



EXHIBIT PHOTO

SCALE: NOT TO SCALE

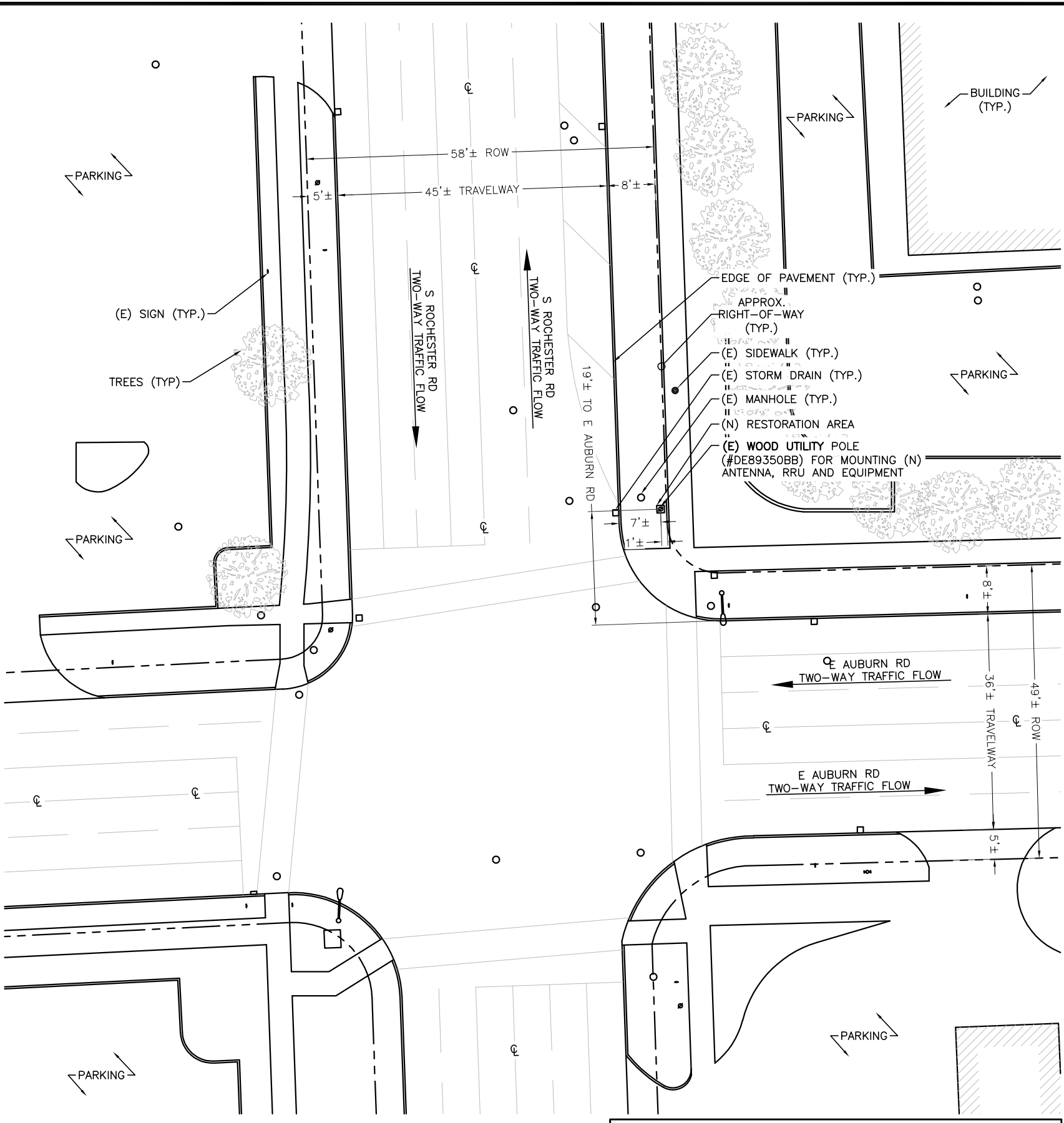
1



AERIAL SITE LOCATION

SCALE: NOT TO SCALE

2



NOTE:
"DTE TO TERMINATE UTILITY SERVICE IN AC DISTRIBUTION BOX,"

ENLARGED SITE PLAN

SCALE: 1" = 40'-0" (1" = 20'-0" ON 24"x36" SHEET)

3



120 S RIVERSIDE PLAZA,
SUITE 1800
CHICAGO, IL 60606
PHONE: (312) 638-5400

PROJECT NO: 9MIB002649-C
DRAWN BY: HS
CHECKED BY: PL

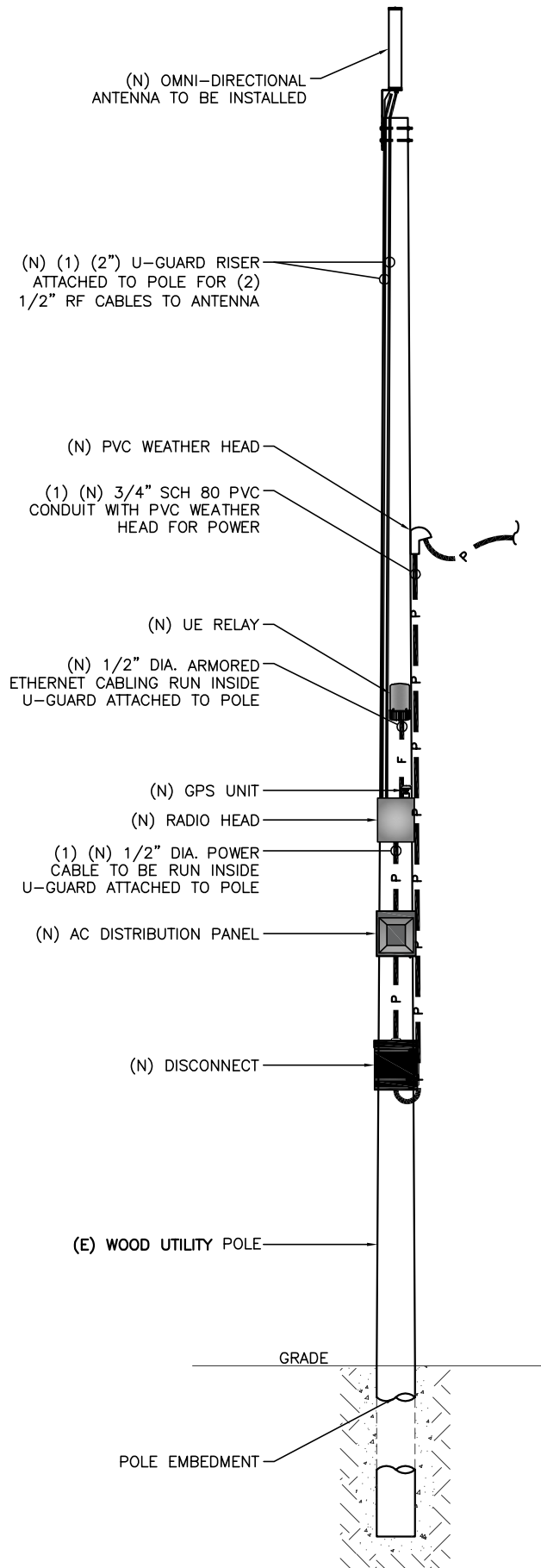
A 12.19.17 FOR REVIEW

DE90XS1AQ-C
9MIB002649-C
2972-2998 M-150
ROCHESTER HILLS, MI 48307
WOOD UTILITY POLE

SHEET TITLE
EXHIBIT PHOTO & SITE PLAN

SHEET NUMBER
SP-1

NOTE:
 (E) POLE MOUNTED EQUIPMENT
 NOT SHOWN FOR CLARITY.



NOTE:
 CABLING DIAGRAM IS FOR CLARITY OF CABLE ROUTE AND TERMINATION ONLY. CONTRACTOR SHALL INSTALL CABLES WITH MINIMAL VISUAL IMPACT ON (E) WOOD UTILITY POLE. SEE ELEVATION DRAWING FOR EQUIPMENT AND ANTENNA LOCATIONS.

CABLING NOTES:

- A) WOOD, CONCRETE AND EXISTING METALLIC POLES
 - I) FROM GRADE LINE TO 11'-0" ABOVE GRADE, ALL CABLES/CONDUCTORS EXCEPT GROUNDING CONDUCTOR MUST RUN IN RIGID GALVANIZED STEEL CONDUIT (RGS)
 - II) GROUNDING CONDUCTORS IN EXPOSED LOCATIONS MUST BE INSTALLED IN PVC.
 - III) IN EARTH INSTALL PVC CONDUIT FOR BACKHAUL AND ELECTRICAL SERVICE. TRANSITION TO RGS AT GRADE LINE.
 - IV) ABOVE 11'-0" ALL CABLES (POWER, ETHERNET, COAXIAL) MUST RUN IN PVC UTILITY POLE RISER.
 - (1) AT MAJOR EQUIPMENT, EXTEND UTILITY DUCT IMMEDIATELY ADJACENT TO THE EQUIPMENT. INSTALL CABLES IN THE UTILITY POLE RISER CREATING CABLE DRIP LOOPS NOT LESS THAN THE CABLE BENDING RADIUS.
 - (2) INSIDE THE UTILITY POLE RISER, UTILIZE 1/2" COAX BLOCKS WITH LAG SCREWS TO SUPPORT COAX, RADIO AND MW POWER, RF COAX, AND ETHERNET CABLES TO WITHIN 12" OF THE EQUIPMENT BEING SERVED AND ON INTERVALS NOT TO EXCEED 4'.
 - V) FOR UNDERGROUND HFC/PUBLIC BACKHAUL, ROUTE ETHERNET CABLE IN CONDUIT UP THE POLE AND ENTER THE UTILITY POLE RISER. SEAL EXPOSED END OF CONDUIT WITH A CABLE TERMINATION FITTING.
 - VI) BY APPROVAL IN SELECT CASES LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LFMC) MAY BE USED IN LENGTHS NOT TO EXCEED 36" TO EXTEND THE ELECTRICAL SERVICE CONDUIT TO THE AC DISTRIBUTION BOX. EXAMPLE: UTILITY-REQUIRED DISCONNECT ON POLE W/ AC DISTRIBUTION BOX ON OPPOSITE SIDE OF POLE. NOT REQUIRED FOR COAX.
- B) NEW METALLIC POLES
 - I) PROCURE NEW POLES WITH SUITABLE HAND HOLES SUCH THAT HAND HOLES EXIST AT ALL EQUIPMENT LOCATIONS.
 - II) WHERE REQUIRED, INSTALL POLE BASE SUCH THAT THE ELECTRICAL FEED AND BACKHAUL (IF UNDERGROUND) CIRCUIT ENTER THE POLE THROUGH THE POLE BASE.

**TYPICAL PLUMBING DIAGRAM
 -FOR REFERENCE ONLY**

1

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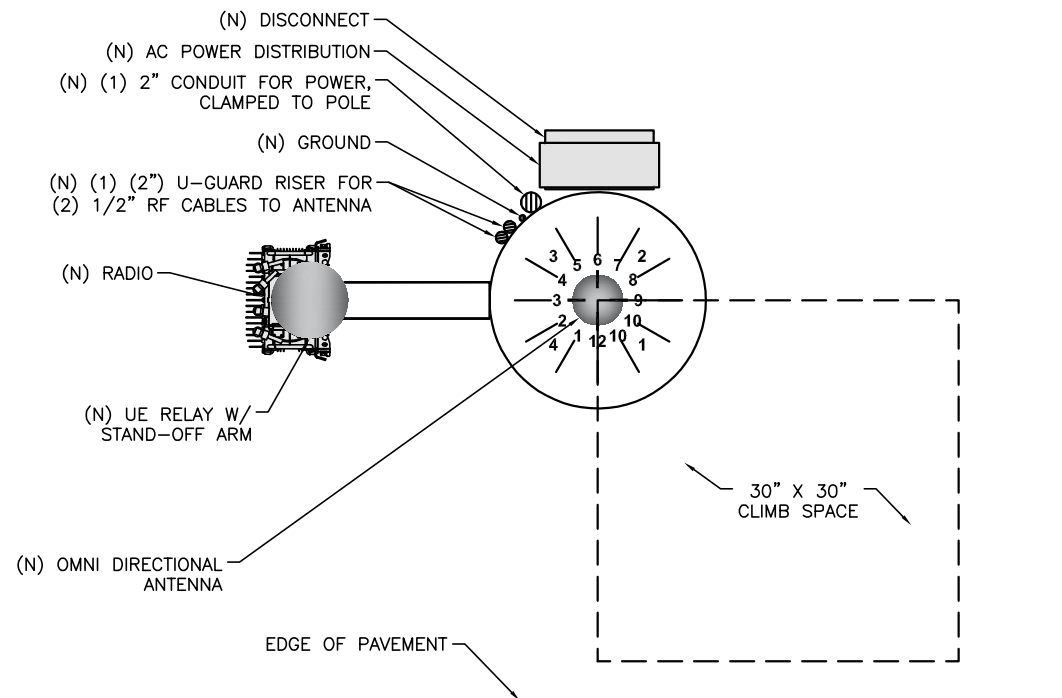
BILL OF MATERIALS							
QTY.	DESCRIPTION	MANUFACTURER	MODEL NUMBER	AZIMUTH	CABLE	DIMENSIONS (HxWxD)	WEIGHT
1	ANTENNA	ALPHA WIRELESS	AW3477-S	N/A	31'-8"±	30.7" X 4.7" DIAMETER	7 LBS
1	UE RELAY	AIRSPAN	iR460-SPB-ST-1-P-0	N/A	3'±	13" X 7" DIAMETER	8.8 LBS
-	-	-	-	-	-	-	-
1	GPS	TALLYSMAN	TW3012	-	-	0.8" X 2.6" DIAMETER	0.3 LBS
1	RADIO	AIRSPAN	AH4000	-	3'±	20.3" X 10.3" X 8.3"	42 LBS
-	-	-	-	-	-	-	-
1	AC DISTRIBUTION PANEL	TRANSECTOR	1101-1207-1012	-	1'±	12" X 12" X 4"	17 LBS
1	NEMA TYPE-3R DISCONNECT	SIEMENS	GF222NR (EXAMPLE)	-	1'±	15.45" X 8.7" X 5.95"	14 LBS
-	-	-	-	-	-	-	-

RFDS REVISION TYPE: NOT FINAL
 RFDS REVISION NUMBER: N/A
 RFDS REVISION TIMESTAMP: N/A

BILL OF MATERIALS

2

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**TYPICAL RISER DIAGRAM
 -FOR REFERENCE ONLY**

3

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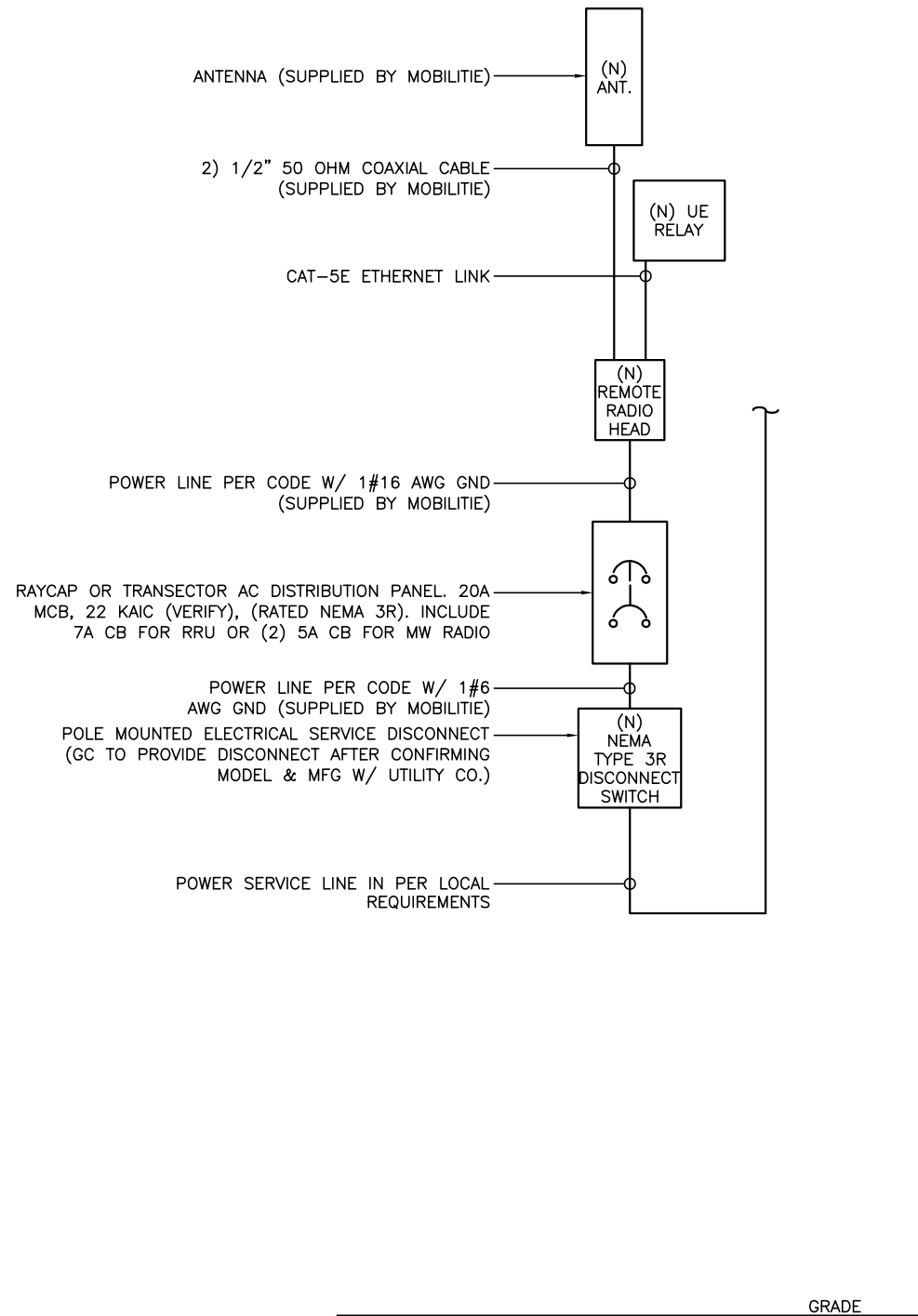
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A 12.19.17 FOR REVIEW

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 2972-2998 M-150
 ROCHESTER HILLS, MI 48307
 WOOD UTILITY POLE

SHEET TITLE
PLUMBING & RISER DIAGRAM

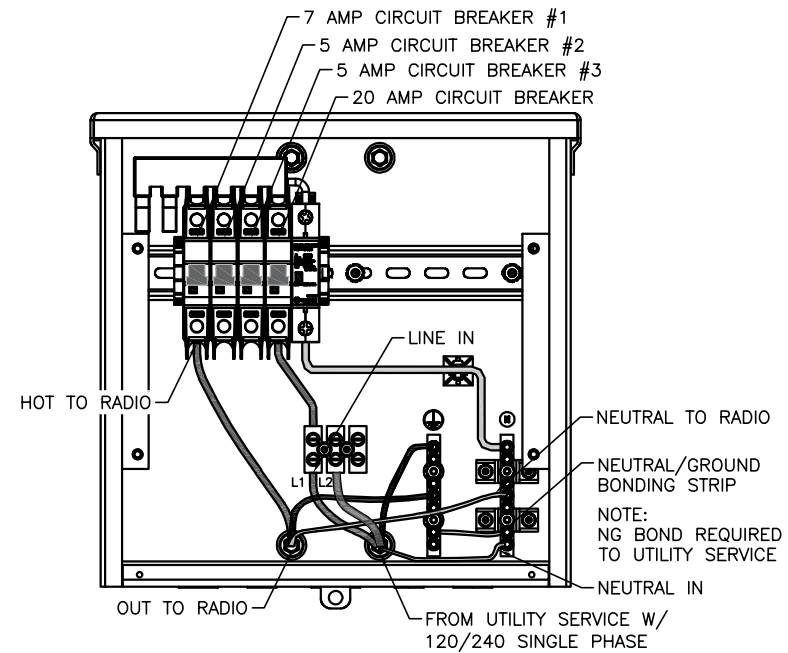
SHEET NUMBER
PL-1



TYPICAL ONE-LINE DIAGRAM - FOR REFERENCE ONLY

SCALE: NOT TO SCALE

1



TRANSECTOR EXPORT AC DISTRIBUTION BOX

TYPICAL BREAKER SCHEDULE - FOR REFERENCE ONLY

SCALE: NOT TO SCALE

2

NOTES:

1. NOMINAL POWER IS CALCULATED AS 80% OF OEM DOCUMENTED MAXIMUM POWER.
2. CALCULATIONS FOR UE W/ NOKIA DO NOT NEED TO INCLUDE THE POWER FOR THE UE ANTENNA AS IT IS INCLUDED IN THE MAX POWER FIGURE. CALCULATIONS FOR UE W/ AIRSPAN MUST INCLUDE UE AS IT IS NOT INCLUDED
3. KVA IS CALCULATED FROM THE CONSUMPTION VALUE ASSUMING A PF=1. MAXIMUM POWER WAS USED FOR KVA. WHERE MAXIMUM WAS NOTED BY THE OEM THE QUOTED FIGURE WAS USED. WHERE AVERAGE/NOMINAL POWER WAS NOTED BY THE OEM MAXIMUM POWER WAS CALCULATED BY INCREASING AVERAGE/NOMINAL POWER BY A FACTOR OF 50%

Airspan Scenario 2 AH4000 High Power Radio and UE Backhaul

Unit	Sub Description	Max Power (W)	Max Current (A)	KVA	kWh/Yr
AirHarmony 4000	LTE Base Station	540	4.50	0.54	4730.4
Airspan IR460	UE Relay	N/A	N/A	N/A	N/A
Total		540	4.50	0.54	4730.4

TYPICAL LOAD CALCULATIONS - FOR REFERENCE ONLY

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ROCHESTER HILLS, MI 48307
WOOD UTILITY POLE

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER

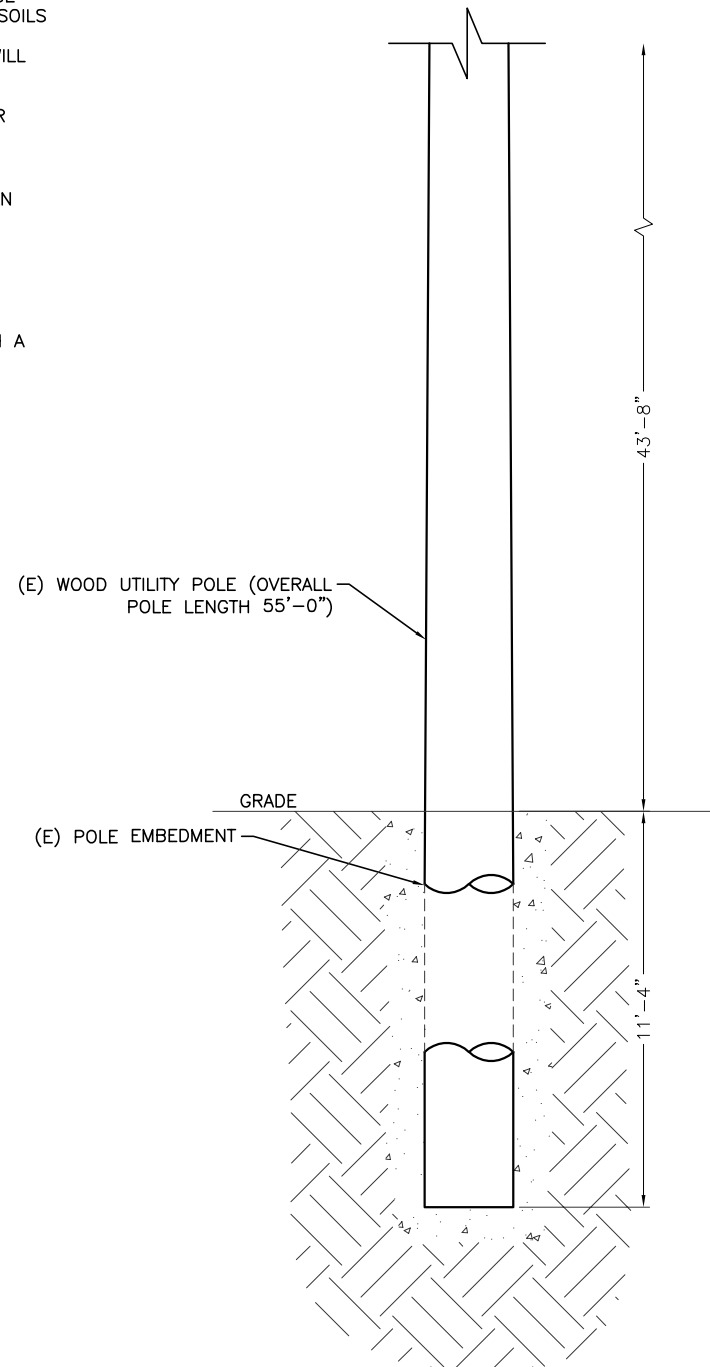
E-1

GENERAL CONSTRUCTION NOTES:

- PRIOR TO ANY CONSTRUCTION WORK, CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES. ALL UTILITIES SHALL BE MARKED.
- BACKFILL OF THE POLES SHALL BE PERFORMED BASED ON THE WATER TABLE. FLOWABLE FILL MIXTURES PURCHASED FROM CONCRETE PLANTS WILL BE USED INSTEAD OF FOAM IN WATER TABLE AREAS.
 - A: NORMAL SOILS ORDER OF PREFERENCE – FOAM, FLOWABLE FILL, CONCRETE, COMPACTED AGGREGATES
 - B: HIGH WATER TABLE SOILS ORDER OF PREFERENCES – FLOWABLE FILL, CONCRETE, COMPACTED AGGREGATES.
- NON-NATIVE SOILS SHALL BE REMOVED FROM BORE AREA AND SHALL NOT BE REUSED FOR BACKFILL. EMBED DEPTHS SHOWN ARE GENERALLY FOR GOOD SOILS AND UTILITY WOOD POLES. EMBED DEPTHS SHALL BE ADJUSTED BASED ON ACTUAL SOIL CONDITIONS AND FINAL POLE CLASS SELECTION. POOR SOILS WILL REQUIRE DEEPER EMBEDS. SOIL CONDITIONS ARE CLASSIFIED ACCORDING TO BEARING CAPACITY: "POOR": 0 TO 2,500 PSI, "AVERAGE": 2,501 PSI TO 8,000 PSI, "GOOD": GREATER THAN 8,000 PSI. GUYING IS AN OPTION FOR REDUCING EMBED DEPTHS BUT REQUIRES MOBILITIE CM WRITTEN APPROVAL.
- FOUNDATION HOLE SHALL BE EXCAVATED TO A MINIMUM OF 12" LARGER THAN POLE BASE DIAMETER TO ALLOW FOR SUITABLE BACKFILL PLACEMENT.
- REMOVE EXCESS WATER FROM HOLE BEFORE INSTALLING POLE.
- CONTRACTOR SHALL PREPARE LIFT PLANS FOR POLE SETTING ACTIVITIES WITH A BOOM TRUCK OR CRANE. ATTACH LIFTING SLING PER POLE MANUFACTURER RECOMMENDATIONS.
- IF REQUIRED BY MOBILITIE CM, CONTRACTOR SHALL PERFORM A TAPE DROP MEASUREMENT OF EXCAVATED HOLE AND WITNESS DROP WITH PHOTOGRAPHS.

NOTE:
SEE GN-3 FOUNDATION, EXCAVATION AND BACKFILL FOR ADDITIONAL NOTES.

NOTE:
REFER TO STRUCTURAL ANALYSIS REPORT (SEPARATE DOCUMENT) FOR ADDITIONAL STRUCTURAL INFORMATION.



OVERALL POLE LENGTH	DIAMETER SIX FEET FROM BUTT	MIN. CIRC. SIX FEET FROM BUTT
20'-0"	9.9"	31.0"
25'-0"	10.7"	33.5"
30'-0"	11.6"	36.5"
35'-0"	12.4"	39.0"
40'-0"	13.1"	41.0"
45'-0"	13.7"	43.0"
50'-0"	14.3"	45.0"
55'-0"	14.8"	46.5"
60'-0"	15.3"	48.0"
65'-0"	15.8"	49.5"
70'-0"	16.2"	51.0"
75'-0"	16.7"	52.5"
80'-0"	17.2"	54.0"
85'-0"	17.8"	55.0"
90'-0"	17.8"	56.0"

NOTE:
FOR OVERALL POLE LENGTHS BETWEEN TWO VALUES, SELECT THE HIGHER POLE ON TABLE.

OVERALL POLE LENGTH	MINIMUM EMBED (10%+2')	REQUIRED EMBED TO MEET 5' INCREMENT	POLE HEIGHT ABOVE GROUND
25'-0"	4'-6"	5'-0"	20'-0"
30'-0"	5'-0"	9'-0"	21'-0"
30'-0"	5'-0"	8'-0"	22'-0"
30'-0"	5'-0"	7'-0"	23'-0"
30'-0"	5'-0"	6'-0"	24'-0"
30'-0"	5'-0"	5'-0"	25'-0"
35'-0"	5'-6"	9'-0"	26'-0"
35'-0"	5'-6"	8'-0"	27'-0"
35'-0"	5'-6"	7'-0"	28'-0"
35'-0"	5'-6"	6'-0"	29'-0"
40'-0"	6'-0"	10'-0"	30'-0"
40'-0"	6'-0"	9'-0"	31'-0"
40'-0"	6'-0"	8'-0"	32'-0"
40'-0"	6'-0"	7'-0"	33'-0"
40'-0"	6'-0"	6'-0"	34'-0"
45'-0"	6'-6"	10'-0"	35'-0"
45'-0"	6'-6"	9'-0"	36'-0"
45'-0"	6'-6"	8'-0"	37'-0"
45'-0"	6'-6"	7'-0"	38'-0"
50'-0"	7'-0"	11'-0"	39'-0"
50'-0"	7'-0"	10'-0"	40'-0"
50'-0"	7'-0"	9'-0"	41'-0"
50'-0"	7'-0"	8'-0"	42'-0"
50'-0"	7'-0"	7'-0"	43'-0"
55'-0"	7'-6"	11'-0"	44'-0"
55'-0"	7'-6"	10'-0"	45'-0"
55'-0"	7'-6"	9'-0"	46'-0"
55'-0"	7'-6"	8'-0"	47'-0"
60'-0"	8'-0"	12'-0"	48'-0"
60'-0"	8'-0"	11'-0"	49'-0"
60'-0"	8'-0"	10'-0"	50'-0"
60'-0"	8'-0"	9'-0"	51'-0"
60'-0"	8'-0"	8'-0"	52'-0"
65'-0"	8'-6"	12'-0"	53'-0"
65'-0"	8'-6"	11'-0"	54'-0"
65'-0"	8'-6"	10'-0"	55'-0"
65'-0"	8'-6"	9'-0"	56'-0"
70'-0"	9'-0"	13'-0"	57'-0"
70'-0"	9'-0"	12'-0"	58'-0"
70'-0"	9'-0"	11'-0"	59'-0"
70'-0"	9'-0"	10'-0"	60'-0"
70'-0"	9'-0"	9'-0"	61'-0"
75'-0"	9'-6"	13'-0"	62'-0"
75'-0"	9'-6"	12'-0"	63'-0"
75'-0"	9'-6"	11'-0"	64'-0"
75'-0"	9'-6"	10'-0"	65'-0"
80'-0"	10'-0"	14'-0"	66'-0"
80'-0"	10'-0"	13'-0"	67'-0"
80'-0"	10'-0"	12'-0"	68'-0"
80'-0"	10'-0"	11'-0"	69'-0"
80'-0"	10'-0"	10'-0"	70'-0"
85'-0"	10'-6"	14'-0"	71'-0"
85'-0"	10'-6"	13'-0"	72'-0"
85'-0"	10'-6"	12'-0"	73'-0"
85'-0"	10'-6"	11'-0"	74'-0"
90'-0"	11'-0"	15'-0"	75'-0"

Pole Diameter (Inches)	Hole Depth (Feet)						
	4	5	6	7	8	9	10
8" Hole Diameter							
5.0	1	1					
6.2	1	1					
18" Hole Diameter							
7.0	6	8	9	11	12	13	15
8.0	6	7	9	10	12	12	14
9.0	6	7	8	9	11	12	13
10.0	5	6	8	9	9	11	12
11.0	5	6	7	8	9	10	11
12.0	4	5	6	7	8	9	10
13.0	4	4	5	6	7	7	9
14.0	3	4	4	5	6	6	7
15.0	2	3	4	4	5	5	6
16.0	2	2	2	3	3	3	4
24" Hole Diameter							
12.0	10	12	14	17	19	20	24
13.0	9	11	14	16	18	19	22
14.0	9	11	13	15	17	18	21
15.0	8	10	12	14	16	17	19
16.0	7	9	11	12	14	15	18
17.0	7	8	10	11	13	14	16
18.0	6	7	9	10	11	12	14
19.0	5	6	7	9	10	10	12
20.0	4	5	6	7	8	8	10
22.0	2	3	3	4	3	5	5
36" Hole Diameter							
18.0			32	37	43	45	53
20.0			30	34	39	42	49
22.0			27	31	36	38	44
24.0			24	28	32	34	39
26.0			21	24	27	29	33
28.0			17	20	23	24	27
30.0			13	15	18	19	21
32.0			9	11	12	13	15
34.0			5	6	6	7	7
48" Hole Diameter							
36.0	7	8	9	10	11	12	14
38.0	33	38	40	47	52	56	66
40.0	27	31	33	39	42	46	54
42.0	21	24	25	30	33	36	41
44.0	14	16	17	20	22	24	28
46.0	8	8	9	10	12	12	15

NOTE:
FOR ABOVE GRADE HEIGHTS BETWEEN TWO VALUES, SELECT THE HIGHER POLE ON TABLE.

POLE EMBEDMENT DETAILS

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SHEET TITLE
POLE EMBEDMENT DETAILS

SHEET NUMBER

S-1

PLAN NOTES:

1. PLANS DEPICTED ARE GENERAL GUIDELINES FOR TEMPORARY VEHICULAR TRAFFIC CONTROL PLANS (TCP) TO INCLUDE PEDESTRIAN AND WORKER SAFETY. CONTRACTOR IS REQUIRED TO HAVE PREPARED A SITE-SPECIFIC TCP FOR REVIEW AND APPROVAL BY THE HIGHWAY AUTHORITY HAVING JURISDICTION. IF REQUIRED, THE FIRM PREPARING THE TCP SHALL BE AUTHORIZED OR CERTIFIED BY THE AUTHORITY HAVING JURISDICTION.
2. EXTEND CHANNELIZATION DEVICES INTO SHOULDER WHERE APPLICABLE.
3. DISTANCES AS INDICATED IN TABLE 1 SHOULD BE INCREASED FOR CONDITIONS THAT WOULD AFFECT STOPPING. DISTANCE SUCH AS DOWNGRADES OR LIMITED SIGHT DISTANCES. DISTANCES CAN BE DECREASED FOR LOW-SPEED (RESIDENTIAL) AREAS WITH APPROVAL BY THE AUTHORITY HAVING JURISDICTION. NIGHT-TIME WORK IS PROHIBITED UNLESS IT IS REQUIRED AS A CONDITION OF APPROVAL BY THE HIGHWAY AND LOCAL AUTHORITY HAVING JURISDICTION.
4. SHOULDER TAPERS SHOULD BE 1/3 OF THE ON-STREET TAPER LENGTH.
5. MAINTAIN A MINIMUM LANE WIDTH OF 10'.

NOTE:
SPEED LIMIT TO BE VERIFIED IN FIELD TO CONFIRM SIGN LOCATION. TAPER SIZE, AND BUFFER SIZE.

■ - SIGN □ - FLAGGER

POSTED SPEED (MPH)	DISTANCE BETWEEN SIGNS			TAPER	BUFFER
	A	B	C	L (SEE NOTE)	
15	100'	100'	100'	45'	100'
20	100'	100'	100'	80'	115'
25	100'	100'	100'	125'	155'
30	200'	200'	200'	180'	200'
35	200'	200'	200'	245'	250'
40	350'	350'	350'	320'	305'
45	350'	350'	350'	540'	360'
50	500'	500'	500'	600'	425'
55	500'	500'	500'	660'	495'
60	500'	500'	500'	720'	570'
65	500'	500'	500'	780'	645'

- NOTES:
- A) DISTANCES IN FEET UNLESS OTHERWISE NOTED.
 - B) CONTRACTOR TO VERIFY EXISTING SPEED LIMIT.
 - C) DISTANCES SHOWN ARE NOT VALID FOR LIMITED ACCESS HIGHWAYS. CONSULT STATE DOT MANUAL FOR DISTANCES.
 - D) ADJUST DISTANCES TO COMPLY WITH REQUIREMENT OF THE STATE OR LOCAL HIGHWAY AUTHORITY HAVING JURISDICTION. SEE NOTE 1, SHEET TC-2.
 - E) TAPER LENGTHS SHOWN BASED ON 12' LANE WIDTH. SEE NOTE 18, SHEET TC-2.

