCTOR (LIGHTING)
NEW 1 OF AWG NO. 10 CONDUCTOR (GROUND)

3	MONTANA Department of Transportation	C:\DGN\9900000elpln002.dgn	DESIGNED BY	Joe DeGroat	1/2024	ELECTRICAL PLANS	SF 189 Prospect Ave. Lighting / HSIP 108-1(4)0
2		12/17/2024	REVIEWED BY	Dan Cunningham	1/2024	LEWIS AND CLARK COUNTY	PRELIMINARY / UPN 9900000 / SHEET E6
		8:06:22 AM CPS - U732	CHECKED BY				

Docusign Envelope ID: E19E7D15-EA32-40FA-909B-FBF9B04B61D7

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CONDUIT AND WIRE SCHEDULE
A — NEW 1 OF 1.5" PLASTIC CONDUIT NEW 2 OF AWG NO. 8 CONDUCTOR (LIGHTING) NEW 1 OF AWG NO. 10 CONDUCTOR (GROUND)



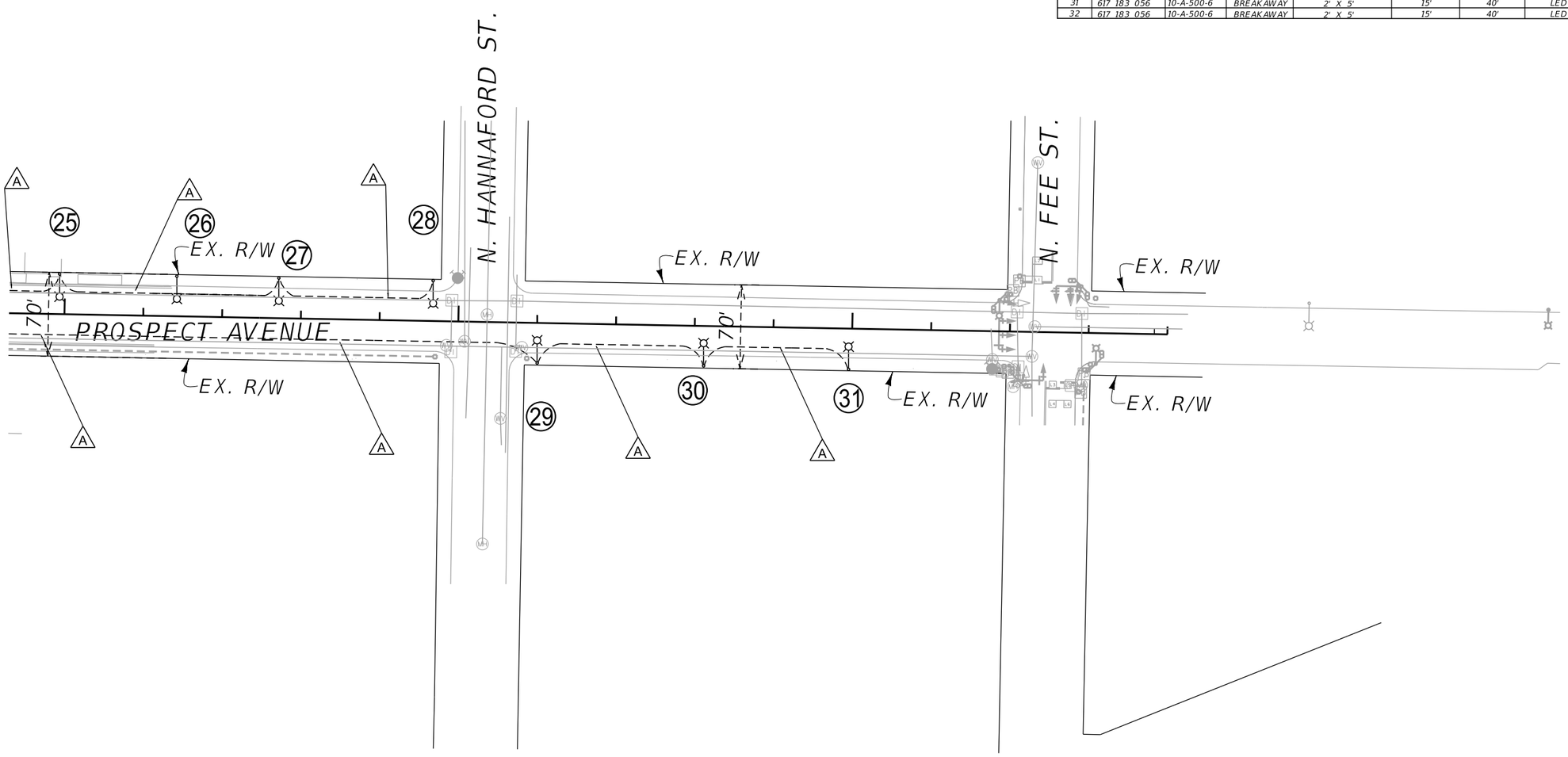
3 1	MONTANA Department of Transportation	C:\DGN\9900000elpln002.dgn 12/17/2024 8:06:26 AM CPS - U732B	DESIGNED BY REVIEWED BY CHECKED BY	Joe DeGroat Dan Cunningham	1/2024 1/2024	ELECTRICAL PLANS LEWIS AND CLARK COUNTY	PRELIMINARY	SF 189 Prospect Ave. Lighting UPN 9900000	HSIP 108-1(4)0 SHEET E7

Docusign Envelope ID: E19E7D15-EA32-40FA-909B-FBF9B04B61D7

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CONDUIT AND WIRE SCHEDULE
(A) NEW 1 OF 1.5" PLASTIC CONDUIT NEW 2 OF AWG NO. 8 CONDUCTOR (LIGHTING) NEW 1 OF AWG NO. 10 CONDUCTOR (GROUND)

POLE SCHEDULE										
POLE NO.	ITEM NO.	TYPE	TYPE POLE BASE	FOUNDATION DIA.X DEPTH	LUMINAIRE MAST ARM	LUMINAIRE HEIGHT	LUMINAIRE TYPE	N OR Y COORDINATE	E OR X COORDINATE	REPLACE SIDEWALK PANEL
1	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863713.75	1335419.75	YES
2	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863645.22	1335524.06	YES
3	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863642.02	1335642.54	YES
4	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863640.17	1335747.69	YES
5	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863638.27	1335860.95	YES
6	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863703.21	1335965.07	YES
7	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863634.18	1336068.27	YES
8	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863695.94	1336380.10	YES
9	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863693.83	1336490.00	YES
10	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863692.21	1336580.75	YES
11	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863687.23	1336838.06	YES
12	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863686.00	1336925.00	NO - (ASPHALT)
13	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863683.84	1337041.71	NO - (ASPHALT)
14	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863682.03	1337133.97	YES
15	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863680.00	1337219.00	YES
16	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863678.77	1337310.00	YES
17	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863677.16	1337398.00	YES
18	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863675.46	1337486.00	YES
19	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863673.84	1337582.00	YES
20	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863670.94	1337693.38	YES
21	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863670.34	1337773.93	YES
22	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863602.42	1337838.64	YES
23	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863667.28	1337936.00	YES
24	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863598.49	1338021.06	YES
25	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863661.52	1338238.91	YES
26	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863659.71	1338336.55	YES
27	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863658.12	1338421.52	YES
28	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863656.00	1338550.00	YES
29	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863587.31	1338636.63	YES
30	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863584.95	1338775.24	YES
31	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863582.11	1338896.00	YES
32	617 183 056	10-A-500-6	BREAKAWAY	2' X 5'	15'	40'	LED	863694.32	1336738.37	YES



2 1	MONTANA Department of Transportation	C:\DGN\9900000elpln002.dgn 12/17/2024 8:06:30 AM CPS - U732	DESIGNED BY REVIEWED BY CHECKED BY	Joe DeGroat Dan Cunningham	1/2024 1/2024	ELECTRICAL PLANS LEWIS AND CLARK COUNTY	PRELIMINARY	SF 189 Prospect Ave. Lighting UPN 9900000	HSIP 108-1(4)0 SHEET E8