SITE PHOTO

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

at&t Mobility

PROJECT: NSB
AT&T SITE ID: W047
AT&T SITE NAME: WHEELING COLLEGE

SITE ADDRESS: NATIONAL ROAD
WHEELING, WV 26003

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11"x17" PLOT WILL BE HALF SCALE
UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

THESE SITE PLANS ADHERE TO ALL OF THE REQUIREMENTS CALLED OUT IN THE JURISDICTION PLANNING AND ZONING FOR ANTENNAS AND SUPPORT STRUCTURES WHERE SITE IS LOCATED.

PROJECT INFORMATION

SITE ADDRESS:	NATIONAL ROAD WHEELING, WV 26003
SITE NAME:	WHEELING COLLEGE
SITE NUMBER:	W047
FA NUMBER:	14232217
USID NUMBER:	188368
LATITUDE (NAD 83):	40° 04' 37.32" N (PER 1A DATED 08/09/21)
LONGITUDE (NAD 83):	80° 41' 26.44" W (PER 1A DATED 08/09/21)
GROUND ELEVATION (NAVD 88):	791.9' AMSL (PER 1A DATED 08/09/21)
LOCAL POWER COMPANY:	AEP POWER
LOCAL TELEPHONE COMPANY:	AT&T
SITE ACQUISITION MANAGER:	JENNIFER STEWART (412) 269-5776
CONSTRUCTION MANAGER:	SUE GODLEWSKI (412) 951-7512

RADIO EQUIPMENT INFORMATION

OCCUPANCY LOAD:	0
BUILDING HEIGHT:	10'-8"
CONSTRUCTION TYPE:	II-B
OCCUPANCY GROUP:	U

TOWER INFORMATION

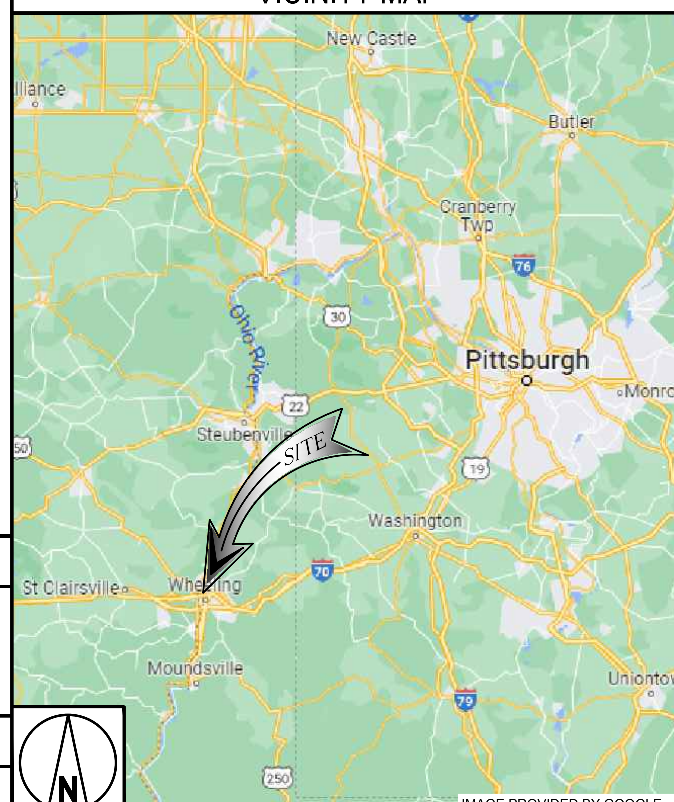
OCCUPANCY LOAD:	0
STRUCTURE HEIGHT:	85'
CONSTRUCTION TYPE:	II-B
OCCUPANCY GROUP:	U

A/E CONTACT INFORMATION

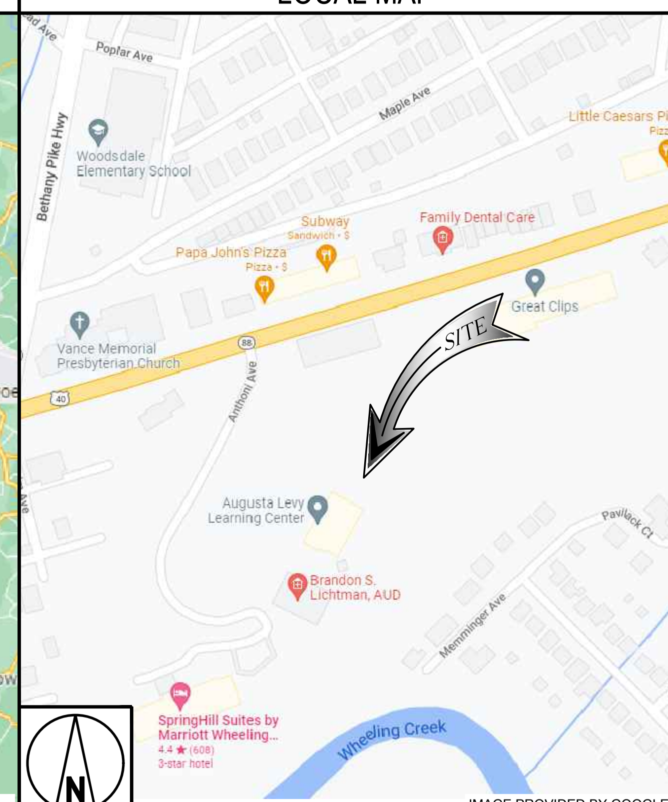
ENGINEER:	GPD GROUP PROFESSIONAL CORPORATION 520 SOUTH MAIN STREET, SUITE 2531 AKRON, OHIO 44311
CONTACT:	BRAD LAUCHER, PE (PROJECT MANAGER) (614) 859-1626/BLAUCHER@GPDGROUP.COM

LOCATION MAPS

VICINITY MAP



LOCAL MAP



NO SCALE

DRIVING DIRECTIONS

DIRECTIONS FROM AT&T OFFICE (635 GRANT ST, PITTSBURGH PA 15219):

HEAD SOUTHWEST ON GRANT ST ST TOWARD STRAWBERRY WAY (0.4MI) USE THE LEFT LANE TO TAKE THE RAMP TO I-376/FT PITT BRG/AIRPORT (0.1MI) MERGE ONTO I-376 W (6.1MI) TAKE EXIT 64A TO MERGE ONTO I-79 S TOWARD WASHINGTON (21.0MI) TAKE EXIT 38 TO MERGE ONTO I-70 W TOWARD WHEELING (26.8MI) KEEP RIGHT AT THE FORK TO STAY ON I-70W (2.6MI) TAKE EXIT 2A TOWARD WV-88 N/OGLEBAY PK (2.6MI) TAKE EXIT 2A TOWARD WV-88 N/OGLEBAY PK (0.2MI) MERGE ONTO MOUNT DECHANTAL RD (0.2MI) TURN RIGHT TOWARD NATIONAL RD (220FT) USE ANY LANE TO TURN SLIGHTLY RIGHT ONTO NATIONAL RD (0.5MI) TURN RIGHT ONTO ANTHONI AVE (174FT)

811

Know what's below.
Call before you dig.

TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN WEST VIRGINIA, CALL WV811

TOLL FREE: 1-800-245-4848 OR
www.wv811.com

WEST VIRGINIA STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

APPLICANT/OWNER:

at&t Mobility

635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
COLUMBUS OH, 43219

PREPARED BY:

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

SEAL:

CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

11/13/2023

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
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1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

TS-1

OVERALL SITE PLAN

40' 20' 0 40' 80'
1"=40'

1

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.

NOTE: DRILLED PIER ONLY TOWER FOUNDATION. COMPOUND IS TOO TIGHT, AND RETAINING WALLS TOO CLOSE FOR PAD AND PIER TOWER FOUNDATION.

NOTES

2

- PROPOSED FENCE
- PROPOSED LEASE AREA
- PROPOSED EASEMENT
- PROPOSED OVERHEAD UTILITIES — OH — OH
- PROPOSED UNDERGROUND FIBER — UGF
- EXISTING PROPERTY LINE — P/L
- PROPOSED UNDERGROUND POWER — UGP
- EXISTING RIGHT OF WAY — R/W
- PROPOSED ICE BRIDGE

LEGEND

3

APPLICANT/OWNER:

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W047
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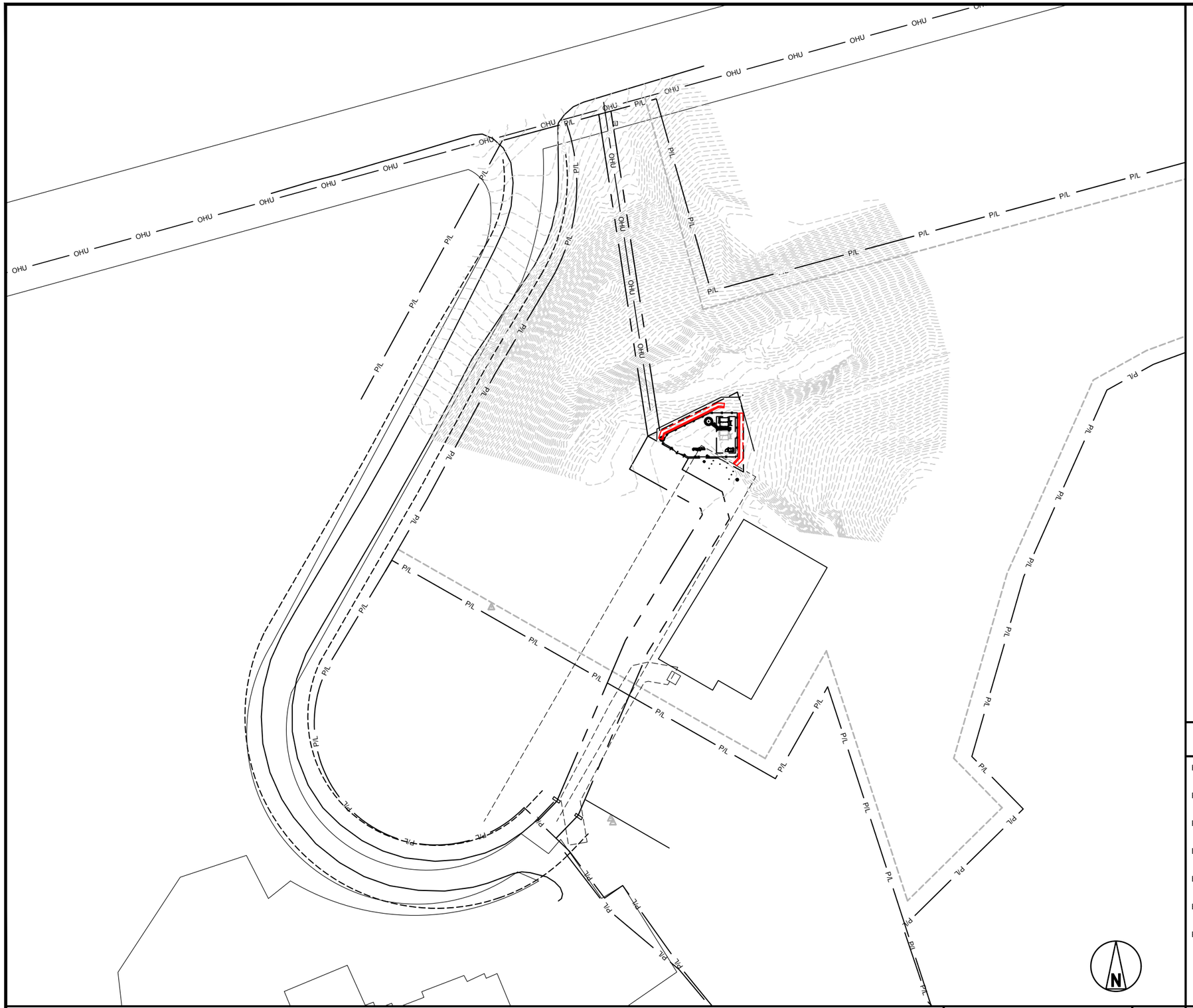
WHEELING, WV 26003

SHEET TITLE:
OVERALL SITE PLAN

SHEET NUMBER:
C-1



OVERALL EXISTING CONTOUR PLAN

40' 20' 0 40' 80'
1"=40'

1

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.

NOTES 2

PROPOSED FENCE

PROPOSED LEASE AREA

PROPOSED EASEMENT

EXISTING OVERHEAD UTILITIES — OHU

EXISTING PROPERTY LINE — P/L

EXISTING RIGHT OF WAY — R/W

PROPOSED ICE BRIDGE

LEGEND 3

APPLICANT/OWNER:

at&t Mobility

635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

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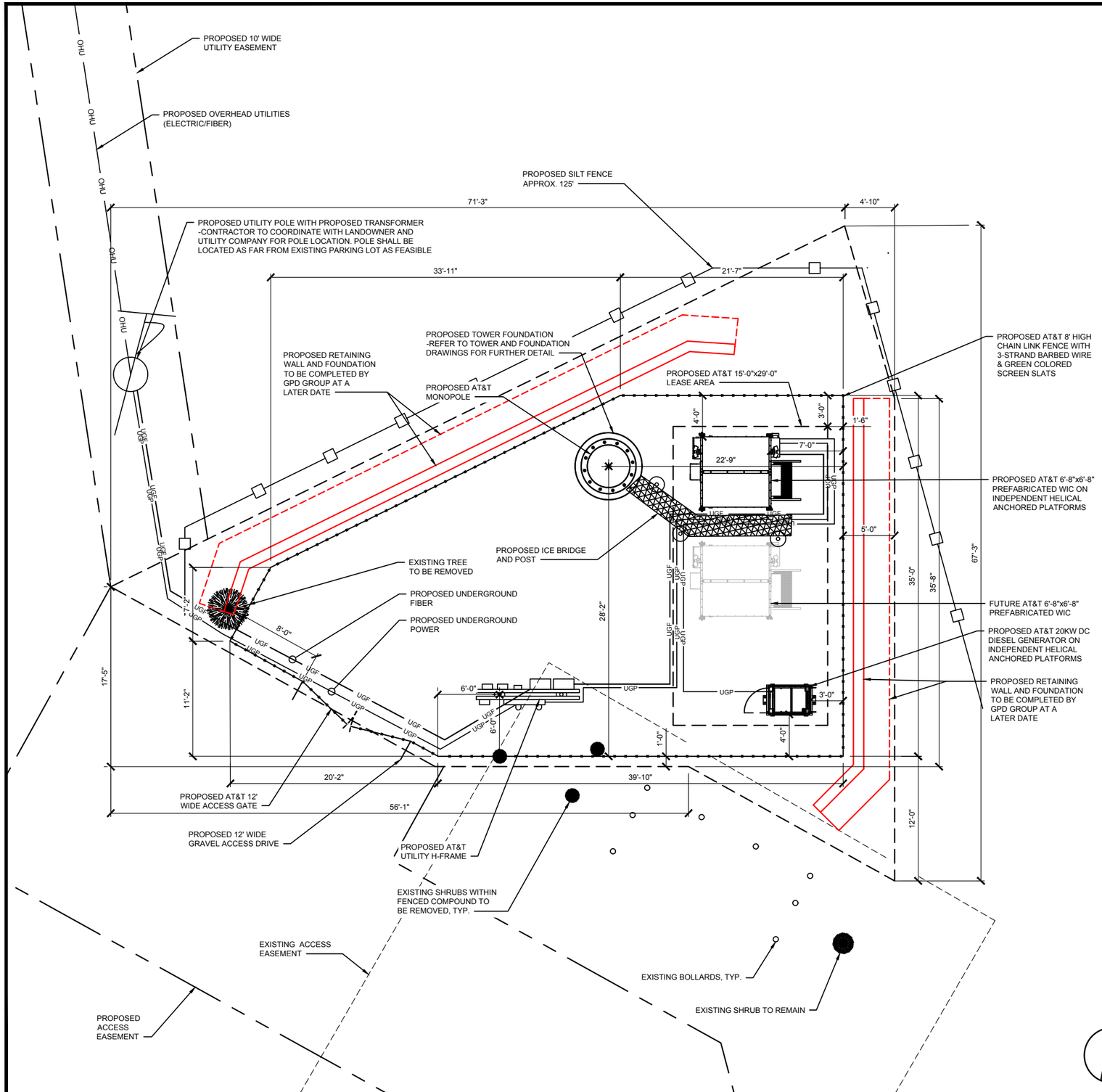
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
OVERALL EXISTING CONTOUR PLAN

SHEET NUMBER:
C-1.1



DETAILED COMPOUND PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

NOTE: DRILLED PIER ONLY TOWER FOUNDATION. COMPOUND IS TOO TIGHT, AND RETAINING WALLS TOO CLOSE FOR PAD AND PIER TOWER FOUNDATION.

NOTES

2

PROPOSED FENCE
PROPOSED LEASE AREA
PROPOSED EASEMENT
PROPOSED OVERHEAD UTILITIES — OH — OH
PROPOSED UNDERGROUND POWER — UGP
PROPOSED UNDERGROUND FIBER — UGF
EXISTING PROPERTY LINE — P/L
PROPOSED ICE BRIDGE
PROPOSED SILT FENCE

LEGEND

3

APPLICANT/OWNER:
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PITTSBURGH, PENNSYLVANIA 15219

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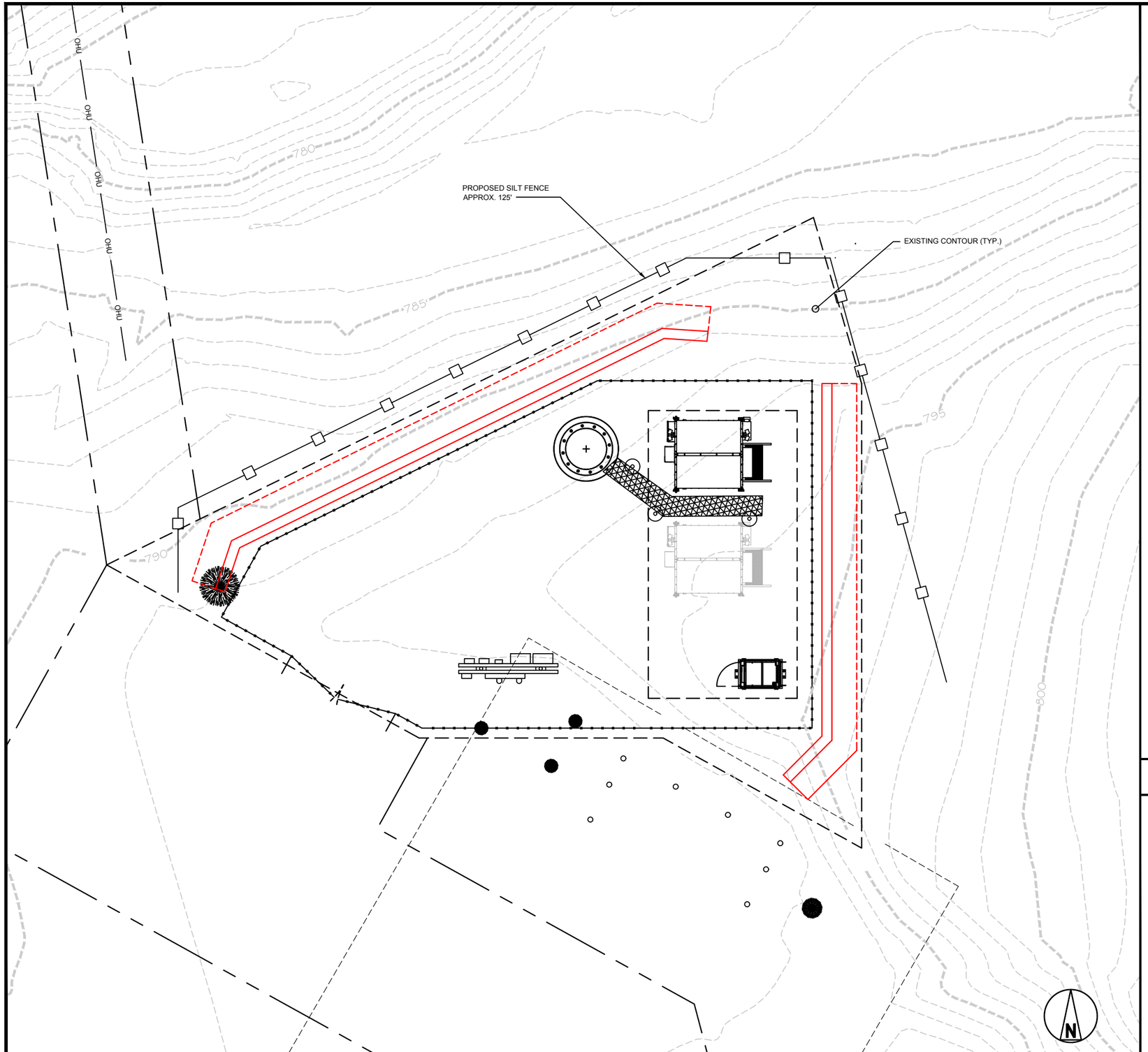
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
DETAILED COMPOUND PLAN

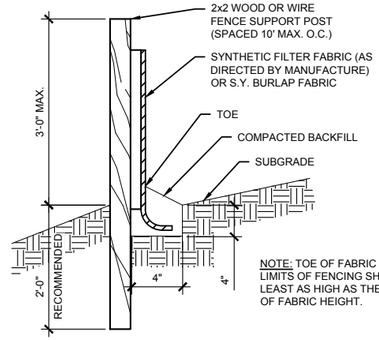
SHEET NUMBER:
C-2



DETAILED SITE GRADING PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1



NOTE: TOE OF FABRIC AT OUTSIDE LIMITS OF FENCING SHALL BE AT LEAST AS HIGH AS THE CENTER TOP OF FABRIC HEIGHT.

NOTES:

1. THE HEIGHT OF THE SILT FENCE SHALL NOT EXCEED 36 INCHES.

2. THE FILTER FABRIC SHALL BE WOVEN FABRIC AND SHALL BE PURCHASED IN A CONTINUOUS ROLL TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND SECURELY SEALED.

3. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM 12 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET.

4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.

5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO THE EXISTING TREES.

7. WHEN EXTRA STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF ITEM NO. 6 APPLYING.

8. THE TRENCH SHALL BE BACKFILLED AND SOIL COMPACTED OVER THE FILTER FABRIC.

9. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

10. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

11. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

12. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

13. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

SILT FENCE DETAIL

2

LEGEND

- PROPOSED FENCE
- PROPOSED LEASE AREA
- PROPOSED EASEMENT
- EXISTING PROPERTY LINE — P/L
- PROPOSED ICE BRIDGE
- PROPOSED SILT FENCE

3

APPLICANT/OWNER:

at&t Mobility

635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
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SEAL

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PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

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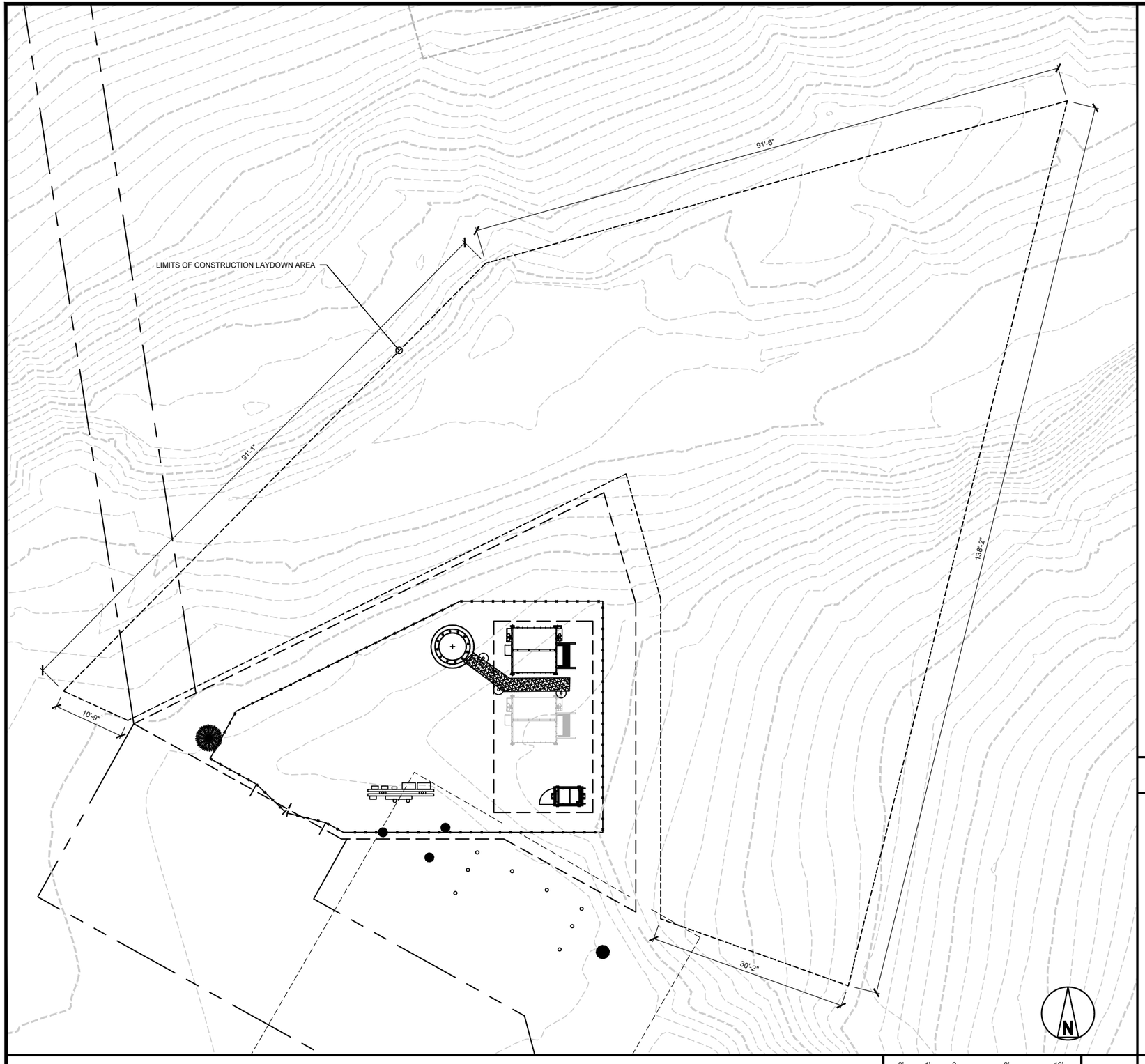
PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
DETAILED SITE GRADING PLAN & NOTES

SHEET NUMBER:
C-2.1



CONSTRUCTION LAYDOWN PLAN

8' 4' 0 8' 16'

1/8"=1'-0"

1

DETAIL NOT USED

2

PROPOSED FENCE

PROPOSED LEASE AREA

PROPOSED EASEMENT

EXISTING PROPERTY LINE — P/L —

PROPOSED ICE BRIDGE

LIMITS OF CONSTRUCTION LAYDOWN AREA

LEGEND

3

APPLICANT/OWNER:

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635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

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PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
CONSTRUCTION LAYDOWN PLAN

SHEET NUMBER:
C-2.2

1.) ACCESS ROADWAY SECTIONS SHALL HAVE ALL TOPSOIL (6" MIN.) REMOVED AND SHALL BE CONSTRUCTED TO SLOPE INTO THE HILLSIDE (WHERE APPLICABLE) AT A RATE OF 1/2" PER FOOT. FLAT SECTIONS THAT WILL BE CENTER OF ACCESS ROADWAY SHALL BE CROWNED TO DRAIN TO BOTH SIDES.

2.) EXISTING AND NEW ACCESS ROADWAY SECTIONS SHALL BE GRADED AND COMPACTED WITH A MIN. TEN (10) TON VIBRATORY ROLLER PRIOR TO PLACEMENT OF GEOTEXTILE FABRIC.

3.) ALL FLAT & WET AREAS OF THE ACCESS ROADWAY SHALL HAVE GEOTEXTILE FABRIC INSTALLED THE FULL TWELVE FEET (12') WIDTH OF THE ROADWAY AFTER THE BASE HAS BEEN COMPACTED.

4.) AFTER GEOTEXTILE FABRIC HAS BEEN PLACED, INSTALL SIX INCHES (6") LAYER OF AASHTO #3 COARSE AGGREGATE WITH 4 INCHES (4") LAYER OF STATE DOT APPROVED WELL-GRADED CRUSHED STONE OR EQUAL PLUS 2 INCHES (2") OF AASHTO #57 CRUSHED LIMESTONE ON TOP ALONG ENTIRE LENGTH OF ACCESS ROADWAY. AFTER CRUSHED STONE IS PLACED ENTIRE ACCESS ROADWAY SHALL BE COMPACTED WITH A MINIMUM TEN (10) TON VIBRATORY ROLLER.

5.) WHERE REQUIRED, A DITCH SHALL BE INSTALLED ALONG THE LOW SIDE OF THE ACCESS ROADWAY. AT MAXIMUM 300' INTERVALS A CROSS OVER PIPE (10" MIN. DIA. - HANCOR "HI-Q" POLYETHYLENE PIPE) TO DIVERT RAINWATER TO OTHER SIDE OF ACCESS ROADWAY. PROVIDE A MIN. OF EIGHTEEN INCHES (18") OF WELL COMPACTED COVER OVER THE TOP OF THE PIPE. THE OUTLET END OF THIS DISCHARGE PIPE SHALL DRAIN INTO A 4'-0" WIDE x 8'-0" LONG x3'-0" DEEP STONE PIT TO DISSIPATE THE FLOW AND MINIMIZE EROSION. LINE ALL DITCHES WITH GEOTEXTILE FABRIC AND SIX INCHES (6") OF AASHTO #3 CRUSHED STONE. ALL STONE. ALL STONE PITS SHALL BE LINED OF GEOTEXTILE FABRIC.

6.) ALL EXCAVATIONS SHALL BE EXTENDED TO THE PROPOSED LINES AND GRADES AS INDICATED ON THE PLANS.

7.) BENCHES:
BENCHES SHALL BE CONSTRUCTED BY EXCAVATING INTO RESIDUAL SOIL, DECOMPOSED ROCK OR ROCK. THE ENTIRE BENCH SHALL BE EXCAVATED INTO THE IN-PLACE MATERIAL, NO PORTION OF THE BENCH SOIL SHALL BE CONSTRUCTED FROM FILL. KEY BENCHES SHALL BE EIGHT FEET (8') WIDE AND SLOPED INTO THE HILL AT 20H:1V. KEY BENCHES SHALL BE INSTALLED ALONG THE ENTIRE WIDTH OF THE TOE OF THE PROPOSED EMBANKMENT AND CONTINUOUSLY AS EMBANKMENT FILL PLACEMENT PROGRESSES.

8.) DRAINAGE:

A.) BENCH DRAIN - A BENCH DRAIN SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF EACH BENCH. THE DRAIN SHALL CONSIST OF A TWELVE INCH (12") WIDE BY TWELVE INCH (12") DEEP TRENCH LINED WITH NON-WOVEN GEOTEXTILE FABRIC. A FOUR INCH (4") DIAMETER CORRUGATED PERFORATED POLYETHYLENE PIPE SHALL BE PLACED IN THE TRENCH AND THE TRENCH SHOULD BE BACKFILLED WITH AASHTO #57 CRUSHED AGGREGATE AND COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC. TRENCH SIDEWALLS AND BOTTOM NEED TO BE LINED WITH A GEOTEXTILE FABRIC (MIRAFI 180N OR EQUAL). THE BRAIN SHALL BE EXTENDED TO OUTLET AWAY FROM THE EMBANKMENT.

B.) SPRING DRAIN - THE PROPOSED FILL EMBANKMENT IS TO BE CONSTRUCTED AGAINST A SLOPE IN WHICH PERCHED WATER TABLES MAY EXIST, IT IS ESSENTIAL THAT THE FILL EMBANKMENT NOT TRAP WATER THAT IS PRESENTLY FINDING AN OUTLET TO THE SURFACE. ANY SPRINGS ENCOUNTERED WITHIN THE EXCAVATION SHOULD BE COLLECTED IN SPRING DRAINS AND CONVEYED TO OUTLET AWAY FROM THE EMBANKMENT. SPRING DRAINS SHALL BE INSTALLED BY EXCAVATING A TWELVE INCH (12") WIDE TRENCH A MINIMUM OF TWO FEET (2') BELOW GRADE (OR DEEPER TO MAINTAIN POSITIVE FLOW), THE TRENCH SHALL BE LINED WITH A NON-WOVEN GEOTEXTILE FABRIC, A FOUR INCH (4") DIAMETER CORRUGATED PERFORATED POLYETHYLENE PIPE SHALL BE PLACED IN THE BASE OF THE TRENCH, AND THE TRENCH SHALL THEN BE BACKFILLED TO GARDE WITH AASHTO #57 CRUSHED AGGREGATE AND COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC. THE SPRING DRAIN SHALL BE EXTENDED AWAY FROM THE EMBANKMENT OR TIED INTO ANOTHER DRAIN WHICH OUTLETS AWAY FROM THE EMBANKMENT.

9.) EMBANKMENT CONSTRUCTION:
THE PROPOSED EMBANKMENT SHALL BE CONSTRUCTED OF ENGINEERED FILL WITH CONTINUOUS BENCHING AS DISCUSSED IN SECTION 1.0 ABOVE AND WITH 2H:1V OUTSIDE SLOPES. ALL FILL MATERIAL SHALL BE PLACED IN HORIZONTAL LAYERS. THE CONSTRUCTION SEQUENCING SHOULD BE DEVELOPED FOR FILL SLOPE CONSTRUCTION EXTENDING FROM THE BOTTOM TO TOP OF THE EXISTING SLOPE. THE PLAN SHOULD ALSO INCLUDE UNIFORM CONSTRUCTION SEQUENCING WITHIN THE SLOPED AREAS AND SHOULD AVOID UNDERMINING THE TOE OF THE EXISTING SLOPES. EXPOSED EXISTING SOILS AT EACH BENCH SHOULD BE INSPECTED. IF EXPOSED SOILS ARE FOUND TO EXHIBIT EXCESSIVE MOISTURE, PUMPING, YIELDING, DEFLECTING, OR RUTTING CONDITIONS, THEY SHOULD BE OVEREXCAVATED AND REPLACED PRIOR TO PLACEMENT OF THE BENCH DRAIN AND THE INITIAL LIFT OF NEW FILL. THE INITIAL LIFT OF NEW FILL SHALL BE PLACED IN MAXIMUM EIGHT INCH (8) THICK LOOSE LIFTS AND SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 (MODIFIED PROCTOR) METHODS. THE MATERIAL SHALL BE WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT AT THE TIME OF PLACEMENT.

10.) ENGINEER FILL:
ENGINEER FILL SHOULD CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE, FREE FROM ORGANIC MATTER, SURFACE COATINGS AND DELETERIOUS MATERIALS. THE FILL SHOULD HAVE A MAXIMUM PARTICLE SIZE OF THREE INCHES (3"), A MAXIMUM LIQUID LIMIT OF 50% AND A MAXIMUM PLASTICITY INDEX OF LESS THAN 25%, AS PER ASTM D-4318. THE FILL SHOULD HAVE A MODIFIED PROCTOR MAXIMUM DRY DENSITY GREATER THAN 110 POUNDS PER CUBIC FOOT (PCF). SAMPLES OF THE PROPOSED FILL MATERIAL SHOULD BE TESTED AND EVALUATED BY THE TESTING AGENCY PRIOR TO PLACEMENT.

11.) EROSION AND SEDIMENT CONTROL NOTES:

A.) THIS CONTRACT DRAWING SHALL BE MADE AVAILABLE ON SITE AT ALL TIMES AND PRESENTED UPON REQUEST. IF UNFORESEEN STORM WATER POLLUTION PREVENTION IS ENCOUNTERED, ADDITIONAL STORM WATER POLLUTION PREVENTION (SWPP) MEASURES MAY BE REQUESTED BY THE OWNER, COUNTY ENGINEER, PROJECT ENGINEER OR SOIL CONSERVATION SERVICE REPRESENTATIVE AT ANYTIME. SUCH REQUESTS SHALL BE IMPLEMENTED IMMEDIATELY AT CONTRACTOR'S EXPENSE.

B.) PLANT TEMPORARY SEEDING AND MULCHING IN ALL AREAS THAT SHALL BE INACTIVE FOR 7 DAYS OR MORE. ALL DISTURBED AND ERODED EARTH SHALL BE REGRADED AND SEEDED WITHIN 14 DAYS WITH SEEDING, AS DEFINED ABOVE AND AS SHOWN ON THE TABLE BELOW. TO ESTABLISH STABILITY AND PROVIDE SEDIMENT CONTROL, WHERE POSSIBLE. TEMPORARY SEEDING GROWTH SHALL NOT BE MOWED UNTIL IT HAS GONE TO SEED FOR 1 YEAR.

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
PERMANENT SEEDINGS			A			*	*		*			
DORMANT SEEDINGS	B									B		
TEMPORARY SEEDINGS			C			D						
SODDING			E**									
MULCHING	F											

A. KENTUCKY BLUEGRASS 90 LBS./AC/MIXED PERENNIAL RYEGRASS 30 LBS./ACRE

B. KENTUCKY BLUEGRASS 135 LBS./AC/MIXED PERENNIAL RYEGRASS 45 LBS./AC. 2 TON STRAW MULCH PER ACRE

C. SPRING OATS 100 LBS./ACRE

D. WHEAT OR CEREAL RYE 150 LBS./ACRE

E. SOD (NURSERY CROWN KENTUCKY BLUEGRASS) 150 LBS./ACRE

F. STRAW MULCH 2 TONS PER ACRE

* IRRIGATION NEEDED DURING JUNE, JULY & SEPTEMBER

** IRRIGATION NEEDED FOR 2-3 WEEKS AFTER SODDING

C.) AT SUCH TIME ROUGH GRADING OF THE SITE IS COMPLETE AND DRAINAGE DIVERTS TO INLETS, INLET SEDIMENT FILTERS SHALL BE INSTALLED AT ALL INLET STRUCTURES TO KEEP PIPING SYSTEMS FREE OF SILTATION.

D.) SILT BARRIERS SHALL BE INSTALLED AROUND ALL EXISTING OR NEW STORM INLETS, CATCH BASINS, AND YARD DRAINS. INSTALL ROCK CHECK DAMS FOR HEADWALL INLETS FOR STORM WATER POLLUTION PREVENTION.

E.)STORM WATER POLLUTION PREVENTION MEASURES SHALL BE INSTALLED OR TOPSOIL STOCKPILES AND OTHER TEMPORARILY DISTURBED AREAS AS SHOWN ON THESE PLANS AND AS DIRECTED BY THE ENGINEER.

F.) SILT BARRIERS, CONSTRUCTION ENTRANCES, AND SILT FENCES SHALL REMAIN IN PLACE UNTIL A GOOD STAND OF GRASS HAS BEEN OBTAINED AND/OR PAVING OPERATIONS ARE COMPLETE. CONTRACTOR SHALL KEEP SILT FROM ENTERING ANY STORM DRAINAGE SYSTEM. ONCE SITE HAS BEEN COMPLETELY STABILIZED, ANY SILT IN PIPES AND DRAINAGE SWALES SHALL BE REMOVED WITHIN 10 DAYS.

G.) UTILITY COMPANIES MUST COMPLY WITH ALL STORM WATER POLLUTION PREVENTION MEASURES AS DEFINED ON THE STORM WATER PREVENTION PLANS, DETAILS AND NOTES.

H.) ALL EXISTING WATER COURSES WITHIN THE PROJECT LIMITS SHALL BE TEMPORARILY PROTECTED DURING LAND CLEARING AND GRADING OPERATIONS. SOILS WITHIN 50 FEET OF SAID WATER COURSES SHALL BE STABILIZED WITHIN 2 DAYS OF THE INITIAL CLEARING / GRADING OPERATION AS SHOWN ON PLANS.

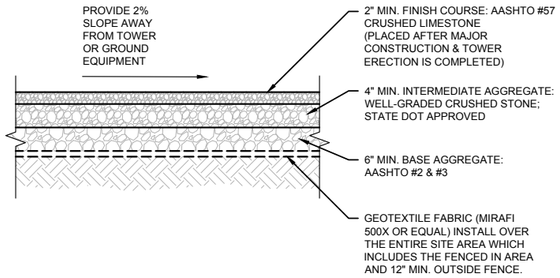
I.) ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 7 DAYS OF FINAL GRADING.

J.) IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL SEDIMENTATION AND STORM WATER POLLUTION PREVENTION ITEMS AT ALL TIMES.

K.) ALL STORM WATER POLLUTION PREVENTION PRACTICES WILL BE INSTALLED BEFORE ANY OTHER EARTH MOVING OCCURS.

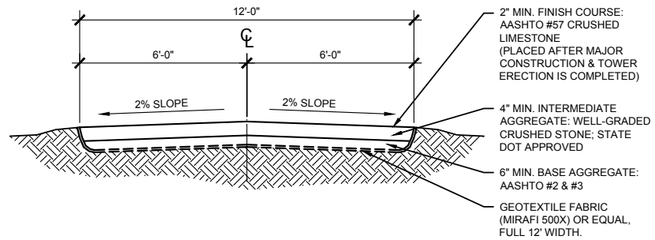
L.) THE FOLLOWING STORM WATER POLLUTION PREVENTION AND SEDIMENT CONTROL MEASURES MAY BE USED ON THIS SITE:
1.) SILT BARRIERS
2.) SILT FENCE
3.) CONSTRUCTION ENTRANCE
4.) EROSION CONTROL SEED BLANKETS - SPEC FOR TEMPORARY EROSION CONTROL BLANKETS ON SLOPES/DITCHES

EXCAVATION NOTES | NO SCALE | 1



NOTE: PREPARE SUBGRADE PER RECOMMENDATION OF GEOTECHNICAL ENGINEER

TYPICAL GRAVEL COMPOUND SECTION | NO SCALE | 2



NOTE: PREPARE SUBGRADE PER RECOMMENDATION OF GEOTECHNICAL ENGINEER

TYPICAL GRAVEL ACCESS DRIVE SECTION | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

DETAIL NOT USED | NO SCALE | 5

DETAIL NOT USED | NO SCALE | 6

APPLICANT/OWNER:
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635 GRANT STREET
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PREPARED BY:
GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

SEAL:
CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

PROJECT NO: 2017748.70
DRAWN BY: JA
CHECKED BY: BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
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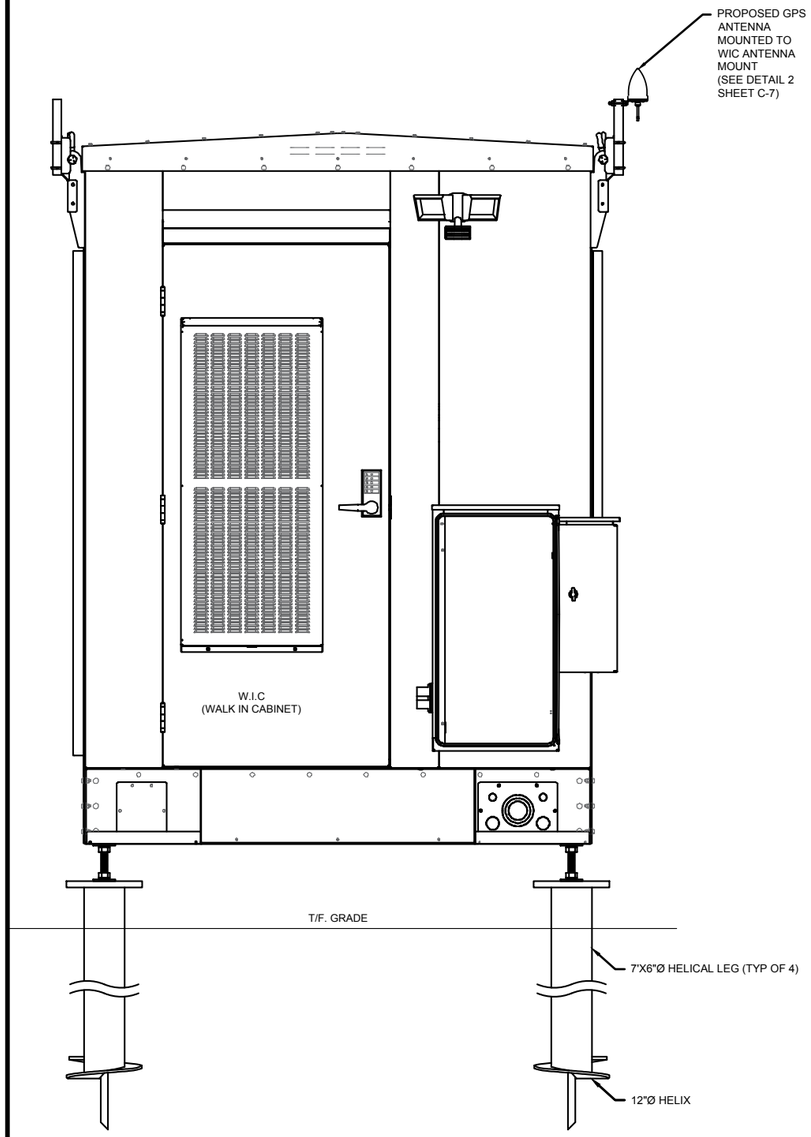
F	01/19/2022	REVISED COMPOUND LOCATION
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
EXCAVATION NOTES & SITE DETAILS

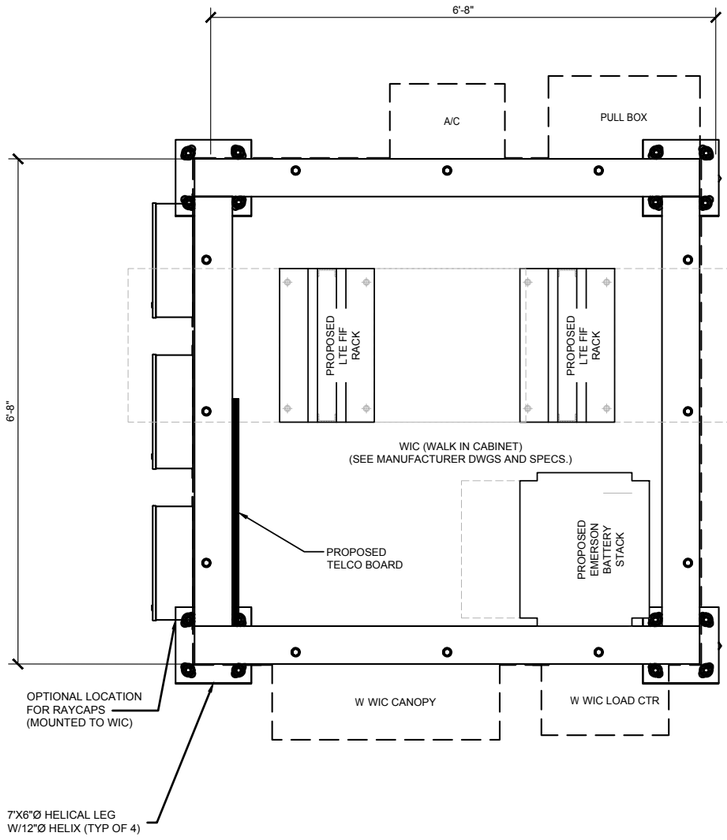
SHEET NUMBER:
C-3



XTE 802 SERIES WIC ELEVATION | NO SCALE | 1

CONTRACTOR - NOTE:

THIS DRAWING IS A SCHEMATIC REPRESENTATION OF THE CABINET'S EQUIPMENT LAYOUT INITIAL DESIGN. THE FINAL CONFIGURATION IS DEPENDANT ON THE OWNER'S ACTUAL FINAL RF EQUIPMENT SELECTION. THE CONTRACTOR SHALL PROVIDE THE ACTUAL CABINET EQUIPMENT LAYOUT DRAWINGS TO THE APPROPRIATE BUILDING DEPARTMENT BEFORE START OF CONSTRUCTION.



XTE 802 SERIES WIC LAYOUT | NO SCALE | 2

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS ANTENNA AND TRANSMITTING ANTENNAS.
3. CONTRACTOR SHALL INSTALL ALL CABINET PARTS SHIPPED LOOSE. (SEE CABINET MANUFACTURER DRAWINGS & SPECS)
4. CABINET SHIPPED WITH INTERIOR COMPLETE. FIELD VERIFY UPON DELIVERY TO SITE AND CONTACT CONSTRUCTION MANAGER IF ANY INTERIOR ITEMS ARE NOT PRESENT.
5. CONTRACTOR SHALL REFER TO "XTE 802 SERIES WALK-IN-CABINET (WIC): DESCRIPTION AND INSTALLATION MANUAL (631-205-434), REVISION H" © 2020 BY VERTIV FOR PRIMARY & ALTERNATIVE INSTALLATION PROCEDURES, AS NECESSARY.
6. REFER TO "HELICAL ANCHOR PIER DESIGN" BY VERTIV DATED 06/22/2017 FOR HELICAL LEG DESIGN CALCULATIONS.
7. IN THE EVENT THAT THE HELICAL LEGS CANNOT BE INSTALLED PER PRIMARY PROCEDURE, AN ALTERNATIVE PROCEDURE SHOULD BE USED. IF AN ALTERNATIVE INSTALLATION PROCEDURE IS REQUIRED OR SITE CONDITIONS REQUIRE CONCRETE PADS TO SUPPORT WALK-IN-CABINET AND GENERATOR, CONTRACTOR SHALL CONSULT WITH GPD GROUP BEFORE INSTALLATION.

NOTES | 3

APPLICANT/OWNER:
at&t Mobility
635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
COLUMBUS OH, 43219

PREPARED BY:

SEAL:

FOR REFERENCE ONLY

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

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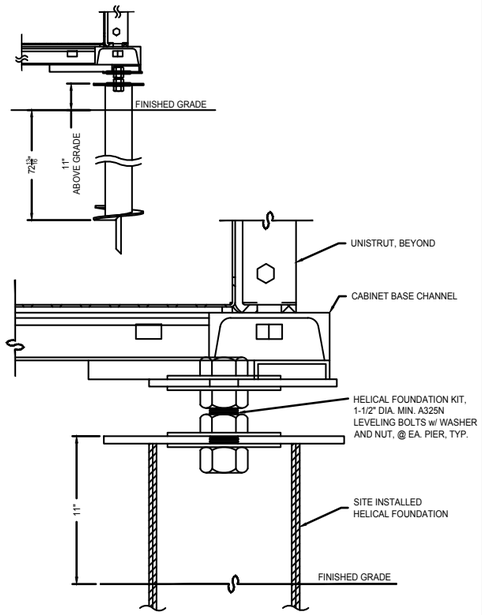
PROJECT LOCATION:

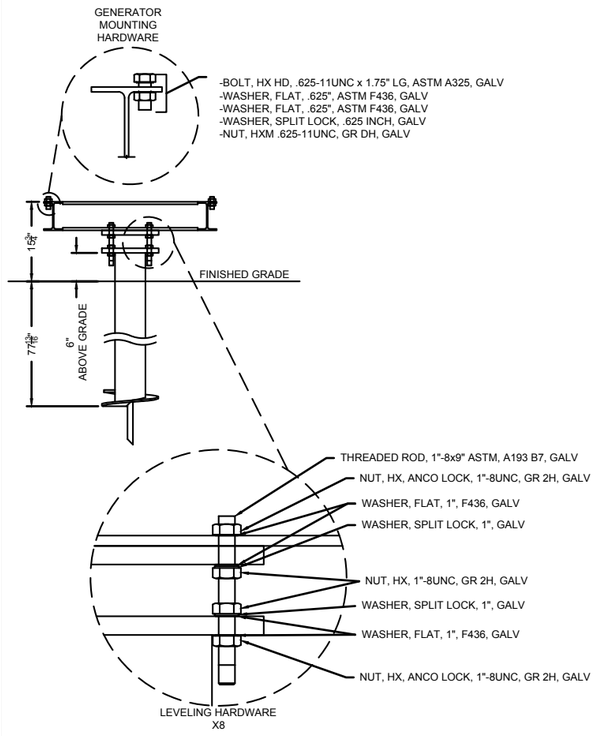
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
EQUIPMENT LAYOUT

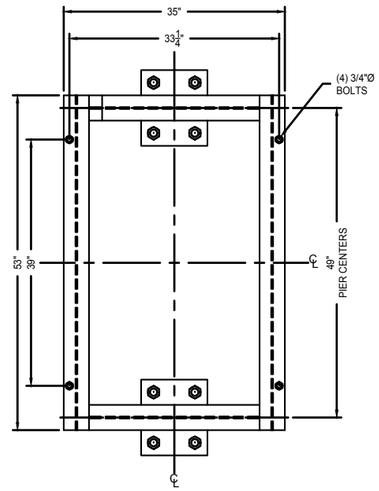
SHEET NUMBER:
C-4



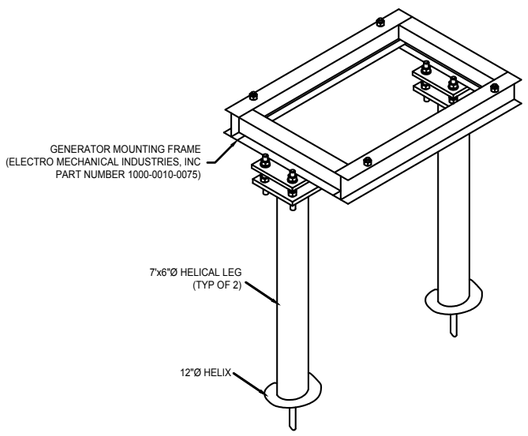
WIC PLATFORM CONNECTIONS | NO SCALE | 1



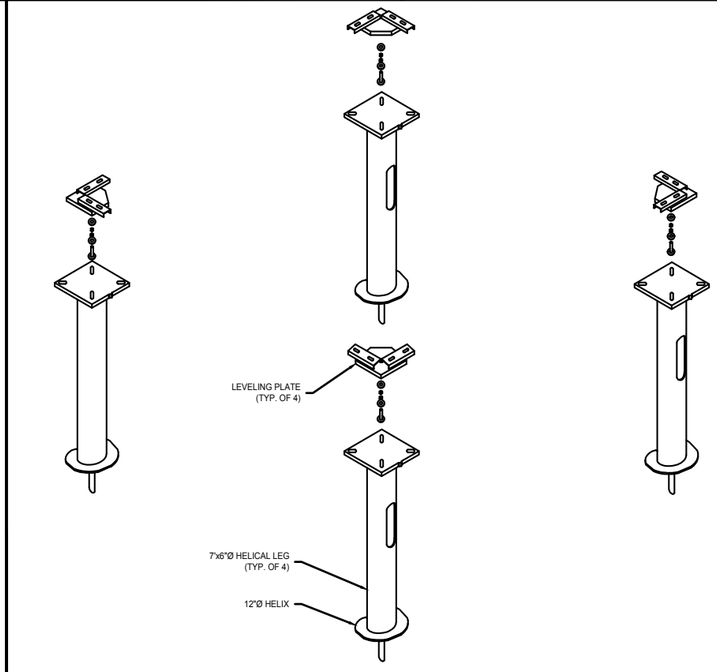
ELEVATED PLATFORM CONNECTIONS | NO SCALE | 2



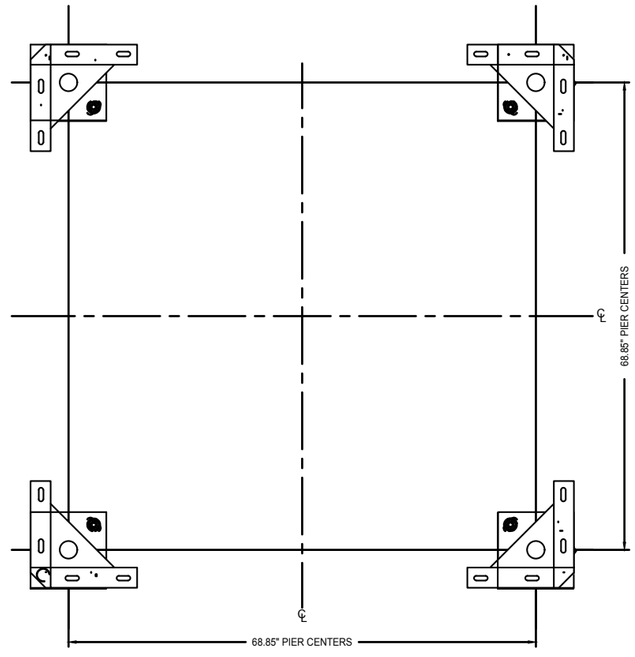
ELEVATED GENERATOR PLATFORM PLAN | NO SCALE | 3



ELEVATED GENERATOR PLATFORM | NO SCALE | 4



ELEVATED WIC PLATFORM | NO SCALE | 5



ELEVATED WIC PLATFORM PLAN | NO SCALE | 6

APPLICANT/OWNER:

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SUITE 150
COLUMBUS OH, 43219

PREPARED BY:

SEAL:

FOR REFERENCE ONLY

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

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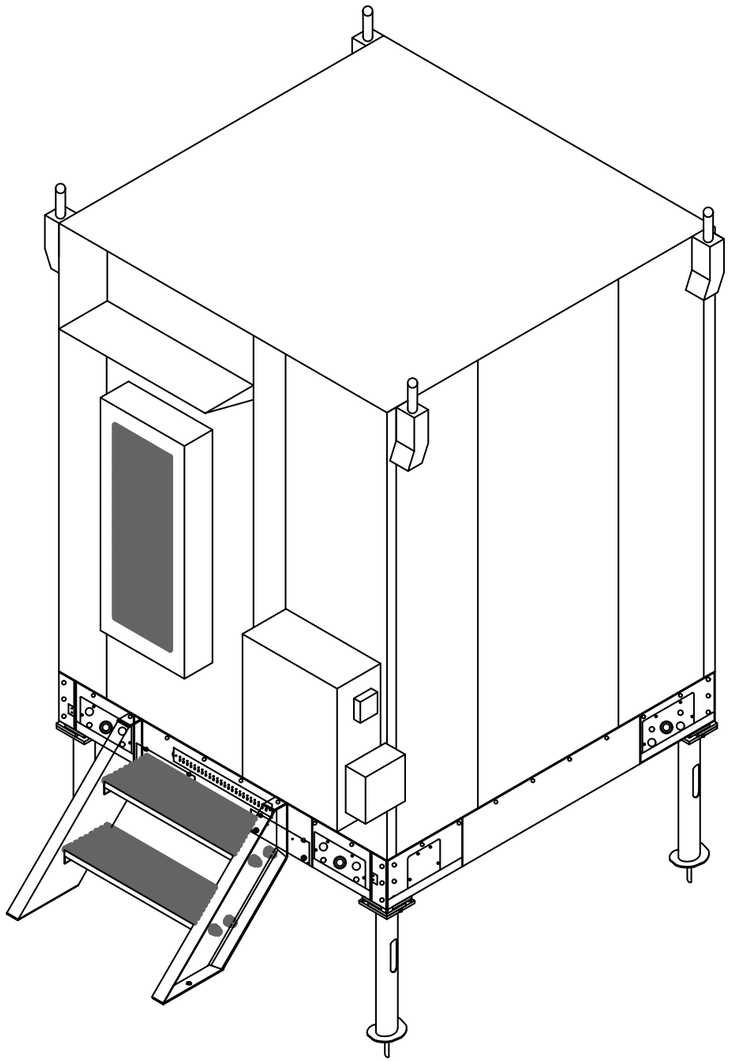
PROJECT LOCATION:

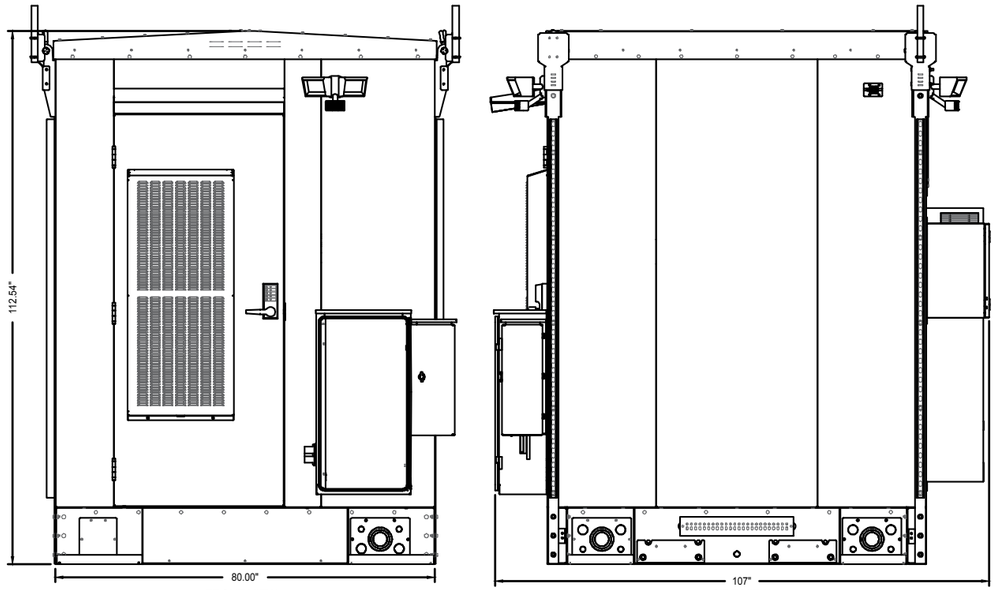
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
WIC & GENERATOR PLATFORM DETAILS

SHEET NUMBER:
C-5

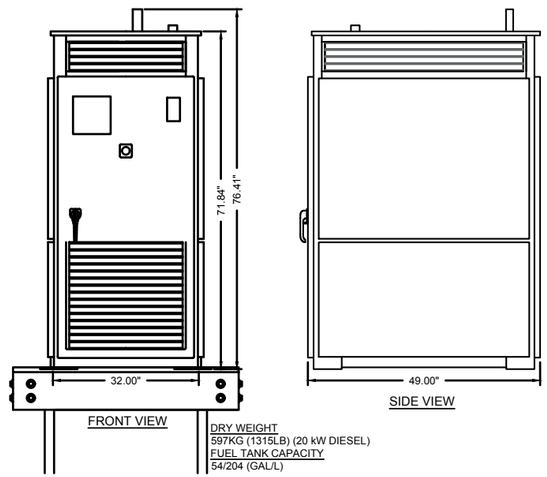


XTE 802 SERIES WALK IN CABINET | NO SCALE | 1



WEIGHT
APPROX. 7200LB (W/ EQUIPMENT)

XTE 802 SERIES WALK IN CABINET | NO SCALE | 2



DRY WEIGHT
597KG (1315LB) (20 kW DIESEL)
FUEL TANK CAPACITY
54/204 (GAL/L)

POLAR POWER V020DYA360TEC | DC DIESEL GENERATOR | NO SCALE | 3

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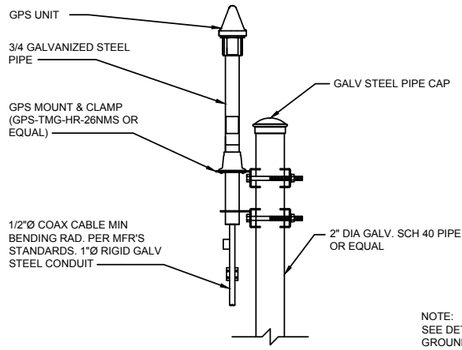
PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
EQUIPMENT SPECIFICATIONS

SHEET NUMBER:
C-6

DETAIL NOT USED | NO SCALE | 1

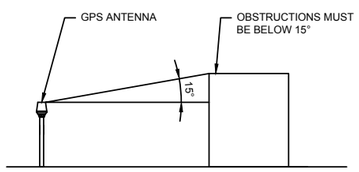


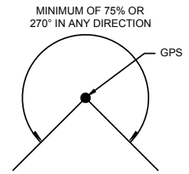
NOTE:
SEE DETAIL 4 ON SHEET E-10 FOR GROUNDING DETAIL.

GPS ANTENNA DETAIL | NO SCALE | 2

NOTES

1. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.
2. DO NOT SWEEP TEST GPS ANTENNA.
3. PLACE PROPOSED GPS ANTENNA A MIN. OF 10' (3 METER) HORIZONTALLY FROM ALL EXISTING TRANSMITTING ANTENNAS.
4. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 3/4" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18") USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH EDGES IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.





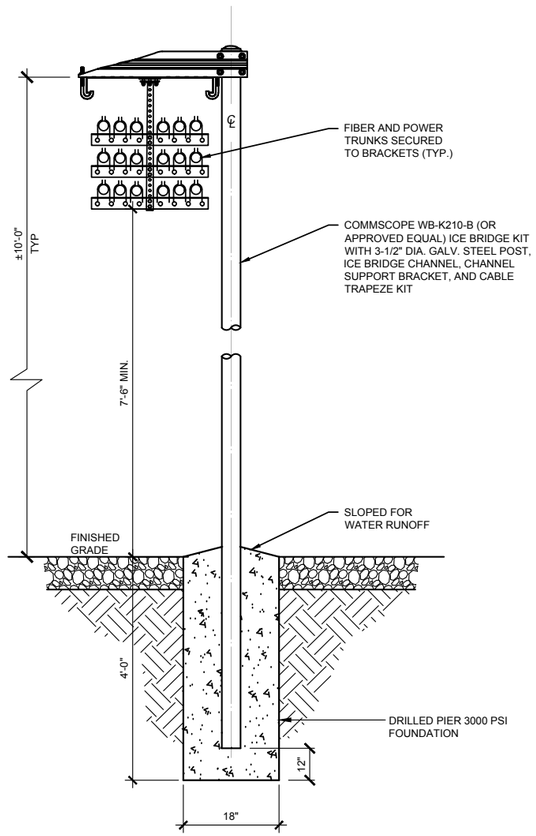
GPS SPECIFICATIONS | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

NOTES

1. CONTRACTOR SHALL CONFIRM THE DEPTH OF THE ICE BRIDGE DRILLED PIER FOUNDATION, IF THE TOWER PAD FOUNDATION DEPTH IS LESS THAN THE STANDARD SHOWN.

ICE BRIDGE DETAIL NOTES | NO SCALE | 5



ICE BRIDGE DETAIL | NO SCALE | 6

DETAIL NOT USED | NO SCALE | 7

APPLICANT/OWNER:
at&t Mobility
635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
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PREPARED BY:
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Professional Corporation
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Akron, OH 44311
330.572.2100 Fax 330.572.2101

SEAL
CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

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PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
EQUIPMENT SITE DETAILS

SHEET NUMBER:
C-7

NOTICE

Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC General Population Exposure Limits.

Follow all posted signs and site guidelines for working in a RF environment.

Ref: 47CFR 1.1307(b)

atat

CAUTION

Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC Occupational Exposure Limits.

Obey all posted signs and site guidelines for working in a RF environment.

Ref: 47CFR 1.1307(b)

atat

ALERTING SIGN

WARNING!

DANGER DO NOT TOUCH TOWER!

SERIOUS "RF" BURN HAZARD!

MAINTAIN AN ADEQUATE CLEARANCE BETWEEN TOWER SUPPORTS AND GUY WIRES

FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN A RADIO FREQUENCY ENVIRONMENT COULD RESULT IN SERIOUS INJURY. CONTACT CURRENT MAY EXCEED LIMITS PRESCRIBED IN ANSI/EEE C95.1-1992 FOR CONTROLLED ENVIRONMENTS.

atat

atat

PROPERTY OF AT&T

AUTHORIZED PERSONNEL ONLY

IN CASE OF EMERGENCY, OR PRIOR TO PERFORMING MAINTENANCE ON THIS SITE, CALL 800-638-2822 AND REFERENCE CELL SITE NUMBER

ALERTING SIGN

INFO SIGN #4

INFORMATION

AT&T operates telecommunications antennas at this location. Remain at least 3 feet away from any antenna and obey all posted signs.

Contact the owner(s) of the antenna(s) before working closer than 3 feet from the antenna.

Contact AT&T at _____ prior to performing any maintenance or repairs near AT&T antennas. This is Site#_____

Contact the management office if this door/hatch/gate is found unlocked.

INFORMACION

En esta propiedad se ubican antenas de telecomunicaciones operadas por AT&T. Favor mantener una distancia de no menos de 3 pies y obedecer todos los avisos.

Comuniquese con el propictario o los propicatarios de las antenas antes de trabajar o caminar a una distancia de menos de 3 pies de la antena.

Comuniquese con AT&T _____antes de realizar cualquier mantenimiento o reparaciones cerca de la antenas de AT&T.

Esta es la estacion base numero_____

Favor comunicarse con la oficina de la administracion del edificio si esta puerta o compuerta se encuentra sin candado.

atat

INFORMATION

ACTIVE ANTENNAS ARE MOUNTED

- ☐ ON THE OUTSIDE OF THIS BUILDING
- ☐ BEHIND THIS PANEL
- ☐ ON THIS STRUCTURE

STAY BACK A MINIMUM OF 3 FEET FROM THESE ANTENNAS

Contact AT&T at _____ and follow their instructions prior to performing any maintenance or repairs closer than 3 feet from the antennas.

This is AT&T site# _____

atat

INFO SIGN #1

INFO SIGN #2

STAY BACK 3 FEET FROM ANTENNA

atat

INFO SIGN #3

ALERTING SIGN
(FOR CELL SITE BATTERIES)

ALERTING SIGN
(FOR DIESEL FUEL)

ALERTING SIGN
(FOR PROPANE)

GENERAL SIGNAGE GUIDELINES

Structure Type	INFO SIGN #1	INFO SIGN #2	INFO SIGN #3	INFO SIGN #4	Striping	NOTICE SIGN	CAUTION SIGN
Towers							
Monopole/Monopine/Monopalm	entrance gates, shelter doors **OR** on the outdoor cabinets	climbing side of the Tower	On the side of Antennas	entrance gates, shelter doors **OR** on the outdoor cabinets			At the height of the first climbing step, min. 9ft above ground
SCE Towers/ Towers with high voltage	entrance gates, shelter doors **OR** on the outdoor cabinets	climbing side of the Tower	On the side of Antennas	entrance gates, shelter doors **OR** on the outdoor cabinets			At the height of the first climbing step, min. 9ft above ground
Light Poles / Flag Poles	entrance gates, shelter doors **OR** on the outdoor cabinets	on the pole, no less than 3ft below the Antenna and no less than 9ft above ground	On the side of Antennas	entrance gates, shelter doors **OR** on the outdoor cabinets			
Utility Wood Poles (JPA)	entrance gates, shelter doors **OR** on the outdoor cabinets	on the pole, no less than 3ft below the Antenna and no less than 9ft above ground	On the side of Antennas	entrance gates, shelter doors **OR** on the outdoor cabinets		If GP max value of MPE at antenna level is: 0-99%: Notice sign; over 99%: Caution sign at no less than 3ft below antenna and 9ft above ground	
Microcells mounted on non-JPA poles	entrance gates, shelter doors **OR** on the outdoor cabinets	on the pole, no less than 3ft below the Antenna and no less than 9ft above ground	On the side of Antennas	entrance gates, shelter doors **OR** on the outdoor cabinets		Notice or Caution sign at no less than 9ft above ground: only if the exposure exceeds 90% of the General Public exposure at 6ft above ground or at outside surface of adjacent buildings	
Roof Tops							
At all access points to the roof	X			X			
On Antennas	X		X	X			
Concealed Antennas	X	X		X			
antennas mounted facing outside the building	X	X		X			
antennas on support structure	X	X		X			
Roofview Graph:							
Radiation area is within 3ft from antenna	X	adjacent to each antenna		X		either Notice or Caution sign (based on Roofview results) at antennas/barrier	
Radiation area is beyond 3ft from antenna	X	adjacent to each antenna		X	diagonal, yellow striping as to Roofview graph		
Church Steeples	Access to steeple	adjacent to antennas if antennas are concealed	On the side of Antennas	Access to steeple			Caution sign at the antennas
Water Stations	Access to ladder	adjacent to antennas if antennas are concealed	On the side of Antennas	Access to ladder			Caution sign beside Info sign #1, min. 9ft above ground

Notes for Rooftop sites:

1. Either NOTICE or CAUTION signs need to be posted at each sector as close as possible to: the outer edge of the striped off area or the outer antennas of the sector.
2. If Roofview shows: only blue = Notice Sign, blue and yellow = Caution Sign, only yellow = Caution Sign to be installed.
3. Should the required striping area interfere with any structures or equipment (A/C, vents, roof hatch, doors, other antennas, dishes, etc.), please notify AT&T to modify the striping area, prior to starting the work

SIGNAGE GUIDELINES CHART

APPLICANT/OWNER:

at&t Mobility

635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
COLUMBUS OH, 43219

PREPARED BY:

SEAL:

FOR REFERENCE ONLY

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
E	12/15/2021	REVISED COMPOUND LOCATION
F	01/19/2022	REVISED COMPOUND LOCATION
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
SIGNAGE DETAILS

SHEET NUMBER:
C-8

PART 1 - GENERAL

1.1 SCOPE:

A. FORM WORK, REINFORCING STEEL, ACCESSORIES, CAST-IN PLACE CONCRETE, FINISHING, CURING AND TESTING FOR STRUCTURAL CONCRETE FOUNDATIONS.

1.2 REFERENCES:

A. ACI (AMERICAN CONCRETE INSTITUTE)

1. ACI 301 SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS.
2. ACI 304 RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE.
3. ACI 305 RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING.
4. ACI 306 RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING.
5. ACI 308 STANDARD PRACTICE FOR CURING CONCRETING.
6. ACI 309 STANDARD PRACTICE FOR CONSOLIDATION OF CONCRETE.
7. ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
8. ACI 347 RECOMMENDED PRACTICE FOR CONCRETE FORMWORK DRILL PIERS.

B. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS). THE APPLICABLE STANDARDS OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS ARE LISTED IN THE ACI STANDARDS AND ARE A PART OF THIS SPECIFICATION.

PART 2 - PRODUCTS

2.1 REINFORCING MATERIALS:

A. REINFORCING BARS: ASTM A615, GRADE 60, PROPOSED DEFORMED BILLET-STEEL BARS, PLAIN FINISH.

B. FURNISH CHAIRS, BOLSTERS, BAR SUPPORTS, SPACERS AS REQUIRED FOR SUPPORT OF REINFORCING STEEL AND WIRE FABRIC.

2.2 CONCRETE MATERIALS:

A. PORTLAND CEMENT SHALL BE TYPE II, CONFORMING TO ASTM C-150.

B. AGGREGATE SHALL CONFORM TO ASTM C-33.

1. FINE AGGREGATE SHALL BE UNIFORMLY GRADED, CLEAN SHARP, WASHED NATURAL, OR CRUSHED SAND, FREE FROM ORGANIC IMPURITIES.
2. COARSE AGGREGATE SHALL BE NATURAL WASHED GRAVEL OR WASHED CRUSHED ROCK HAVING HARD, STRONG, DURABLE PIECES, FREE FROM ADHERENT COATINGS.
3. MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE 3/4 INCH IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM C-33 GRADATION SIZE NO. 67.

C. WATER USED IN CONCRETE MIX SHALL BE POTABLE, CLEAN, AND FREE FROM OILS, ACIDS, SALTS, CHLORIDES, ALKALI, SUGAR, VEGETABLE, OR OTHER INJURIOUS SUBSTANCES.

D. THE CONCRETE SHALL CONTAIN AN AIR-ENTRAINING ADMIXTURE COMPLYING WITH THE REQUIREMENTS OF ASTM C-260 AND ACI 212. 1R AND A WATER- REDUCING ADMIXTURE COMPLYING WITH THE REQUIREMENTS OF ASTM C-494 AND ACI 212. 1R. ADMIXTURES SHALL BE PURCHASED AND BATCHED IN LIQUID SOLUTION. THE USE OF CALCIUM CHLORIDE OR AN ADMIXTURE CONTAINING CALCIUM CHLORIDE IS PROHIBITED. ADMIXTURES SHALL BE OF THE SAME MANUFACTURER TO ASSURE COMPATIBILITY. ACCEPTABLE MANUFACTURERS ARE:

1. W.R. GRACE
2. SIKA CORP.
3. MASTER BUILDERS
4. EUCLID CHEMICAL CO.
5. APPROVED EQUAL

E. CURING COMPOUND SHALL CONFORM TO ASTM C309, TYPE I, ID, CLASS A AND B AND ASTM C171 AS APPLICABLE.

2.3 CONCRETE MIX:

A. PROPORTION CONCRETE MIX IN ACCORDANCE WITH REQUIREMENTS OF ACI 301. THE STRENGTH OF CONCRETE SHALL BE AS INDICATED ON THE DRAWINGS. WHERE STRENGTH IS NOT CLEARLY INDICATED, CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.

B. THE CONCRETE MIX SHALL BE DESIGNED FOR A MAXIMUM SLUMP OF THREE INCHES (PLUS OR MINUS 1-INCH) AT THE POINT OF DISCHARGE. MIXES OF THE STIFFEST CONSISTENCY THAT CAN BE EFFICIENTLY PLACED SHALL BE USED.

C. ALL CONCRETE SHALL BE TO SIX PERCENT (6%) AIR ENTRAINED (PLUS OR MINUS 1%).

D. ALL STRUCTURAL CONCRETE SHALL CONTAIN A WATER-REDUCING AGENT.

PART 3 - EXECUTION

3.1 GENERAL:

A. CONSTRUCT AND ERECT THE FORM WORK IN ACCORDANCE WITH ACI 301 AND ACI 347.

B. COLD-WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 306.

C. HOT-WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 305.

3.2 INSERTS, EMBEDDED COMPONENTS AND OPENINGS:

A. CONTRACTOR SHALL CHECK ALL CIVIL, ARCHITECTURAL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR OPENINGS, SLEEVES, ANCHOR BOLTS, INSERTS AND OTHER ITEMS TO BE BUILT INTO THE CONCRETE WORK.

B. COORDINATE THE WORK OF OTHER SECTION IN FORMING AND SETTING OPENINGS. RECESSES, SLOTS, CHASES, ANCHORS, INSERTS AND OTHER ITEMS TO BE EMBEDDED.

C. EMBEDDED ITEMS SHALL BE SET ACCURATELY IN LOCATION, ALIGNMENT, ELEVATION AND PLUMBNESS, LOCATE AND MEASURE FROM ESTABLISHED SURVEYED REFERENCE BENCHMARKS.

D. EMBEDDED ITEMS SHALL BE ANCHORED INTO PLACE IN A MANNER TO PREVENT MOVEMENT DURING CONCRETE PLACEMENT AND CONSOLIDATION. COMPONENTS FORMING A PART OF A COMPLETE ASSEMBLY SHALL BE ALIGNED BEFORE ANCHORING INTO PLACE. PROVIDE TEMPORARY BRACING, ANCHORAGE, AND TEMPLATES AS REQUIRED TO MAINTAIN THE SETTING AND ALIGNMENT.

3.3 REINFORCEMENT PLACEMENT:

A. PLACE REINFORCEMENT ACCORDING TO CHECKED AND RELEASED DRAWINGS AND IN ACCORDANCE WITH ACI 301 AND ACI 318.

B. ACCURATELY POSITION, SUPPORT AND SECURE REINFORCEMENT AGAINST DISPLACEMENT FROM FORM WORK CONSTRUCTION OR CONCRETE PLACEMENT AND CONSOLIDATION. SUPPORT REINFORCING ON METAL CHAIRS, RUNNERS, BOLSTERS, SPACERS AND HANGERS.

C. SPLICES OF REINFORCING BARS SHALL BE CLASS B UNLESS SHOWN OTHERWISE ON THE DRAWINGS. SPLICES SHALL BE STAGGERED. FULL DEVELOPMENT LENGTH SHALL BE PROVIDED ACROSS JOINTS.

D. LOCATE REINFORCING TO PROVIDE CONCRETE COVER AND SPACING SHOWN ON THE DRAWINGS. MINIMUM COVER SHALL BE AS REQUIRED BY ACI 318.

E. WELDING OF AND TO ANY REINFORCING MATERIALS INCLUDING TACK WELDING OF CROSSING BARS IS STRICTLY PROHIBITED.

3.4 CONCRETE PLACEMENT:

A. PRIOR TO PLACING CONCRETE, THE FORMS AND REINFORCEMENT SHALL BE THOROUGHLY INSPECTED; ALL TEMPORARY BRACING, TIES AND CLEATS REMOVED; ALL OPENINGS FOR UTILITIES PROPERLY BOXED; ALL FORMS PROPERLY SECURED IN THERE CORRECT POSITION AND MADE TIGHT. ALL REINFORCEMENT AND EMBEDDED ITEMS SHALL BE SECURED IN THEIR PROPER LOCATIONS. ALL OLD AND DRY CONCRETE AND DIRT SHALL BE CLEANED OFF AND ALL STANDING WATER AND OTHER FOREIGN MATERIAL REMOVED.

B. PLACING CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301 AND ACI 304 AND SHALL BE CARRIED OUT AT SUCH A RATE THAT THE CONCRETE PREVIOUSLY PLACED IS STILL PLASTIC AND INTEGRATED WITH THE FRESHLY PLACED CONCRETE. CONCRETING ONCE STARTED, SHALL BE CARRIED ON AS A CONTINUOUS OPERATION UNTIL THE SECTION IS COMPLETED. NO COLD JOINTS SHALL BE ALLOWED.

C. ALL CONCRETE SHALL BE THOROUGHLY CONSOLIDATED AND COMPACTED BY VIBRATION SPACING, RODDING, OR FORKING DURING THE OPERATION OF PLACING AND DEPOSITING IN ACCORDANCE WITH ACI 309. THE CONCRETE SHALL BE THOROUGHLY WORKED AROUND REINFORCEMENT, EMBEDDED ITEMS, AND INTO THE CORNER OF THE FORMS SO AS TO ELIMINATE ALL AIR AND STONE POCKETS.

3.5 FINISHING:

A. FINISHING OF THE FLOOR SLABS SHALL BE IN ACCORDANCE WITH ACI 302.1 SECTION 7.2 WITH A MINIMUM OF THREE TROWELINGS. THE SLAB FINISH TOLERANCE AS MEASURED IN ACCORDANCE WITH ASTM E 1155 SHALL HAVE AN OVERALL TEST NUMBER FOR FLATNESS, FF= 20 AND FOR LEVEL. FL=15. THE MINIMUM LOCAL NUMBER FOR FLATNESS, FF= 15 AND FOR LEVEL FL=10.

B. SURFACE OF FLOOR SLAB SHALL RECEIVE TWO COATS OF CLEAR SEALER/HARDENER.

C. ABOVE GRADE WALL SURFACES SHALL HAVE A SMOOTH FORM FINISH AS DEFINED IN CHAPTER 10 OF ACI 301.

3.6 CURING:

A. FRESHLY DEPOSITED CONCRETE SHALL BE PROTECTED FROM PREMATURE DRYING AND EXCESSIVELY HOT AND COLD TEMPERATURES AND SHALL BE MAINTAINED WITH MINIMUM MOISTURE LOSS AT A RELATIVELY CONSTANT TEMPERATURE FOR A PERIOD OF TIME NECESSARY FOR THE HYDRATION OF THE CEMENT AND PROPER HARDENING OF THE CONCRETE.

B. CONCRETE SHALL BE KEPT CONTINUOUSLY MOIST AT LEAST OVERNIGHT, IMMEDIATELY FOLLOWING THE INITIAL CURING. BEFORE THE CONCRETE HAS DRIED. ADDITIONAL CURING SHALL BE ACCOMPLISHED BY ONE OF THE FOLLOWING MATERIALS OR METHODS:

1. PONDING OR CONTINUOUS SPRINKLING.
2. ABSORPTIVE MAT OR FABRIC KEPT CONTINUOUSLY WET.
3. NON-ABSORPTIVE FILM (POLYETHYLENE) OVER PREVIOUSLY SPRINKLED SURFACE.
4. SAND OR OTHER COVERING KEPT CONTINUOUSLY WET.
5. CONTINUOUS STEAM (NOT EXCEEDING 150 F) OR VAPOR MIST BATH.
6. SPRAYED-ON CURING COMPOUND APPLIED IN TWO COATS, SPRAYED IN PERPENDICULAR DIRECTION.

C. THE FINAL CURING SHALL CONTINUE UNTIL THE CUMULATIVE NUMBER OF DAYS OR FRACTION THEREOF, NOT NECESSARILY CONSECUTIVE, DURING WHICH TEMPERATURE OF THE AIR IN CONTACT WITH CONCRETE IS ABOVE 50F HAS TOTALED SEVEN (7) DAYS. CONCRETE SHALL NOT BE PERMITTED TO FREEZE DURING THE CURING PERIOD. RAPID DRYING AT THE END OF THE CURING PERIOD SHALL BE PREVENTED.

1. ALL FABRICATION AND INSTALLATION SHOULD BE DONE BY A CONTRACTOR EXPERIENCED IN SIMILAR WORK.
2. CONTRACTOR SHOULD OBSERVE ALL OSHA AND OTHER APPLICABLE SAFETY GUIDELINES DURING INSTALLATION.
3. ALL FABRICATION AND INSTALLATION PROCEDURES AND SITE SAFETY ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. CONTRACTOR SHOULD FIELD VERIFY ALL DIMENSIONS AND FIT BEFORE FABRICATION.
5. THE DRAWINGS DO NOT INCLUDE ALL THE EXISTING FIELD CONDITIONS, SOME OF WHICH MAY INTERFERE WITH THE INSTALLATION. CONTRACTOR SHOULD CONDUCT A FIELD SURVEY TO IDENTIFY ANY POTENTIAL DIFFICULTIES IN THE INSTALLATION BEFORE WORK COMMENCES. CONTACT THE ENGINEER IF THE FIELD CONDITIONS REQUIRE ANY CHANGES IN THE DESIGN.
6. CONTRACTOR MAY HAVE TO TEMPORARILY REMOVE EXISTING TRANSMISSION LINES AND OTHER OBSTRUCTIONS TO INSTALL NEW STRUCTURE. COORDINATE ALL SUCH PROCEDURES WITH THE BUILDING OWNER.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LICENSES, PERMITS AND ANY OTHER APPROVALS REQUIRED FOR CONSTRUCTION.
8. PAINT THE NEW MEMBERS TO MATCH THE EXISTING STRUCTURE.
9. THE STRUCTURAL STEEL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANCHOR BOLT LOCATIONS, ELEVATIONS OF TOP CONCRETE AND BEARING PLATES, ALIGNMENT ETC. PRIOR TO START OF STEEL ERECTION.
10. THE LATEST EDITION OF THE FOLLOWING SPECIFICATIONS SHALL GOVERN:
    a. AISC - "ALLOWABLE STRESS DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
    b. AISC - "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
    c. AWS - "D1.1 STRUCTURAL WELDING CODE - STEEL"
11. MATERIAL, UNLESS OTHERWISE NOTED, SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS

a. STRUCTURAL WIDE FLANGE & M SHAPES	A992 OR A572 Fy = 50 KSI
b. OTHER STRUCTURAL SHAPES AND PLATES	A36, Fy = 36KSI
c. STRUCTURAL TUBING	A500, GRADE B Fy = 46 KSI
d. HIGH STRENGTH BOLTS	A325
e. THREADED RODS	A36
f. ANCHOR BOLTS	A307 OR A36
g. PIPE (HANDRAIL)	SCH 40 PIPE

12. ALL STEEL SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123 SPECIFICATIONS.
13. ALL STEEL HARDWARE SHALL BE HOT DIPPED GALVANIZED PER ASTM A153.
14. ALL BOLTS SHALL BE DOMESTIC, NEW 1/2 INCH DIAMETER HIGH STRENGTH GALVANIZED BOLTS, BEARING TYPE 'X', UNLESS NOTED OTHERWISE IN THE DRAWINGS AND SHALL CONFORM TO ASTM A325 SPECIFICATIONS. USE ANCO LOCKNUTS & FLAT WASHERS ON ALL BOLTS.
15. ALL FINISHED BOLT HOLES SHALL NOT BE MORE THAN 1/16 INCH LARGER THAN THE BOLT DIAMETER UNLESS NOTED OTHERWISE.
16. ALL BOLTS SHALL BE TIGHTENED USING TURN-OF-THE-NUT METHOD.
17. ALL BOLT HOLES EDGE DISTANCES SHALL BE 1 1/2 INCH UNLESS OTHERWISE NOTED.
18. ALL WELDING SHALL BE DONE USING E-70 ELECTRODES AND IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STANDARDS AND SPECIFICATIONS.
19. ANY FIELD CUTS MUST BE THOROUGHLY CLEANED AND DOUBLE COATED.
20. DO NOT HEAT STRUCTURAL MATERIAL FOR STRAIGHTENING BENT OR WARPED MEMBERS.
21. CLEAN THE SITE OF ALL DEBRIS UPON COMPLETION OF THE WORK. STORE ALL SURPLUS MATERIALS NEATLY IN AN AREA APPROVED BY THE OWNER.
22. BEFORE FIELD WELDING CLEAN ALL PAINT AND GALVANIZING TO BARE METAL. PREHEATING AND POSTHEATING OF THE BASE METAL SHOULD BE AS PER AWS D1.1 SPECIFICATION AND APPLICABLE CODES REGARDING PREHEATING AND POSTHEATING.
23. CONTRACTOR TO PROVIDE FIRE PROTECTION BEFORE FIELD WELDING.
24. HOLES IN STEEL SHALL BE DRILLED OR PUNCHED. ALL SLOTTED HOLES SHALL BE PROVIDED WITH SMOOTH EDGES. BURNING OF HOLES AND TORCH CUTTING AT THE SITE IS NOT PERMITTED. ALL HOLES IN BEARING PLATES SHALL BE DRILLED.
25. EPOXY ANCHORS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

APPLICANT/OWNER:
at&t Mobility
635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
COLUMBUS OH, 43219

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330.572.2100 Fax 330.572.2101

SEAL:
CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

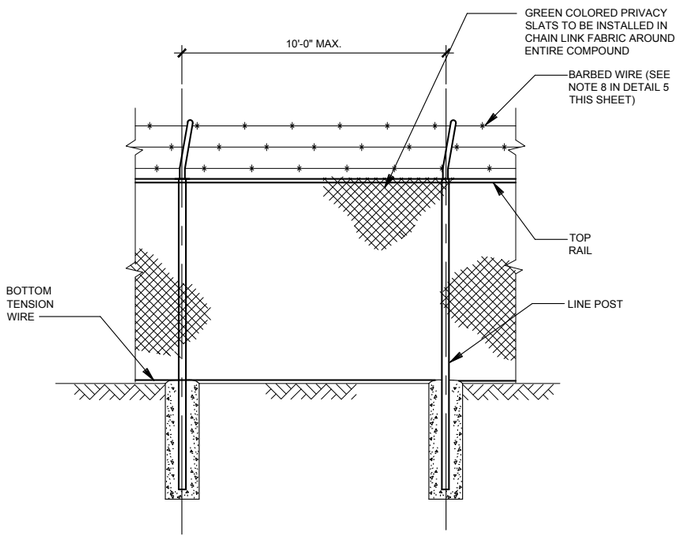
LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
E	12/15/2021	REVISED COMPOUND LOCATION
F	01/19/2022	REVISED COMPOUND LOCATION
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

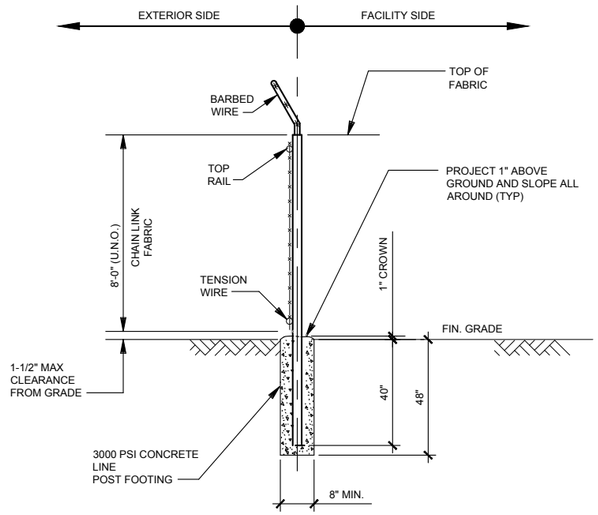
PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
CONCRETE WORK AND STRUCTURAL NOTES

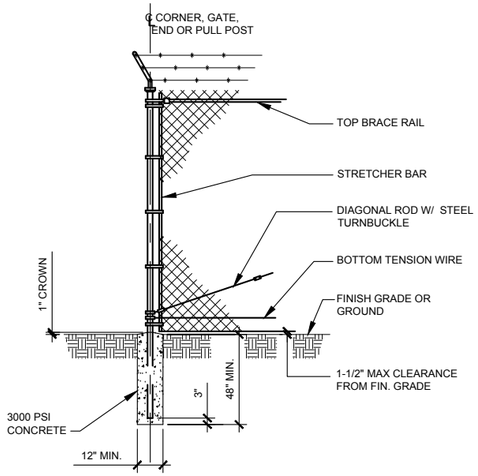
SHEET NUMBER:
C-9



TYPICAL FENCE ELEVATION | NO SCALE | 1

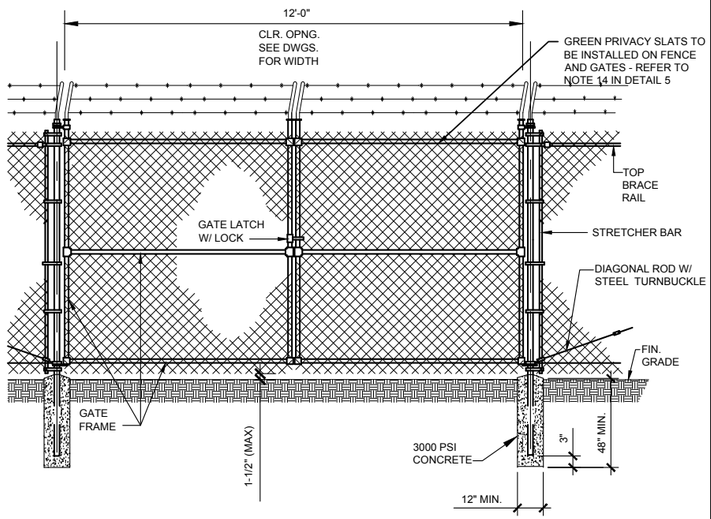


TYPICAL FENCE SECTION | NO SCALE | 2



CORNER, GATE, END OR PULL POST DETAIL | NO SCALE | 3

NOTE:
WHERE REQUIRED FOR GATES WIDER THAN 6'-0": EXAMPLE PROVIDE 12'-0" WIDE DOUBLE LEAF SWING GATE W/(2) 6'-0" WIDE LEAFS. (SEE NOTES 1 & 3 IN DETAIL 5 THIS SHEET)



(DOUBLE) SWING GATE DETAIL | NO SCALE | 4

1. GATE POST, CORNER, TERMINAL OR PULL POST SHALL BE 2 7/8"Ø SCHEDULE 40 FOR GATE WIDTHS UP THROUGH 6 FEET OR 12 FEET FOR DOUBLE SWING GATE PER ASTM-F1083.
2. LINE POST: 2-3/8"Ø SCHEDULE 40 PIPE PER ASTM-F1083.
3. GATE FRAME: 1 1/2"Ø SCHEDULE 40 PIPE PER ASTM-F1083.
4. TOP RAIL & BRACE RAIL: 1 1/4"Ø SCHEDULE 40 PIPE PER ASTM-F1083.
5. FABRIC: 9 GA. CORE WIRE SIZE 2" MESH, CONFORMING TO ASTM-A392 CLASS 1.
6. TIE WIRE: MINIMUM 11 GA GALVANIZED STEEL INSTALL A SINGLE WRAP TIE WIRE AT POSTS AND RAILS AT MAX. 24" INTERVALS. INSTALL HOG RINGS ON TENSION WIRE AT 24" INTERVALS.
7. TENSION WIRE: 7 GA. GALVANIZED STEEL.
8. BARBED WIRE: 3 STRANDS OF DOUBLE STRANDED 12-1/2 GAUGE TWISTED WIRE, 4 PT. BARBS SPACED ON APPROXIMATELY 5" CENTERS.
9. GATE LATCH: 1-3/8" O.D. PLUNGER ROD W/ MUSHROOM TYPE CATCH AND LOCK (KEYED ALIKE FOR ALL SITES OR COMBINATION AS SPECIFIED BY AT&T).
10. LOCAL ORDINANCE FOR BARBED WIRE PERMIT SHALL GOVERN INSTALLATION.
11. TOTAL HEIGHT OF FENCE = 8'-0" + 1'-0" BARBED WIRE VERTICAL = 9'-0" AGL.
12. ALL WORK SHALL CONFORM WITH THE PROJECT SPECIFICATIONS.
13. ALL FENCE COMPONENTS SHALL BE GALVANIZED
14. PRIVACY SLATS SHALL BE HDPE PLASTIC FLAT TUBULAR IN SHAPE WITH A TOP LOCKING CIRCULAR NOTCH NEAR THE TOP OF THE SLAT. POLYETHYLENE DENSITY SHALL BE 0.950 (MIN.) WITH A TENSILE STRENGTH OF 3,500 PSI (MIN.) PDS FENCE PRODUCTS AS MANUGACTURED BY FILTRONA EXTRUSION OR EQUAL. COLOR SHALL BE GREEN.

(INSTALL FENCING PER ASTM F-567, SWING GATES PER ASTM F-900)

WOVEN WIRE FENCING NOTES | NO SCALE | 5

DETAIL NOT USED | NO SCALE | 6

APPLICANT/OWNER:
at&t Mobility
635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
COLUMBUS OH, 43219

PREPARED BY:
GPD GROUP
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520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

SEAL:
CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
E	12/15/2021	REVISED COMPOUND LOCATION
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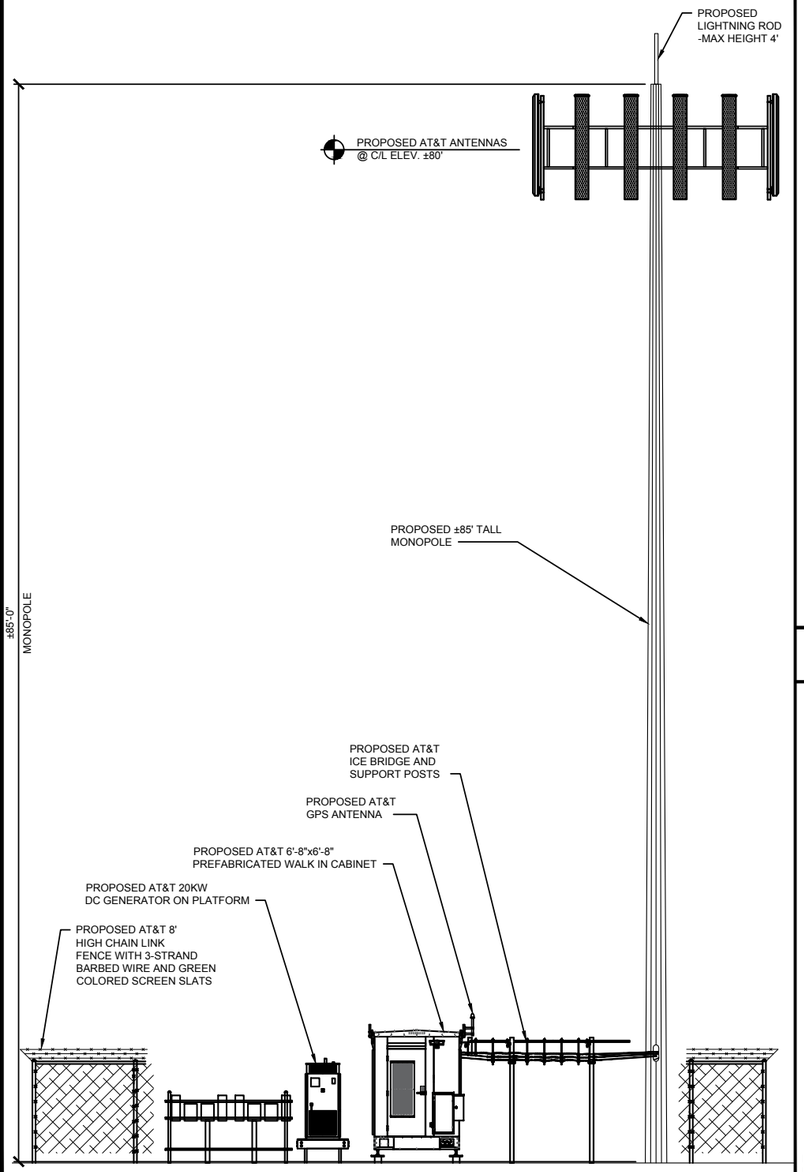
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
FENCING DETAILS & NOTES

SHEET NUMBER:
C-10

NOTE: DRILLED PIER ONLY TOWER FOUNDATION. COMPOUND IS TOO TIGHT, AND RETAINING WALLS TOO CLOSE FOR PAD AND PIER TOWER FOUNDATION.

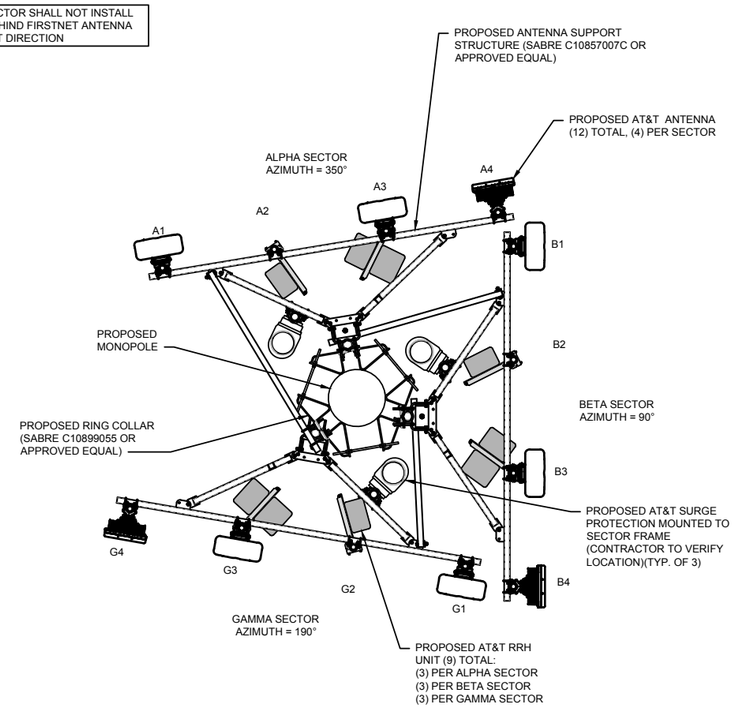


TOWER ELEVATION

NO SCALE

1

CONTRACTOR SHALL NOT INSTALL RRHS BEHIND FIRSTNET ANTENNA PER AT&T DIRECTION

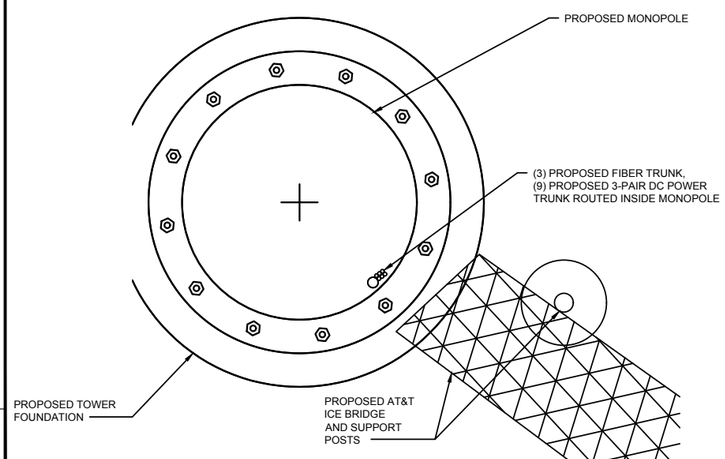


NOTE:
CONTRACTOR SHALL INSTALL DC/FIBER DEMARCATION BOX WITHIN 15 FEET FROM ALL RRH'S WITHIN RESPECTIVE SECTOR.

ANTENNA LAYOUT PLAN

NO SCALE

2



CABLE/FIBER ROUTING PLAN

NO SCALE

3

1. RFDS TO BE VERIFIED WITH AT&T FOR FINAL VERSION PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO ENSURE ANY RFDS ALTERATIONS ARE COVERED WITHIN THE STRUCTURAL ANALYSIS AND TOWER AND FOUNDATION DESIGN.
3. CONTRACTOR TO NOTIFY GPD GROUP IF ANTENNAS MOUNT TIEBACKS TO BE INSTALLED PER CD OR PER MANUFACTURER RECOMMENDATIONS

GENERAL NOTES

4

1. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
2. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
3. CONTRACTOR TO CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027, REFER TO THE LATEST VERSION.
4. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE WILL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'-0".
5. ALL COAXIAL CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC.
6. CONTRACTOR MUST FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
7. WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE. WEATHERPROOFING SHALL BE COMPLETED IN STRICT ACCORDANCE WITH AT&T STANDARDS.
8. CONTRACTOR SHALL GROUND ALL EQUIPMENT. INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES, AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED WIREMEN IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATION AND RECOMMENDATION.
9. CONTRACTOR SHALL PROVIDE STRAIN-RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES, COAX CABLES, AND RET CONTROL CABLES. CABLE STRAIN-RELIEFS AND CABLE SUPPORTS SHALL BE APPROVED FOR THE PURPOSE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
10. CONTRACTOR TO VERIFY THAT EXISTING COAX HANGERS ARE STACKABLE SNAP IN HANGERS. IF EXISTING HANGERS ARE NOT STACKABLE SNAP IN HANGERS THE CONTRACTOR SHALL REPLACE EXISTING HANGERS WITH NEW SNAP IN HANGERS IF APPLICABLE.

ANTENNA CABLE NOTES

5

PROPOSED EQUIPMENT:

QTY	PART #	ITEM
6	COMMSCOPE NNH4-65B-R6H4	ANTENNAS
3	ERICSSON AIR6449 B77D	ANTENNAS
3	ERICSSON AIR6419 B77G	ANTENNAS
3	ERICSSON 4478 B14	RRHS
3	ERICSSON 4449 B5/B12	RRHS
3	ERICSSON 8843 B2/B66A	RRHS
3	RAYCAP DC9-48-60-24-8C-EV	DC/FIBER DEMARCATION BOX
1	SABRE PIPE MOUNT ASSEMBLY (C10899055)(OR APPROVED EQUAL)	RING COLLAR
3	SABRE EHD V-BOOM ASSEMBLY (C10857007C)(OR APPROVED EQUAL)	SECTOR FRAMES

PROPOSED TOWER EQUIPMENT

NO SCALE

6

APPLICANT/OWNER:

at&t Mobility

635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
COLUMBUS OH, 43219

PREPARED BY:

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

SEAL:

CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

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SHEET TITLE:
TOWER ELEVATION, ANTENNA & COAX PLANS

SHEET NUMBER:
T-1

ANTENNA REQUIREMENTS (VERIFY WITH CURRENT RFDS)								PROPOSED LTE/UMTS TRANSMISSION CABLES																
SECTOR	ANTENNA TYPE	ANTENNA AZIMUTH	FINAL NUMBER OF TMA'S	FINAL NUMBER OF RRH'S	TILT		CENTERLINE ELEVATION	FROM DC6-48-60-RM TO DC6/DC9 (DC POWER)			FROM DC6/DC9 TO RRH/TMA (DC POWER)			FROM LTE 9926 TO DC6/DC9 (TELCO)			FROM DC6/DC9 TO RRH (TELCO)			FROM RRH TO ANTENNA (TELCO-CSR)			RET CABLES		
					MECH.	ELEC.		PART #	QTY.	LENGTH	PART #	QTY.	LENGTH	PART #	QTY.	LENGTH	PART #	QTY.	LENGTH	PART #	QTY.	LENGTH	PART #	QTY.	LENGTH
A1	PROPOSED ANTENNA	350°	-	-	0	2	80'	WR-VG86ST-BRD	9	115'	WR-VGCO81-BRD	1	30'	FB-L98B-235-50000	3	115'	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
A2				1																				
A3	PROPOSED ANTENNA	350°	-	2	0	2/2/2/2/2/2	80'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
A4	PROPOSED STACKED ANTENNA	350°	-	-	0	2/0	78'/82'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
B1	PROPOSED ANTENNA	90°	-	-	0	2	80'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
B2				1																				
B3	PROPOSED ANTENNA	90°	-	2	0	2/2/2/2/2/2	80'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
B4	PROPOSED STACKED ANTENNA	90°	-	-	0	2/0	78'/82'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
G1	PROPOSED ANTENNA	190°	-	-	0	2	80'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
G2				1																				
G3	PROPOSED ANTENNA	190°	-	2	0	2/2/2/2/2/2	80'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'
G4	PROPOSED STACKED ANTENNA	190°	-	-	0	2/0	78'/82'	-	-	-	WR-VGCO81-BRD	1	30'	-	-	-	FB-L98B-035-5000	1	15'	LDF4	2	5'/20'	840-10-408	1	6.6'

PER RFDS DATED 07/13/2022

PROPOSED ANTENNA AND TRANSMISSION CABLES REQUIREMENT

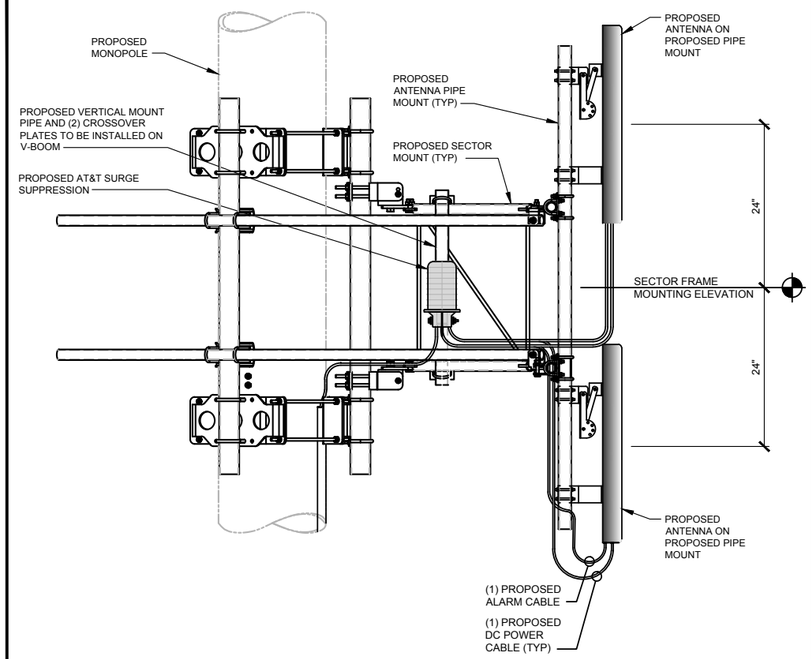
1

CONTRACTOR SHALL NOT INSTALL RRHS BEHIND FIRSTNET ANTENNA PER AT&T DIRECTION

ANTENNA MOUNTING DETAIL | NO SCALE | 2

CONTRACTOR SHALL NOT INSTALL RRHS BEHIND FIRSTNET ANTENNA PER AT&T DIRECTION

ANTENNA MOUNTING WITH RRH DETAIL | NO SCALE | 3



STACKED ANTENNA MOUNTING DETAIL | NO SCALE | 4

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NOTES | 5

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NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
TOWER EQUIPMENT DETAILS & NOTES

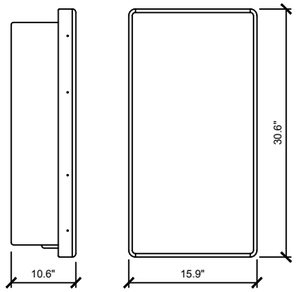
SHEET NUMBER:
T-2

ERICSSON AIR6449 N77

DIMENSIONS, HXWXD: 30.6"X15.9"X10.6"

WEIGHT, WITHOUT MOUNTING: 83.8 LBS.

CONNECTOR POSITION: BOTTOM



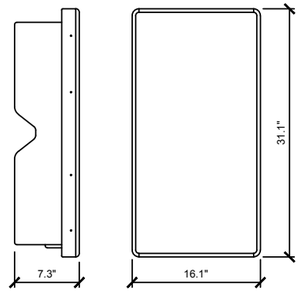
PROPOSED ANTENNA SPECIFICATIONS | NO SCALE | 1

ERICSSON AIR6419 B77G

DIMENSIONS, HXWXD: 31.1"X16.1"X7.3"

WEIGHT, WITHOUT MOUNTING: 44 LBS.

CONNECTOR POSITION: BOTTOM



PROPOSED ANTENNA SPECIFICATIONS | NO SCALE | 2

COMMSCOPE ANTENNAS NNH4-65B-R6H4

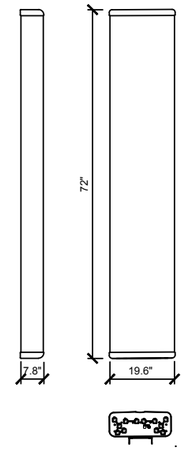
DIMENSIONS, HXWXD: 72.0"X19.6"X7.8"

SURVIVAL WIND SPEED: >150 MPH

WEIGHT, WITHOUT MOUNTING: 84.4 LBS.

CONNECTOR: (12) 4.3-10 FEMALE

CONNECTOR POSITION: BOTTOM

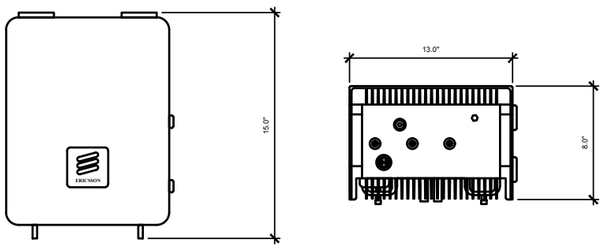


PROPOSED ANTENNA SPECIFICATIONS | NO SCALE | 3

ERICSSON- RADIO 4449 B5/B12

DIMENSIONS, WxDxH: 13.2x9.4x18.0 IN.

TOTAL WEIGHT: 70.0 lbs



RRH SPECIFICATIONS | NO SCALE | 4

DETAIL NOT USED | NO SCALE | 5

ERICSSON- RADIO 4478 B14

DIMENSIONS, WxDxH: 13.0x8.0x15.0 IN.

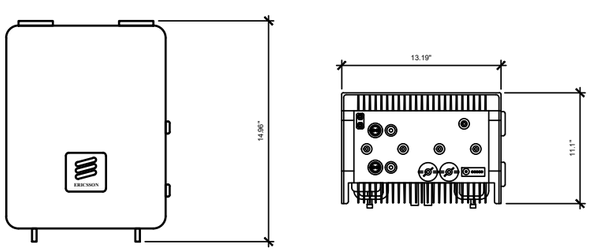
TOTAL WEIGHT: 60.0 lbs

RRH SPECIFICATIONS | NO SCALE | 6

ERICSSON- RADIO 8843 B2/B66A

DIMENSIONS, WxDxH: 13.19x11.1X14.96 IN.

TOTAL WEIGHT: 75.0 lbs



RRH SPECIFICATIONS | NO SCALE | 7

RAYCAP DC9-48-60-24-8C-EV

DIMENSIONS, WxDxH: 260x798mm (10.24"x31.4")

NOMINAL OPERATING VOLTAGE: 48 VDC

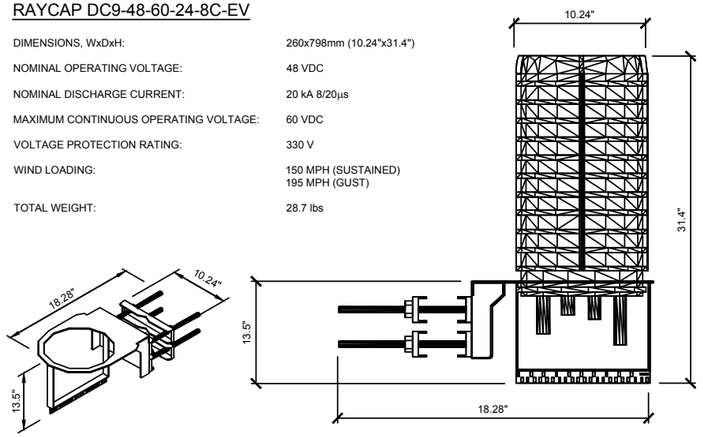
NOMINAL DISCHARGE CURRENT: 20 kA 8/20µs

MAXIMUM CONTINUOUS OPERATING VOLTAGE: 60 VDC

VOLTAGE PROTECTION RATING: 330 V

WIND LOADING: 150 MPH (SUSTAINED)
195 MPH (GUST)

TOTAL WEIGHT: 28.7 lbs



DC9 SURGE SUPPRESSION SPECIFICATIONS | NO SCALE | 8

DETAIL NOT USED | NO SCALE | 9

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PREPARED BY:

SEAL:

FOR REFERENCE ONLY

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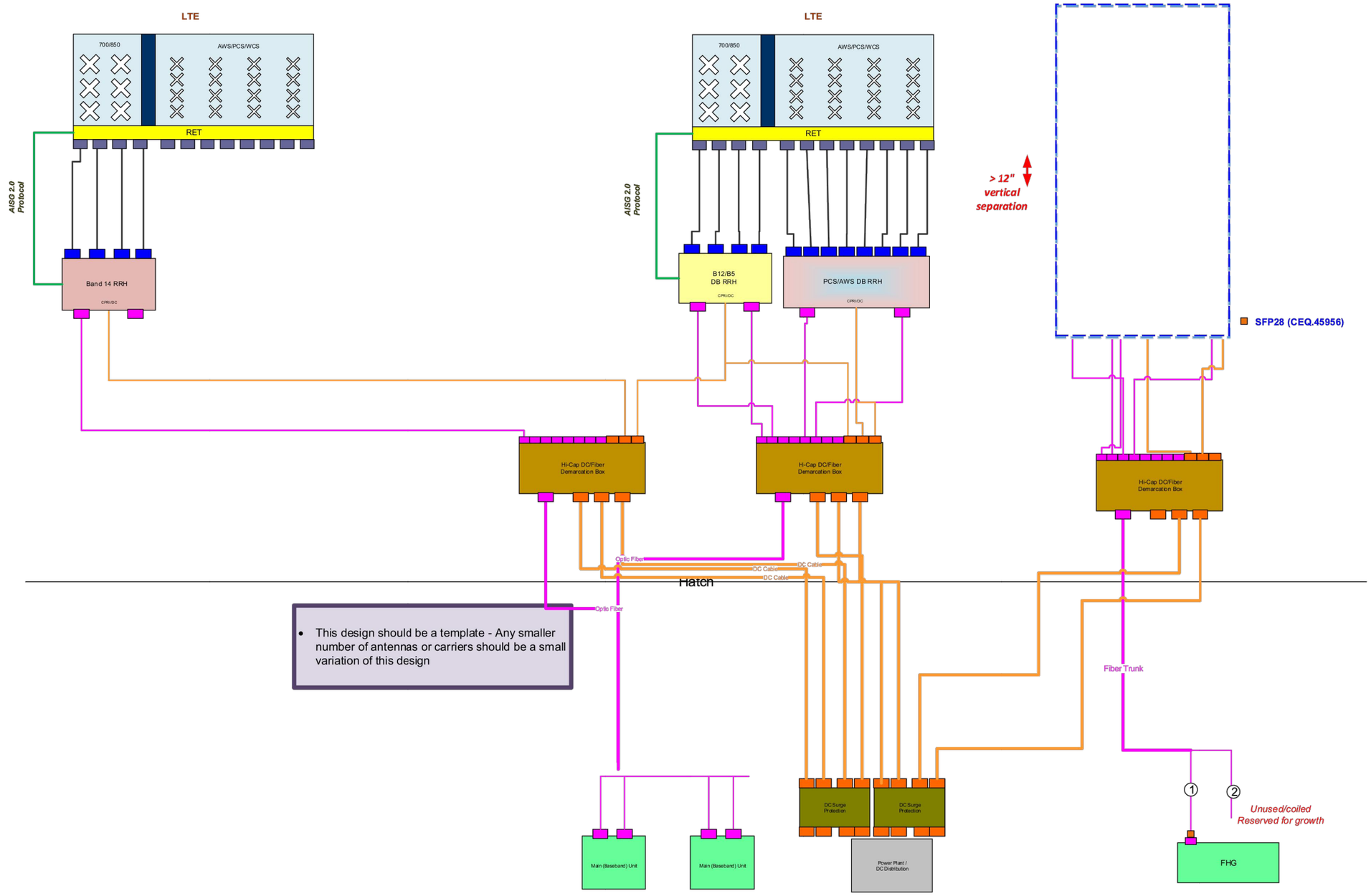
SHEET TITLE:
TOWER EQUIPMENT DETAILS

SHEET NUMBER:
T-3

Diagram - Sector	A	Diagram File Name - NSB_W047_LTE5C_C Band_DoD.vsd					
Atoll Site Name -	PWL04547	Location Name -	SPRINGHILL SUITES BY MARRIOTT	Market -	WPA	Market Cluster -	OHIO/WESTERN PENNSYLVANIA
Comments:							



- This design should be a template - Any smaller number of antennas or carriers should be a small variation of this design

WIRING DIAGRAM | NO SCALE | 1

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SHEET TITLE:

WIRING DIAGRAM

SHEET NUMBER:

T-4

PART 1 - GENERAL

1.1 SCOPE:

A. PROVIDE FABRICATION AND ERECTION OF STRUCTURAL STEEL AND OTHER ITEMS AS SHOWN ON THE DRAWINGS OR REQUIRED BY OTHER SECTIONS OF THESE SPECIFICATIONS.

1.2 REFERENCES:

A. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC). MANUAL OF STEEL CONSTRUCTION (14TH EDITION), ALLOWABLE STRESS DESIGN (ASD).

B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
ASTM A36: STRUCTURAL STEEL
ASTM A53: PIPE, STEEL BLACK AND HOT DIPPED, ZINC-COATED WELDED AND SEAMLESS.
ASTM A108: STEEL BARS, CARBON, COLD FINISHED, STANDARD QUALITY.
ASTM A123: ZINC (HOT-DIPPED GALVANIZED) COATING ON IRON AND STEEL PRODUCTS.
ASTM A307: CARBON STEEL BOLTS AND STUDS, 60,000 PSI TENSILE STRENGTH.
ASTM A325: HIGH-STRENGTH BOLT FOR STRUCTURAL STEEL JOINTS.
ASTM A490: HEAT-TREATED, STRUCTURAL STEEL BOLTS, 150 (KSI) (1035MPA) TENSILE STRENGTH.
ASTM A500: COLD-FORMED WELDED AND SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES.
ASTM A563: CARBON AND ALLOY STEEL NUTS.
ASTM B695: COATINGS OF ZINC MECHANICALLY DEPOSITED ON IRON AND STEEL.
ASTM F436: HARDENED STEEL WASHERS.
ASTM F959: COMPRESSIBLE-WASHER-TYPE DIRECT TENSION INDICATOR FOR USE WITH STRUCTURAL FASTENERS.

C. AMERICAN WELDING SOCIETY (AWS):
AWS A5.1: COVERED CARBON STEEL ARC WELDING ELECTRODES.
AWS A5.5: LOW ALLOY STEEL COVERED ARC WELDING ELECTRODES.
AWS D1.1: STRUCTURAL WELDING CODE - STEEL.

D. RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC): "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS OR ASTM A490 BOLTS" AS ENDORSED BY AISC.

E. STEEL STRUCTURES PAINTING COUNCIL (SSPC):
SSPC-SP3: POWER TOOL CLEANING.
SSPC-PAINT 11: RED IRON OXIDE, ZINC CHROME, RAW LINSEED OIL OR ALKYD PAINT.

1.3 SUBMITTALS:

A. SUBMIT THE FOLLOWING FOR APPROVAL:

1. FABRICATION AND ERECTION DRAWINGS SHOWING ALL DETAILS, CONNECTIONS, MATERIAL DESIGNATIONS, AND ALL TOP STEEL ELEVATIONS.

B. WELDERS SHALL BE QUALIFIED AS PRESCRIBED IN AWS D1.1.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL:

A. SHAPES, PLATES AND BARS SHALL CONFORM TO ASTM A36 AND ASTM A992.

B. STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B. STEEL PIPE SHALL CONFORM TO ASTM A53, TYPE E OR S, GRADE B.

2.2 ANCHOR BOLTS:

A. ANCHOR BOLTS SHALL CONFORM TO ASTM A307 WITH HEAVY HEXAGONAL NUTS.

2.3 BOLTS:

A. COMMON (MACHINE) BOLTS SHALL CONFORM TO ASTM A307 GRADE A AND NUTS TO ASTM A563. ONE COMMON BOLT ASSEMBLY SHALL CONSIST OF A BOLT, A HEAVY HEX NUT, AND A HARDENED WASHER.

B. HIGH STRENGTH BOLT SHALL CONFORM TO ASTM A325, ONE HIGH STRENGTH BOLT ASSEMBLY SHALL CONSIST OF A HEAVY HEX STRUCTURAL BOLT, A HEAVY HEX NUT, A HARDENED WASHER CONFORMING WITH ASTM F436 AND A DIRECT TENSION INDICATOR CONFORMING WITH ASTM F959. THE HARDENED WASHER SHALL BE INSTALLED AGAINST THE ELEMENT TURNED IN TIGHTENING. UNLESS NOTED OTHERWISE ON THE DRAWINGS, ALL CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS.

2.4 WELDING ELECTRODES:

A. WELDING ELECTRODES SHALL COMPLY WITH AWS D1.1 USING A5.1 OR A5.5 E70XX AND SHALL BE COMPATIBLE WITH THE WELDING PROCESS SELECTED.

2.5 PRIMER:

A. PRIMER SHALL BE RED OXIDE-CHROMATE PRIMER COMPLYING WITH SSPC PAINT SPECIFICATION NO. 11.

PART 3 - EXECUTION

3.1 FABRICATION:

A. SHOP FABRICATE AND ASSEMBLY MATERIALS AS SPECIFIED HEREIN.

1. FABRICATE ITEMS OF STRUCTURAL STEEL IN ACCORDANCE WITH THE AISC-ASD SPECIFICATION, AND AS INDICATED ON THE APPROVED SHOP DRAWINGS.
2. ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED PER ASTM.
3. PROPERLY MARK AND MATCH-MARK MATERIALS FOR FIELD ASSEMBLY AND FOR IDENTIFICATION AS TO LOCATION FOR WHICH INTENDED.
4. FABRICATE AND DELIVER IN A SEQUENCE WHICH WILL EXPEDITE ERECTION AND MINIMIZE FIELD HANDLING OF MATERIALS.
5. WHERE FINISHING IS REQUIRED, COMPLETE THE ASSEMBLY, INCLUDING THE WELDING OF UNITS, BEFORE START OF FINISHING OPERATIONS.
6. PROVIDE FINISH SURFACE OF MEMBERS EXPOSED IN THE FINAL STRUCTURE FREE FROM MARKINGS, BURNS, AND OTHER DEFECTS.

B. PROVIDE CONNECTIONS AS SPECIFIED HEREIN:

1. PROVIDE BOLTS AND WASHERS OF TYPES AND SIZE REQUIRED FOR COMPLETION OF FIELD ERECTION. USE 3/4 INCH DIAMETER A325 BOLTS UNLESS NOTED OTHERWISE.
2. INSTALL HIGH STRENGTH THREADED FASTENERS IN ACCORDANCE WITH RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS."
3. WELDED CONSTRUCTION SHALL COMPLY WITH AWS D1.1 FOR PROCEDURES, APPEARANCE, QUALITY OF WELD, AND METHODS USED IN CORRECTING WELDED WORK.
4. THE FABRICATOR SHALL FURNISH AND INSTALL ERECTION CLIPS FOR FIT-UP OF WELDED CONNECTIONS.
5. DOUBLE ANGLE MEMBERS SHALL HAVE WELDED FILLERS SPACED IN ACCORDANCE WITH CHAPTER E4 OF THE AISC-ASD SPECIFICATION.
6. GUSSET AND STIFFENER PLATES SHALL BE 3/8 INCH THICK MINIMUM.

3.2 PRIMING:

A. STRUCTURAL STEEL SHALL BE PRIMED AS SPECIFIED HEREIN, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

B. STRUCTURAL STEEL SURFACE PREPARATION SHALL CONFORM TO SSPC-SP3, "POWER TOOL CLEANING."

C. SURFACE PREPARATION AND PRIMER SHALL BE IN ACCORDANCE WITH AISC CODE OF STANDARD PRACTICE AS INCLUDED IN THE ASD MANUAL OF STEEL CONSTRUCTION.

D. MATERIALS SHALL REMAIN CLOSED UNTIL REQUIRED FOR USE, MANUFACTURER'S POT-LIFE REQUIREMENTS SHALL BE STRICTLY ADHERED TO.

E. PRIMER SHALL BE APPLIED TO DRY, CLEAN, PREPARED SURFACE AND UNDER FAVORABLE CONDITIONS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER PRIMING SHALL NOT BE DONE WHEN AMBIENT TEMPERATURE IS LESS THAN 50 DEGREE F. THE RELATIVE HUMIDITY IS MORE THAN 90 PERCENT, OR THE SURFACE TEMPERATURE IS LESS THAN 5 DEGREE F ABOVE THE DEW POINT.

F. GENERALLY ALL PRIMER SHALL BE SPRAY APPLIED. BRUSH OR ROLLER APPLICATION SHALL BE RESTRICTED TO TOUCHUP AND TO AREAS NOT ACCESSIBLE BY SPRAY GUN.

G. PRIMER SHALL BE UNIFORMLY APPLIED WITHOUT RUNS, SAGS, SOLVENT BLISTERS, DRY SPRAY OR OTHER BLEMISHES. ALL BLEMISHES AND OTHER IRREGULARITIES SHALL BE REPAIRED OR REMOVED AND THE AREA RE-COATED. SPECIAL ATTENTION SHALL BE PAID TO CREVICES, WELD LINES, BOLT HEADS, CORNERS, EDGES, ETC., TO OBTAIN THE REQUIRED NOMINAL FILM THICKNESS.

H. THE DRY FILM THICKNESS OF THE PRIMER SHALL BE 2.0 MILS.

I. IF THE PRIMER IS DAMAGED BY WELDING OR PHYSICAL ABUSE, THE AREA SHALL BE TOUCHED-UP AND REPAIRED. THE TOUCHUP PAINT SHALL BE COMPATIBLE WITH THE APPLIED PRIMER WITH MINIMUM DRY FILM THICKNESS OF 1.5 MILS.

3.3 INSTALLATION:

A. INSTALLATION OF STRUCTURAL STEEL SHALL COMPLY WITH AISC "CODE OF STANDARD PRACTICE."

B. STRUCTURAL FIELD WELDING SHALL BE DONE BY THE ELECTRIC SUBMERGED OR SHIELDED METAL ARC PROCESS. WELDED CONSTRUCTION SHALL COMPLY WITH AWS D1.1.

C. PROVIDE ANCHOR BOLTS AND OTHER CONNECTORS REQUIRED FOR SECURING STRUCTURAL STEEL TO ELEVATOR SHAFT WALLS AND OTHER IN-PLACE WORK. PROVIDE TEMPLATES AND OTHER DEVICES NECESSARY FOR PRESETTING BOLTS AND ANCHORS TO ACCURATE LOCATIONS.

D. SPLICE MEMBERS ONLY WHERE INDICATED ON THE DRAWINGS.

E. ANY GAS CUTTING TORCHES HAVE TO BE APPROVED IN WRITING BY THE PROJECT STRUCTURAL ENGINEER.

F. PROVIDE TEMPORARY SHORING BRACING WITH CONNECTIONS OF SUFFICIENT STRENGTH TO BEAR IMPOSED LOADS. REMOVE TEMPORARY CONNECTIONS AND MEMBERS WHEN PERMANENT MEMBERS ARE IN PLACE AND THE FINAL CONNECTIONS HAVE BEEN MADE.

G. ALIGN AND ADJUST MEMBERS, AND OTHER SURFACES WHICH WILL BE IN PERMANENT CONTACT, BEFORE ASSEMBLY.

H. HIGH-STRENGTH BOLTS AS A MINIMUM, SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN THE LATEST AISC SPECIFICATION. ALL HIGH-STRENGTH BOLTS SPECIFIED ON THE DESIGN DRAWINGS TO BE USED IN PRETENSION OR SLIP-CRITICAL JOINTS SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN THAT GIVEN IN AISC TABLE J3.1. INSTALLATION SHALL BE BY ANY OF THE FOLLOWING METHODS: TURN-OF NUT METHOD, A DIRECT-TENSION-INDICATOR, TWIST-OFF-TYPE TENSION-CONTROL BOLT, CALIBRATED WRENCH, OR ALTERNATIVE DESIGN BOLT.

ANTENNA MOUNTING

1. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
2. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
3. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
4. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
5. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
6. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
7. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50-OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.
8. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS. REFER TO ND-00246.
9. JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.
10. CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.
11. TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.
12. ANTENNAS SHALL HAVE A 4'-0" MIN CENTER TO CENTER HORIZONTAL SEPARATION.

TORQUE REQUIREMENTS

13. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
14. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
    A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
    B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.
15. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
16. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
17. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
18. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 - 29.8 NM).
19. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 - 2.3 NM).

FIBER & POWER CABLE MOUNTING

20. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.
21. THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.
22. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

23. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
24. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
25. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION.
26. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'-0".
27. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC.
28. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
29. CONTRACTOR SHALL WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE. WEATHERPROOFING SHALL BE COMPLETED IN STRICT ACCORDANCE WITH AT&T STANDARDS.

GENERAL CABLE AND EQUIPMENT NOTES

30. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
31. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.
32. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
33. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
34. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
    A. TEMPERATURE SHALL BE ABOVE 50° F.
    B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
    C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
    D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
35. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
    A. GROUNDING AT THE ANTENNA LEVEL.
    B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
    C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
    D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
    E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
36. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.
37. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANTENNA AND THE COAX CONFIGURATION IS THE CORRECT MAKE AND MODELS, PRIOR TO INSTALLATION.
38. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.
39. ANTENNA CONTRACTOR SHALL FURNISH AND INSTALL A 12'-0" T-BOOM SECTOR ANTENNA MOUNT, IF APPLICABLE, INCLUDING ALL HARDWARE.

APPLICANT/OWNER:
at&t Mobility
635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
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SUITE 150
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SEAL:
CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
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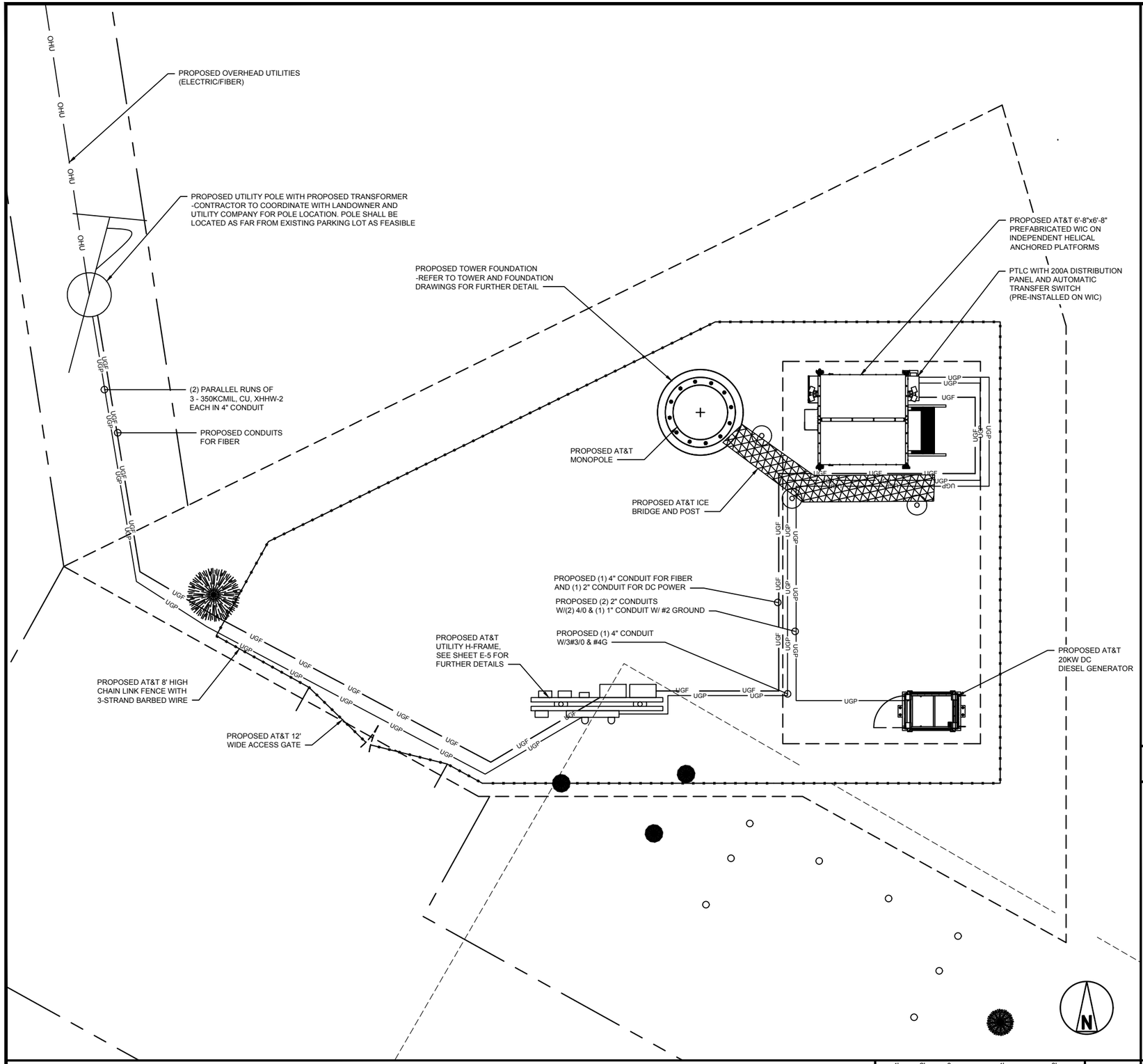
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
TOWER SECTION NOTES

SHEET NUMBER:
T-5



UTILITY PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

1

1. THE CONDUIT ROUTING IS DIAGRAMMATICALLY SHOWN ON THE PLANS AND ARE ONLY APPROXIMATIONS. THE EXACT LOCATION AND ROUTING SHALL BE FIELD VERIFIED.
2. ALL ELECTRICAL EQUIPMENT AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES, INDICATING THE CIRCUITS ORIGINATION AND ALL EQUIPMENT TERMINATIONS.
3. CONTRACTOR SHALL PROVIDE STRAIN-RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES, COAX CABLES, AND RET CONTROL CABLES. CABLE STRAIN-RELIEFS, CABLE SUPPORTS SHALL BE APPROVED FOR THE PURPOSE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
4. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS, AND CIRCUIT CONDUCTORS, AS REQUIRED FOR A COMPLETED SYSTEM AND SHALL BE IN COMPLIANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
5. WHEN ADDITIONAL +24Vdc TO -48Vdc CONVERTERS ARE REQUIRED FOR LTE EQUIPMENT, ADDITIONAL +24Vdc RECTIFICATION & ADDITIONAL BATTERIES MAY BE REQUIRED TO BE ADDED TO THE EXISTING BATTERY STRING. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BREAKERS, RECTIFIERS, BATTERIES, CONDUIT, CABLE TRAY, & CONDUCTORS WHICH ARE REQUIRED FOR A COMPLETED, FUNCTIONING ELECTRICAL SYSTEM.
6. ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.
7. PROPOSED TELCO WITH 25 PAIR ICKY-PICK CAT 5 CONDUCTOR IN (2) PROPOSED 4" SCH 40 PVC CONDUIT. CONTRACTOR TO COORDINATE WITH LOCAL TELEPHONE COMPANY. EACH 4" TELCO CONDUIT TO HAVE (2) 1-1/4" INTERDUCT CONDUITS FOR FIBER.
8. CONTRACTOR SHALL COORDINATE WITH POWER AND TELEPHONE COMPANIES, AND PROVIDE ALL MATERIALS REQUIRED, AND PROVIDE TRENCH, BACKFILL & SITE RESTORATION. DEPTH OF CONDUITS PER N.E.C., LOCAL JURISDICTION AND POWER & TELE COMPANY, WHICHEVER IS MORE STRINGENT.

NOTES

2

UNDERGROUND POWER — UGP — UGP — UGP
UNDERGROUND FIBER — UGF — UGF — UGF

LEGEND

3

APPLICANT/OWNER:

at&t Mobility

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STEVEN P. SCHAUB
REGISTERED
19959
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

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PROJECT LOCATION:

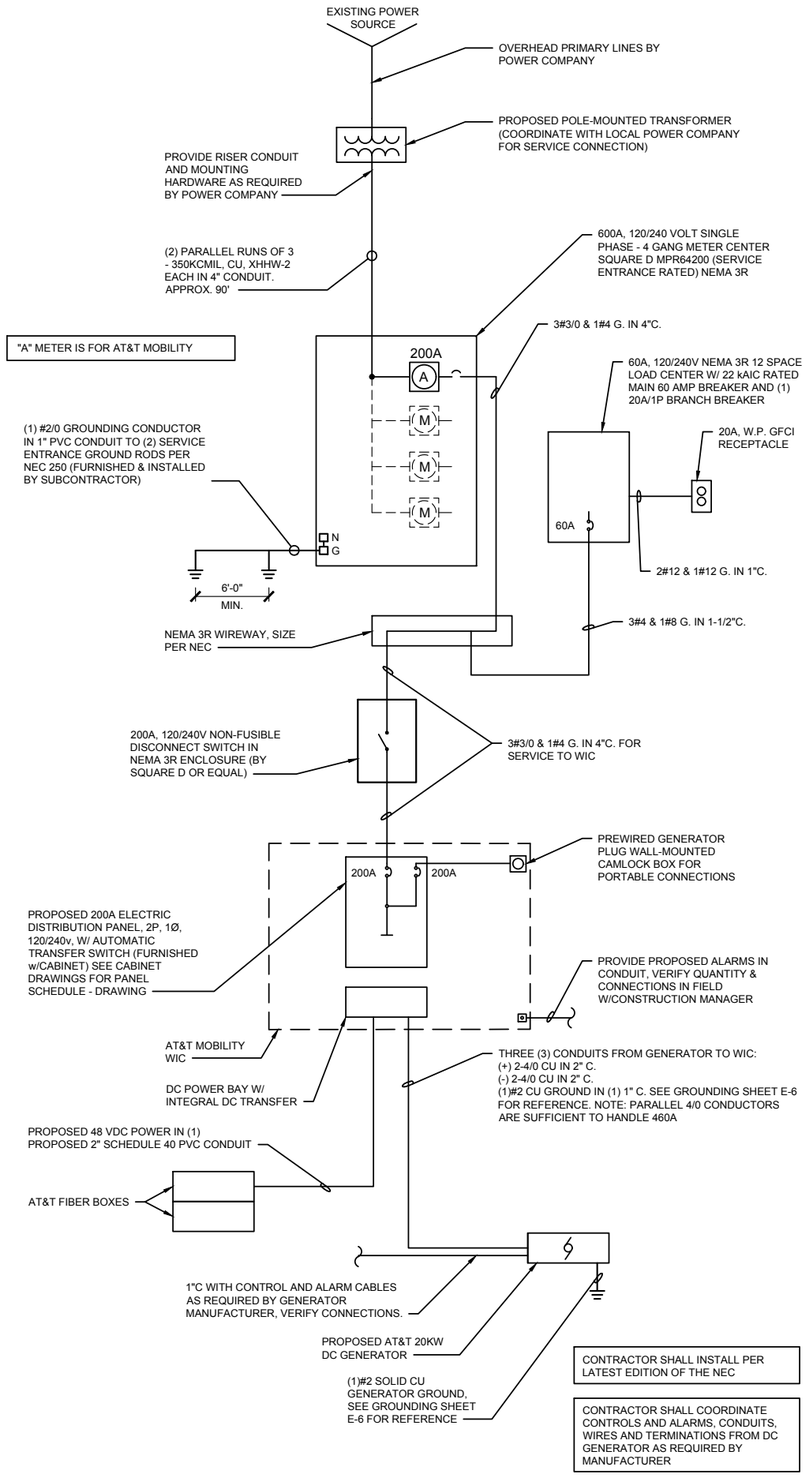
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:

UTILITY PLAN

SHEET NUMBER:

E-1



ELECTRICAL AC ONE-LINE DIAGRAM | NO SCALE | 1

NOTES:

1. THE CONTRACTOR SHALL PROVIDE TWO SAME SIGNS ON BOTH THE OUTDOOR DISCONNECT AND THE INDOOR MAIN PANEL STATING:
   - 1.1. "ONE OPTIONAL PERMANENT STANDBY SOURCE AND ONE OPTIONAL TEMPORARY STANDBY SOURCE OF POWER ON THIS SYSTEM:
     - 1.1.1. A STANDBY GENERATOR - 20kW DC, 48V, DIESEL FUELED - TO BE LOCATED NEAR THE WALK-IN CABINET.
     - 1.1.2. A GENERATOR PLUG FOR A TEMPORARY TRAILERED GENERATOR, FLOATING NEUTRAL SYSTEM TO BE LOCATED (EQUIPMENT PERMITTING) ADJACENT TO THE WALK-IN CABINET. WARNING - SHOCK HAZARD! DO NOT DISCONNECT ANY GROUND CONDUCTORS WHILE THE GENERATOR IS IN OPERATION."
   - 1.2. THE CONTRACTOR SHALL PROVIDE A SIGN ON THE GENERATOR PLUG STATING:
     - 1.2.1 "WARNING! FOR CONNECTION OF A NON-SEPARATELY DERIVED (FLOATING NEUTRAL) SYSTEM ONLY."

SIGNAGE NOTES | NO SCALE | 2

48V RECTIFIER SIZE (AMPS)	37
48V RECTIFIERS REQUIRED	10
TOTAL DC LOADING (AMPS)	370
GENERATOR CAPACITY (VA)	20000
POWER SUPPLY DC (V)	48
POWER SUPPLIED BY GENERATOR (A)	417

NOTES
1. A 450 AMP BREAKER WILL BE USED FOR THE GENERATOR
2. DATA SHOWN PER AT&T'S SPECIFICATIONS

DC LOADING | NO SCALE | 3

APPLICANT/OWNER:
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PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
ELECTRICAL AC ONE-LINE DIAGRAM & NOTES

SHEET NUMBER:
E-2

A. WORK INCLUDED:

THIS SPECIFICATION AND ACCOMPANYING DRAWING CONTEMPLATE THE PROVISIONS AND INSTALLATION, BY THE ELECTRICAL CONTRACTOR OF ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO INSTALL THE ELECTRICAL WORK COMPLETE IN CONNECTION WITH THIS AT&T MOBILITY SITE AND SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:

1. THE PROVISIONS, INSTALLATION AND CONNECTION OF A GROUNDING ELECTRODE SYSTEM COMPLETE WITH A BUILDING AND SECONDARY GROUNDING, TOWER GROUNDING AND CONNECTIONS TO THE INCOMING ELECTRICAL DISTRIBUTION EQUIPMENT.

2. THE PROVISIONS AND INSTALLATION OF AN ELECTRICAL SERVICE AND ALL ASSOCIATED WIRE AND CONDUIT AS REQUIRED AND/OR INDICATED ON PLANS.

3. ALL UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC. (UNLESS OTHERWISE NOTED).

4. ALL CONDUITS SHALL BE LEFT WITH 200# TEST PULL WIRE. (UNLESS NOTED OTHERWISE) STUB & PLUG BOTH ENDS OF ALL SPARE CONDUITS UP AT 12" ABOVE GRADE.

5. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL THE ELECTRICAL SERVICE ENTRANCE CONDUCTORS AND CONDUIT AND MAKE THE CONNECTION TO THE SERVICE EQUIPMENT WITHIN THE BUILDING.

6. SUBCONTRACTOR SHALL NOTIFY ELECTRIC AND TELEPHONE SERVICES CONTACT AT START OF CONSTRUCTION (2 WEEKS MIN.):

POWER CO.:
CONTACT: ORDERED BY BLACK & VEATCH
PHONE #:

TELEPHONE CO.:
CONTACT: ORDERED BY BLACK & VEATCH
PHONE #:

7. ABOVE GRADE RISER CONDUIT SHALL BE GALVANIZED STEEL WITH MATCHING FITTINGS WHERE REQUIRED BY NEC.

8. THE SUBCONTRACTOR SHALL PERFORM ALL WORK SHOWN ON THE BUILDING DRAWINGS NOTED "FIELD WORK" OR OTHERWISE NOTED AS WIRING TO BE COMPLETED IN THE FIELD.

9. ALL WIRE SHALL BE (COPPER, 600V THHW, 90°C) UNLESS NOTED OTHERWISE.

B. CODES, PERMITS AND FEES:

1. ALL REQUIRED PERMITS, LICENSES, INSPECTIONS AND APPROVALS SHALL BE SECURED AND ALL FEES FOR SAME PAID BY SUBCONTRACTOR.

2. THE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES; STATE, LOCAL AND NATIONAL, AND THE DESIGN, PERFORMANCE CHARACTERISTICS AND METHODS OF CONSTRUCTION OF ALL ITEMS AND EQUIPMENT, SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF THE VARIOUS APPLICABLE STANDARD SPECIFICATIONS OF THE FOLLOWING RECOGNIZED AUTHORITIES:

A.N.S.I. - AMERICAN NATIONAL STANDARDS INSTITUTE
I.E.E.E. - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
N.E.C. - NATIONAL ELECTRIC CODE
N.E.M.A. - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N.F.P.A. - NATIONAL FIRE PROTECTION ASSOCIATION
U.L. - UNDERWRITERS LABORATORIES, INC.

3. THE SUBCONTRACTOR SHALL BE LICENSED TO PERFORM WORK IN THE STATE, CITY OR COUNTY OF THE PROJECT SITE AS REQUIRED.

4. UTILITY COMPANY COORDINATION
ELECTRICAL CONTRACTOR SHALL COMPLETE ALL WORK IN ACCORDANCE WITH THE RULES OF THE LOCAL UTILITY COMPANY. BEFORE SUBMITTING HIS BID, THE SUBCONTRACTOR SHALL CHECK WITH THE UTILITY COMPANIES SUPPLYING SERVICE TO THIS PROJECT AND SHALL DETERMINE FROM THEM ALL EQUIPMENT AND CHARGES WHICH THEY WILL REQUIRE AND SHALL INCLUDE THE COST IN HIS BID WHENEVER POSSIBLE.

5. UTILITIES:

THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE EXCAVATION AND PROPER BACKFILLING OF TRENCHES AND SUPPLY CONDUIT REQUIRED FOR UNDERGROUND TELEPHONE & ELECTRICAL UTILITIES. ALL TRENCHING SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE W/ASTM D-1557 IN 6" LIFTS.

THE ELECTRICAL TRENCH SHALL START AT THE NEW PREFABRICATED RADIO EQUIPMENT BUILDING AND END AT THE NEW METER BOARD STRUCTURE. THE SUBCONTRACTOR SHALL THEN STUB THE CONDUIT 5' OUTSIDE THE FENCE. THE ELECTRIC PROVIDER SHALL PROVIDE SERVICE TO THE NEW METER BOARD STRUCTURE. THE SUBCONTRACTOR SHALL PROPERLY BACKFILL THE TRENCHES AFTER SETTLEMENT AND RESTORE GRAVEL COMPOUND. CONTACT ELECTRIC PROVIDER SIX WEEKS PRIOR TO CONSTRUCTION FOR SERVICE AND COORDINATION OF ACCESS TO SITE.

THE SUBCONTRACTOR SHALL RUN THE TELEPHONE TRENCH AND CONDUIT FROM THE NEW PREFABRICATED RADIO EQUIPMENT BUILDING TO THE NEW TELCO METER BOARD STRUCTURE. THE SUBCONTRACTOR SHALL THEN RUN CONDUIT W/PULL STRING OUTSIDE THE FENCE IN THE UTILITY EASEMENT TO THE R.O.W. THE SUBCONTRACTOR SHALL STAKE THE LOCATIONS OF THE PULL BOXES. THE TELCO PROVIDER SHALL PROVIDE SERVICE TO THE METER BOARD STRUCTURE. THE SUBCONTRACTOR SHALL PROPERLY BACKFILL THE TRENCHES AFTER SETTLEMENT AND RESTORE THE GRAVEL COMPOUND.

GENERAL NOTES

1. PROVIDE ALL SIGNAGE AS REQUIRED BY NEC AND LOCAL JURISDICTION. SEE SIGNAGE NOTES.

2. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

3. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

4. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.

5. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.

6. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.

7. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA.

8. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPICITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANEL BOARD AND CIRCUIT ID'S).

9. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.

10. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

11. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

13. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.

14. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).

15. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

16. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

17. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

18. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

19. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

20. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

21. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.

22. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

23. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

25. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

26. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

27. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

28. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

29. THE CONTRACTOR SHALL CO-ORDINATE WITH UTILITY COMPANY AND CALCULATE SHORT CIRCUIT FAULT CURRENT AND ARC FLASH, AND PROVIDE LABELS ON ELECTRICAL EQUIPMENT PER NEC AND LOCAL JURISDICTION. CONTRACTOR SHALL PROVIDE EQUIPMENT RATED FOR FAULT CURRENT.

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STEVEN P. SCHAUB
REGISTERED
19959
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

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1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
GENERAL ELECTRICAL NOTES

SHEET NUMBER:
E-3

VOLTAGE:	120/240V			PHASE:	1		WIRE:	3								
MAIN BREAKER:	200 AMP			BUSS RATING:	200 AMPS		AIC:	22K (VERIFY IN FIELD. SEE NOTE 29 ON SHEET E-3)								
MOUNT:	SURFACE			NEUTRAL BAR:	YES		GROUND BAR:	YES								
ENCLOSURE TYPE:	NEMA 3R			N to GROUND BOND:	NO											
PANEL STATUS:	PROPOSED			INTERNAL TVSS:	YES											

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	RECTIFIER 1 & 2	25	2	ON	2150	1.00	2330		1.00	180	ON	1	20	GFCI	2
3				ON	2150	1.00		4300	1.00	2150	ON	2	25	RECTIFIER 7 & 8	4
5	RECTIFIER 3 & 4	25	2	ON	2150	1.00	4300		1.00	2150	ON				6
7				ON	2150	1.00		4300	1.00	2150	ON	2	25	RECTIFIER 9 & 10	8
9	RECTIFIER 5 & 6	25	2	ON	2150	1.00	4300		1.00	2150	ON				10
11				ON	2150	1.00		2150	1.00	0	OFF	2	30	SPARE	12
13	SPARE	30	2	OFF	0	1.00	0		1.00	0	OFF				14
15				OFF	0	1.00		144	1.00	144	ON	1	20	EXTERIOR LIGHTS	16
17	1 TON AC UNIT	20	2	ON	1800	1.00	1800		1.00	0	N/A	---	---	---	18
19				ON	1800	1.00		1800	1.00	0	N/A	---	---	---	20
21	RECEPTACLE	20	1	ON	180	1.00	180		1.00	0	N/A	---	---	---	22
23	---	---	---	N/A	0	1.00		0	1.00	0	N/A	---	---	---	24
25	---	---	---	N/A	0	1.00	0		1.00	0	N/A	---	---	---	26
27	---	---	---	N/A	0	1.00		0	1.00	0	N/A	---	---	---	28
29	---	---	---	N/A	0	1.00	0		1.00	0	N/A	---	---	---	30
							12910	12694	VA			TOTAL KVA	25.60		
Walk In Cabinet Schedule												AMPS	106.68		

NOTE: CONTRACTOR IS RESPONSIBLE TO SIZE ALL BRANCH CIRCUITS PER THE NEC, DE-RATE WIRES FOR VOLTAGE DROP AND DE-RATE FOR NUMBER OF WIRES PER CONDUIT

PANEL SCHEDULE LAYOUT PER MANUFACTURE PROVIDED SPECIFICATIONS.

AC PANEL SCHEDULE

NO SCALE

1

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SEAL: STEVEN P. SCHAUB REGISTERED 19959 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

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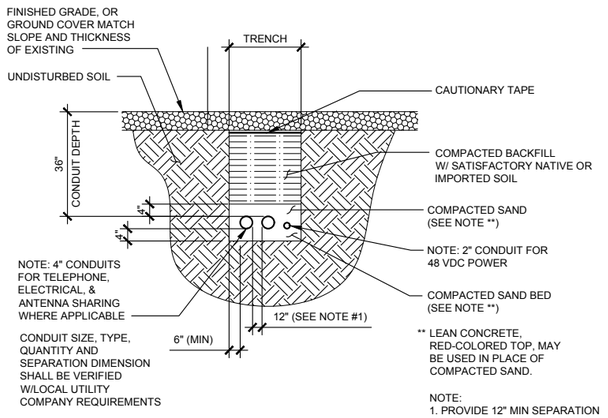
PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

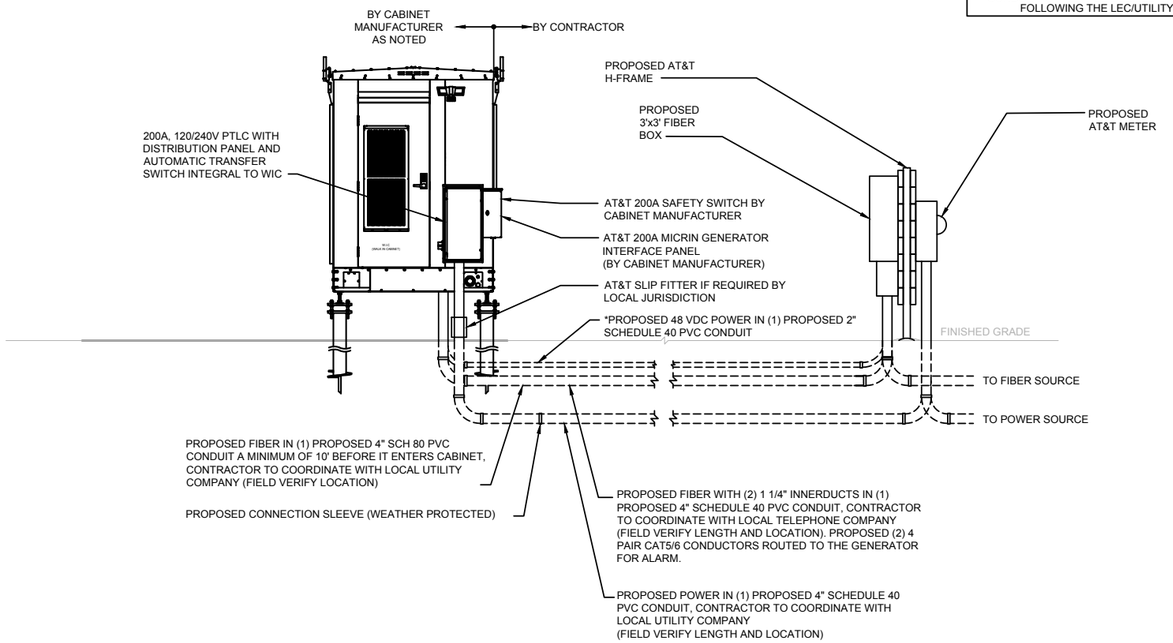
SHEET TITLE:
AC PANEL SCHEDULE & NOTES

SHEET NUMBER:
E-4

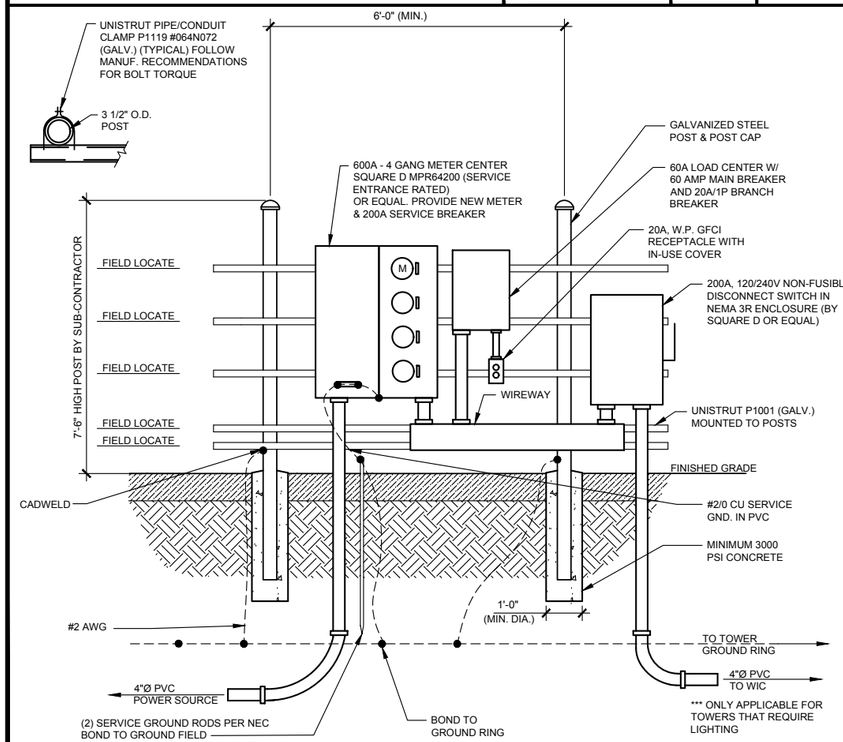


TYPICAL UTILITY TRENCH DETAIL | NO SCALE | 1

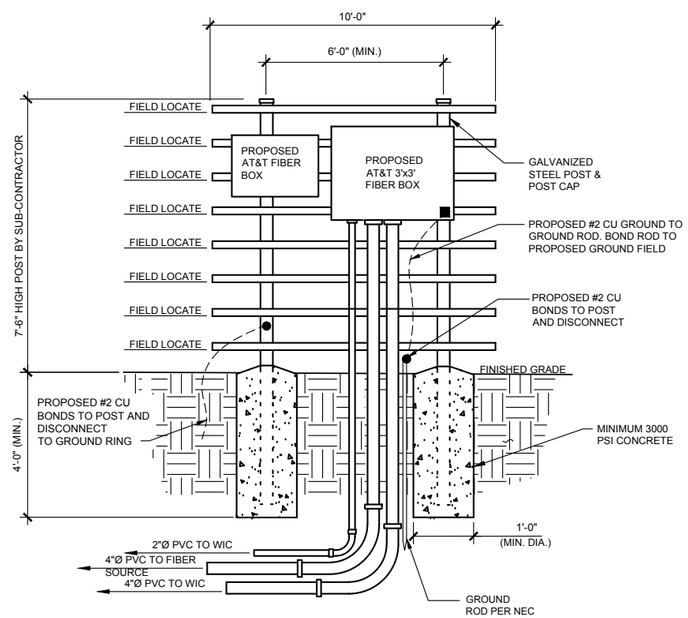
*CONTRACTOR SHALL CONFIRM WITH CONSTRUCTION MANAGER PRIOR TO ORDERING AND INSTALLING 2" CONDUIT AS IT MAY BE DEEMED UNNECESSARY FOLLOWING THE LEC/UTILITY WALK



POWER RISER DIAGRAM | NO SCALE | 2



PROPOSED AT&T H-FRAME FRONT ELEVATION | NO SCALE | 3



PROPOSED AT&T H-FRAME REAR ELEVATION | NO SCALE | 4

1. ALL UNDERGROUND CONDUITS SHALL BE SCH 40 PVC. ALL UNDERGROUND ELBOWS SHALL BE SWEEPING BENDS. 2'-0" MINIMUM SHALL BE REQUIRED.
2. TWO CONDUITS ARE SHOWN IN DETAIL 2, ALTHOUGH MULTIPLE CONDUITS CAN BE PLACED IN THE SAME TRENCH. A MINIMUM SEPARATION IS REQUIRED PER THE LOCAL JURISDICTIONS AND UTILITY COMPANIES. IN ALL OTHER CASES, USE THE TYP UTILITIES TRENCH DETAIL ON THIS SHEET TO MAINTAIN MINIMUM SPACING BETWEEN THE EXTERIOR WALL TO EXTERIOR WALL SEPARATION OF CONDUITS.
3. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
4. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
5. ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION.

NOTES | 5

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PROFESSIONAL ENGINEER
11/13/2023

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

PROJECT NO:	2017748.70
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CHECKED BY:	BML

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PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
ELECTRICAL DETAILS

SHEET NUMBER:
E-5

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY. FOR GROUNDING DETAILS SEE DRAWINGS E-8 THRU E-10.

2. TESTING SHALL BE PERFORMED AT ALL SITES WHERE MODIFICATIONS OR ADDITIONS ARE MADE TO THE EXISTING GROUNDING SYSTEM AND SHALL BE IN ACCORDANCE WITH AT&T GROUNDING AND BONDING STANDARDS TP-76416. THE CONTRACTOR SHALL SUPPLY AT&T WITH RESULTS FROM PRE-CONSTRUCTION AND POST-CONSTRUCTION OHM TESTING (GROUNDING) RESULTS AND BE IN COMPLIANCE WITH AT&T GROUNDING AND BONDING STANDARDS TP-76416.

3. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A "FALL OF POTENTIAL" TEST ON THE PROPOSED SUPPLEMENTAL GROUNDING FIELD PRIOR TO FINAL CONNECTION OF THE GROUNDING SYSTEM TO EQUIPMENT. THE TEST SHALL BE PERFORMED BY A QUALIFIED AND CERTIFIED TESTING AGENT. PROVIDE INDEPENDENT TEST RESULTS TO THE PROJECT MANAGER FOR REVIEW. THE GROUNDING SYSTEM RESISTANCE TO EARTH GROUNDING SHALL NOT EXCEED (5) OHMS. IF THE GROUNDING TEST EXCEEDS THE MAXIMUM OF (5) OHMS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADDITIONAL GROUNDING RODS AND CONNECTIONS AS REQUIRED TO MEET THE (5) OHMS' MAXIMUM.

4. THE INSPECTOR HAVING JURISDICTION SHALL INSPECT ALL GROUNDING CONNECTIONS FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BEFORE BEING PERMANENTLY CONCEALED.

5. FOR ALL CONNECTIONS TO THE GROUNDING RING, SEE THE SHELTER MANUFACTURER'S DRAWINGS.

6. WHEN AN EXISTING METER RACK IS BEING UTILIZED AND A NEW METER IS INSTALLED IN THE EXISTING METER RACK, THE GROUNDING RODS, AND GROUNDING CONDUCTORS OF THE EXISTING GROUNDING RING, SHALL BE EXTENDED TO THE PROPOSED GROUNDING RING AND BECOME A COMPLETE GROUNDING SYSTEM.

7. CONTRACTOR SHALL GROUND ALL EQUIPMENT INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED WIREMEN IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

8. WHEN A CANOPY IS INSTALLED, THE CANOPY SHALL BE EFFECTIVELY GROUNDED AS REQUIRED BY AT&T GROUNDING AND BONDING STANDARDS TP-76416.

9. FOR ROOFTOP INSTALLATIONS, ROUTE GROUNDING CONDUCTORS ON THE SHELTER'S EXTERIOR SUPPORTING STRUCTURE. WHEN A SUPPORT PLATFORM STRUCTURE IS EMPLOYED, ROUTE GROUNDING CONDUCTORS UNDERNEATH AND ON THE SUPPORTING MEMBERS, USING APPROVED STRAPS AS REQUIRED IN AT&T GROUNDING AND BONDING ARTICLE 6.4.1.7 STATED IN TP-76416.

10. FOR GROUNDING INSTALLATIONS WHICH HAVE A LIMITED AREA AND IS BEING REQUIRED TO BE INSTALLED WITHIN THE LEASE AREA ONLY, THE GROUNDING RING CONDUCTORS CAN BE INSTALLED UNDER THE SHELTER'S FOOTINGS.

11. MAIN GROUNDING CONDUCTORS SHALL BE ROUTED AND BONDED TO ALL EFFECTIVE GROUNDING PATHS IN ACCORDANCE WITH AT&T GROUNDING AND BONDING SPECIFICATION 6.8.2 STATED IN TP-76416. THE NEW GROUNDING SYSTEM SHALL BE BONDED (2 PLACES) TO ALL EXISTING GROUNDING SYSTEMS, INCLUDING BUT NOT LIMITED TO BUILDING STEEL STRUCTURE, LIGHTNING PROTECTION SYSTEMS, BUILDING MAIN GROUNDING SYSTEM AND/OR MAIN WATER SUPPLY IF APPLICABLE.

12. ON BUILDINGS AND/OR NEW TOWERS GREATER THAN 75 FEET IN HEIGHT WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS NOT SMALLER THAN 2/0 AWG COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). SEE AT&T GROUNDING AND BONDING STANDARDS TP-76416 SPECIFICATION 6.3.2.2.

13. CONNECTIONS TO THE BURIED GROUND RING SHALL BE EXOTHERMICALLY WELDED BY A CERTIFIED TECHNICIAN. CONNECTIONS TO ABOVE GROUND UNITS SHALL BE MAKE WITH EXOTHERMIC WELD, WHERE PRACTICAL, OR WITH 2 HOLE CONNECTIONS.

14. GROUND WIRE SHALL HAVE A MINIMUM BEND RADIUS OF 8" AND >90°.

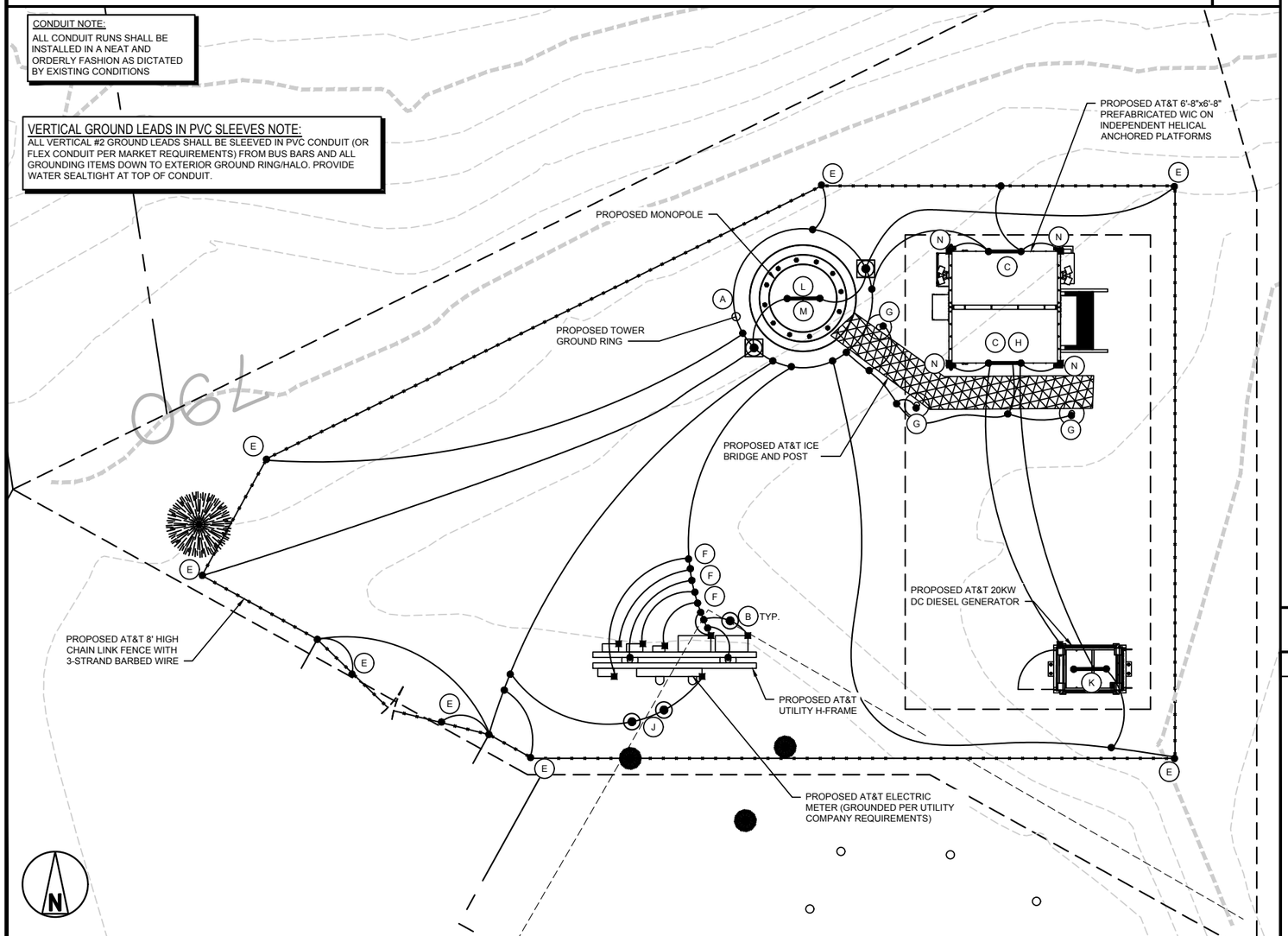
15. ALL MECHANICAL GROUND CONNECTION SHALL HAVE AN ANTIOXIDANT COMPOUND APPLIED PRIOR TO INSTALLATION.

NOTES

1

CONDUIT NOTE:
ALL CONDUIT RUNS SHALL BE INSTALLED IN A NEAT AND ORDERLY FASHION AS DICTATED BY EXISTING CONDITIONS

VERTICAL GROUND LEADS IN PVC SLEEVES NOTE:
ALL VERTICAL #2 GROUND LEADS SHALL BE SLEEVED IN PVC CONDUIT (OR FLEX CONDUIT PER MARKET REQUIREMENTS) FROM BUS BARS AND ALL GROUNDING ITEMS DOWN TO EXTERIOR GROUND RING/HALO. PROVIDE WATER SEALTIGHT AT TOP OF CONDUIT.



GROUNDING SITE PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

3

(A) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS. GROUND RING SHALL BE INSTALLED 24" MINIMUM CLEAR OF THE TOWER FOUNDATION. (ATT-TP-76416 7.5.1)

(B) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 3/4" DIAMETER BY TEN FEET LONG. ALL GROUND RODS MAY BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR. (ATT-TP-76416 1.4 / 2.2.3.10) [NOT DRAWN TO SCALE IN PLAN]

(C) WALK IN CABINET GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO TOWER GROUND RING WITH (1) #2 SOLID TINNED COPPER CONDUCTORS AND TO HELICAL ANCHORS WITH (2) #2 SOLID TINNED COPPER CONDUCTORS. (ATT-TP-76416 7.6.7) [NOT DRAWN TO SCALE IN PLAN]

(D) N/A

(E) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS. (ATT-TP-76416 7.12.2.2)

(F) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE TOWER GROUND RING. (ATT-TP-76416 7.12.2)

(G) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING. (ATT-TP-76416 7.4.2.6)

(H) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICES CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR (CRGB) PER AT&T-TP-76300 SECTION H 6 AND AT&T-TP-76416 FIGURE 7-11 REQUIREMENTS.

(J) ELECTRICAL SERVICE GROUND: EXTEND #2/0 BARE TINNED COPPER GROUND WIRE FROM NEUTRAL BUS BAR IN METER CABINET TO POWER COMPANY GROUND.

(K) GENERATOR GROUND BAR: EXTEND (1) #2 AWG SOLID TINNED BOND FROM GENERATOR INTERNAL GROUND BAR TO WIC GROUND BAR AND EXTEND (1) #2 AWG SOLID TINNED BOND FROM GENERATOR PLATFORM TO WIC GROUND BAR. [NOT DRAWN TO SCALE IN PLAN]

(L) TOWER TOP GROUNDING BAR: MECHANICALLY BOND GROUND BAR TO STRUCTURE. [NOT DRAWN TO SCALE IN PLAN]

(M) ANTENNA GROUND BAR: #2 AWG SOLID TINNED COPPER BOND TO TOWER TOP GROUND BAR. [NOT DRAWN TO SCALE IN PLAN]

(N) HELICAL ANCHORS: PROVIDE MECHANICAL BONDS AT PLATFORM HELICAL ANCHORS, BOND TO GROUND BAR.

GROUNDING KEYED NOTES

2

SYMBOL	DESCRIPTION
◉	3/4" x 10' COPPER CLAD STEEL GROUND ROD
◎	3/4" x 10' COPPER CLAD TEST WELL GROUND ROD W/INSPECTION SLEEVE
•	EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
⊙	EXOTHERMIC WELD (CADWELD) WITH INSPECTION SLEEVE
■	MECHANICALLY BONDED GROUND CONNECTION

LEGEND

NO SCALE

4

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SEAL:
STEVEN P. SCHAUB
REGISTERED
19959
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

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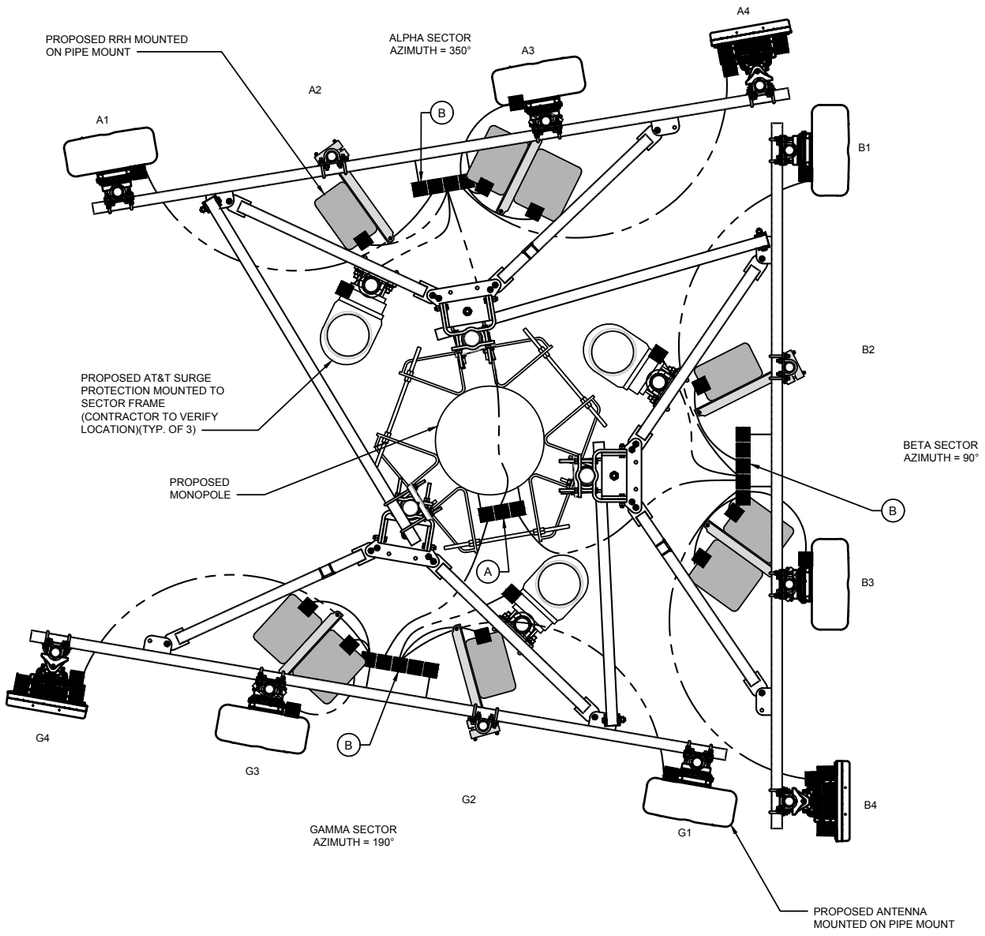
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
GROUNDING SITE PLAN & NOTES

SHEET NUMBER:
E-6



1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL HAVE A COMPLETE UNDERSTANDING OF THE CONTENTS OF AT&T STANDARD TP-76416.
3. ALL INSTALLATIONS SHALL BE FIELD VERIFIED.
4. TOWER GROUNDING BAR: EXTEND (2) #2 AWG TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND MAKE A MECHANICAL CONNECTION. SECURE GROUND BAR DIRECTLY TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
5. ANTENNA GROUNDING BAR: ANDREW CORPORATION PART #UGBKIT-0424-T MOUNT GROUND BAR DIRECTLY TO TOWER. SECURE TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
6. GROUNDING BAR: LOCATED CLOSE TO GRADE LOCK BOX TESSCO PART #351546: INSTALL PER MANUFACTURER GUIDELINES.
7. EXOTHERMIC OR COMPRESSION CONNECTION FOR PIPE MOUNT TO ANTENNA ROUTE CONDUCTOR TO NEAREST GROUNDING BAR SO THE GROUNDING CONDUCTORS PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND. USE #2 AWG SOLID TINNED COPPER CONDUCTOR. GROUNDING CONNECTION SHALL BE LOCATED AT THE TOP 2" OF PIPE.
8. ALL GROUNDING CONDUCTORS SHALL BE #2 AWG COPPER TINNED UNLESS NOTED OTHERWISE.
9. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
10. KOPR-SHIELD ANTI-OXIDATION COMPOUND SHALL BE USED ON ALL COMPRESSION GROUNDING CONNECTIONS.
11. ALL EXOTHERMIC CONNECTIONS SHALL BE INSTALLED UTILIZING THE PROPER CONNECTION/MOLD AND MATERIALS FOR THE PARTICULAR APPLICATION.
12. ALL BOLTED GROUNDING CONNECTIONS SHALL BE INSTALLED WITH AN EXTERNAL TOOTHED LOCK WASHER. GROUNDING BUS BARS MAY HAVE PRE-PUNCHED HOLES OR TAPPED HOLES. ALL HARDWARE SHALL BE SECURITY TORQUE HARDWARE 3/8" STAINLESS STEEL.
13. EXTERNAL GROUNDING CONDUCTOR SHALL NOT BE INSTALLED OR ROUTED THROUGH HOLES IN ANY METAL OBJECTS, CONDUITS, OR SUPPORTS TO PRECLUDE ESTABLISHING A MAGNETIC CHOKE POINT.
14. PLASTIC CLIPS SHALL BE USED TO FASTEN AND SUPPORT GROUNDING CONDUCTORS. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL NOT BE USED.
15. IF COAX ON ICE BRIDGE IS MORE THAT 6' FROM THE GROUND BAR AT THE BASE OF THE TOWER, A SECOND GROUND BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE RUN TO GROUND THE COAX GROUND KIT AND THE IN-LINE SURGE ARRESTORS (SURGE ARRESTORS INSTALLED BY LUCENT ONLY HAVE 6' GROUND TAILS).
16. CONTRACTOR SHALL REPAIR/PLACE EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

NOTES 2

(A) TOWER TOP GROUNDING BAR: MECHANICALLY BOND GROUND BAR TO STRUCTURE.

(B) ANTENNA GROUND BAR: #2 AWG SOLID TINNED COPPER BOND TO TOWER TOP GROUND BAR.

KEY NOTES 3

- EXOTHERMIC TYPE CONNECTION
- COMPRESSION TYPE CONNECTION
- GROUNDING CONDUCTOR
- GROUNDING BAR

LEGEND 4

ANTENNA GROUNDING PLAN 1

NO SCALE

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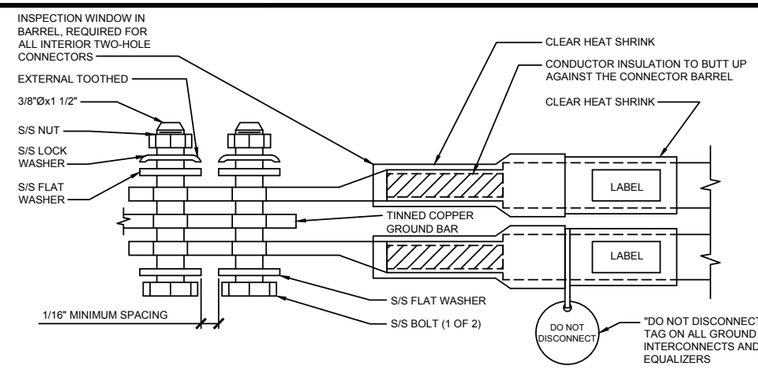
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
ANTENNA GROUNDING PLAN

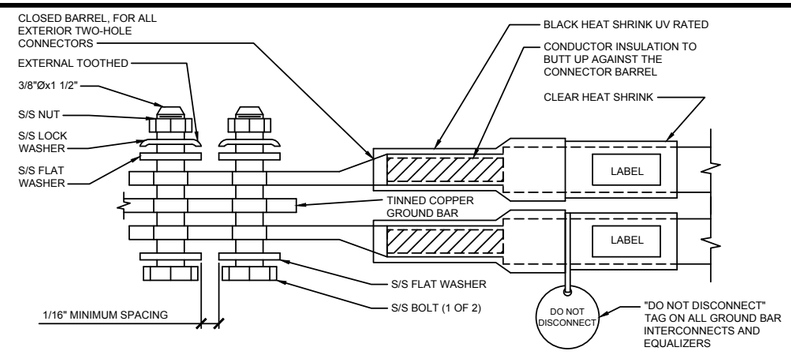
SHEET NUMBER:
E-7



NOTES:

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL GROUND BARS SHALL BE STAMPED IN TO THE METAL "IF STOLEN DO NOT RECYCLE." THE CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.
3. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
5. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUND BUS.
6. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE. INSTALL BLACK HEAT-SHRINKING TUBE, 600 VOLT INSULATION, ON ALL GROUND TERMINATIONS. THE INTENT IS TO WEATHERPROOF THE COMPRESSION CONNECTION.
7. SUPPLIED AND INSTALLED BY CONTRACTOR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
9. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).
10. BOLTS SHALL BE MADE "SNUG-TIGHT" PLUS 1/4 TURN.

INTERIOR TWO HOLE LUG DETAIL | NO SCALE | 1



NOTES:

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
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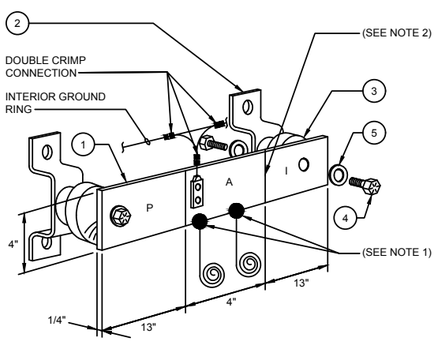
7. SUPPLIED AND INSTALLED BY CONTRACTOR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
9. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).
10. BOLTS SHALL BE MADE "SNUG-TIGHT" PLUS 1/4 TURN.

EXTERIOR TWO HOLE LUG DETAIL | NO SCALE | 2

NEWTON INSTRUMENT COMPANY, INC. BUTNER, N.C.			
NO	REQUIRED	PART NUMBER	DESCRIPTION
1	1	1/4"x4"x30"	SOLID GROUND BAR
2	2	A-6056	WALL MOUNTING BRACKET
3	2	3061-4	INSULATORS
4	4	3012-1	5/8"-11x1" H.H.C.S.
5	4	3015-8	5/8" LOCKWASHER



EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" - SURGE PROTECTORS

(EC) CELL REFERENCE GROUND BAR (IF COLLOCATED)
(EC) GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
(EC) TELCO GROUND BAR (#2 AWG)
(EC) COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (3/0)
(EC) FIBER GROUND BAR (#2 AWG)
(EC) POWER ROOM REFERENCE GROUND BAR (#2 AWG)
(AT&T) RECTIFIER FRAMES

SECTION "A" - SURGE ABSORBERS

(EC) INTERIOR GROUND RING (#2 AWG)
(EC) EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
(EC) METALLIC COLD WATER PIPE (IF AVAILABLE) (1/0 AWG)
(EC) BUILDING STEEL (IF AVAILABLE) (1/0 AWG)

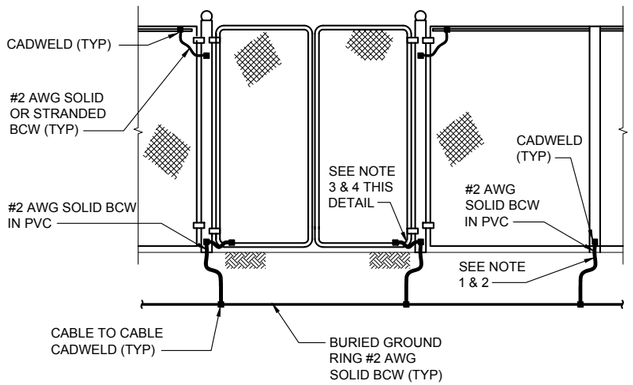
SECTION "I" - ISOLATED GROUND ZONE

(AT&T) ALL ISOLATED GROUND REFERENCE
(AT&T) GROUND WINDOW BAR

DETAIL NOTES:

1. EXOTHERMICALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. THE INSTALLER SHALL USE PERMAMENT MARKER TO DRAW THE LIKE BETWEEN SECTION AND LABEL EACH SECTION ("P", "A", "I" WITH 1" HIGH LETTERS

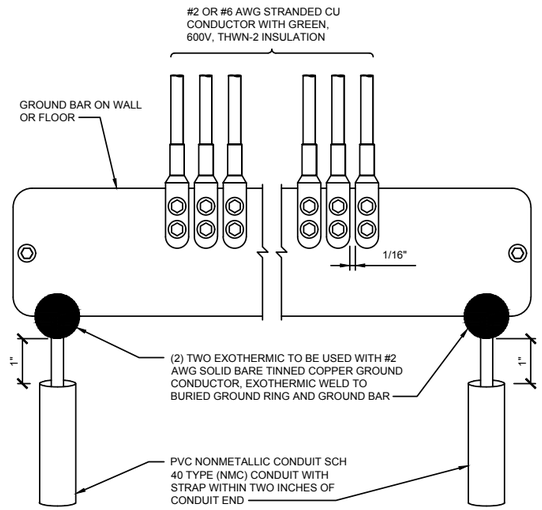
(MGB) REFERENCE GROUNDING BAR DETAIL | NO SCALE | 3



NOTE:

1. VERTICAL FENCE POSTS SHALL BE BONDED TO THE BURIED GROUND RING AT EACH CORNER AND AT EACH GATE POST. AS A MINIMUM ONE VERTICAL POST SHALL BE BONDED TO THE GROUND RING IN EVERY 100 FOOT STRAIGHT RUN OF FENCE.
2. THE BOND OF #2 AWG BCW IN PVC FROM THE BURIED GROUND RING SHALL BE CADWELDED TO THE VERTICAL POST ABOVE GRADE.
3. GATE JUMPER SHALL BE #4/0 AWG WELDING CABLE OR FLEXIBLE COPPER BRAID BURNDY TYPE B WITH SLEEVES ON EACH END DESIGNED FOR EXOTHERMIC WELDING.
4. GATE JUMPER SHALL BE INSTALLED SO THAT IT WILL NOT BE SUBJECTED TO DAMAGING STRAIN WHEN GATE IS FULLY OPEN IN EITHER DIRECTION.

FENCE & GATE GROUNDING DETAIL | NO SCALE | 5



GROUNDING BAR DETAIL | NO SCALE | 4

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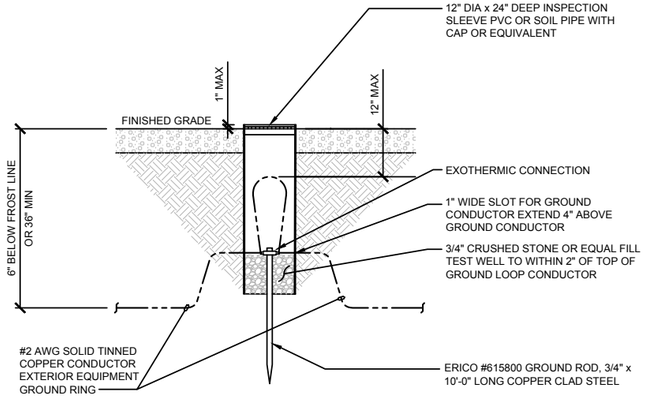
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
GROUNDING DETAILS

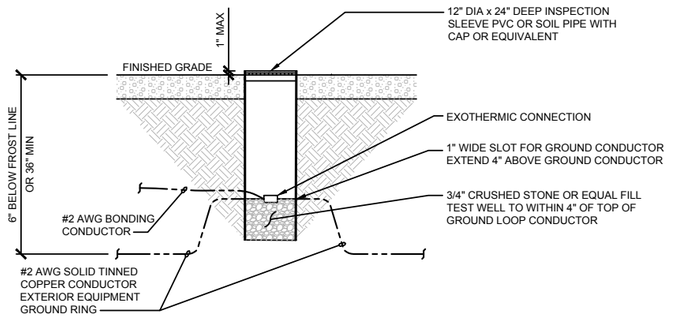
SHEET NUMBER:
E-8

DETAIL NOT USED | NO SCALE | 1

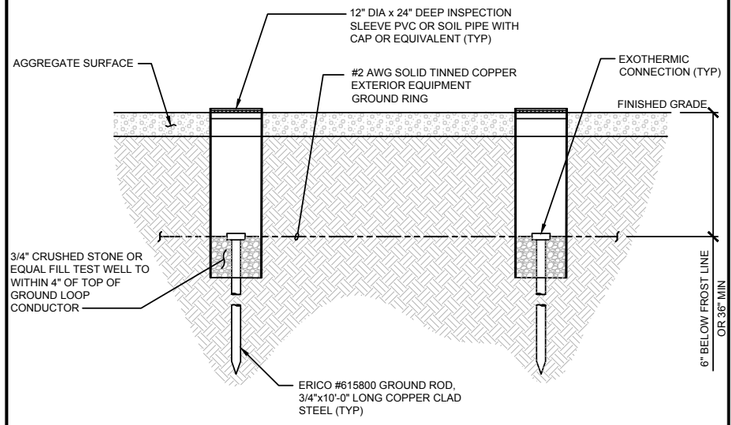
DETAIL NOT USED | NO SCALE | 2



TEST GROUND ROD WITH INSPECTION SLEEVE DETAIL | NO SCALE | 3

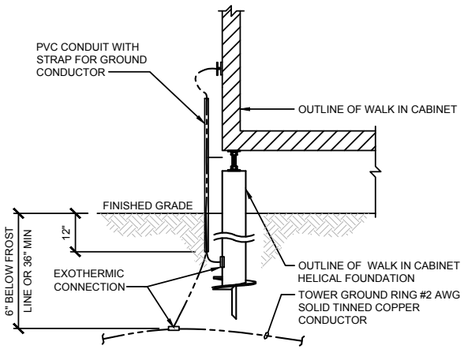


EXOTHERMIC WITH INSPECTION SLEEVE DETAIL | NO SCALE | 4



GROUNDING ROD WITH INSPECTION SLEEVE DETAIL | NO SCALE | 5

NOTE
1. SEE GEOTECHNICAL REPORT FOR RESISTIVITY.

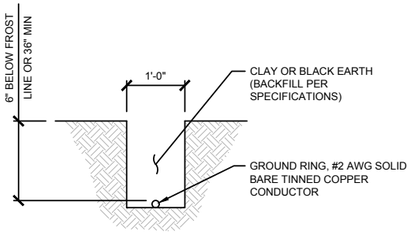


CABINET GROUNDING DETAIL | NO SCALE | 6

DETAIL NOT USED | NO SCALE | 7

DETAIL NOT USED | NO SCALE | 8

NOTE
1. SEE GEOTECHNICAL REPORT FOR RESISTIVITY.



GROUNDING RING TRENCH DETAIL | NO SCALE | 9

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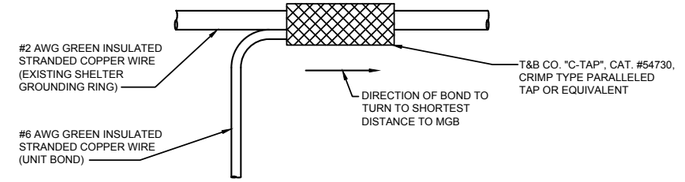
WHEELING, WV 26003

SHEET TITLE:
GROUNDING DETAILS

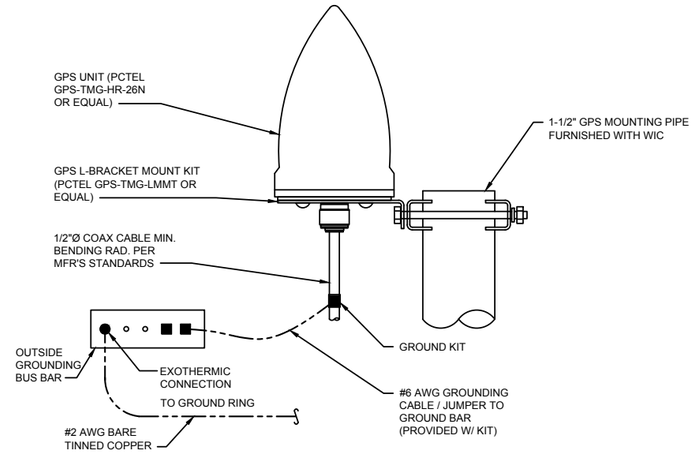
SHEET NUMBER:
E-9

DETAIL NOT USED | NO SCALE | 1

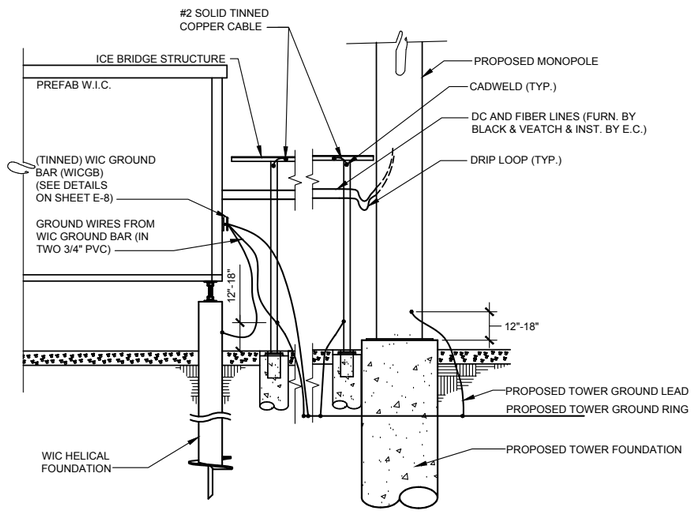
DETAIL NOT USED | NO SCALE | 2



GROUNDING WIRE CONNECTION DETAIL | NO SCALE | 3



GPS ANTENNA GROUNDING DETAIL | NO SCALE | 4



ICE BRIDGE AND ANTENNA CABLE DETAIL | NO SCALE | 5

NOTES

1. CABINET SHIPPED WITH INTERIOR COMPLETE. FIELD VERIFY UPON DELIVERY TO SITE AND CONTACT CONSTRUCTION MANAGER IF ANY INTERIOR ITEMS ARE NOT PRESENT. (SEE SHELTER MANUFACTURER DRAWINGS)

**DETAIL IS FOR REFERENCE ONLY

NOTES | 6

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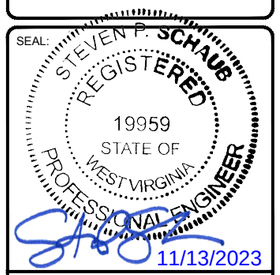

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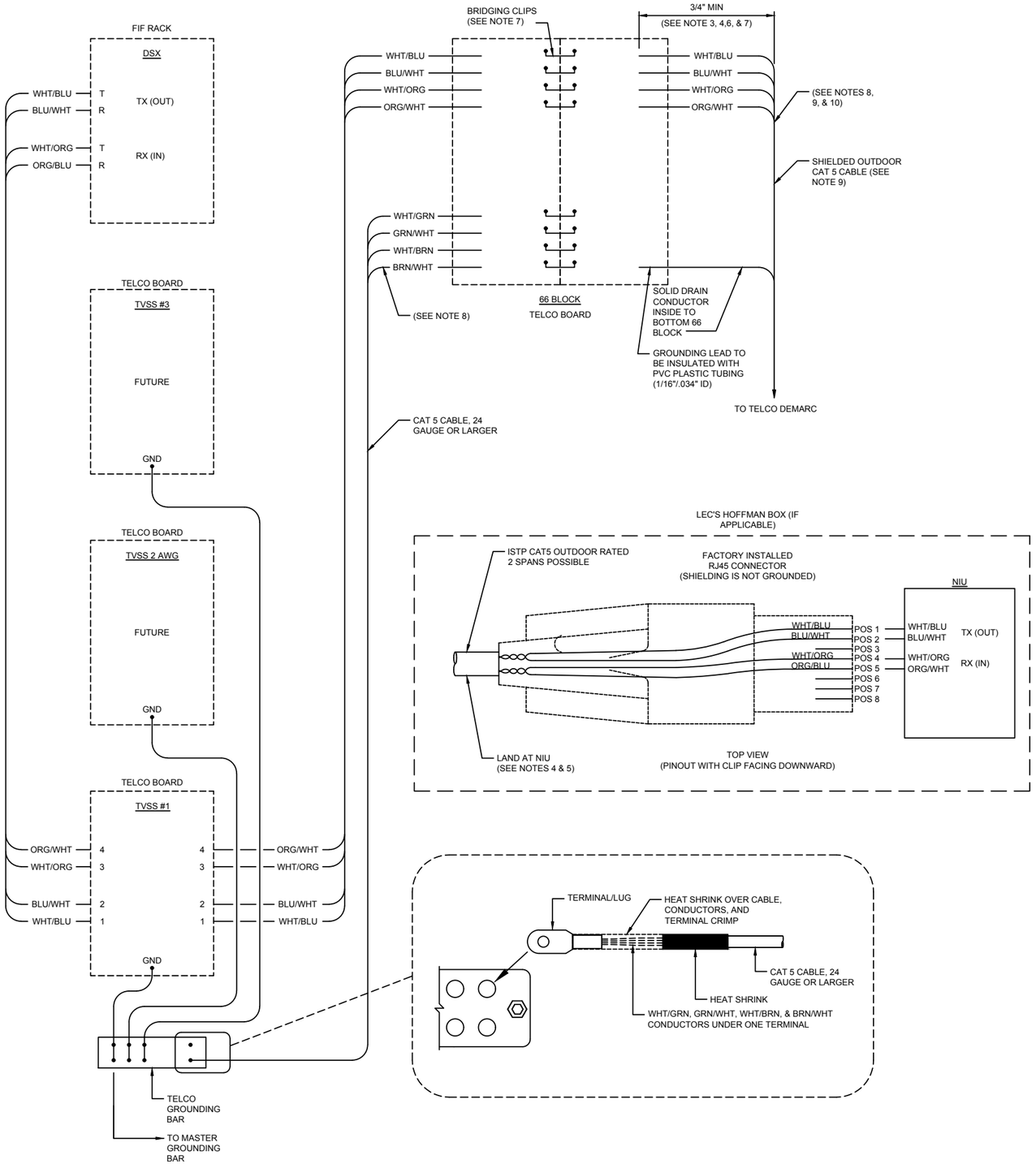
WHEELING, WV 26003

SHEET TITLE:

GROUNDING DETAILS

SHEET NUMBER:

E-10

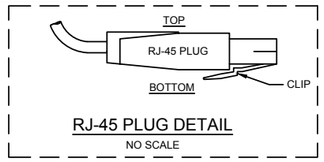


TELCO INTERFACE SCHEMATIC | NO SCALE | 1

1. TVSS WILL BE PRE-INSTALLED ON THE TELCO BOARD IN SHELTER. USE APPROPRIATE STAINLESS STEEL BOLTS WITH FLAT WASHERS AND A LOCK WASHER ON THE NUT SIDE.
2. ATTACH RING TERMINAL FROM SUPPLIED GROUNDING CONDUCTOR TO TVSS GROUNDING STUD SECURELY FASTEN WITH SUPPLIED WASHER AND NUT. REFER TO MANUFACTURER'S INSTRUCTIONS. FOR PROPER PERFORMANCE, THE GROUNDING CONDUCTOR LENGTH SHOULD BE LIMITED WITH NO SHARP BENDS ON COILS.
3. TELCO CABLE TO H-FRAME TO BE 25 PAIR ICKY-PICK CAT 5, 24 SOLID CONDUCTOR, RJ45 CONNECTOR ON ONE END (FACTORY ASSEMBLED).
4. CONTRACTOR TO LAND CONNECTION AT NIU (CAT 5 OUTDOOR RATED).
5. AC DATA SYSTEMS MODEL TJ1010B SURGE SUPPRESSER.
6. KEEP TWIST IN PAIR 1/2" TO DIN CONNECTION.
7. INSTALL BRIDGING CLIPS ON 66 BLOCK.
8. 1 1/2" LENGTH HEAT SHRINK OVER BOTH ENDS OF CABLE.
9. CONDOMEX FTP 25 PAIR ICKY-PICK 24 AWG TYPE CMR (UL) C (UL) CMG E-107389 VERIFIED (UL) CAT 5 OR ETL VERIFIED TO TIA/EIA-568-8.2 CAT 5.
10. LEAVE 10" SERVICE LOOP AT BOTH ENDS OF CABLE.
11. SERVICE LOOP TO BE SECURED TO BACKBOARD OF HOFFMAN BOX USING PLASTIC "C CLIPS".

NOTES

3



RJ-45 PLUG DETAIL
NO SCALE

1 NC		INTRUSION ALARM	BL/W 51 NC		TWR PHOTOCELL FAILURE
2 C			W/BL 52 C		
3 NC		HIGH TEMP ALARM	O/W 53 NC		HIGH HUMIDITY
4 C			W/O 54 C		
5 NC		HIGH HUMIDITY ALARM	G/W 55 NC		DEHYDRATOR
6 C			W/G 56 C		
7 NC		SURGE ARRESTER ALARM	BR/W 57 NC		PCU FAIL MAJOR
8 C			W/BR 58 C		
9 NC		SMOKE ALARM	S/W 59 NC		PCU CONV FAIL MAJOR
10 C			W/S 60 C		
11 NC		COMMON POWER FAILURE	BL/R 61 NC		HIGH VOLTAGE
12 C			R/BL 62 C		
13 NC		#1 HVAC FAILURE ALARM	R/O 63 NC		FIF FUSE ALARM
14 C			O/R 64 C		
15 NC		#2 HVAC FAILURE ALARM	G/R 65 NC		FIRE SYSTEM TROUBLE
16 C			R/G 66 C		
W/B 17 NC		LOW TEMPERATURE ALARM	BR/R 67 NC		FIRE SUPPRESSION DISCHARGE
B/W 8C			R/BR 68C		
W/O 19 NC		HYDROGEN GAS ALARM	S/R 69 NC		SIAD
O/W 20C			R/S 70C		
W/G 21 NC		TECHNICIAN ON SITE	BL/BK 71 NC		M/W MAJOR 1
G/W 22 C			BK/BL 72 C		
W/BR 23 NC		EMERGENCY CALL	O/BK 73 NC		M/W MINOR 1
BR/W 24 C			BK/O 74 C		
W/S 25 NC		POSITIVE REPORTING TL - ON	G/BK 75 NC		M/W MAJOR 2
S/W 26 C			BK/G 76 C		
C/B 27 NC		PP FUSE ALARM	BR/BK 77 NC		M/W MINOR 2
B/C 28 C			BK/BR 78 C		
R/U 29 NC		PP MAJOR	S/BK 79 NC		M/W MAJOR 3
U/R 30 C			BK/S 80 C		
R/G 31 NC		PP MINOR	BL/Y 81 NC		M/W MINOR 3
G/R 32 C			Y/BL 82 C		
R/BR 33 NC		PP BATT DISCH (LOW VOLTAGE)	O/Y 83 NC		M/W MAJOR 4
BR/R 34 C			Y/O 84 C		
R/S 35 NC		48V RECT CRITICAL	G/Y 85 NC		M/W MINOR 4
S/R 36 C			Y/G 86 C		
BL/B 37 NC		48V RECT MAJOR	BR/Y 87 NC		LOW TEMP
B/BL 38 C			Y/BR 88 C		
W/B 39 NC		48V RECT MINOR	S/Y 89 NC		TRANSFER SWITCH
B/W 40 C			Y/S 90 C		
W/B 41 NC		48V PDU ALARM	BL/Y 91 NC		GENERATOR RUN
B/W 42 C			Y/BL 92 C		
43 NC		TMA FAIL	O/Y 93 NC		GENERATOR FAIL
44 C			Y/O 94 C		
45 NC		TWR BEACON LIGHTS FAILURE	G/Y 95 NC		GEN BATT/CHG FAIL
46 C			Y/G 96 C		
47 NC		TWR STROBE LIGHTS FAILURE	BR/Y 97 NC		LOW HUMIDITY
48 C			Y/BR 98 C		
49 NC		TWR SIDE LIGHTS FAILURE	99 NC		TOWER 4
50 C			100 C		

MARCONI-SIEMENS CONFIGURATION
SHELTER PUNCHDOWN BLOCK | NO SCALE | 2

APPLICANT/OWNER:

at&t Mobility

635 GRANT STREET
PITTSBURGH, PENNSYLVANIA 15219

BLACK & VEATCH
4449 EASTON WAY
SUITE 150
COLUMBUS OH, 43219

PREPARED BY:

SEAL:

FOR REFERENCE ONLY

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
E	12/15/2021	REVISED COMPOUND LOCATION
F	01/19/2022	REVISED COMPOUND LOCATION
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:

TELCO INTERFACE

SHEET NUMBER:

E-11

PART 1 - GENERAL

1.1 GENERAL CONDITIONS:

A. CONTRACTOR SHALL INSPECT THE EXISTING SITE CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.

B. THE CONTRACTOR SHALL OBTAIN PERMITS, LICENSES, MAKE ALL DEPOSITS, AND PAY ALL FEES REQUIRED FOR THE CONSTRUCTION PERFORMANCE FOR THE WORK UNDER THIS SECTION.

C. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DRAWING SHALL NOT BE SCALED TO DETERMINE DIMENSIONS.

1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES.

A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES. CONDUIT BENDS SHALL BE THE RADIUS BEND FOR THE TRADE SIZE OF CONDUIT IN COMPLIANCE WITH THE LATEST EDITIONS OF NEC.

1.3 REFERENCES:

A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE. THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION UNLESS OTHERWISE NOTED. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.

1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
3. ICEA (INSULATED CABLE ENGINEERS ASSOCIATION)
4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
7. UL (UNDERWRITERS LABORATORIES INC.)
8. AT&T GROUNDING AND BONDING STANDARDS TP-76416

1.4 SCOPE OF WORK

A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND BE OPERATIONAL.

B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING, TRENCHES, BACKFILLING, AND REMOVAL OF EXCESS DIRT.

D. THE CONTRACTOR SHALL FURNISH TO THE OWNER WITH CERTIFICATES OF A FINAL INSPECTION AND APPROVAL FROM THE INSPECTION AUTHORITIES HAVING JURISDICTION.

E. THE CONTRACTOR SHALL PREPARE A COMPLETE SET OF AS-BUILT DRAWINGS, DOCUMENT ALL WIRING EQUIPMENT CONDITIONS, AND CHANGES WHILE COMPLETING THIS CONTRACT. THE AS-BUILT DRAWINGS SHALL BE SUBMITTED AT COMPLETION OF THE PROJECT.

PART 2 - PRODUCTS

2.1 GENERAL:

A. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED, NEW, AND FREE FROM DEFECTS.

B. ALL ITEMS OF MATERIALS AND EQUIPMENT SHALL BE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AS SUITABLE FOR THE USE INTENDED.

C. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 10,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.

2.2 MATERIALS AND EQUIPMENT:

A. CONDUIT:

1. RIGID METAL CONDUIT (RMC) SHALL BE HOT-DIPPED GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.
2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED.
3. CONDUIT CLAMPS, STRAPS AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION AND CONCRETE TIGHT TYPE. GROUNDING BUSHINGS WITH INSULATED THROATS SHALL BE INSTALLED ON ALL CONDUIT TERMINATIONS.
4. NONMETALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40 PVC. INSTALL USING SOLVENT-CEMENT-TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.

B. CONDUCTORS AND CABLE:

1. CONDUCTORS AND CABLE SHALL BE FLAME-RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC, SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN-2, 600 VOLT, SIZE AS INDICATED, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR USED.
2. #10 AWG AND SMALLER CONDUCTOR SHALL BE SOLID OR STRANDED AND #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.
3. SOLDERLESS, COMPRESSION-TYPE CONNECTORS SHALL BE USED FOR TERMINATION OF ALL STRANDED CONDUCTORS.
4. STRAIN-RELIEF SUPPORTS GRIPS SHALL BE HUBBELL KELLEMS OR APPROVED EQUAL. CABLES SHALL BE SUPPORTED IN ACCORDANCE WITH THE NEC AND CABLE MANUFACTURER'S RECOMMENDATIONS.
5. ALL CONDUCTORS SHALL BE TAGGED AT BOTH ENDS OF THE CONDUCTOR, AT ALL PULL BOXES, J-BOXES, EQUIPMENT AND CABINETS AND SHALL BE IDENTIFIED WITH APPROVED PLASTIC TAGS (ACTION CRAFT, BRADY, OR APPROVED EQUAL).

C. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD-FRONT, QUICK-MAKE, QUICK-BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE AND INTERLOCK WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED FURNISHED IN NEMA 3R ENCLOSURE, PROVIDE IF SHOWN ON PLANTS, SQUARE-D OR ENGINEER APPROVED EQUAL.

D. CHEMICAL ELECTROLYTIC GROUNDING SYSTEM: PROVIDE ONLY IF SHOWN ON DRAWINGS

1. INSTALL CHEMICAL GROUNDING AS REQUIRED. THE SYSTEM SHALL BE ELECTROLYTIC MAINTENANCE FREE ELECTRODE CONSISTING OF RODS WITH A MINIMUM #2 AWG CU EXOTHERMICALLY WELDED PIGTAIL, PROTECTIVE BOXES, AND BACKFILL MATERIAL. MANUFACTURER SHALL BE LYNCOLE XIT GROUNDING ROD TYPES K2-(*)CS OR K2L-(*)CS (*) LENGTH AS REQUIRED.
2. GROUND ACCESS BOX SHALL BE A POLYPLASTIC BOX FOR NON-TRAFFIC APPLICATIONS, INCLUDING BOLT DOWN FLUSH COVER WITH "BREATHER" HOLES, XIT MODEL #XB-22. ALL DISCONNECT SWITCHES AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS ID NUMBERING, AND THE ELECTRICAL POWER SOURCE.
3. BACKFILL MATERIAL SHALL BE LYNCONITE AND LYNCOLE GROUNDING GRAVEL.

E. SYSTEM GROUNDING:

1. ALL GROUNDING COMPONENTS SHALL BE TINNED AND GROUNDING CONDUCTOR SHALL BE #2 AWG BARE, SOLID, TINNED, COPPER. ABOVE GRADE GROUNDING CONDUCTORS SHALL BE INSULATED WHERE NOTED.
2. GROUNDING BUSES SHALL BE BARE, TINNED, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION. STANDARD BUS BARS MGB, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
3. CONNECTORS SHALL BE HIGH-CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO-HOLE COMPRESSION LUGS WITH HEAT SHRINK FOR MECHANICAL CONNECTIONS. INTERIOR CONNECTIONS USE TWO-HOLE COMPRESSION LUGS WITH INSPECTION WINDOW AND CLEAR HEAT SHRINK.
4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.
5. GROUND RODS SHALL BE COPPER-CLAD STEEL WITH HIGH-STRENGTH STEEL CORE AND ELECTROLYTIC-GRADE COPPER OUTER SHEATH, MOLTEN WELDED TO CORE, 5/8"x10'-0". ALL GROUNDING RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES.
6. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS IN COMPLIANCE WITH THE AT&T SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, DISCONNECT SWITCHES, STARTERS; AND EQUIPMENT CABINETS.

F. OTHER MATERIALS:

1. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.
2. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

G. PANELS AND LOAD CENTERS:

1. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

PART 3 - EXECUTION

3.1 GENERAL:

A. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT OR WATER, AND AGAINST CHEMICAL OR MECHANICAL INJURY DURING INSTALLATION AND CONSTRUCTION PERIODS.

3.2 LABOR AND WORKMANSHIP:

A. ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE INSTALLED BY EXPERIENCED WIREMEN, IN A NEAT AND WORKMAN-LIKE MANNER.

B. ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED, ALIGNED AND TESTED BY THE CONTRACTOR AS REQUIRED TO PRODUCE THE INTENDED PERFORMANCE.

C. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL LABELS AND ANY DEBRIS, CRATING OR CARTONS AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

3.3 COORDINATION:

A. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER-FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

3.4 INSTALLATION:

A. CONDUIT:

1. ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN 3/4 INCH TRADE SIZE.
2. PROVIDE RIGID PVC SCHEDULE 80 CONDUITS FOR ALL RISERS, RMC OTHERWISE NOTED. EMT MAY BE INSTALLED FOR EXTERIOR CONDUITS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
3. INSTALL SCHEDULE 40 PVC CONDUIT WITH A MINIMUM COVER OF 24" UNDER ROADWAYS, PARKING LOTS, STREETS, AND ALLEYS. CONDUIT SHALL HAVE A MINIMUM COVER OF 18" IN ALL OTHER NON-TRAFFIC APPLICATIONS.
4. USE GALVANIZED FLEXIBLE STEEL CONDUIT WHERE DIRECT CONNECTION TO EQUIPMENT WITH MOVEMENT, VIBRATION, OR FOR EASE OF MAINTENANCE. USE LIQUID TIGHT, FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS. INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORT TO ALLOW FOR EXPANSION AND CONTRACTION.
5. A RUN OF CONDUIT BETWEEN BOXES OR EQUIPMENT SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE QUARTER-BENDS. CONDUIT BEND SHALL BE MADE WITH THE UL LISTED BENDER OR FACTORY 90 DEGREE ELBOWS MAY BE USED.
6. FIELD FABRICATED CONDUITS SHALL BE CUT SQUARE WITH A CONDUIT CUTTING TOOL AND REAMED TO PROVIDE A SMOOTH INSIDE SURFACE.
7. PROVIDE INSULATED GROUNDING BUSHING FOR ALL CONDUITS.
8. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
9. ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF CONDUCTORS OR CABLES. CONDUIT SHALL BE FREE OF DIRT AND DEBRIS.
10. INSTALL PULL STRINGS IN ALL CLEAN EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END.
11. INSTALL 2" HIGHLY VISIBLE AND DETECTABLE TAPE 12" ABOVE ALL UNDERGROUND CONDUITS AND CONDUCTORS.
12. CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.
13. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS TO ALLOW FOR RACEWAYS AND CABLES TO BE ROUTED THROUGH THE BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE EFFECTIVELY SEALED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FIRE STOPS AT FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE, AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.

B. CONDUCTORS AND CABLE:

1. ALL POWER WIRING SHALL BE COLOR CODED AS FOLLOWS:

DESCRIPTION	208/240/120 VOLT SYSTEMS
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUNDING	GREEN

2. SPLICES SHALL BE MADE ONLY AT OUTLETS, JUNCTION BOXES, OR ACCESSIBLE RACEWAY CONDUITS APPROVED FOR THIS PURPOSE.
3. PULLING LUBRICANTS SHALL BE UL APPROVED. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CONDUCTOR OR CABLES INTO THE CONDUIT.
4. CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES & EQUIPMENT TO PERMIT MAKING A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS OR TERMINALS. CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY AND MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS IS PROHIBITED. DAMAGED CABLES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

C. DISCONNECT SWITCHES:

1. INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB. CONNECT TO WIRING SYSTEM AND GROUNDING SYSTEM AS INDICATED.

D. GROUNDING:

1. ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING MANUFACTURER, AT&T GROUNDING AND BONDING STANDARDS TP-76416, ND-00135, AND THE NATIONAL ELECTRICAL CODE.
2. PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM INDICATED WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
3. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
4. BUILDINGS AND/OR NEW TOWERS GREATER THAN 75 FEET IN HEIGHT AND WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 AWG COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). SEE STANDARD 6.3.2.2.
5. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
6. CONTRACTOR SHALL VERIFY THE LOCATIONS OF GROUNDING TIE-IN-POINTS TO THE EXISTING GROUNDING SYSTEM. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION BEFORE BEING PERMANENTLY CONCEALED.
8. APPLY CORROSION-RESISTANT FINISH TO FIELD CONNECTIONS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED. USE KOPR-SHIELD ANTI-OXIDATION COMPOUND ON ALL COMPRESSION GROUNDING CONNECTIONS.
9. A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS.
10. BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE #6 AWG GROUNDING CONDUCTOR TO A GROUND BUS.
11. DIRECT BURIED GROUNDING CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 36" MINIMUM BELOW GRADE, OR 6" BELOW THE FROST LINE, USE THE GREATER OF THE TWO DISTANCES.
12. ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT.
13. THE INSTALLATION OF CHEMICAL ELECTROLYTIC GROUNDING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL PROTECTIVE BOX FLUSH WITH GRADE.
14. DRIVE GROUND RODS UNTIL TOPS ARE A MINIMUM DISTANCE OF 36" DEPTH OR 6" BELOW FROST LINE, USING THE GREATER OF THE TWO DISTANCES.
15. IF COAX ON THE ICE BRIDGE IS MORE THAN 6 FT. FROM THE GROUNDING BAR AT THE BASE OF THE TOWER, A SECOND GROUNDING BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE, TO GROUND THE COAX CABLE GROUNDING KITS AND IN-LINE ARRESTORS.
16. CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

3.5 ACCEPTANCE TESTING:

A. CERTIFIED PERSONNEL USING CERTIFIED EQUIPMENT SHALL PERFORM REQUIRED TESTS AND SUBMIT WRITTEN TEST REPORTS UPON COMPLETION.

B. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND NOT TO COMPLY WITH THE SPECIFIED REQUIREMENTS, THE NON-COMPLYING ITEMS SHALL BE REMOVED FROM THE PROJECT SITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS PROMPTLY AFTER RECEIPT OF NOTICE FOR NON-COMPLIANCE.

C. TEST PROCEDURES:

1. ALL FEEDERS SHALL HAVE INSULATION TESTED AFTER INSTALLATION, BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1000V DC. PROVIDE WRITTEN DOCUMENTATION FOR ALL TEST RESULTS.
2. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
3. MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE CONDUCTORS AND NEUTRALS. SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
4. PERFORM GROUNDING TEST TO MEASURE GROUNDING RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3-POINT "FALL-OF-POTENTIAL" METHOD. PROVIDE PLOTTED TEST VALUES AND LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.

APPLICANT/OWNER:

at&t Mobility

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PITTSBURGH, PENNSYLVANIA 15219

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COLUMBUS OH, 43219

PREPARED BY:

GPD GROUP
Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2101

SEAL:

STEVEN P. SCHAUB
REGISTERED
19959
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
E	12/15/2021	REVISED COMPOUND LOCATION
F	01/19/2022	REVISED COMPOUND LOCATION
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:

ELECTRICAL NOTES

SHEET NUMBER:

E-12

GENERAL CONSTRUCTION

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   GENERAL CONTRACTOR - OVERLAND CONTRACTING INC. (B&V)
   CONTRACTOR: (CONSTRUCTION)
   OWNER - AT&T

2. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND AT&T PROJECT SPECIFICATIONS.

3. GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

4. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.

5. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.

6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

7. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.

8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

9. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.

10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFIRM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.

11. GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.

12. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMAN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.

13. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.

14. WORK PREVIOUSLY COMPLETED IS REPRESENTED BY LIGHT SHADED LINES AND NOTES. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.

15. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.

16. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

17. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

18. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.

19. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.

20. THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.

21. THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OT 2-A:10-B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.

22. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.

23. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.

24. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.

25. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.

26. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

27. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE-APPROVED BY THE LOCAL JURISDICTION.

28. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.

29. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.

30. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.

31. CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.

32. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS REQUIRED).

33. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.

34. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.

35. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION AT&T MOBILITY GROUNDING STANDARD "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM/GPRS WIRELESS SITES" AND "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING". IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.

36. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.

37. CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.

38. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

39. NO WHITE STROBE LIGHTS ARE PERMITTED. LIGHTING IF REQUIRED, WILL MEET FAA STANDARDS AND REQUIREMENTS.

40. ALL COAXIAL CABLE INSTALLATIONS TO FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

ANTENNA MOUNTING

41. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.

42. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.

43. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.

44. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.

45. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.

46. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.

47. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50-OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.

48. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS. REFER TO ND-00246.

49. JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.

50. CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.

51. TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.

52. ANTENNAS SHALL HAVE A 4'-0" MIN CENTER TO CENTER HORIZONTAL SEPARATION.

TORQUE REQUIREMENTS

53. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.

54. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
   A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
   B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.

55. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).

56. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).

57. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.

58. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 - 29.8 NM).

59. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 - 2.3 NM).

FIBER & POWER CABLE MOUNTING

60. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.

61. THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.

62. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

63. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.

62. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.

63. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION.

64. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'-0".

65. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC.

66. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.

67. CONTRACTOR SHALL WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE. WEATHERPROOFING SHALL BE COMPLETED IN STRICT ACCORDANCE WITH AT&T STANDARDS.

GENERAL CABLE AND EQUIPMENT NOTES

68. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.

69. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.

70. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.

71. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.

72. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
   A. TEMPERATURE SHALL BE ABOVE 50° F.
   B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
   C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
   D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.

73. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
   A. GROUNDING AT THE ANTENNA LEVEL.
   B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
   C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
   D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
   E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.

74. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.

75. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANTENNA AND THE COAX CONFIGURATION IS THE CORRECT MAKE AND MODELS, PRIOR TO INSTALLATION.

76. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.

77. ANTENNA CONTRACTOR SHALL FURNISH AND INSTALL A 12'-0" T-BOOM SECTOR ANTENNA MOUNT, IF APPLICABLE, INCLUDING ALL HARDWARE.

SAFETY ENFORCEMENT

SAFETY IS OF PARAMOUNT CONCERN TO BOTH SITE WORKERS AND THE PUBLIC.

78. CONSTRUCTION WORK PRESENTS UNIQUE THREATS TO HEALTH AND SAFETY. THE CONTRACTOR IS RESPONSIBLE TO EDUCATE THEIR WORK FORCE OF THESE DANGERS AND LIMIT THEIR EXPOSURE TO HAZARDS. THIS EDUCATION SHALL INCLUDE BUT NOT BE LIMITED TO APPLICABLE TRAINING COURSES AND CERTIFICATIONS, PROPER PERSONAL PROTECTIVE EQUIPMENT USAGE, DAILY TAILGATE MEETINGS AND ANY OTHER PREVENTATIVE MEASURES WHICH MAY BE REASONABLY EXPECTED. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND ANY PROPERTY OCCUPANTS WHO MAY BE AFFECTED BY THE WORK UNDER CONTRACT. THE CONTRACTOR SHALL REVIEW ALL LANDOWNER, PRIME CONTRACTOR, CARRIER, OSHA, AND LOCAL SAFETY GUIDELINES AND AT ALL TIMES SHALL CONFORM TO THE MOST RESTRICTIVE OF THESE STANDARDS TO ENSURE A SAFE WORKPLACE.

79. ALL SAFETY EQUIPMENT SHALL BE INSPECTED ACCORDING TO ALL OSHA AND INDUSTRY SCHEDULED INTERVALS AND ALL INSPECTIONS SHALL BE DOCUMENTED PER APPLICABLE CODES AND STANDARDS.

80. TOWER WORK PRESENTS ADDITIONAL THREATS TO HEALTH AND SAFETY. ALL TOWER WORKERS WORKING ON A TOWER MUST BE ADEQUATELY TRAINED AND MONITORED TO ENSURE THAT SAFE WORK PRACTICES ARE LEARNED AND FOLLOWED. AS REQUIRED BY OSHA, WHEN WORKING ON EXISTING COMMUNICATION TOWERS, EMPLOYEES MUST BE PROVIDED WITH APPROPRIATE FALL PROTECTION, TRAINED TO USE THIS FALL PROTECTION PROPERLY, AND THE USE OF FALL PROTECTION MUST BE CONSISTENTLY SUPERVISED AND ENFORCED BY THE CONTRACTOR.

81. ELECTRICAL WORK PRESENTS SPECIFIC THREATS TO THE HEALTH AND SAFETY OF WORKERS ON SITE. SPECIFICALLY ELECTROCUTIONS ARE THE FOURTH LEADING CAUSE OF DEATH ON CONSTRUCTION SITES. ALL ELECTRICAL WORKERS SHALL HAVE CURRENT CERTIFICATIONS WHICH SATISFY ALL TRAINING REQUIREMENTS FOR THE ELECTRICAL WORK THEY ARE PERFORMING PER OSHA STANDARDS. ALL ELECTRICAL WORKERS SHALL ADHERE TO ALL SAFETY RULES AND REGULATIONS FOR WORKER AND PUBLIC SAFETY. ALL WORK SHALL BE PERFORMED BY QUALIFIED ELECTRICIANS TRAINED FOR THE TYPE OF WORK AND THE VOLTAGES PRESENT FOR EACH TASK. THE CONTRACTOR SHALL REVIEW ALL LANDOWNER, PRIME CONTRACTOR, CARRIER, OSHA, NFPA 70, AND LOCAL SAFETY GUIDELINES AND AT ALL TIMES SHALL CONFORM TO THE MOST RESTRICTIVE OF THESE STANDARDS TO ENSURE A SAFE WORKPLACE.

SPECIAL INSPECTIONS

82. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING IF ANY SPECIAL INSPECTIONS ARE REQUIRED BY THE JURISDICTION HAVING AUTHORITY. IF REQUIRED BY THE JURISDICTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND SCHEDULING OF THE SPECIAL INSPECTIONS WITH THE ENGINEER OF RECORD. IN THOSE CASES, SPECIAL INSPECTIONS MUST BE COMPLETED PRIOR TO FINAL INSPECTION APPROVAL.

1. RFDS TO BE VERIFIED WITH AT&T FOR FINAL VERSION PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO ENSURE ANY RFDS ALTERATIONS ARE COVERED WITHIN THE STRUCTURAL OR TOWER AND FOUNDATION DESIGN.

APPLICANT/OWNER:

at&t Mobility

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SEAL:

CHRISTOPHER J. SCHEKS
REGISTERED
20552
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
E	12/15/2021	REVISED COMPOUND LOCATION
F	01/19/2022	REVISED COMPOUND LOCATION
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:

WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
GENERAL CONSTRUCTION NOTES

SHEET NUMBER:
N-1

PART 1 - GENERAL

CLEARING, GRUBBING, STRIPPING, EROSION CONTROL, SURVEY, LAYOUT, SUBGRADE PREPARATION AND FINISH GRADING AS REQUIRED TO COMPLETE THE PROPOSED WORK SHOWN IN THESE PLANS.

1.1 REFERENCES:

A. DOT (STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION-CURRENT EDITION).

B. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS).

C. OSHA (OCCUPATION SAFETY AND HEALTH ADMINISTRATION).

1.2 INSPECTION AND TESTING:

A. FIELD TESTING OF EARTHWORK COMPACTION AND CONCRETE CYLINDERS SHALL BE PERFORMED BY CONTRACTORS INDEPENDENT TESTING LAB. THIS WORK TO BE COORDINATE BY THE CONTRACTOR.

B. ALL WORK SHALL BE INSPECTED AND RELEASED BY THE GENERAL CONTRACTOR WHO SHALL CARRY OUT THE GENERAL INSPECTION OF THE WORK WITH SPECIFIC CONCERN TO PROPER PERFORMANCE OF THE WORK AS SPECIFIED AND/OR CALLED FOR ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REQUEST TIMELY INSPECTIONS PRIOR TO PROCEEDING WITH FURTHER WORK THAT WOULD MAKE PARTS OF WORK INACCESSIBLE OR DIFFICULT TO INSPECT.

1.3 SITE MAINTENANCE AND PROTECTION:

A. PROVIDE ALL NECESSARY JOB SITE MAINTENANCE FROM COMMENCEMENT OF WORK UNTIL COMPLETION OF THE SUBCONTRACT.

B. AVOID DAMAGE TO THE SITE AND TO EXISTING FACILITIES, STRUCTURES, TREES, AND SHRUBS DESIGNATED TO REMAIN. TAKE PROTECTIVE MEASURES TO PREVENT EXISTING FACILITIES THAT ARE NOT DESIGNATED FOR REMOVAL FROM BEING DAMAGED BY THE WORK.

C. KEEP SITE FREE OF ALL PONDING WATER.

D. PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH STATE DOT AND EPA REQUIREMENTS.

E. PROVIDE AND MAINTAIN ALL TEMPORARY FENCING, BARRICADES, WARNING SIGNALS AND SIMILAR DEVICES NECESSARY TO PROTECT AGAINST THEFT FROM PROPERTY DURING THE ENTIRE PERIOD OF CONSTRUCTION. REMOVE ALL SUCH DEVICES UPON COMPLETION OF THE WORK.

F. EXISTING UTILITIES: DO NOT INTERRUPT EXISTING UTILITIES SERVING FACILITIES OCCUPIED BY THE OWNER OR OTHERS, EXCEPT WHEN PERMITTED IN WRITING BY THE ENGINEER AND THEN ONLY AFTER ACCEPTABLE TEMPORARY UTILITY SERVICES HAVE BEEN PROVIDED.

1. PROVIDE A MINIMUM 48 HOURS NOTICE TO THE ENGINEER AND RECEIVE WRITTEN NOTICE TO PROCEED BEFORE INTERRUPTING ANY UTILITY SERVICE.

PART 2 - PRODUCTS

2.1 SUITABLE BACKFILL: ASTM D2321 (CLASS I, II, III OR IVA) FREE FROM FROZEN LUMPS, REFUSE, STONES OR ROCKS LARGER THAN 3 INCHES IN ANY DIMENSION OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL.

2.2 NONPOROUS GRANULAR EMBANKMENT AND BACKFILL: ASTM D2321 (CLASS III, IVA OR IVB) COARSE AGGREGATE. FREE FROM FROZEN LUMPS, REFUSE, STONES OR ROCKS LARGER THAN 3 INCHES IN ANY DIMENSION OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL.

2.3 POROUS GRANULAR EMBANKMENT AND BACKFILL: ASTM D2321 (CLASS IA, IB OR II) COARSE AGGREGATE FREE FROM FROZEN LUMPS, REFUSE, STONES OR ROCKS LARGER THAN 3 INCHES IN ANY DIMENSION OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL.

2.4 SELECT STRUCTURAL FILL: GRANULAR FILL MATERIAL MEETING THE REQUIREMENTS OF ASTM E850-95. FOR USE AROUND AND UNDER STRUCTURES WHERE STRUCTURAL FILL MATERIAL ARE REQUIRED.

2.5 GRANULAR BEDDING AND TRENCH BACKFILL: WELL-GRADED SAND MEETING THE GRADATION REQUIREMENTS OF ASTM D2487 (SE OR SW-SM).

2.6 COARSE AGGREGATE FOR ACCESS ROAD SUBBASE COURSE SHALL CONFORM TO ASTM D2940.

2.7 UNSUITABLE MATERIAL: HIGH AND MODERATELY PLASTIC SILTS AND CLAYS (LL>45). MATERIAL CONTAINING REFUSE, FROZEN LUMPS, DEMOLISHED BITUMINOUS MATERIAL, VEGETATIVE MATTER, WOOD, STONES IN EXCESS OF 3 INCHES IN ANY DIMENSION, AND DEBRIS AS DETERMINED BY THE CONSTRUCTION MANAGER. TYPICAL THESE WILL BE SOILS CLASSIFIED BY ASTM AS PT, MH, CH, OH, ML, AND OL.

2.8 GEOTEXTILE FABRIC: MIRAFI 500X OR ENGINEER APPROVED EQUAL.

2.9 PLASTIC MARKING TAPE: SHALL BE ACID AND ALKALI RESISTANT POLYETHYLENE FILM SPECIFICALLY MANUFACTURED FOR MARKING AND LOCATING UNDERGROUND UTILITIES, 6 INCHES WIDE WITH A MINIMUM THICKNESS OF 0.004 INCH. TAPE SHALL HAVE MINIMUM STRENGTH OF 1500 PSI IN BOTH DIRECTIONS AND MANUFACTURED WITH INTEGRAL CONDUCTORS, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY A METAL DETECTOR WHEN BURIED UP TO 3 FEET DEEP. THE METALLIC CORE OF THE TAPE SHALL BE ENCASED IN A PROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. TAPE COLOR SHALL BE RED FOR ELECTRIC UTILITIES AND ORANGE FOR TELECOMMUNICATION UTILITIES.

PART 3 - EXECUTION

3.1 GENERAL:

A. BEFORE STARTING GENERAL SITE PREPARATION ACTIVITIES, INSTALL EROSION AND SEDIMENT CONTROL MEASURES. THE WORK AREA SHALL BE CONSTRUCTED AND MAINTAINED IN SUCH CONDITION THAT IN THE EVENT OF RAIN THE SITE WILL BE DRAINED AT ANY TIME.

B. BEFORE ALL SURVEY, LAYOUT, STAKING, AND MARKING ESTABLISH AND MAINTAIN ALL LINES, GRADES, ELEVATIONS AND BENCHMARKS NEEDED FOR EXECUTION OF THE WORK.

C. CLEAR AND GRUB THE AREA WITHIN THE LIMITS OF THE SITE. REMOVE TREES, BRUSH, STUMPS, RUBBISH AND OTHER DEBRIS AND VEGETATION RESTING ON OR PROTRUDING THROUGH THE SURFACE OF THE SITE AREA TO BE CLEARED.

1. REMOVE THE FOLLOWING MATERIALS TO A DEPTH OF NO LESS THAN 12 INCHES BELOW THE ORIGINAL GROUND SURFACE: ROOTS, STUMPS, AND OTHER DEBRIS, BRUSH, AND REFUSE EMBEDDED IN OR PROTRUDING THROUGH THE GROUND SURFACE, RAKE, DISK OR PLOW THE AREA TO A DEPTH OF NO LESS THAN 6 INCHES, AND REMOVE TO A DEPTH OF 12 INCHES ALL ROOTS AND OTHER DEBRIS THEREBY EXPOSED.

2. REMOVE TOPSOIL MATERIAL COMPLETELY FROM THE SURFACE UNTIL THE SOIL NO LONGER MEETS THE DEFINITION OF TOPSOIL. AVOID MIXING TOPSOIL WITH SUBSOIL OR OTHER UNDESIRABLE MATERIALS.

3. EXCEPT WHERE EXCAVATION TO GREATER DEPTH IS INDICATED, FILL DEPRESSIONS RESULTING FROM CLEARING, GRUBBING AND DEMOLITION WORK COMPLETELY WITH SUITABLE FILL.

D. REMOVE FROM THE SITE AND DISPOSE IN AN AUTHORIZED LANDFILL ALL DEBRIS RESULTING FROM CLEARING AND GRUBBING OPERATIONS. BURNING WILL NOT BE PERMITTED.

E. PRIOR TO EXCAVATING, THOROUGHLY EXAMINE THE AREA TO BE EXCAVATED AND/OR TRENCHED TO VERIFY THE LOCATIONS OF FEATURES INDICATED ON THE DRAWINGS AND TO ASCERTAIN THE EXISTENCE AND LOCATION OF ANY STRUCTURE, UNDERGROUND STRUCTURE, OR OTHER ITEM NOT SHOWN THAT MIGHT INTERFERE WITH THE PROPOSED CONSTRUCTION. NOTIFY THE CONSTRUCTION MANAGER OF ANY OBSTRUCTIONS THAT WILL PREVENT ACCOMPLISHMENT OF THE WORK AS INDICATED ON THE DRAWINGS.

F. SEPARATE AND STOCK PILE ALL EXCAVATED MATERIALS SUITABLE FOR BACKFILL. ALL EXCESS EXCAVATED AND UNSUITABLE MATERIALS SHALL BE DISPOSED OF OFF-SITE IN A LEGAL MANNER.

3.2 BACKFILL:

A. AS SOON AS PRACTICAL, AFTER COMPLETING CONSTRUCTION OF THE RELATED STRUCTURE, INCLUDING EXPIRATION OF THE SPECIFIED MINIMUM CURING PERIOD FOR CAST-IN-PLACE CONCRETE, BACKFILL THE EXCAVATION WITH APPROVED MATERIAL TO RESTORE THE REQUIRED FINISHED GRADE.

1. PRIOR TO PLACING BACKFILL AROUND STRUCTURES, ALL FORMS SHALL BE REMOVED AND THE EXCAVATION CLEANED OF ALL TRASH, DEBRIS, AND UNSUITABLE MATERIALS.

2. BACKFILL BY PLACING AND COMPACTING SUITABLE BACKFILL MATERIAL OR SELECT GRANULAR BACKFILL MATERIAL WHEN REQUIRED IN UNIFORM HORIZONTAL LAYERS OF NO GREATER THAN 8 INCHES LOOSE THICKNESS AND COMPACTED. WHERE HAND OPERATED COMPACTORS ARE USED, THE FILL MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 4 INCHES IN LOOSE DEPTH AND COMPACTED.

3. WHENEVER THE DENSITY TESTING INDICATES THAT THE CONTRACTOR HAS NOT OBTAINED THE SPECIFIED DENSITY, THE SUCCEEDING LAYER SHALL NOT BE PLACED UNTIL THE SPECIFICATION REQUIREMENTS ARE MET UNLESS OTHERWISE AUTHORIZED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL TAKE WHATEVER APPROPRIATE ACTION IS NECESSARY, SUCH AS DISKING AND DRYING, ADDING WATER, OR INCREASING THE COMPACTIVE EFFORT TO MEET THE MINIMUM COMPACTION REQUIREMENTS.

B. THOROUGHLY COMPACT EACH LAYER OF BACKFILL TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE STANDARD PROCTOR TEST, ASTM D 698.

3.3 TRENCH EXCAVATION:

A. UTILITY TRENCHES SHALL BE EXCAVATED TO THE LINES AND GRADES SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE GENERAL CONTRACTOR. PROVIDE SHORING, SHEETING AND BRACING AS REQUIRED TO PREVENT CAVING OR SLOUGHING OF THE TRENCH WALLS.

B. EXTEND THE TRENCH WIDTH A MINIMUM OF 6 INCHES BEYOND THE OUTSIDE EDGE OF THE OUTERMOST CONDUIT.

C. WHEN SOFT YIELDING, OR OTHERWISE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, BACKFILL AT THE REQUIRED TRENCH TO A DEPTH OF NO LESS THAN 12 INCHES BELOW THE REQUIRED ELEVATION AND BACKFILL WITH GRANULAR BEDDING MATERIAL.

3.4 TRENCH BACKFILL:

A. PROVIDE GRANULAR BEDDING MATERIAL IN ACCORDANCE WITH THE DRAWINGS AND THE UTILITY REQUIREMENTS.

B. NOTIFY THE GENERAL CONTRACTOR 24 HOURS IN ADVANCE OF BACKFILLING.

C. CONDUCT UTILITY CHECK TESTS BEFORE BACKFILLING. BACKFILL AND COMPACT TRENCH BEFORE ACCEPTANCE TESTING.

D. PLACE GRANULAR TRENCH BACKFILL UNIFORMLY ON BOTH SIDES OF THE CONDUITS IN 6 INCH UNCOMPACTED LIFTS UNTIL 12 INCHES OVER THE CONDUITS. SOLIDLY RAM AND TAMP BACKFILL INTO SPACE AROUND CONDUITS.

E. PROTECT CONDUIT FROM LATERAL MOVEMENT, IMPACT DAMAGE, OR UNBALANCED LOADING.

F. ABOVE THE CONDUIT EMBEDMENT ZONE, PLACE AND COMPACT SATISFACTORY BACKFILL MATERIAL IN 8 INCH MAXIMUM LOOSE THICKNESS LIFTS TO RESTORE THE REQUIRED FINISHED SURFACE GRADE.

G. COMPACT FINAL TRENCH BACKFILL TO A DENSITY EQUAL TO OR GREATER THAN THAT OF THE EXISTING UNDISTURBED MATERIAL IMMEDIATELY ADJACENT TO THE TRENCH BUT NO LESS THAN A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE STANDARD PROCTOR TEST, ASTM D 698.

3.5 AGGREGATE ACCESS ROAD:

A. CLEAR, GRUB, STRIP AND EXCAVATE FOR THE ACCESS ROAD TO THE LINES AND GRADES INDICATED ON THE DRAWINGS. SCARIFY TO A DEPTH OF 6 INCHES AND PROOF-ROLL. ALL HOLES, RUTS, SOFT PLACES AND OTHER DEFECTS SHALL BE CORRECTED.

B. THE ENTIRE SUBGRADE SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE MODIFIED PROCTOR TEST, ASTM D 1557.

C. AFTER PREPARATION OF THE SUBGRADE IS COMPLETE THE GEOTEXTILE FABRIC (MIRAFI 500X) SHALL BE INSTALLED TO THE LIMITS INDICATED ON THE DRAWINGS BY ROLLING THE FABRIC OUT LONGITUDINALLY ALONG THE ROADWAY. THE FABRIC SHALL NOT BE DRAGGED ACROSS THE SUBGRADE. PLACE THE ENTIRE ROLL IN A SINGLE OPERATION, ROLLING OUT AS SMOOTHLY AS POSSIBLE.

1. OVERLAPS PARALLEL TO THE ROADWAY WILL BE PERMITTED AT THE CENTERLINE AND AT LOCATIONS BEYOND THE ROADWAY SURFACE WIDTH (I.E. WITHIN THE SHOULDER WIDTH) ONLY. NO LONGITUDINAL OVERLAPS SHALL BE LOCATED BETWEEN THE CENTERLINE AND THE SHOULDER. PARALLEL OVERLAPS SHALL BE A MINIMUM OF 3 FEET WIDE.

2. TRANSVERSE (PERPENDICULAR TO THE ROADWAY) OVERLAPS AT THE END OF A ROLL SHALL OVERLAP IN THE DIRECTION OF THE AGGREGATE PLACEMENT (PREVIOUS ROLL ON TOP) AND SHALL HAVE A MINIMUM LENGTH OF 3 FEET.

3. ALL OVERLAPS SHALL BE PINNED WITH STAPLES OR NAILS A MINIMUM OF 10 INCHES LONG TO INSURE POSITIONING DURING PLACEMENT OF AGGREGATE. PIN LONGITUDINAL SEAMS AT 25 FOOT CENTERS AND TRANSVERSE SEAMS EVERY 5 FEET.

D. AGGREGATE TO BE PLACED ON GEOTEXTILE FABRIC SHALL BE END-DUMPED ON THE FABRIC FROM THE FREE END OF THE FABRIC OR OVER PREVIOUSLY PLACED AGGREGATE. THE FIRST LIFT SHALL BE BLADED DOWN TO A THICKNESS OF 6 INCHES PRIOR TO COMPACTION. AT NO TIME SHALL EQUIPMENT, EITHER TRANSPORTING THE AGGREGATE OR GRADING THE AGGREGATE, BE PERMITTED ON THE ROADWAY WITH LESS THAN 4 INCHES OF MATERIAL COVERING THE FABRIC.

E. THE AGGREGATE SHALL BE IMMEDIATELY COMPACTED TO NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE MODIFIED PROCTOR TEST, ASTM D 1557 WITH A TAMPING ROLLER, OR WITH A PNEUMATIC-TIRED ROLLER, OR WITH A VIBRATORY MACHINE OR ANY COMBINATION OF THE ABOVE. THE TOP LAYER SHALL BE GIVEN A FINAL ROLLING WITH A THREE-WHEEL OR TANDEM ROLLER.

3.6 FINISH GRADING:

A. PERFORM ALL GRADING TO PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES AND SMOOTH, EVEN SURFACE DRAINAGE OF THE ENTIRE AREA WITHIN THE LIMITS OF CONSTRUCTION. GRADING SHALL BE COMPATIBLE WITH ALL SURROUNDING TOPOGRAPHY AND STRUCTURES.

B. UTILIZE SATISFACTORY FILL MATERIAL RESULTING FROM THE EXCAVATION WORK IN THE CONSTRUCTION OF FILLS, EMBANKMENTS AND FOR REPLACEMENT OF REMOVED UNSUITABLE MATERIALS.

C. ACHIEVE FINISHED GRADE BY PLACING A MINIMUM OF 4 INCHES OF 1/2" - 3/4" CRUSHED STONE ON TOP SOIL STABILIZER FABRIC.

D. REPAIR ALL ACCESS ROADS AND SURROUNDING AREAS USED DURING THE COURSE OF THIS WORK TO THEIR ORIGINAL CONDITION.

3.7 ASPHALT PAVING ROAD:

A. SECTION 400 - ODOT FLEXIBLE PAVEMENT.

B. SECTION 400 - PennDOT BITUMINOUS CONCRETE COURSES.

C. DIVISION 400 - WVDOT BITUMINOUS PAVEMENTS.

D. SECTION 400 - INDOT ASPHALT PAVEMENTS

E. SECTION 1000 - KYTC ASPHALT PAVEMENTS

CONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODES:
WEST VIRGINIA BUILDING CODE (IBC 2018), LATEST EDITION ADOPTED BY STATE OF WEST VIRGINIA
ALSO BY LOCAL JURISDICTION BUILDING AUTHORITY,
WEST VIRGINIA PLUMBING CODE (IPC 2018),
WEST VIRGINIA MECHANICAL CODE (IMC 2018),
NATIONAL ELECTRICAL CODE (NEC 2020), LATEST EDITION AS ADOPTED BY LOCAL BUILDING AUTHORITY AND BY STATE OF WEST VIRGINIA,
NFPA 70 - NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - (2020 EDITION),
NFPA 101 - LIFE SAFETY CODE - (2018 EDITION),
NFPA 780 - LIGHTNING PROTECTION SYSTEMS - (2020 EDITION)

CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
AMERICAN CONCRETE INSTITUTE (ACI) 318-14, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE & COMMENTARY
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), STEEL CONSTRUCTION MANUAL, FOURTEENTH EDITION
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (LATEST EDITION) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1275, GENERAL INSTALLATION REQUIREMENTS

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

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REGISTERED
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STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

PROJECT NO:	2017748.70
DRAWN BY:	JA
CHECKED BY:	BML

LANDLORD/PROPERTY OWNER SIGNATURE:

REV	DATE	DESCRIPTION
C	03/19/2019	ISSUED FOR REVIEW
D	04/03/2019	REVISED TOWER HEIGHT
E	12/15/2021	REVISED COMPOUND LOCATION
F	01/19/2022	REVISED COMPOUND LOCATION
0	08/24/2022	ISSUED FOR CONSTRUCTION
1	11/13/2023	REVISED FOR ZONING

PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
GENERAL CONSTRUCTION NOTES

SHEET NUMBER:
N-2

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48-T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
LED-1-25A400/51K-SR4-120-PE-DDBTXD

CHAINLINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND | 1

AB	ANCHOR BOLT
ABV	ABOVE
AC	ALTERNATING CURRENT
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERAGE INTERRUPTION CAPACITY
ALUM	ALUMINUM
ALT	ALTERNATE
ANT	ANTENNA
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BTC	BARE TINNED COPPER CONDUCTOR
BOF	BOTTOM OF FOOTING
CAB	CABINET
CANT	CANTILEVERED
CEC	CALIFORNIA ELECTRIC CODE
CHG	CHARGING
CLG	CEILING
CLR	CLEAR
COL	COLUMN
COMM	COMMON
CONC	CONCRETE
CONSTR	CONSTRUCTION
DBL	DOUBLE
DC	DIRECT CURRENT
DEPT	DEPARTMENT
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
(E)	EXISTING
EA	EACH
EC	ELECTRICAL CONDUCTOR
EL	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EXP	EXPANSION
EXT	EXTERIOR
FAB	FABRICATION
FF	FINISH FLOOR
FG	FINISH GRADE
FIF	FACILITY INTERFACE FRAME
FIN	FINISH(ED)
FLR	FLOOR
FDN	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FS	FINISH SURFACE
FT	FOOT
FTG	FOOTING
GA	GAUGE
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GLB	GLUE LAMINATED BEAM
GLV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE
HDR	HEADER
HGR	HANGER
HVAC	HEAT/VENTILATION/AIR CONDITIONING
HT	HEIGHT
IGR	INTERIOR GROUND RING
IN	INCH
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
NO.(#)	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OPNG	OPENING
(P)	PROPOSED
P/C	PRECAST CONCRETE
PCS	PERSONAL COMMUNICATION SERVICES
PCU	PRIMARY CONTROL UNIT
PRC	PRIMARY RADIO CABINET
PP	POLARIZING PRESERVING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PWR	POWER CABINET
QTY	QUANTITY
RAD	RADIUS
RECT	RECTIFIER
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
RET	REMOTE ELECTRIC TILT
RMC	RIGID METALLIC CONDUIT
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
RWY	RACEWAY
SCH	SCHEDULE
SHT	SHEET
SIAD	SMART INTEGRATED DEVICE
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
TEMP	TEMPORARY
THK	THICKNESS
TMA	TOWER MOUNTED AMPLIFIER
TN	TOE NAIL
TOA	TOP OF ANTENNA
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOP	TOP OF PLATE (PARAPET)
TOS	TOP OF STEEL
TOW	TOP OF WALL
TVSS	TRANSIENT VOLTAGE SUPPRESSION SYSTEM
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
UPS	UNITERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
VIF	VERIFIED IN FIELD
W	WIDE
W/	WITH
WD	WOOD
W.P.	WORK POINT
WP	WEATHERPROOF
WT	WEIGHT

ABBREVIATIONS | 2

NOT USED | 3

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REGISTERED
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WEST VIRGINIA
PROFESSIONAL ENGINEER
11/13/2023

PROJECT NO: 2017748.70

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PROJECT LOCATION:
WHEELING COLLEGE
W047
NATIONAL ROAD
WHEELING, WV 26003

SHEET TITLE:
LEGENDS AND ABBREVIATIONS

SHEET NUMBER:
N-3